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Document Title:	2017 Annual Compliance Report - Ivanpah Solar Electric Generating System
Description:	N/A
Filer:	Patty Paul
Organization:	NRG Ivanpah Solar Electric Generating system
Submitter Role:	Applicant
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Docketed Date:	6/7/2018

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NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 22, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C)
Conditions of Certification, COMPLIANCE-4 and COMPLIANCE-7; 2017 Annual Compliance Report

Dear Mr. Douglas and Mr. Ahrens,

Pursuant to the requirements of CEC Conditions of Certification, COMPLIANCE-4 and COMPLIANCE-7, the 2017 Annual Compliance Report for Ivanpah Solar Electric Generating System that covers from January 1, 2017 to December 31, 2017 is being submitted on behalf of Solar Partners I, II, and VIII, LLCs for your review.

Please feel free to contact me with any questions or concerns.

Thank you.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Paul Zavesoff, NRG, Carlsbad, CA
Tim Sisk, NRG
Document Control Specialist – NRG.

Ivanpah Solar Electric Generating System

California Energy Commission (07-AFC-5C)
Bureau of Land Management
(CACA-48668, 49502, 49503, and 49504)
Conditions of Certification COMPLIANCE-4 and COMPLIANCE-7

Annual Compliance Report

January 1, 2017 – December 31, 2017 Reporting Period

January 24, 2018

Prepared by: NRG Energy Services
on behalf of Solar Partners I, II, and VIII, LLCs

100302 Yates Well Road
Nipton, CA 92364

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Exhibit 1

Annual Compliance Report Summary

2017 Annual Compliance Report

Section 1

Summary of Current Operating Status and Changes to Facility Operations

(COMP-7 Item 2)

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NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 9, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Summary of Current Project Operating Status to fulfill California Energy Commission Conditions of Certification, COMPLIANCE-7 Item 2

Dear Mr. Douglas and Mr. Ahrens,

Pursuant to the requirements of Conditions of Certification COMPLIANCE-7 Item 5 of the Commission's approval of the Ivanpah Solar Electric Generating System, we are providing the following summary of current project operating status during the reporting period as a requirement in the Annual Compliance Report:

- Ivanpah has completed the 5-year Effective Management Plan (EMP) that documents the process- and scale-based determinants of survival of translocated Mojave Desert Tortoises in the Ivanpah Valley from April 2011 through May 2017. The 5-year Final EMP Report was submitted to BLM and USFWS on November 29, 2017, with a copy also sent to CEC. In addition, one hundred (100) EMP tortoises and the thirteen (13) long distance translocated tortoises which were not part of the EMP had their transmitters removed in October 2017, and will no longer be monitored by ISEGS.
- The Mojave Milkweed mitigation land (Hudgen's parcel) per BIO-18 has been transferred to National Park Service (NPS) on April 20, 2017. The recorded documents have been provided to NPS and included in a separate section in this report under Appendix M: BIO-18_Mojave Milkweed Land Acquisition Annual Report.
- A lube oil spill occurred at the Ivanpah Unit 3 Main Boiler Feed Pump Turbine (MBFPT) control oil system on June 23, 2017 at approximately 2000 hours PDT while the unit was offline and operating at normal operating pressure. The MBFPT control oil filter experienced a leak at the O-ring, causing the accidental release of approximately 380 gallons of lube oil within and adjacent to the containment underneath the MBFPT. Ivanpah provided timely verbal notifications to relevant agencies on June 23, 2017. A Spill Report was submitted to the agencies on July 24, 2017. The spill was properly remediated without impacting any watershed.

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- A lube oil spill occurred at the Ivanpah Unit 3 Main Boiler Feed Pump Turbine (MBFPT) control oil system on August 2, 2017 at approximately 0715 hours PDT while the unit was offline and transitioning on to turning gear. The MBFPT control oil filter O-ring failed, causing the accidental release of approximately 150 gallons of turbine oil within secondary containment underneath the MBFPT. Timely notifications to all relevant agencies were made on August 2, 2017. The Spill Report was submitted to all agencies on August 18, 2017. The spill was properly remediated without impacting any watershed.
- An approximately 400 gallon lube oil spill also occurred at the Ivanpah 3 Main Boiler Feed Pump Turbine (MBFPT) control oil system on August 14, 2017, at approximately 1645 hours PDT, while the unit was offline for the day and the turbine was transitioning to turning gear. The MBFPT control oil filter experienced a ruptured O-ring due to potential pressure surge during shutdowns, causing the accidental release of approximately 400 gallons of turbine oil within secondary containment underneath the MBFPT. Ivanpah provided verbal notifications to relevant agencies on August 14, 2017. The Spill Report was submitted to the agencies on September 7, 2017. The spill was properly remediated without impacting any watershed. The failing oil filter design was replaced with a robust oil filter design to prevent reoccurrence of this failure.
- Another accidental hydraulic oil spill occurred at the Ivanpah Unit 3 access road on October 18, 2017, at approximately 0237 hours PDT. A rental mobile crane tipped over on its side, causing the release of approximately 35 gallons of hydraulic oil onto the asphalt pavement and road shoulder near the Unit 3 solar field. There were no injuries during the incident and majority of the released oil was contained within the asphalt pavement,and impacted a small area within the soil on the compacted road shoulder. Ivanpah provided timely verbal notifications to relevant agencies on October 18, 2017. The Spill Report was submitted to the agencies on November 3, 2017. The spill was properly remediated without impacting any watershedd.
- CEC staff conducted an inspection on April 5, 2017 for operational compliance. To date, there has been no report from the CEC regarding this inspection.
- MDAQMD conducted an Air Quality audit on July 13, 2017 to verify Ivanpah's compliance with the permits issued to the facility. MDAQMD certified on August 2, 2017 that ISEGS is in compliance with all permit conditions. A copy of the MDAQMD inspection report is attached.
- California Energy Commission and Regional Water Quality Control Board conducted an inspection on ISEGS storm water sampling areas on August 30, 2017. There were no negative comments received from either agency.
- Natural gas consumption for each power block is below the annual limit of 525 mmscf.
    - Ivanpah 1 - 423 mmscf
    - Ivanpah 2 - 402 mmscf
    - Ivanpah 3 - 407 mmscf.

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- Ivanpah used 71% of the allotted 100 acre-feet of ground water extraction/drawn from Well #1 and Well #2, of which, approximately 57% was used by the three (3) units for electricity generation.
- All three units are stable, and able to attain and sustain full load.
- There were no significant changes to the facility operations during the reporting period.

Please feel free to contact me with any questions.

Thank you.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 -- 800.635.4617 -- FAX 760.245.2022

GENERAL INSPECTION FORM

32503

Start Date: 07/13/2017 End Date: 07/13/2017 Inspector: Catherine Tran

OWNER OR OPERATOR (Co.#1769)

Solar Partners II, LLC
HCR1 Box 280
Nipton, CA, 92364

FACILITY LOCATION (Fac.#3007)

Ivanpah 1
Near Ca/Nev border at Primm
Ivanpah, CA, 92364

SIC: 4911 *Location/UTM(Km): 640E/3933N*

Permit Number	Issue Date	Permit Status	Equipment Name	Fee Sch	Rating	Expire Date
B010375	06/13/2017	PTO	BOILER, Year of Manufacture 2012, Serial Number 2011-07,	2 (f)	249000000 Btu	10/31/2017
B011544	10/17/2016	PTO	BOILER, NIGHTIME PRESERVATION	2 (d)	10000000 Btu	10/31/2017
E010378	10/17/2016	PTO	DIESEL IC ENGINE, FIRE PUMP	7 (g)	1 device	10/31/2017
E010379	10/17/2016	PTO	DIESEL IC ENGINE, EMERGENCY GENERATOR	7 (g)	1 device	10/31/2017
E011546	10/17/2016	PTO	DIESEL IC ENGINE, EMERGENCY GENERATOR	7 (g)	1 device	10/31/2017
E011547	10/17/2016	PTO	DIESEL IC ENGINE, FIRE PUMP	7 (g)	1 device	10/31/2017

PERMIT NUMBER: B010375

Issue Date: 06/13/2017	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: solar energy
Contact: Timothy Higdon	Title: Environmental Specialist	Phone No: 702-815-2015
Fee Schedule: 2(f)	Rating: 249	Permit Status: PTO
SCC: 10300601	Current, On-Site: Yes	

Equipment Description: BOILER, Year of Manufacture 2012, Serial Number 2011-07,

Variance No : _____	Publications : _____
Process Rate : _____	Existing NTC : none
VEE : N	Existing NOV : none
VEE No : _____	Existing Variance : none

1. *Operation of this equipment must be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

2. *The owner/operator (o/o) shall operate this equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application for this permit, which produce the minimum emission of air contaminants. [Rule 1302(C)(2)(a)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *This boiler shall use only natural gas as fuel and shall be equipped with a meter measuring fuel consumption. [40 CFR 60 Subpart Db, Section 60.49b]*

O/o is aware of this condition and show compliance, ref. comment section

4. *The o/o shall maintain a current, on-site (at a central location if necessary) log for this equipment for five (5) years, which shall be provided to District, state or federal personnel upon request. This log shall include calendar year fuel use for this equipment in standard cubic feet, or BTUs, and daily hours of operation. [40 CFR 60 Subpart Db, Section 60.49b]*

O/o is aware of this condition and show compliance, ref. comment section

5. *The owner/operator shall perform compliance tests at least once every twelve (12) months in accordance with the District Compliance Test Procedural Manual. Prior to performing these annual tests, the boiler shall be tuned in accord with the manufacturers specified tune-up procedure, by a qualified technician. Subsequent tests shall demonstrate that this equipment does not exceed the following emission maximums:*

Pollutant	***ppmv***	***Lb/MMBTU***	*****Lb/hr***
**NOx*	*9.0*	*0.011*	*2.7 (Per USEPA Methods 7E and 19)*
SO2	*1.7*	*0.003*	*0.7*
**CO*	*25.0*	*0.018*	*4.5 (Per USEPA Method 10)*
VOC	*12.6*	*0.005*	*1.3 (Per USEPA Methods 25A and 18)*
PM10	*n/a*	*0.007*	*1.7 (Per USEPA Method 5 or 201A, and 202)*

**corrected to 3% oxygen, on a dry basis, averaged over one hour*

Flue gas flow rate shall be quantified in dscf per USEPA Methods 1 through 5

***As indicated in the District Compliance Manual, the District may approve alternatives, modifications and/or deviations to the methods specified in this condition.*
[Rule 1303(A); BACT]

O/o is aware of this condition and show compliance, ref. comment section

6. *This boiler shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (NSPS Db) including but not limited to recordkeeping and reporting requirements. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

7. *Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits; PUC regulated pipeline quality natural gas meets this requirement. [40 CFR 60 Subpart Db, Section 60.48b; Emission monitoring for particulate matter and nitrogen oxides]*

O/o is aware of this condition and show compliance, ref. comment section

8. *The o/o shall continuously monitor and record fuel flow rate and flue gas oxygen level. [40 CFR 60 Subpart Db, Section 60.49b; Reporting and Recordkeeping Requirements]*

O/o is aware of this condition and show compliance, ref. comment section

9. *In lieu of installing CEMs to monitor NOx emissions, and pursuant to 40 CFR 60 Subpart Db, Section 60.49b(c), the owner/operator shall monitor boiler operating conditions and estimate NOx emission rates per a District approved emissions estimation plan. The plan shall be based on the annual source tests required by condition 5. The plan shall include test results, operating parameters, analysis, conclusions and proposed NOx estimating relationship consistent with established emission chemistry and operational effects. Any proposed changes to a District-approved plan shall include subsequent test results, operating parameters, analysis, and any other pertinent information to support the proposed changes. The District must approve any emissions estimation plan or revision for estimated NOx emissions to be considered valid. [40 CFR 60 Subpart Db, Section 60.49b(c)]*

O/o is aware of this condition and show compliance, ref. comment section

10. *The combined fuel use from the auxiliary boilers and nighttime preservation boilers shall not exceed 525 MMSCF of natural gas in any calendar year; combined fuel use is the sum total of natural gas combusted from Boilers with MDAQMD permit numbers B010375 and B011544 (Ivanpah 1) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010376 and B011572 (Ivanpah 2) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010377 and B011573 (Ivanpah 3) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair. [Rule 204;Rule 1302(C)(2)(a); CEC Condition Of Certification]*

O/o is aware of this condition and show compliance, ref. comment section

11. *The owner/operator must submit a compliance/certification test protocol at least thirty (30) days prior to the compliance/certification test date. The owner/operator must conduct all required compliance/certification tests in accordance with a District-approved test protocol. The owner/operator must notify the District a minimum of ten (10) days prior to the compliance/certification test date so that an observer may be present. The final compliance/certification test results must be submitted to the District within forty-five (45) days of completion of the test. All compliance/certification test notifications, protocols, and results may be submitted electronically to reporting@mdaqmd.ca.gov*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

08/01/2017 Completed, TranC

08/02/16 Unit and operations record are well maintained per permit conditions.

08/03/16 PIR Complete, TranC w/ May Mamari

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: B011544

Issue Date: 10/17/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy Higdon	Title: Environmental Specialist	Phone No: 702-815-2015
Fee Schedule: 2(d)	Rating: 100	Permit Status: PTO
SCC: 10300602	Current, On-Site: Yes	

Equipment Description: BOILER, NIGHTIME PRESERVATION

Variance No : _____	Publications : _____
Process Rate : _____	Existing NTC : none
VEE : N	Existing NOV : none
VEE No : _____	Existing Variance : none

1. *Operation of this equipment must be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

2. *The owner/operator shall operate this equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application for this permit, which produce the minimum emission of air contaminants.[Rule 1302(C)(2)(a)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *This boiler shall use only natural gas as fuel.[Rule 1302(C)(2)(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *The owner/operator shall maintain a current, on-site (at a central location if necessary) log for this equipment for five (5) years, which shall be provided to District, state, or federal personnel upon request. This log shall include calendar year fuel use for this equipment in standard cubic feet, or BTUs, and daily hours of operation.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

5. *The owner/operator shall perform annual tune-ups in accordance with the unit manufacturer's specified tune-up procedure, by a qualified technician.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

6. *Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits; PUC regulated pipeline quality natural gas meets this requirement.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

7. *The owner/operator shall continuously monitor and record fuel flow rate into this power block known as Ivanpah 1.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

8. *The combined fuel use from the auxiliary boilers and nighttime preservation boilers shall not exceed 525 MMSCF of natural gas in any calendar year; combined fuel use is the sum total of natural gas combusted from Boilers with MDAQMD permit numbers B010375 and B011544 (Ivanpah 1) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010376 and B011572 (Ivanpah 2) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010377 and B011573 (Ivanpah 3) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair. [Rule 204; Rule 1302(C)(2)(a); CEC Condition Of Certification]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions. Note that the manometer to the air intake system to the nightime boiler outlet flow is broken. Request O/o to look into replace/fix manometer and maintain this unit per manufacturer or supplier and/or sound engineering principles

08/01/2017 Completed, TranC

08/02/16 Unit and operations record are well maintained per permit conditions.

08/05/16 PIR Complete, TranC w/ May Mamari

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	Y
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: E010378

Issue Date: 10/17/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy	Title: Higdon	Phone No: 702-805-2016
Fee Schedule: 7(g)	Rating: 1	Permit Status: PTO
SCC: 20100102	Current, On-Site: Yes	

Equipment Description: DIESEL IC ENGINE, FIRE PUMP

Current Hour Meter Reading: 159 Previous Hour Meter Reading: 138.5

1. *This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205 and 60.4211]*

O/o is aware of this condition and show compliance, ref. comment section

2. *This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. [Title 17 CCR 93115.10(e)(1); 60.4209(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *This unit shall be limited to use for emergency purposes, defined as in response to a fire. In addition, this unit shall be operated no more than 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. The 50 hour limit can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel fueled CI engine operated per and in accord with the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies. [District Rule 1302(C)(2)(a) and Rule 1304 (D)(1)(a)] and 17 CCR 93115.3(n); hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]*

O/o is aware of this condition and show compliance, ref. comment section

5. *The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:*

a. Date of each use and duration of each use (in hours);
b. Reason for use (testing & maintenance, emergency, required emission testing, etc.);
c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and,
d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115.10]

O/o is aware of this condition and show compliance, ref. comment section

6. *These engines may operate in response to fire suppression requirements and needs. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

7. *This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115) and 40 CFR Part 60, Subpart IIII (NSPS). In the event of conflict between these conditions and the ATCM or NSPS, the more stringent requirements shall govern. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

08/01/2017 Completed, TranC

08/02/16 Engine and operations records are well maintained per permit conditions.

08/03/16 PIR Completed, TranC w/ May Mamari

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: E010379

Issue Date: 10/17/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy Higdon	Title: Environmental Specialist	Phone No: 702-815-2015
Fee Schedule: 7(g)	Rating: 1	Permit Status: PTO
SCC: 20100102	Current, On-Site: Yes	

Equipment Description: DIESEL IC ENGINE, EMERGENCY GENERATOR

Current Hour Meter Reading: 450 Previous Hour Meter Reading: 260

1. *This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205, and 60.4211]*

O/o is aware of this condition and show compliance, ref. comment section

2. *This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. [Title 17 CCR 93115.10(e)(1); 60.4209(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *This unit shall not be used to provide power during a voluntary agreed to power outage and/or power reduction initiated under an Interruptible Service Contract (ISC); Demand Response Program (DRP); Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier. [17 CCR 93115; hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements]*

O/o is aware of this condition and show compliance, ref. comment section

5. *This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. [NSR and 17 CCR 93115; hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements]*

O/o is aware of this condition and show compliance, ref. comment section

6. *The o/o shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:*
a. Date of each use and duration of each use (in hours);
b. Reason for use (testing & maintenance, emergency, required emission testing);
c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours; and,
d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log). [17 CCR 93115.10]

O/o is aware of this condition and show compliance, ref. comment section

7. *This genset is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115) and 40 CFR Part 60, Subpart IIII (NSPS). In the event of conflict between these conditions and the ATCM, the more stringent requirements shall govern. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

Note: 03/07/2017 there was repair done to the underground 115kV electrical transmission line an used this unit to keep operations up. Details archived [Corsp-F 2017.pdf/Q1383677.1]

08/01/2017 Completed, TranC

08/02/16 Engine and operations records are well maintained per permit conditions.

08/03/16 PIR Completed, TranCw/ May Mamari

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: E011546

Issue Date: 10/17/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy Higdon	Title: Environmental Specialist	Phone No: 702-815-2015
Fee Schedule: 7(g)	Rating: 1	Permit Status: PTO
SCC: 20200102	Current, On-Site: Yes	

Equipment Description: DIESEL IC ENGINE, EMERGENCY GENERATOR

Current Hour Meter Reading: 235.0 Previous Hour Meter Reading: 193.90

1. *This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205, and 60.4211]*

O/o is aware of this condition and show compliance, ref. comment section

2. *This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. [Title 17 CCR 93115.10(e)(1); 60.4209(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *This unit shall not be used to provide power during a voluntary agreed to power outage and/or power reduction initiated under an Interruptible Service Contract (ISC); Demand Response Program (DRP); Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier. [17 CCR 93115; hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements]*

O/o is aware of this condition and show compliance, ref. comment section

5. *This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. [NSR and 17 CCR 93115; hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements]*

O/o is aware of this condition and show compliance, ref. comment section

6. *The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request.*
The log shall include, at a minimum, the information specified below:
a. Date of each use and duration of each use (in hours);
b. Reason for use (testing & maintenance, emergency, required emission testing, etc.);
c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and,
d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115.10]

O/o is aware of this condition and show compliance, ref. comment section

7. *If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in 60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached. [60.4209]*

O/o is aware of this condition and show compliance, ref. comment section

8. *This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115) and 40 CFR Part 60, Subpart IIII (NSPS). In the event of conflict between these conditions and the ATCM or NSPS, the more stringent requirements shall govern.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

08/01/2017 Completed, TranC

08/02/16 Engine and operations records are well maintained per permit conditions.

08/03/16 PIR Completed, TranCw/ May Mamari

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: E011547

Issue Date: 10/17/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy Higdon	Title: Environmental Specialist	Phone No: 702-815-2015
Fee Schedule: 7(g)	Rating: 1	Permit Status: PTO
SCC: 20100102	Current, On-Site: Yes	

Equipment Description: DIESEL IC ENGINE, FIRE PUMP

Current Hour Meter Reading: _____ Previous Hour Meter Reading: 99

1. *This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205 and 60.4211]*

O/o is aware of this condition and show compliance, ref. comment section

2. *This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. [Title 17 CCR 93115.10(e)(1); 60.4209(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *This unit shall be limited to use for emergency purposes, defined as in response to a fire. In addition, this unit shall be operated no more than 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. The 50 hour limit can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel fueled CI engine operated per and in accord with the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies. [District Rule 1302(C)(2)(a) and Rule 1304 (D)(1)(a)] and 17 CCR 93115.3(n); hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]*

O/o is aware of this condition and show compliance, ref. comment section

5. *The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:*
a. Date of each use and duration of each use (in hours);
b. Reason for use (testing & maintenance, emergency, required emission testing, etc.);
c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and,
d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115.10]

O/o is aware of this condition and show compliance, ref. comment section

6. *These engines may operate in response to fire suppression requirements and needs. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

7. *This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for StationaryCompression Ignition Engines (17 CCR 93115) and 40 CFR Part 60, Subpart IIII (NSPS). In the event of conflict between these conditions and the ATCM or NSPS, the more stringent requirements shall govern. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

08/01/2017 Completed, TranC

08/02/16 Engine and operations records are well maintained per permit conditions.

08/03/16 PIR Completed, TranC w/ May Mamari

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 -- 800.635.4617 -- FAX 760.245.2022

GENERAL INSPECTION FORM

32516

Start Date: 07/13/2017 End Date: 07/13/2017 Inspector: Catherine Tran

OWNER OR OPERATOR (Co.#1770)

Solar Partners I, LLC
HCR1 Box 280
Nipton, CA, 92364

FACILITY LOCATION (Fac.#3008)

Ivanpah 2
Ca/Nev border at Primm
Ivanpah, CA, 92364

SIC: 4911 *Location/UTM(Km): 644E/3934N*

Permit Number	Issue Date	Permit Status	Equipment Name	Fee Sch	Rating	Expire Date
B010376	06/13/2017	PTO	BOILER, Year of Manufacture 2012, Serial Number 2011-08,	2 (f)	249000000 Btu	10/31/2017
B011572	09/28/2016	PTO	BOILER, NIGHTTIME PRESERVATION	2 (d)	10000000 Btu	10/31/2017
E010380	09/28/2016	PTO	DIESEL IC ENGINE, FIRE PUMP	7 (g)	1 device	10/31/2017
E010381	09/28/2016	PTO	DIESEL IC ENGINE, EMERGENCY GENERATOR	7 (g)	1 device	10/31/2017

PERMIT NUMBER: B010376

Issue Date: 06/13/2017	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type:
Contact: Timothy Higdon	Title: Environmental Specialist	Phone No: 702-815-2016
Fee Schedule: 2(f)	Rating: 249	Permit Status: PTO
SCC: 10300601	Current, On-Site: Yes	

Equipment Description: BOILER, Year of Manufacture 2012, Serial Number 2011-08,

Variance No : _____	Publications : _____
Process Rate : _____	Existing NTC : none
VEE : N	Existing NOV : none
VEE No : _____	Existing Variance : none

1. *Operation of this equipment must be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

2. *The owner/operator (o/o) shall operate this equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application for this permit, which produce the minimum emission of air contaminants.[Rule 1302(C)(2)(a)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *This boiler shall use only natural gas as fuel and shall be equipped with a meter measuring fuel consumption.[40 CFR 60 Subpart Db, Section 60.49b]*

O/o is aware of this condition and show compliance, ref. comment section

4. *The o/o shall maintain a current, on-site (at a central location if necessary) log for this equipment for five (5) years, which shall be provided to District, state or federal personnel upon request. This log shall include calendar year fuel use for this equipment in standard cubic feet, or BTUs, and daily hours of operation.[40 CFR 60 Subpart Db, Section 60.49b]*

O/o is aware of this condition and show compliance, ref. comment section

5. *The owner/operator shall perform compliance tests at least once every twelve (12) months in accordance with the District Compliance Test Procedural Manual. Prior to performing these annual tests, the boiler shall be tuned in accord with the manufacturers specified tune-up procedure, by a qualified technician. Subsequent tests shall demonstrate that this equipment does not exceed the following emission maximums:*

Pollutant	***ppmv***	***Lb/MMBTU***	*****Lb/hr***
**NOx*	*9.0*	*0.011*	*2.7 (Per USEPA Methods 7E and 19)*
SO2	*1.7*	*0.003*	*0.7*
**CO*	*25.0*	*0.018*	*4.5 (Per USEPA Method 10)*
VOC	*12.6*	*0.005*	*1.3 (Per USEPA Methods 25A and 18)*
PM10	*n/a*	*0.007*	*1.7 (Per USEPA Method 5 or 201A, and 202)*

**corrected to 3% oxygen, on a dry basis, averaged over one hour*

Flue gas flow rate shall be quantified in dscf per USEPA Methods 1 through 5

***As indicated in the District Compliance Manual, the District may approve alternatives, modifications and/or deviations to the methods specified in this condition. [Rule 1303(A); BACT]*

O/o is aware of this condition and show compliance, ref. comment section

6. *This boiler shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (NSPS Db) including but not limited to recordkeeping and reporting requirements.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

7. *Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits; PUC regulated pipeline quality natural gas meets this requirement.[40 CFR 60 Subpart Db, Section 60.48b; Emission monitoring for particulate matter and nitrogen oxides]*

O/o is aware of this condition and show compliance, ref. comment section

8. *The o/o shall continuously monitor and record fuel flow rate and flue gas oxygen level.[40 CFR 60 Subpart Db, Section 60.49b; Reporting and Recordkeeping Requirements]*

O/o is aware of this condition and show compliance, ref. comment section

9. *In lieu of installing CEMs to monitor NOx emissions, and pursuant to 40 CFR 60 Subpart Db, Section 60.49b(c), the owner/operator shall monitor boiler operating conditions and estimate NOx emission rates per a District approved emissions estimation plan. The plan shall be based on the annual source tests required by condition 5. The plan shall include test results, operating parameters, analysis, conclusions and proposed NOx estimating relationship consistent with established emission chemistry and operational effects. Any proposed changes to a District-approved plan shall include subsequent test results, operating parameters, analysis, and any other pertinent information to support the proposed changes. The District must approve any emissions estimation plan or revision for estimated NOx emissions to be considered valid.[40 CFR 60 Subpart Db, Section 60.49b(c)]*

O/o is aware of this condition and show compliance, ref. comment section

10. *The combined fuel use from the auxiliary boilers and nighttime preservation boilers shall not exceed 525 MMSCF of natural gas in any calendar year; combined fuel use is the sum total of natural gas combusted from Boilers with MDAQMD permit numbers B010375 and B011544 (Ivanpah 1) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010376 and B011572 (Ivanpah 2) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010377 and B011573 (Ivanpah 3) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair. [Rule 204; CEC Condition Of Certification]*

O/o is aware of this condition and show compliance, ref. comment section

11. *The owner/operator must submit a compliance/certification test protocol at least thirty (30) days prior to the compliance/certification test date. The owner/operator must conduct all required compliance/certification tests in accordance with a District-approved test protocol. The owner/operator must notify the District a minimum of ten (10) days prior to the compliance/certification test date so that an observer may be present. The final compliance/certification test results must be submitted to the District within forty-five (45) days of completion of the test. All compliance/certification test notifications, protocols, and results may be submitted electronically to reporting@mdaqmd.ca.gov*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

08/01/2017 Completed, TranC

08/02/16 Unit and operations record are well maintained per permit conditions.

08/03/16 PIR Complete, TranC w/ May Mamari

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: B011572

Issue Date: 09/28/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy Higdon	Title: Environmental Specialist	Phone No: 702-815-2016
Fee Schedule: 2(d)	Rating: 100	Permit Status: PTO
SCC: 10300602	Current, On-Site: Yes	

Equipment Description: BOILER, NIGHTTIME PRESERVATION

Variance No : _____	Publications : _____
Process Rate : _____	Existing NTC : none
VEE : N	Existing NOV : none
VEE No : _____	Existing Variance : none

1. *Operation of this equipment must be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

2. *The owner/operator shall operate this equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application for this permit, which produce the minimum emission of air contaminants.[Rule 1302(C)(2)(a)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *This boiler shall use only natural gas as fuel.[Rule 1302(C)(2)(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *The owner/operator shall maintain a current, on-site (at a central location if necessary) log for this equipment for five (5) years, which shall be provided to District, state, or federal personnel upon request. This log shall include calendar year fuel use for this equipment in standard cubic feet, or BTUs, and daily hours of operation.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

5. *The owner/operator shall perform annual tune-ups in accordance with the unit manufacturer's specified tune-up procedure, by a qualified technician.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

6. *Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits; PUC regulated pipeline quality natural gas meets this requirement.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

7. *The owner/operator shall continuously monitor and record fuel flow rate into this power block known as Ivanpah 2.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

8. *The combined fuel use from the auxiliary boilers and nighttime preservation boilers shall not exceed 525 MMSCF of natural gas in any calendar year; combined fuel use is the sum total of natural gas combusted from Boilers with MDAQMD permit numbers B010375 and B011544 (Ivanpah 1) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010376 and B011572 (Ivanpah 2) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010377 and B011573 (Ivanpah 3) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair. [Rule 204; Rule 1302(C)(2)(a); CEC Condition Of Certification]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.Note that the manometer to the air intake system to the nightime boiler need oil/fluid. Request O/o to look into adding oil/fluid to manometer and maintain this unit per manufacturer or supplier and/or sound engineering principles

08/01/2017 Completed, TranC

08/02/16 Unit and operations record are well maintained per permit conditions.

08/04/16 Requested record submitted and show compliance to condition 5.

08/05/16 PIR Complete and updated, TranC w/ May Mamari

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	Y
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: E010380

Issue Date: 09/28/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy Higdon	Title: Environmental Specialist	Phone No: 702-815-2016
Fee Schedule: 7(g)	Rating: 1	Permit Status: PTO
SCC: 20100102	Current, On-Site: Yes	

Equipment Description: DIESEL IC ENGINE, FIRE PUMP

Current Hour Meter Reading: 139.6 Previous Hour Meter Reading: 118.11

1. *This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205 and 60.4211]*

O/o is aware of this condition and show compliance, ref. comment section

2. *This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. [Title 17 CCR 93115.10(e)(1); 60.4209(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *This unit shall be limited to use for emergency purposes, defined as in response to a fire. In addition, this unit shall be operated no more than 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. The 50 hour limit can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel fueled CI engine operated per and in accord with the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies. [District Rule 1302(C)(2)(a) and Rule 1304 (D)(1)(a)] and 17 CCR 93115.3(n); hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]*

O/o is aware of this condition and show compliance, ref. comment section

5. *The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:*
a. Date of each use and duration of each use (in hours);
b. Reason for use (testing & maintenance, emergency, required emission testing, etc.);
c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and,
d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115.10]

O/o is aware of this condition and show compliance, ref. comment section

6. *These engines may operate in response to fire suppression requirements and needs. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

7. *This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115) and 40 CFR Part 60, Subpart IIII (NSPS). In the event of conflict between these conditions and the ATCM or NSPS, the more stringent requirements shall govern. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

08/01/2017 Completed, TranC

08/02/16 Engine and operations records are well maintained per permit conditions.

08/03/16 PIR Completed, TranC w/ May Mamari

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: E010381

Issue Date: 09/28/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy Higdon	Title: Environmental Specialist	Phone No: 702-815-2016
Fee Schedule: 7(g)	Rating: 1	Permit Status: PTO
SCC: 20100102	Current, On-Site: Yes	

Equipment Description: DIESEL IC ENGINE, EMERGENCY GENERATOR

Current Hour Meter Reading: 88.1 Previous Hour Meter Reading: 56.40

1. *This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205, and 60.4211]*

O/o is aware of this condition and show compliance, ref. comment section

2. *This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. [Title 17 CCR 93115.10(e)(1); 60.4209(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *This unit shall not be used to provide power during a voluntary agreed to power outage and/or power reduction initiated under an Interruptible Service Contract (ISC); Demand Response Program (DRP); Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier. [17 CCR 93115; hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements]*

O/o is aware of this condition and show compliance, ref. comment section

5. *This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. [NSR and 17 CCR 93115; hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]*

O/o is aware of this condition and show compliance, ref. comment section

6. *The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:*
a. Date of each use and duration of each use (in hours);
b. Reason for use (testing & maintenance, emergency, required emission testing, etc.);
c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and,
d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115.10]

O/o is aware of this condition and show compliance, ref. comment section

7. *This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115) and 40 CFR Part 60, Subpart IIII (NSPS). In the event of conflict between these conditions and the ATCM or NSPS, the more stringent requirements shall govern. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

08/01/2017 Completed, TranC

08/02/16 Engine and operations records are well maintained per permit conditions.

08/03/16 PIR Completed, TranCw/ May Mamari

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 -- 800.635.4617 -- FAX 760.245.2022

GENERAL INSPECTION FORM

32517

Start Date: 07/13/2017 End Date: 07/13/2017 Inspector: Catherine Tran

OWNER OR OPERATOR (Co.#1771)

Solar Partners VIII, LLC
HCR1 Box 280
Nipton, CA, 92364

FACILITY LOCATION (Fac.#3009)

Ivanpah 3
Ca/Nev border at Primm
Ivanpah, CA, 92364

SIC: 4911 *Location/UTM(Km): 644E/3934N*

Permit Number	Issue Date	Permit Status	Equipment Name	Fee Sch	Rating	Expire Date
B010377	06/13/2017	PTO	BOILER, Year of Manufacture 2012, Serial Number 2011-09,	2 (f)	249000000 Btu	10/31/2017
B011573	10/17/2016	PTO	BOILER, NIGHTTIME PRESERVATION	2 (d)	10000000 Btu	10/31/2017
E010382	10/17/2016	PTO	DIESEL IC ENGINE, EMERGENCY GENERATOR	7 (g)	1 device	10/31/2017
E010384	10/17/2016	PTO	DIESEL IC ENGINE, FIRE PUMP	7 (g)	1 device	10/31/2017

PERMIT NUMBER: B010377

Issue Date: 06/13/2017	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: solar energy
Contact: Timothy Higdon	Title: Higdon	Phone No: 702-805-2016
Fee Schedule: 2(f)	Rating: 249	Permit Status: PTO
SCC: 10300601	Current, On-Site: Yes	

Equipment Description: BOILER, Year of Manufacture 2012, Serial Number 2011-09,

Variance No : _____	Publications : _____
Process Rate : _____	Existing NTC : none
VEE : N	Existing NOV : none
VEE No : _____	Existing Variance : none

1. *Operation of this equipment must be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

2. *The owner/operator (o/o) shall operate this equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application for this permit, which produce the minimum emission of air contaminants.[Rule 1302(C)(2)(a)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *This boiler shall use only natural gas as fuel and shall be equipped with a meter measuring fuel consumption.[40 CFR 60 Subpart Db, Section 60.49b]*

O/o is aware of this condition and show compliance, ref. comment section

4. *The o/o shall maintain a current, on-site (at a central location if necessary) log for this equipment for five (5) years, which shall be provided to District, state or federal personnel upon request. This log shall include calendar year fuel use for this equipment in standard cubic feet, or BTUs, and daily hours of operation.[40 CFR 60 Subpart Db, Section 60.49b]*

O/o is aware of this condition and show compliance, ref. comment section

5. *The owner/operator shall perform compliance tests at least once every twelve (12) months in accordance with the District Compliance Test Procedural Manual. Prior to performing these annual tests, the boiler shall be tuned in accord with the manufacturers specified tune-up procedure, by a qualified technician. Subsequent tests shall demonstrate that this equipment does not exceed the following emission maximums:*

Pollutant	***ppmv***	***Lb/MMBTU***	*****Lb/hr***
**NOx*	*9.0*	*0.011*	*2.7 (Per USEPA Methods 7E and 19)*
SO2	*1.7*	*0.003*	*0.7*
**CO*	*25.0*	*0.018*	*4.5 (Per USEPA Method 10)*
VOC	*12.6*	*0.005*	*1.3 (Per USEPA Methods 25A and 18)*
PM10	*n/a*	*0.007*	*1.7 (Per USEPA Method 5 or 201A, and 202)*

**corrected to 3% oxygen, on a dry basis, averaged over one hour*

Flue gas flow rate shall be quantified in dscf per USEPA Methods 1 through 5

***As indicated in the District Compliance Manual, the District may approve alternatives, modifications and/or deviations to the methods specified in this condition.[Rule 1303(A); BACT]*

O/o is aware of this condition and show compliance, ref. comment section

6. *This boiler shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (NSPS Db) including but not limited to recordkeeping and reporting requirements.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

7. *Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits; PUC regulated pipeline quality natural gas meets this requirement.[40 CFR 60 Subpart Db, Section 60.48b; Emission monitoring for particulate matter and nitrogen oxides]*

O/o is aware of this condition and show compliance, ref. comment section

8. *The o/o shall continuously monitor and record fuel flow rate and flue gas oxygen level.[40 CFR 60 Subpart Db, Section 60.49b; Reporting and Recordkeeping Requirements]*

O/o is aware of this condition and show compliance, ref. comment section

9. *In lieu of installing CEMs to monitor NOx emissions, and pursuant to 40 CFR 60 Subpart Db, Section 60.49b(c), the owner/operator shall monitor boiler operating conditions and estimate NOx emission rates per a District approved emissions estimation plan. The plan shall be based on the annual source tests required by condition 5. The plan shall include test results, operating parameters, analysis, conclusions and proposed NOx estimating relationship consistent with established emission chemistry and operational effects. Any proposed changes to a District-approved plan shall include subsequent test results, operating parameters, analysis, and any other pertinent information to support the proposed changes. The District must approve any emissions estimation plan or revision for estimated NOx emissions to be considered valid.[40 CFR 60 Subpart Db, Section 60.49b(c)]*

O/o is aware of this condition and show compliance, ref. comment section

10. *The combined fuel use from the auxiliary boilers and nighttime preservation boilers shall not exceed 525 MMSCF of natural gas in any calendar year; combined fuel use is the sum total of natural gas combusted from Boilers with MDAQMD permit numbers B010375 and B011544 (Ivanpah 1) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010376 and B011572 (Ivanpah 2) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010377 and B011573 (Ivanpah 3) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair. [Rule 204; Rule 1302(C)(2)(a); CEC Condition Of Certification]*

O/o is aware of this condition and show compliance, ref. comment section

11. *The owner/operator must submit a compliance/certification test protocol at least thirty (30) days prior to the compliance/certification test date. The owner/operator must conduct all required compliance/certification tests in accordance with a District-approved test protocol. The owner/operator must notify the District a minimum of ten (10) days prior to the compliance/certification test date so that an observer may be present. The final compliance/certification test results must be submitted to the District within forty-five (45) days of completion of the test. All compliance/certification test notifications, protocols, and results may be submitted electronically to reporting@mdaqmd.ca.gov*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

08/01/2017 Completed, TranC

08/02/2016
Unit and operations record are well maintained per permit conditions.

08/03/16 PIR Complete, May Mamari under the supervision of TranC

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: B011573

Issue Date: 10/17/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy Higdon	Title: Higdon	Phone No: 702-805-2016
Fee Schedule: 2(d)	Rating: 100	Permit Status: PTO
SCC: 10300602	Current, On-Site: Yes	

Equipment Description: BOILER, NIGHTTIME PRESERVATION

Variance No : _____	Publications : _____
Process Rate : _____	Existing NTC : none
VEE : N	Existing NOV : none
VEE No : _____	Existing Variance : none

1. *Operation of this equipment must be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

2. *The owner/operator shall operate this equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application for this permit, which produce the minimum emission of air contaminants.[Rule 1302(C)(2)(a)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *This boiler shall use only natural gas as fuel.[Rule 1302(C)(2)(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *The owner/operator shall maintain a current, on-site (at a central location if necessary) log for this equipment for five (5) years, which shall be provided to District, state, or federal personnel upon request. This log shall include calendar year fuel use for this equipment in standard cubic feet, or BTUs, and daily hours of operation.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

5. *The owner/operator shall perform annual tune-ups in accordance with the unit manufacturer's specified tune-up procedure, by a qualified technician.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

6. *Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits; PUC regulated pipeline quality natural gas meets this requirement.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

7. *The owner/operator shall continuously monitor and record fuel flow rate into this power block known as Ivanpah 3.[Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

8. *The combined fuel use from the auxiliary boilers and nighttime preservation boilers shall not exceed 525 MMSCF of natural gas in any calendar year; combined fuel use is the sum total of natural gas combusted from Boilers with MDAQMD permit numbers B010375 and B011544 (Ivanpah 1) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010376 and B011572 (Ivanpah 2) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair, B010377 and B011573 (Ivanpah 3) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair. [Rule 204; Rule 1302(C)(2)(a); CEC Condition Of Certification]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.Note that the manometer to the air intake system to the nightime boiler need oil/fluid. Request O/o to look into adding oil/fluid to manometer and maintain this unit per manufacturer or supplier and/or sound engineering principles

08/01/2017 Completed, TranC

08/02/16 Unit and operations record are well maintained per permit conditions.

08/05/16 PIR Completed, May Mamari under the supervision of TranC

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	Y
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: E010382

Issue Date: 10/17/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy Higdon	Title: Higdon	Phone No: 702-805-2016
Fee Schedule: 7(g)	Rating: 1	Permit Status: PTO
SCC: 20100102	Current, On-Site: Yes	

Equipment Description: DIESEL IC ENGINE, EMERGENCY GENERATOR

Current Hour Meter Reading: _____ Previous Hour Meter Reading: 56.90

1. *This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205, and 60.4211]*

O/o is aware of this condition and show compliance, ref. comment section

2. *This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. [Title 17 CCR 93115.10(e)(1); 60.4209(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *This unit shall not be used to provide power during a voluntary agreed to power outage and/or power reduction initiated under an Interruptible Service Contract (ISC); Demand Response Program (DRP); Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier. [17 CCR 93115; hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements]*

O/o is aware of this condition and show compliance, ref. comment section

5. *This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. [NSR and 17 CCR 93115; hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements]*

O/o is aware of this condition and show compliance, ref. comment section

6. *The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:*
a. Date of each use and duration of each use (in hours);
b. Reason for use (testing & maintenance, emergency, required emission testing, etc.);
c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and,
d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115.10]

O/o is aware of this condition and show compliance, ref. comment section

7. *This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115) and 40 CFR Part 60, Subpart IIII (NSPS). In the event of conflict between these conditions and the ATCM or NSPS, the more stringent requirements shall govern. {Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

08/01/2017 Completed, TranC

08/02/16 Engine and operations records are well maintained per permit conditions.

08/03/16 PIR Completed, May Mamari under the supervision of TranC

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

PERMIT NUMBER: E010384

Issue Date: 10/17/2016	Expiration Date: 10/31/2017	Last Inspected: 2016-08-02 00:00:00.000
Attached: _____ Copies	Inspection Type: Annual	Facility Type: Solar Plant
Contact: Timothy Higdon	Title: Higdon	Phone No: 702-805-2016
Fee Schedule: 7(g)	Rating: 1	Permit Status: PTO
SCC: 20100102	Current, On-Site: Yes	

Equipment Description: DIESEL IC ENGINE, FIRE PUMP

Current Hour Meter Reading: _____ Previous Hour Meter Reading: 163.5

1. *This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205 and 60.4211]*

O/o is aware of this condition and show compliance, ref. comment section

2. *This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]*

O/o is aware of this condition and show compliance, ref. comment section

3. *A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. [Title 17 CCR 93115.10(e)(1); 60.4209(a)]*

O/o is aware of this condition and show compliance, ref. comment section

4. *This unit shall be limited to use for emergency purposes, defined as in response to a fire. In addition, this unit shall be operated no more than 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. The 50 hour limit can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel fueled CI engine operated per and in accord with the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies. [District Rule 1302(C)(2)(a) and Rule 1304 (D)(1)(a)] and 17 CCR 93115.3(n); hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]*

O/o is aware of this condition and show compliance, ref. comment section

5. *The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:*
a. Date of each use and duration of each use (in hours);
b. Reason for use (testing & maintenance, emergency, required emission testing, etc.);
c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and,
d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115.10]

O/o is aware of this condition and show compliance, ref. comment section

6. *These engines may operate in response to fire suppression requirements and needs. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

7. *This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115) and 40 CFR Part 60, Subpart IIII (NSPS). In the event of conflict between these conditions and the ATCM or NSPS, the more stringent requirements shall govern. [Rule 204]*

O/o is aware of this condition and show compliance, ref. comment section

Comments: 08/13/2017 Unit and operations record are well maintained per permit conditions.

08/01/2017 Completed, TranC

08/02/16 Engine and operations records are well maintained per permit conditions.

08/03/16 PIR Completed, May Mamari under the supervision of TranC

Prohibitory Rules:

In Compliance:	Y
Warning Issued:	N
NTC:	N
NOV:	N
Reinspect:	N

Section 2

Post Certification Changes by the CEC, BLM ROW Grants or Approved POD by BLM

(COMP-7 Item 4)

energyservices
an NRG service

NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 8, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Post-Certification Changes by the CEC or changes to the BLM Right-of-Way Grant or Approved POD by BLM, COMPLIANCE 07 Item 4

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certification COMPLIANCE-07 Item 4 of the Commission's approval of the Ivanpah Solar Electric Generating System, we are providing the following statement as a requirement in the Annual Compliance Report:

There are no petitions to amend submitted or post-certification changes approved by the CEC, and there are no changes to the BLM ROW grant or approved plan of development by BLM during the reporting period. The list of previously approved post-certification changes and BLM ROW grants is attached for reference.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

LIST OF POST CERTIFICATION CHANGES BY CEC OR BLM ROW GRANT OR APPROVED POD BY BLM

In accordance with COC COMP-07 Item 4, the following include cumulative listing of all post-certification changes by the Energy Commission or changes to the BLM ROW grant or approved POD by BLM, or cleared by BLM's Authorized Officer and the CPM

PTA No.	Description	Submittal Date	Approval Date
1	Petition To Amend - Equipment Change to Reduce Emissions and modify several Air Quality Conditions of certifications. The Petition to Amend modified, deleted and added several Air Quality Conditions of Certification. The modifications proposed in the petition include several equipment changes to make the project operations more effective and efficient.	3/8/2012	2/13/2013
2	Petition To Amend - Condition of Certification BIO-20. The modifications proposed in the petition would amend Condition of Certification BIO-20 to allow the owner to pay in-lieu fees to the California Department of Fish and Game (DFG) for acquisition and/or restoration of habitat under DFG's Advanced Mitigation Land Acquisition Grants program.	11/26/2012	2/13/2013
3	Petition To Amend - CEC Condition of Certification AQ-12, AQ-34 and AQSC-10. The modifications proposed in the petition would allow ISEGS to increase the maximum allowable annual fuel usage limit for boilers from 328 to 525 million standard cubic feet (MMSCF) per power block. The requested change would require modification of the annual fuel use limits in Air Quality Conditions of Certification AQ-12 and AQ-34. Additionally, the petition requests conforming changes to Air Quality Condition of Certification AQ-SC10, which limits total annual natural gas fuel heat input to each of the three ISEGS power plants to no more than 5 percent of the total heat input from the sun. According to the petition, the proposed revisions to condition AQSC-10 are necessary to make the condition consistent with the proposed changes to conditions AQ-12 and AQ-34.	3/26/2014	9/15/2014
4	Petition To Amend - to modify several Air Quality Conditions of Certifications. The modifications proposed include minor alterations to the ISEGS Air Quality Conditions of Certification to revise the description of engines used for emergency generators and fire pumps to match the existing engines. The Mojave Desert Air Quality Management District (District or MDAQMD) has reviewed the proposed changes and has incorporated the revised descriptions into district permit language. The purpose of this application is to update the equipment descriptions contained in the Air Quality Conditions of Certification to reflect the as-built engine information. Additionally, the District has made minor changes to permit conditions, consolidating redundant conditions, eliminating obsolete conditions, and making minor simplifications and corrections - those changes are reflected in the amended Decision.	3/17/2015	11/19/2015

ISEGS LIST OF BLM ROW GRANTS

Right-of-Way Grant No.	LOCATION	DATE ISSUED	TOTAL ACREAGE
CACA 049502	Construction Logistics Area	07-Oct-2010	245.89
CACA 049504	Ivanpah 1	07-Oct-2010	914.03
CACA 048668	Ivanpah 2	07-Oct-2010	1,076.51
CACA 049503	Ivanpah 3	07-Oct-2010	1,234.93
CACA 049502 Amendment #1	CLA - Modify certain boundaries of the CLA and shared ancillary facilites (Amend. #1)	14-Mar-2011	29.70
CACA 049502 Amendment #2	CLA - Construction of a Tortoise Pen along I-15 (Amend. #2)	09-Mar-2012	9.70
CACA 049502 Amendment #3	CLA - Installation of additional tortoise exclusion fence, two tortoise guards on Yates Well Rd from PVGC to I-15 and 3 tortoise guards along Colosseum Rd. (Amend. #3)	02-May-2012	5.40
CACA 049502 Amendment #4	CLA - Installation of Automated Data Logging Weather Stations (Amend. #4)	26-Mar-2013	0.10
CACA 049502 Amendment #5	CLA - Continued operation, maintain and decommissioning of the heliostat assembly building (HAB) (Amend. #5)	16-Apr-2013	22.50
CACA 055108*	Solar/Ecological Interpretive Center	25-Jul-2014	4.59
CACA 055666**	50 Miles of Desert Tortoise Exclusion Fencing along Interstate 15 and Interstate 40	02-Sep-2015	99.71

NOTES:

* This ROW Grant is a Land-Use permit issued by BLM which allows the use of public land to construct the Solar/Ecological Interpretive Center.

** Right-of-Way Grant for the right to install, monitor and maintain desert tortoise exclusion fence on public lands managed by the Bureau of Land Management.

Section 3

Explanation for Any Submittal Deadlines That Were Missed

(COMP-7 Item 5)

energyservices
an NRG service

NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364 Ph:
702-815-2021 Fax: 702-815-2030

January 5, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Explanation for any Submittal Deadlines that were Missed to fulfill California Energy Commission Conditions of Certification, COMPLIANCE-7 Item 5

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certification COMPLIANCE-7 Item 5 of the Commission's approval of the Ivanpah Solar Electric Generating System, we are providing the following statement as a requirement in the Annual Compliance Report:

There are no submission deadlines that were missed on record during the 2017 reporting period.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Section 5

Projection of Project Compliance Activities Scheduled During the Next Year – 2018

(COMP-7 Item 7)

Ivanpah SEGS Operations Projection of Project Compliance Activities for 2018

In accordance with CEC Condition of Certification COMP-07 Item 7, the following is the projection of project compliance activities scheduled during the next year, 2018

TECHNICAL AREA	COC No.	DESCRIPTION	FREQUENCY	TENTATIVE COMPLIANCE DATE	REQUIRED SUBMITTAL DATE
Air Quality Auxilliary Boilers	**AQ-01**	Equipment operation to be conducted in compliance with all data and specifications submitted with the application. Any non-compliant operations shall be listed in the Annual Compliance Report (COMPLIANCE-7).	Daily	31-Dec-2018	To be submitted with the annual compliance report
Air Quality Auxilliary Boilers	**AQ-02**	To operate equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application. As part of the Annual Compliance Report (COMPLIANCE-7), the project owner shall include information on the date, time, and duration of any violation of this permit condition.	Daily	31-Dec-2018	Violation of this permit condition shall be reported in the annual compliance test report
Air Quality Auxilliary Boilers	**AQ-03**	Only natural gas shall be used for the boilers and equipped with a meter measuring fuel consumption. To include proofs that only pipeline quality, or Public Utility Commission regulated gas are used for the boilers. As part of the Annual Compliance Report (COMPLIANCE-7), the project owner shall include proofs that only pipeline quality, or Public Utility Commission regulated natural gas are used for the boilers.	Daily	31-Dec-2018	To be submitted with the annual compliance report
Air Quality Auxilliary Boilers	**AQ-04**	To maintain log for boilers for 5 years which shall be provided to the District, state or federal personnel upon request.	Monthly	31-Dec-2018	To be submitted with the annual compliance report
Air Quality Auxilliary Boilers	**AQ-06**	Notify MDAQMD and CEC before execution of annual compliance tests	Annually	14-Dec-2017	30 days prior scheduled performance tests
Air Quality Auxilliary Boilers	**AQ-06**	Perform boiler tune-up in accord with manufacturer's specified tune-up procedure.	Annually	10-Jan-2018	
Air Quality Auxilliary Boilers	**AQ-06**	Perform annual compliance tests for auxiliary boilers Ivanpah 1, Ivanpah 2 and Ivanpah 3.	Annually	16-Jan-2018	
Air Quality Auxilliary Boilers	**AQ-06**	Submit compliance test results to MDAQMD and CEC.	Annually	02-Mar-2018	45 days from the date of the tests
Air Quality Auxilliary Boilers	**AQ-07**	This boiler (Boilers 1, 2, and 3) shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (NSPS Db).	Monthly	31-Dec-2018	
Air Quality Auxilliary Boilers	**AQ-08**	Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits.	Monthly	31-Dec-2018	

TECHNICAL AREA	COC No.	DESCRIPTION	FREQUENCY	TENTATIVE COMPLIANCE DATE	REQUIRED SUBMITTAL DATE
Air Quality Auxilliary Boilers	**AQ-09**	The owner/operator shall continuously monitor and record fuel flow rate and flue gas oxygen level.	Monthly	31-Dec-2018	
Air Quality Auxilliary Boilers	**AQ-12**	Monitor and record fuel consumption for each auxiliary boiler and nighttime preservation boiler pair not to exceed 525 mmscf.	Monthly	31-Dec-2018	To be submitted with the annual compliance report
Air Quality Fire Pumps	**AQ-14**	To ensure that the units shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis.	Monthly	31-Dec-2018	
Air Quality Fire Pumps	**AQ-16**	To monitor operation of this equipment will not exceed 1.0 hour per day for a total of 50 hours per year for testing and maintenance.	Monthly	31-Dec-2018	
Air Quality Fire Pumps	**AQ-17**	To maintain operations log for these equipment.	Monthly	31-Dec-2018	
Air Quality Emergency Generators	**AQ-21**	To ensure that the units shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis.	Monthly	31-Dec-2018	
Air Quality Emergency Generators	**AQ-24**	To monitor operation of this equipment will not exceed 1.0 hour per day for a total of 50 hours per year for testing and maintenance.	Monthly	31-Dec-2018	
Air Quality Emergency Generators	**AQ-25**	To maintain operations log for these equipment.	Monthly	31-Dec-2018	
Air Quality - Nighttime Preservation Boilers	**AQ-27**	Equipment operation to be conducted in compliance with all data and specifications submitted with the application.	Daily	31-Dec-2018	To be submitted with the annual compliance report
Air Quality - Nighttime Preservation Boilers	**AQ-28**	To operate equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application.	Daily	31-Dec-2018	Violation of this permit condition shall be reported in the annual compliance test report
Air Quality - Nighttime Preservation Boilers	**AQ-29**	Only natural gas shall be used for the boilers and equipped with a meter measuring fuel consumption. To include proofs that only pipeline quality, or Public Utility Commission regulated gas are used for the boilers.	Daily	31-Dec-2018	To be submitted with the annual compliance report
Air Quality - Nighttime Preservation Boilers	**AQ-30**	To maintain log for boilers for 5 years.	Monthly	31-Dec-2018	To be submitted with the annual compliance report
Air Quality - Nighttime Preservation Boilers	**AQ-31**	Perform boiler tune-up in accord with manufacturer's specified tune-up procedure.	Annually	10-Jan-2018	
Air Quality - Nighttime Preservation Boilers	**AQ-32**	To maintain records of fuel supplier sulfur certification.	Monthly	31-Dec-2018	

TECHNICAL AREA	COC No.	DESCRIPTION	FREQUENCY	TENTATIVE COMPLIANCE DATE	REQUIRED SUBMITTAL DATE
Air Quality - Nighttime Preservation Boilers	**AQ-33**	The owner/operator shall continuously monitor and record fuel 'flow rate.	Monthly	31-Dec-2018	
Air Quality - Nighttime Preservation Boilers	**AQ-34**	Monitor and record fuel consumption for each auxiliary boiler and nighttime preservation boiler.	Monthly	31-Dec-2018	To be submitted with the annual compliance report
Air Quality - Common Area Emergency Generator	**AQ-36**	To ensure that the units shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis.	Monthly	31-Dec-2018	
Air Quality - Common Area Emergency Generator	**AQ-39**	To monitor operation of this equipment will not exceed 1.0 hour per day for a total of 50 hours per year for testing and maintenance.	Monthly	31-Dec-2018	
Air Quality - Common Area Emergency Generator	**AQ-40**	To maintain operations log for these equipment.	Monthly	31-Dec-2018	
Air Quality - Common Area Emergency Fire Pump	**AQ-43**	To ensure that the units shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis.	Monthly	31-Dec-2018	
Air Quality - Common Area Emergency Fire Pump	**AQ-45**	To monitor operation of this equipment will not exceed 1.0 hour per day for a total of 50 hours per year for testing and maintenance.	Monthly	31-Dec-2018	
Air Quality - Common Area Emergency Fire Pump	**AQ-46**	To maintain operations log for these equipment.	Monthly	31-Dec-2018	
Air Quality General	**AQSC-6**	***Off-road Vehicles for Mirror Washing:*** The plan shall be updated every other year and submitted in the Annual Compliance Report (COMPLIANCE-7). The plan was originally submitted on 8/22/2013.	Every other year	23-Aug-2019	To be submitted with the annual compliance report - 1/31/2018.
Air Quality General	**AQSC-7**	Recordkeeping and annual reporting in association with the Dust Control Plan	Annually	31-Dec-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-02**	***Designated Biologist Duties:*** The Designated Biologist shall submit record summaries in the Annual Compliance Report unless his/her duties cease, as approved by BLM's Authorized Officer and the CPM.	Annually	31-Dec-2018	To be submitted with the annual compliance report

TECHNICAL AREA	COC No.	DESCRIPTION	FREQUENCY	TENTATIVE COMPLIANCE DATE	REQUIRED SUBMITTAL DATE
Biological Resources	**BIO-04**	***Biological Monitor Duties:*** The Designated Biologist shall submit record summaries in the Annual Compliance Report unless his/her duties cease, as approved by BLM's Authorized Officer and the CPM.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-06**	***Worker Environmental Awareness Program (WEAP):*** The worker education program shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-06**	During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-10**	***Desert Tortoise Compliance Verification:*** 6. No later than January 31 of every year the ISEGS facility remains in operation, provide BLM's Authorized Officer and the CPM an annual Listed Species Status Report	Annually	31-Jan-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-11**	***Impact Avoidance and Minimization Measures:*** The Designated Biologist shall report summarizing all available data (species of carcass, date and location collected, and cause of death) describing bird and other carcasses collected within the project site each year.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-12**	***Raven Management Plan:*** Submit annual monitoring reports to CDFG, BLM, and USFWS no later than December 31st of each raven management year.	Annually	Completed in 2016	This condition of certification has been completed in 2016 based on 2-year monitoring period.
Biological Resources	**BIO-13**	Submit Weed Management Plan Annual Report in the Annual Compliance Report.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-14**	Submit Revegetation Annual Monitoring Report in the Annual Compliance Report.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-17**	Submit the results of the annual inspection of fencing and rehabilitated routes; a summary of fence repairs and maintenance of reclaimed routes completed during the year; and recommendations and a cost estimate for repairs and maintenance activities needed for the upcoming year. The reports will be submitted in the 2017 Annual Compliance Report.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-18**	***Special Status Plant Impact Avoidance and Minimization:*** On January 31st of each year following construction, the owner's qualified botanist shall submit a report, including CNDDB field survey forms, describing results of off-site plant surveys for Mojave milkweed and Rusby's desert-mallow to the BLM's authorized officer, the CPM, CDFG, and CNDDB.	Annually	31-Dec-2018	To be submitted with the annual compliance report

TECHNICAL AREA	COC No.	DESCRIPTION	FREQUENCY	TENTATIVE COMPLIANCE DATE	REQUIRED SUBMITTAL DATE
Biological Resources	**BIO-18**	During operation, the DB shall submit record summaries in the Annual Compliance Report for a period not < 10 years for the Gas Pipeline Revegetation Plan, and for the life of the project for the SSPP and Monitoring Plan, and the SSP Remedial Action Plan, including funding for the seed storage.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-19**	***Nelson's Bighorn Sheep:*** The SCBC will provide the project owner an annual report no later than January 15th of each year, and the project owner will provide to the CEC and BLM the annual report no later than January 31st of each year.	Annually	15-Jan-2018	To be submitted with the annual compliance report
Biological Resources	**BIO-20**	Streambed Impact Minimization and Compensation Measure change of condition report. To be submitted in the Annual Compliance Report	As Needed	31-Dec-2018	
Biological Resources	**BIO-21**	***Avian and Bat Monitoring and Management Plan:*** For one year following the beginning of power plant operation, the Designated Biologist shall submit quarterly reports to the CPM, CDFG, and USFWS. describing the results of monitoring.	Quarterly		
Biological Resources	**BIO-21**	***Avian and Bat Monitoring and Management Plan:*** Following the completion of the fourth quarter of monitoring, the Designated Biologist shall prepare an Annual Report that summarizes the year's data, analyzes any Project-related bird fatalities or injuries detected, and provides recommendations for future monitoring and any adaptive management actions needed.	Annually	31-Dec-2018	
Biological Resources	**BIO-21**	***Avian and Bat Monitoring and Management Plan:*** No later than January 31st of every year the Annual Report shall be provided to the CPM, CDFG, and USFWS. Quarterly reporting shall continue until the CPM, in consultation with CDFG and USFWS determine whether more years of monitoring are needed, and whether mitigation and adaptive management measures are necessary.	Annually	31-Dec-2018	
Biological Resources	**BIO-21**	***Avian and Bat Monitoring and Management Plan:*** After two years of data collection, the project owner or contractor shall prepare a report that describes the study design and monitoring results of the Avian and Bat Monitoring and Management Plan. The report shall be submitted to the CPM, CDFG and USFWS no later than the third year after onset of Project operation.	Annually	31-Dec-2018	
Biological Resources	**BIO-23 (BLM)**	The applicant shall conduct visual biweekly surveys for bird and bat mortalities throughout the project site. In addition to the photo documentation of bird mortalities (Item #14 in BIO-11), mortalities and injuries to bats and other wildlife shall be photo documented. Additionally, data would document the species affected and any overt signs of injury resulting in death (e.g., scorched feathers). This information would be compiled and provided to the BLM on quarterly intervals for the first three years, then annually thereafter, unless otherwise requested by the BLM.	Quarterly for the first 3 years; then, annually thereafter.		
Compliance Conditions	**COMP-04**	During Operations, an annual compliance report must be submitted.	Annually	31-Jan-2018	

TECHNICAL AREA	COC No.	DESCRIPTION	FREQUENCY	TENTATIVE COMPLIANCE DATE	REQUIRED SUBMITTAL DATE
Compliance Conditions	**COMP-05**	***Compliance Matrix:*** A compliance matrix shall be submitted by the project owner to BLM's Authorized Officer and the CPM along with each annual compliance report. The compliance matrix is intended to provide BLM's Authorized Officer and the CPM with the current status of all conditions of certification in a spreadsheet format.	Annually	31-Jan-2018	To be submitted with the annual compliance report
Compliance Conditions	**COMP-07**	***Annual Compliance Report:*** After construction of each power plant is complete or when a power plant goes into commercial operation, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports.	Annually	31-Jan-2018	
Compliance Conditions	**COMP-08**	***Confidential Information:*** Any information that the project owner deems confidential shall be submitted to the Energy Commission's Dockets Unit with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information that is determined to be confidential shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq. Any information the ROW holder deems confidential shall be submitted to the BLM Authorized Officer with a written request for said confidentiality along with a justification for the request. All confidential submissions to BLM should be clearly stamped "proprietary information" by the holder when submitted.	As Needed	As Needed	
Compliance Conditions	**COMP-09**	***Annual Facility Compliance Fee:*** Pursuant to the provisions of Section 25806(b) of the Public Resources Code, the project owner is required to pay the Energy Commission an annual compliance fee	Annually	01-Jul-2018	
Compliance Conditions	**COMP-10**	***Reports of Complaints, Notices, and Citations:*** In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies to BLM's Authorized Officer and the CPM of all complaint forms, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the NOISE conditions of certification. All other complaints shall berecorded on the complaint form (Attachment A).	As Needed	As Needed	
Compliance Conditions	**COMP-14**	Submit Petition to Amend to CEC	As Needed		
Hazardous Materials	**HAZ-1**	Provide to BLM's Authorized Officer and the CPM in the Annual Compliance Report, a list of hazardous materials contained at the facility.	Annually	31-Jan-2018	To be submitted with the annual compliance report
Hazardous Materials	**HAZ-5**	In the Annual Compliance Report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and updated certification statements are appended to the Operations Security Plan. In the Annual Compliance Report, the project owner shall include a statement that the Operations Security Plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.	Annually	31-Dec-2018	To be submitted with the annual compliance report

TECHNICAL AREA	COC No.	DESCRIPTION	FREQUENCY	TENTATIVE COMPLIANCE DATE	REQUIRED SUBMITTAL DATE
Land Use	**LAND-3**	***Solar / Ecological Interpretive Center:*** In each Annual Compliance Report, the project owner shall provide a summary of estimated public use of the Solar / Ecological Interpretive Center and summarize any issues associated with operating and maintenance activities.	Annually	31-Dec-2018	To be submitted with the annual compliance report - 1/31/2018
Recreation	**REC-1**	***Solar / Ecological Interpretive Center:*** After commercial operation and in each Annual Compliance Report for the life of the ISEGS project, the project owner shall provide a summary of estimated public utilization of the Solar / Ecological Interpretive Center and summarize any issues associated with operating and maintenance activities.	Annually	31-Dec-2018	To be submitted with the annual compliance report - 1/31/2018
Soil & Water	**S&W-1**	***Drainage Erosion ans Sediment Control Plan:*** c. Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Soil & Water	**S&W-2**	***In accordance with Storm Water Pollution Prevention Plan (SWPPP) Sect. 6.4:*** • **Annual Comprehensive Site Compliance Evaluation:** The Environmental Specialist, Environmental Health and Safety Officer, or the Environmental Specialist III, with the assistance of SWPPT team and/or designated contractor, shall perform one comprehensive site evaluation or ACSCE during each report period (July 1-June 30). The evaluation shall be conducted a minimum of 8 months from the previous ACSCE and shall include review of all records, a visual inspection of all potential pollutant sources, review and evaluation of all BMPs, revision of the SWPPP as necessary to revise existing or include additional BMPs, visual inspection of all equipment needed to implement the SWPPP, and preparation of a report of the evaluation. Dischargers shall implement SWPPP revisions resulting from the ACSCE within 90 days of the evaluation.	Annually	01-Jul-2018	
Soil & Water	**S&W-2**	***In accordance with Storm Water Pollution Prevention Plan (SWPPP) Sect. 7:*** Records of all storm water monitoring information and copies of all reports required by this Permit will be retained for a period of at least 5 years from the date of the sample, observation, measurement or report. The following records will be kept: • SWPPP, • Quarterly Visual Observations – NSWDs, • Monthly Visual Observations – Storm Water Discharges, • Annual Visual Observations – ACSCE, • ACSCE Summary Report, • Personnel Training, • Significant Spills and Leaks, and • Documentation of Dangerous Weather Preventing Inspection or Sampling (Flood conditions, high winds, lightning, dust storms).	Monthly	31-Dec-2018	

TECHNICAL AREA	COC No.	DESCRIPTION	FREQUENCY	TENTATIVE COMPLIANCE DATE	REQUIRED SUBMITTAL DATE
Soil & Water	**S&W-2**	***In accordance with Storm Water Pollution Prevention Plan (SWPPP) Sect. 7.1:*** The Permit requires an annual report to be submitted to the Lahontan Regional Water Quality Control Board (LRWQCB) on an annual basis. The annual report is to encompass the period of July 1 through June 30 and is due July 1 of each year. A copy of the report must be retained in the SWPPP with for a minimum of 5 years from the date of submittal. The annual report shall include:	Annually	01-Jul-2018	
Soil & Water	**S&W-3**	***Project Groundwater Wells:*** 8. Annual Montioring Reports will be submitted which include Quarterly monitoring data as described in the Approved Groundwater Monitoring and Management Plan. The First Annual Report will be a Baseline Report which includes the Well Network and level monitoring report and plan	Annually	31-Dec-2018	
Soil & Water	**S&W-4**	***Operations Water Consumption:*** The project owner shall prepare an annual summary, which will include daily usage, monthly range and monthly average of daily water usage in gallons per day, and total water used on a monthly and annual basis in acre-feet. For years subsequent to the initial year of operation, the annual summary will also include the yearly range and yearly average water use by source. For calculating the total water use, the term “year” will correspond to the date established for the annual compliance report submittal.	Annually	31-Dec-2018	
Soil & Water	**S&W-5**	***Storm Water Damage Monitoring and Response Plan:*** The project owner shall prepare an annual summary of the number of heliostats failed, cause of the failure,and cleanup and mitigation performed for each failed heliostat.	Annually	31-Dec-2018	
Soil & Water	**S&W-6**	***Groundwater Monitoring and Reporting Plan:*** 5. After project construction and during project operations, the project owner shall submit the monitoring data annually to both BLM’s Authorized Office and the CPM.The summary shall document water level monitoring methods, the water level data, water level plots, and a comparison between pre- and post-project start-up waterlevel trends. The report shall also include a summary of actual water use conditions, monthly climatic information (temperature and rainfall), and a comparison and assessment of water level data relative to the assumptions and spatial levels simulated by the applicant's groundwater model.	Annually	15-Aug-2018	
Traffic & Transport.	**TRANS-3**	***Heliostat Positioning Plan:*** 4. The monitoring plan should be coordinated with the FAA, U.S. Department of the Navy, CalTrans, CHP, and Clark County Department of Aviation in relation to the proposed Southern Nevada Supplemental Airport and be updated on an annual basis for the first 5 years, and at 2-year intervals thereafter for the life of the project.	Annually	10-Dec-2018	
Transm. Lines	**TLSN-3**	During the first 5 years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report to be provided to BLM’s Authorized Officer and the CPM.	Annually	31-Dec-2018	To be submitted with the annual compliance report

TECHNICAL AREA	COC No.	DESCRIPTION	FREQUENCY	TENTATIVE COMPLIANCE DATE	REQUIRED SUBMITTAL DATE
Visual Resources	**VIS-1**	***Surface Treatment of Project Structures and Buildings:*** The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Visual Resources	**VIS-2**	***Landscape Screening of Golf Course:*** The project owner shall report landscape maintenance activities, including replacement of dead or dying vegetation, for the previous year of operation in each Annual Compliance Report.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Waste Mgmt	**WASTE-6**	***Operations Waste Management Plan:*** The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.	Annually	31-Dec-2018	To be submitted with the annual compliance report
Waste Mgmt	**WASTE-7**	Ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are reported, cleanedup, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.	As Needed	As Needed	
Worker Safety & FP	**WS-2**	Implement Project Operations and Maintenance Safety Program	Monthly	31-Dec-2018	
Worker Safety & FP	**WS-5**	The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During operations, all power plant employees shall be trained in its use.	Annually	31-Dec-2018	

Section 6

Listing of the years Addition to the Onsite Compliance File

(COMP-7 Item 8)

ISEGS LIST COMPLIANCE FILES

In accordance with COC COMP-07 Item 8, the Ivanpah SEGS on-site compliance files are maintained at the project site Administration Building. At the end of the reporting period, the onsite compliance files contain the following information:

Ref. No.	Description	Document Date	Revision Date
07-AFC-5C	CEC Final Decision	9/22/2010	2/13/2013; 9/15/2014; 11/19/2015
07-AFC-5C	CEC Notice to Proceed	10/8/2010	
CACA 48668, 49502, 49503, 49504	BLM Record of Decision	10/7/2010	
CACA 48668, 49502, 49503, 49504	BLM ROW Notices to Proceed	Varies	
81440-2010-F-0096	USFWS Biological Opinion and any Revisions	6/10/2011	
CACA 48668, 49502, 49503, 49504	All approved BLM Verification Change Request Forms	Varies	
Biological Opinion	Animal Husbandry Plan	11/1/2010	11/3/2012
AQSC-02	AQCMP-Air Quality Compliance and Mitigation Plan	7/14/2010	1/27/2011
BIO-02, 04, 10, 11, 18, 20 &21	Annual Biological Summary Reports	Varies	
BIO-06	WEAP Training Booklet, Training Sheets, and Training Log	6/24/2010	
BIO-07	BRMIMP- Biological Resources Mitigation, Implementation and Monitoring Plan	7/15/2010	Rev. 1: 10/6/2010; Rev. 2: 4/11/2012
BIO-09	Desert Tortoise Translocation Plan	3/19/2009	Rev. 1: 3/2009; Rev. 2C: 9/23/2010; Rev. 3: 10/5/2010; Rev. 4:: 10/13/2010; Rev. 5.1: 10/2011
BIO-09	BIO-9 Compliance Status Reports-included in MCRs	11/29/2010	
BIO-12	Raven Management Plan	July 2010	Rev. 3: 10/4/2010; Rev. 4: 10/17/2012
BIO-13/WS-06	Weed Management Plan	7/12/2010	10/6/2010
BIO-14/BIO-18 /COMP-11	Closure, Rehabilitation, and Revegetation Plan - Includes Gas Pipeline Revegetation and Monitoring Plan		Rev. 3: 7/13/2010; Rev. 4: 9/29/2010
BIO-16	Burrowing Owl Mitigation and Monitoring Plan,	July 2010	Rev. 1: 10/4/2010; Rev. 2: 10/15/2010
BIO-18	Special-status Plant Protection and Monitoring Plan		Rev. 1: 10/26/2010
BIO-18	Special-status Plant Remedial Action Plan	11/9/2010	
BIO-18	Special-Status Plants Annual Reports	January 2012	3/7/2012
BIO-19	Big Horn Sheep Mitigation Plan	1/20/2012	9/27/2012
BIO-21	Avian and Bat Monitoring and Management Plan	September 2010	Rev. 1: 10/21/2010; Rev. 2: 5/23/2011; Rev. 3: 2/24/2012; Rev. 10:: 10/31/2013; Rev. 11: 11/5/2013; Rev. 12: 11/12/2013; Rev. 13: 12/23/2015 Rev. 14: October 2017

Ref. No.	Description	Document Date	Revision Date
COMP-06	All Monthly Compliance Reports	Varies	
	DOE Annual Summary Environmental Compliance Report	Varies	
COMP-12/ COMP-13	On-Site Contingency Plan for Unplanned Temporary or Permanent Closure	1/31/2011	
CUL-03	CRMMP- Cultural Resources Mitigation and Monitoring Plan	8/13/2010	
HAZ-02	Hazardous Materials Business Plan	2/13/2013	2/14/2017
HAZ-03	Safety Management Plan	4/25/2013	
NOISE-03	Noise Control Plan	8/11/2010	
PAL-03	PRMMP- Paleontological Resources Mitigation and Monitoring Plan	August 2010	Rev. 1: 10/4/2010
S&W-02	Storm Water Pollution Prevention Plan (SWPPP)	July 2013	Rev. 1: 10/24/2014; Rev. 2: 6/24/2015; Rev. 3: 9/8/2015; Rev. 4: 8/10/2016; Rev. 5: 12/5/2016; Rev. 10/27/2017
S&W-02	SWPPP Annual Reports	Varies	
S&W-04	Semi-Annual Groundwater Usage Reports	Varies	
S&W-06	Groundwater Monitoring and Reporting Plan	7/15/2010	October 2010
S&W-06	Annual Groundwater Monitoring Reports	Varies	
TRANS-01	Traffic Control Plan	6/15/2010	
TRANS-03	Heliostat Positioning Plan-Rev 1	1/14/2013	September 2013; Rev. 1: 12/10/2014; Rev. 2: 12/10/2015; Rev. 3: 12/7/2016 Rev. 4: 12/10/2017
TRANS-04	Power Tower Luminance Plan	9/12/2013	Updated on 3/28/2014
VIS-01	Surface Treatment Plan	6/29/2010	Rev. 1: 5/24/2011;
VIS-04	Visual Resources Mitigation Plan (Lighting Plan w/Nighttime Amendment)	12/14/2011	
WORKER SAFETY-02	Project Operations and Maintenance Safety and Health Program	Varies	
FA0014961	CUPA (Certified Unified Program Agency) Annual Permit for Facility #FA0014961 from San Bernardino County Fire Protection District	3/1/2015	Renewed every February each year
	Spill Prevention Control and Countermeasure Plan (SPCC)	10/27/2014	Rev. 1: 5/13/2015; Rev. 2: 9/3/2015; Rev. 3: 8/25/2016; Rev. 3: 12/22/2016
CAL000389737	Hazardous Waste Generation Identification Number issued by Department of Toxic Substances Control	9/23/2013	
WASTE-06	Operations Waste Management Plan	9/23/2013	
S&W-05	Storm Water Damage Monitoring and Response Plan and Reports	8/7/2013	
40 CFR 98	Greenhouse Gas (GHG) Monitoring Plan and Annual Reports	3/10/2014	6/15/2015; Rev. 4/25/2017
Varies	MDAQMD Permits To Operate (changed from ATC to PTO on March 2, 2015.	Varies	11/19/2015
12-3601181-001	Domestic Water Supply Permit No. 14-3601181-001 from San Bernardino County Department of Public Health	1/28/2014	
AQ-06	Annual Compliance Test Reports	10/2/2014; 6/11/2015; 5/16/2016; 3/28/2017	

Ref. No.	Description	Document Date	Revision Date
COMP-07	Annual Compliance Report (COMP-7)	1/30/2015; 1/29/2016; 1/27/2017	
40 CFR 75.53(a)	Acid Rain Monitoring Plan	November 2015	
FOP #17693007	Federal Operating Permit (Title IV and Title V)	19-May-2016	

Section 7

Evaluation of the On-site Contingency Plan for Unplanned Facility Closure

(COMP-7 Item 9)

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NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 8, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Evaluation of On-site Contingency Plan for Unplanned Facility Closure, Including Suggestions for Bringing the Plan up to Date, to fulfill California Energy Commission Conditions of Certification, COMPLIANCE-07 Item 9

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certification COMPLIANCE-07 Item 9 of the Commission's approval of the Ivanpah Solar Electric Generating System, we are providing the following statement as a requirement in the Annual Compliance Report:

The On-site Contingency Plan for Unplanned Facility Closure, in accordance with COMPLIANCE-12 and COMPLIANCE-13, is currently in force and no changes were made during the reporting period.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Section 8

Listing of Complaints, Notice of Violations, Official Warnings and Citations Received During the Year

(COMP-7 Item 10)

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NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 5, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C)
Listing of Complaints, Notices of Violations, Official Warnings and Citations Received during the Year, to fulfill California Energy Commission Conditions of Certification, COMPLIANCE-7 Item 10

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certification COMPLIANCE-7 Item 10 of the Commission's approval of the Ivanpah Solar Electric Generating System (ISEGS), we are providing the following information as a requirement in the Annual Compliance Report:

The California Energy Commission (CEC) Condition of Certification COMPLIANCE-7, Annual Compliance Report requires "A listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved matters, and the status of any unresolved matters."

ISEGS received a warning from Mojave Desert Air Quality Management District (MDAQMD) during the inspection on July 13, 2017, regarding a non-functioning manometer to the air intake system of the Nighttime Preservation Boiler at each Unit. These manometers can be used for visual inspection to monitor the differential pressure of the air intake filters to the boiler system. The operations department was using a digital Low Flow DCS System in place of the manometers to monitor the differential pressure of the air intake filters to the boiler system. The manometers were replaced, periodic inspections are now being performed to ensure functionality, and now both the manometers and the digital Low Flow DCS System are used to monitor the differential pressure of the air intake filters to the boiler system. A completion report was sent to MDAQMD on August 17, 2017, and the warning was rescinded.

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ISEGS did not receive any further official warnings, complaints or pilot reports of glare from the facility, notices of violation, and citations received during the reporting period.

Please feel free to contact me with any questions.

Thank you.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Section 9

Table 1 – List of Conditions of Certifications That Were Satisfied During the Reporting Period

(COMP-7)

The following **TABLE 1** includes Actions including plan or report submittals that were made up to the end of this reporting period in compliance with the project's **Conditions of Certification**.

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Air Quality Auxilliary Boilers	**AQ-01**	Equipment operation to be conducted in compliance with all data and specifications submitted with the application. Any non-compliant operations shall be listed in the Annual Compliance Report (COMPLIANCE-7).	Submitted with the annual compliance report - 1/27/2017
Air Quality Auxilliary Boilers	**AQ-02**	To operate equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application. As part of the Annual Compliance Report (COMPLIANCE-7), the project owner shall include information on the date, time, and duration of any violation of this permit condition.	Submitted with the annual compliance report - 1/27/2017
Air Quality Auxilliary Boilers	**AQ-03**	Only natural gas shall be used for the boilers and equipped with a meter measuring fuel consumption. To include proofs that only pipeline quality, or Public Utility Commission regulated gas are used for the boilers. As part of the Annual Compliance Report (COMPLIANCE-7), the project owner shall include proofs that only pipeline quality, or Public Utility Commission regulated natural gas are used for the boilers.	Submitted with the annual compliance report - 1/27/2017
Air Quality Auxilliary Boilers	**AQ-04**	To maintain log for boilers for 5 years which shall be provided to the District, state or federal personnel upon request.	Completed for 2014; Completed for 2015; Completed for 2016; Completed for 2017
Air Quality Auxilliary Boilers	**AQ-06**	Submitted 30 days notification prior the annual compliance test for Unit 1, Unit 2 and Unit 3 Auxiliary Boilers.	7/11/2014; 3/13/2015; 2/24/2016; 1/5/2017
Air Quality Auxilliary Boilers	**AQ-06**	Performed annual tune-up for Unit 1, Unit 2 and Unit 3 Auxiliary Boilers	4/15/2015; 3/23/2016; 2/13/2017
Air Quality Auxilliary Boilers	**AQ-06**	Unit 1 Auxiliary Boiler annual compliance test was completed on 3/30/2016. The test report was submitted on 5/16/2016.	10/3/2014; 6/15/2015; 5/16/2016; 2/16/2017

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Air Quality Auxilliary Boilers	**AQ-06**	Unit 2 Auxiliary Boiler annual compliance test was completed on 3/31/2016. The test report was submitted on 5/16/2016.	10/3/2014; 6/15/2015; 5/16/2016; 2/15/2017
Air Quality Auxilliary Boilers	**AQ-06**	Unit 3 Auxiliary Boiler annual compliance test was completed on 4/1/2016. The test report was submitted on 5/16/2016.	10/3/2014; 6/15/2015; 5/16/2016; 2/14/2017
Air Quality Auxilliary Boilers	**AQ-07**	This boiler (Boilers 1, 2, and 3) shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (NSPS Db).	Completed for 2014; Completed for 2015; Completed for 2016; Completed for 2017
Air Quality Auxilliary Boilers	**AQ-08**	Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits.	Completed for 2014; Completed for 2015; Completed for 2016; Completed for 2017
Air Quality Auxilliary Boilers	**AQ-09**	The owner/operator shall continuously monitor and record fuel flow rate and flue gas oxygen level.	Completed for 2014; Completed for 2015; Completed for 2016; Completed for 2017
Air Quality Auxilliary Boilers	**AQ-10**	Submitted Petition for Low Mass Emissions Certification to predict NOx emissions. Conducted Low Mass Emissions Testing on 4/4-6/2016 and 5/11-13/2016. The LME report was submitted on 6/16/2016.	11/12/2015; 6/16/2016
Air Quality Auxilliary Boilers	**AQ-10**	An updated Emissions Estimation Plan was submitted on 6/21/2016. Approval from MDAQMD was received on 6/21/2016	6/21/2016
Air Quality Auxilliary Boilers	**AQ-12**	Annual fuel use for the Auxiliary Boilers and Nighttime Preservation Boilers was amended from 328 mmscf to 525 mmscf on 9/15/2014. Annual fuel use for each Aux. Boiler and Nighttime Preservation Boiler did not exceed 525 mmscf of natural gas in 2015. Record logs are being kept and monitored. Records are submitted in the annual compliance report.	1/30/2015; 1/29/2016; 1/27/2017
Air Quality Fire Pumps	**AQ-13**	This engine, certified in accordance with 40 Code of Federal Regulations (CFR) part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufaturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by 40 CFR 60 Subparts 60.4205 and 60.4211. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Air Quality Fire Pumps	**AQ-14**	This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per ARB Diesel or equivalent requirements. [17 California Code of Regulations (CCR) 93115; 60.4207(b)]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Fire Pumps	**AQ-15**	This unit shall be limited to use for emergency purposes. In addition, this unit shall be operated no more than 1.0 hours per day for a total of 50 hours per year for testing and maintenance.	MDAQMD verified and certified in compliance during the site audit on 7/13/2017.
Air Quality Fire Pumps	**AQ-16**	This unit shall be limited to use for emergency purposes. In addition, this unit shall be operated no more than 1.0 hours per day for a total of 50 hours per year for testing and maintenance. The 50 hour can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel dueled CI engine when operated per and in accord with the National Fire protection Association (NFPA) 25 - "Standard for the Insopection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies.[[District Rule 1302(C)(2)(a) and Rule 1304(D)(1)(a)] and 17CCR93115.3(n)] [Hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Fire Pumps	**AQ-17**	The owner/operator shall maintain an operations log for this units current and on-site, (either at the engine location or at a on-site location), for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below: a. Date of each use and duration of each use (in hours); b. Reason for use (testing & maintenance, emergency, required emission testing, etc.); c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and, d. Fuel sulfur concentration (the owner/operator may use the supplier's certification of sulfur content if it is maintained as part of this log. [17 CCR 93115]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Fire Pumps	**AQ-18**	These engines may operate in response to fire suppression requirements and needs. [Rule 204].	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016
Air Quality Fire Pumps	**AQ-19**	This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR § 93115) and 40 Code of Federal Regulations (CFR) Part 60, Subpart III (NSPS). In the event of conflict between these conditions and the ATCM or NSPS, the more stringent requirements shall govern.	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Air Quality Emergency Generators	**AQ-20**	This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205, and 60.4211]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Emergency Generators	**AQ-21**	This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Emergency Generators	**AQ-23**	This unit shall not be used to provide power during a voluntary power outage and/or power reduction initiated under an Interruptible Service Contract (ISC), Demand Response Program (DRP), Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier. [17 CCR 93115] [40 CFR 60 Subpart IIII allowance for DRP streamlined out.]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Emergency Generators	**AQ-24**	This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than 1.0 hours per day of 50 hours per year for testing and maintenance [NSR and 17 CCR 93115] [Hours allowed by 60.42 (f) stremlined out.]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Emergency Generators	**AQ-25**	The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below: a. Date of each use and duration of each use (in hours); b. Reason for use (testing & maintenance, emergency, required emission testing, etc.); c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and, ~~d.~~ Fuel sulfur concentration (the owner/operator may use the supplier's certification of sulfur content if it is maintained as part of this log) [17 CCR 93115]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Emergency Generators	**AQ-26**	This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR §93115) and 40 CFR 60 Part 60, Subpart III (NSPS). In the event of conflict between these conditions and the ATCM or NSPS, the more stringent requirements shall govern.	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Nighttime Preservation Boilers	**AQ-27**	Any non-compliant operations shall be listed in the Annual Compliance report (COMPLIANCE-7).	1/30/2015; 1/29/2016; 1/27/2017

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Air Quality Nighttime Preservation Boilers	**AQ-28**	As part of the Annual Compliance Report (COMPLIANCE-7), the project owner shall include information on the date, time, and duration of any violation of this permit condition.	1/30/2015; 1/29/2016; 1/27/2017
Air Quality Nighttime Preservation Boilers	**AQ-29**	As part of the Annual Compliance Report (COMPLIANCE-7), the project owner shall include proof that only pipeline quality, or Public Utility Commission requlated natural gas is used in these boilers.	1/30/2015; 1/29/2016; 1/27/2017
Air Quality Nighttime Preservation Boilers	**AQ-30**	The owner/operator shall maintain a current, on-site (at a central location if necessary) log for this equipment for five (5) years, which shall be provided to District, state, or federal personnel upon request. This log shall include calendar year fuel use for this equipment in standard cubic feet, or BTUs, and daily hours of operation.	Completed for 2014; Completed for 2015; Completed for 2016; Completed for 2017
Air Quality Nighttime Preservation Boilers	**AQ-31**	The owner/operator shall perform annual tune-ups in accordance with the unit manufacturer's specified tune-up procedure, by a qualified technician.	Completed for 2014; Completed for 2015; Completed for 2016; Completed for 2017
Air Quality Nighttime Preservation Boilers	**AQ-32**	Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits.	Completed for 2014; Completed for 2015; Completed for 2016; Completed for 2017
Air Quality Nighttime Preservation Boilers	**AQ-33**	The owner/operator shall continuously monitor and record fuel 'flow rate.	Completed for 2014; Completed for 2015; Completed for 2016; Completed for 2017
Air Quality Nighttime Preservation Boilers	**AQ-34**	The combined fuel use from the auxiliary boiler and the nighttime preservation boiler shall not exceed 525 MMSCF of natural gas in any calendar year; combined fuel use is the sum total of natural gas combusted from Boilers with MDAQMD permit numbers; B010375 and B011544 (Ivanpah 1) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair; B010376 and B011572 (Ivanpah 2) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair; B01 0377, and B011573 (Ivanpah 3) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair.	1/30/2015; 1/29/2016; 1/27/2017
Air Quality Common Area Emergency Generators	**AQ-35**	This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205, and 60.42111	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Air Quality Common Area Emergency Generators	**AQ-36**	This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15 ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115;.60.4207(b)]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Common Area Emergency Generators	**AQ-38**	This unit shall not be used to provide power during a voluntary power outage and/or power reduction initiated under an Interruptible Service Contract (ISC), Demand Response Program (ORP), Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier. [17 CCR 93115] [40 CFR 60 Subpart IIII allowance for DRP streamlined out.]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Common Area Emergency Generators	**AQ-39**	This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. [NSR and 17 CCR 93115] [Hours allowed by 60.42(f) streamlined out.]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Common Area Emergency Generators	**AQ-40**	The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below: a. Date of each use and duration of each use (in hours); b. Reason for use (testing & maintenance, emergency, required emission testing, etc.); c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and, d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115}	Completed for 2014; Completed for 2015; Completed for 2016; Completed for 2017
Air Quality Common Area Fire Pumps	**AQ-45**	This unit shall be limited to use for emergency purposes. In addition, this unit shall be operated no more than 1.0 hours per day for a total of 50 hours per year for testing and maintenance.	MDAQMD verified and certified in compliance during the site audit on /13/2017.
Air Quality Common Area Fire Pumps	**AQ-42**	This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205 and 60.4211]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Common Area Fire Pumps	**AQ-43**	This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Air Quality Common Area Fire Pumps	**AQ-45**	This unit shall be limited to use for emergency purposes. In addition, this unit shall be operated no more than 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. The 50 hour limit can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel fueled CI engine operated per and in accord with the National Fire Protection Association (NFPA) 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies. [[District Rule 1302(C)(2)(a) and Rule 1304 (D)(1)(a)] and 17 CCR 93115.3(n)] [Hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Common Area Fire Pumps	**AQ-46**	The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. . The log shall include, at a minimum, the information specified below: a. Date of each use and duration of each use (in hours); b. Reason for use (testing & maintenance, emergency, required emission testinq, etc.); c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR93115]; and, d. Fuel sulfur concentration (the % may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115].	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality Common Area Fire Pumps	**AQ-47**	These engines may operate in response to fire suppression requirements and needs. [Rule 204].	In Compliance for 2014; In Compliance for 2015; In Compliance for 2016; In Compliance for 2017
Air Quality General	**AQSC-06**	Dedicated Off-road Vehicles for Mirror Washing Activities Plan - The Plan shall be updated every other year and submitted in the Annual Compliance Report. The updated Plan was submitted withn the Annual Compliance Report.	1/29/2016; 1/27/2017
Air Quality General	**AQSC-07**	Revised Operations Dust Control Plan was submitted to CEC and BLM.	7/30/2014
Air Quality General	**AQSC-07**	Submit 2015 dust control annual report with the annual compliance report	1/29/2016; 1/27/2017
Air Quality General	**AQSC-08**	Submitted copy of all MDAQMD Permits To Operate to CEC and BLM.	12/10/2015; 10/24/2017
Biological Resources	**BIO-02**	During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless his/her duties cease, as approved by BLM's Authorized Officer and the CPM.	1/30/2015; 1/29/2016; 1/27/2017
Biological Resources	**BIO-04**	During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless his/her duties cease, as approved by BLM's Authorized Officer and the CPM.	1/30/2015; 1/29/2016; 1/27/2017

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Biological Resources	**BIO-07**	Submitted Construction Termination Report (within 30 days after completion of project construction. Project construction officially completed on 5/31/2014.	6/30/2014
Biological Resources	**BIO-10**	Submitted Annual Listed Species Status Report with the Annual Compliance Report.	1/30/2015; 1/29/2016; 1/27/2017
Biological Resources	**BIO-11**	The Designated Biologist shall report summarizing all available data (species of carcass, date and location collected, and cause of death) describing bird and other carcasses collected within the project site each year. This report was submitted in the Annual Compliance Report.	1/30/2015; 1/29/2016; 1/27/2017
Biological Resources	**BIO-12**	Annual Monitoring Report per the Raven Mangement Plan was submitted on 12/31/2014. Resubmitted on 1/5/2015 with maps. The Raven Management Plan (Rev. 2) Semi-annual Report was submitted on 6/27/2016. The Raven Management Plan has been completed and was closed in October 2016.	12/31/2014; 12/30/2015; 6/27/2016
Biological Resources	**BIO-12**	Report identifying which items of the Raven Management Plan (Post Construction Raven Management Report) have been completed was submitted to CEC and BLM on 7/31/2014.	7/31/2014
Biological Resources	**BIO-13**	Submitted Weed Management Plan Annual Report in the Annual Compliance Report.	1/30/2015; 1/29/2016; 1/27/2017
Biological Resources	**BIO-14**	Submitted post-construction Closure, Revegetation and Rehabilitation Plan Report	7/1/2014
Biological Resources	**BIO-14**	Submitted Revegetation Annual Monitoring Report in the Annual Compliance Report.	1/30/2015; 1/29/2016; 1/27/2017
Biological Resources	**BIO-14**	Report identifying which items of the Post-construction Closure, Revegetation and Rehabilitation Plan have been completed was submitted to CEC and BLM on 6/30/2014	6/30/2014
Biological Resources	**BIO-16**	Submitted Construction Termination Report (within 30 days after completion of project construction. Project construction officially completed on 5/31/2014.	6/30/2014
Biological Resources	**BIO-17**	Submitted post-construction analysis with the final accounting of the amount of habitat disturbed during project construction.	8/29/2014
Biological Resources	**BIO-17**	Submitted the results of the annual inspection of fencing and rehabilitated routes; a summary of fence repairs and maintenance of reclaimed routes completed during the year; and recommendations and a cost estimate for repairs and maintenance activities needed for the upcoming year. The reports were submitted in the 2015 Annual Compliance Report.	1/29/2016; 1/27/2017
Biological Resources	**BIO-17**	The construction of 50 Miles of Tortoise Fencing along Interstates 15 and 40 were completed on 3/18/2016. The post construction report was submitted to BLM and CalTrans on 4/18/2016	4/18/2016
Biological Resources	**BIO-18**	Submitted Special Status Plants Annual Report in the Annual Compliance Report	1/30/2015; 1/29/2016; 1/27/2017

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Biological Resources	**BIO-18**	Mojave Milkweed Land Acquisition Annual Report for 2015	1/29/2016; 1/27/2017
Biological Resources	**BIO-18**	Submitted Special Status Plants Natural Gas Line Monitoring Report in the Annual Compliance Report.	1/30/2015; 1/29/2016
Biological Resources	**BIO-19**	SCBS Nelson's Bighorn Sheep Annual Report	1/30/2015; 1/29/2016
Biological Resources	**BIO-20**	Streambed Impact Minimization and Compensation Measure change of condition report was submitted in the 2015 Annual Compliance Report	1/29/2016; 1/27/2017
Biological Resources	**BIO-21**	Revised Spring Avian and Bat Monitoring and Management Plan quarterly reports were submitted on 12/16/2014.	12/16/2014;
Biological Resources	**BIO-21**	Submitted Avian & Bat Monitoring Plan - 2015 Summer Report; 2016 Summer Report	3/16/2016; 6/16/2017
Biological Resources	**BIO-21**	Submitted Avian & Bat Monitoring Plan - 2014-2015 Annual Report; 2015-2016 Annual Report	6/30/2016; 8/15/2017
Biological Resources	**BIO-21**	Submitted Avian & Bat Monitoring Plan - 2015 Winter Report	10/4/2016
Biological Resources	**BIO-21**	Submitted Avian & Bat Monitoring Plan - 2016 Spring Report	9/30/2016
Biological Resources	**BIO-21**	Submitted Avian & Bat Monitoring Plan - 2016 Fall Report	6/16/2017
Biological Resources	**BIO-21**	Submitted Avian & Bat Monitoring Plan Revision 13 dated November 2015	12/23/2015
Biological Resources	**BIO-21**	Submitted Avian & Bat Monitoring Plan Revision 14	10/3/2017
Biological Resources	**BIO-22**	Submitted post-construction analysis of the amount of habitat disturbed during project construction.	8/29/2014
Biological Resources	**BIO-23 (BLM)**	Revised Spring and Summer Avian and Bat Monitoring and Management Plan quarterly reports were submitted on 12/16/2014	12/16/2014
Biological Resources	**BIO-23 (BLM)**	Submitted Avian & Bat Monitoring Plan - 2015 Summer Report; 2016 Summer Report	3/16/2016; 6/16/2017
Biological Resources	**BIO-23 (BLM)**	Submitted Avian & Bat Monitoring Plan - 2014-2015 Annual Report; 2015-2016 Annual Report	6/30/2016; 8/15/2017
Biological Resources	**BIO-23 (BLM)**	Submitted Avian & Bat Monitoring Plan - 2015 Winter Report	10/4/2016
Biological Resources	**BIO-23 (BLM)**	Submitted Avian & Bat Monitoring Plan - 2016 Spring Report	9/30/2016
Biological Resources	**BIO-23 (BLM)**	Submitted Avian & Bat Monitoring Plan - 2016 Fall Report	6/16/2017
Compliance Conditions	**COMP-2**	Compliance Record: As-built drawings are maintained at the ISEGS facility. These files were hand-delivered to CEC on 12/8/2014 by Doug Davis.	12/8/2014

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Compliance Conditions	**COMP-4/ COMP-7**	Submit annual compliance report during project operations.	1/30/2015; 1/29/2016; 1/27/2017
Compliance Conditions	**COMP-05**	***Compliance Matrix:*** A compliance matrix shall be submitted by the project owner to BLM's Authorized Officer and the CPM along with each annual compliance report.	1/30/2015; 1/29/2016; 1/27/2017
Compliance Conditions	**COMP-08**	***Confidential Information:*** Any information that the project owner deems confidential shall be submitted to the Energy Commission's Dockets Unit with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information that is determined to be confidential shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq. Any information the ROW holder deems confidential shall be submitted to the BLM Authorized Officer with a written request for said confidentiality along with a justification for the request. All confidential submissions to BLM should be clearly stamped "proprietary information" by the holder when submitted.	6/16/2016
Compliance Conditions	**COMP-9**	Paid annual facility compliance fee to CEC pursuant to the provisions of the Public Resources Code.	7/1/2016
Compliance Conditions	**COMP-10**	***Reports of Complaints, Notices, and Citations:*** In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies to BLM's Authorized Officer and the CPM of all complaint forms, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the NOISE conditions of certification. All other complaints shall berecorded on the complaint form (Attachment A).	Notice of Violation (NOV) from SBC CUPA was submitted to CEC/BLM on 8/4/2016; Response to Glare complaint Pilot Report ACN 1390751 was submitted to CEC/BLM/FAA on 11/10/2016.
Facility Design	**GEN-1**	The project owner shall provide BLM's Authorized Officer and the CPM a copy of the certificate of occupancy within 30 days of receipt from the CBO (2007 CBC, Appendix Chapter 1, section 110, Certificate of Occupancy).	1/22/2015
Facility Design	**GEN-1**	Notified CEC/BLM on 4/27/2016 for repair/replacement of Unit 2 STG Stator Active Parts.	4/27/2016
Facility Design	**GEN-8**	Electronic copies of the final approved engineering plans were hand-delivered by Doug Davis to CEC on 12/8/2014.	12/8/2014
Hazardous Materials	**HAZ-1**	A list of hazardous materials contained in the facility was submitted with the annual compliance report.	1/30/2015; 1/29/2016; 1/27/2017
Hazardous Materials	**HAZ-5**	Provided statement with the annual compliance report that all employees and contractors have been performed and vendor certifications and employee background investigations were appended in the Operations Security Plan.	1/30/2015; 1/29/2016; 1/27/2017

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Hazardous Materials	**HAZ-6**	Notified CEC/BLM on 7/29/2016 on the lube oil release on 7/29/2016 at Unit 1. The Spill Report was submitted on 8/15/2016.	7/29/2016; 8/15/2016
Hazardous Materials	**HAZ-6**	Notified CEC/BLM on 10/2/2016 on the lube oil release at Unit 3. The Spill Report was submitted on 10/13/2016.	10/2/2016; 10/13/2016
Hazardous Materials	**HAZ-6**	Submitted Spill Report on 8/21/2017 for lube oil release at Unit 3 Main Boiler Feed Pump Turbine on 8/2/2017	8/21/2017
Hazardous Materials	**HAZ-6**	Submitted Spill Report on 9/11/2017 for lube oil release at Unit 3 Main Boiler Feed Pump Turbine on 8/14/2017	9/11/2017
Hazardous Materials	**HAZ-6**	Submitted Spill Report on 11/3/2017 for lube oil release at Unit 3 access road due to mobile crane roll over on 10/18/2017	11/3/2017
Land Use	**LAND-3**	Upon completion the project owner shall submit notice to BLM and the Energy Commission that it has completed construction of the Solar / Ecological Interpretive Center. The notification was submitted to BLM and CEC and accepted on 5/13/2015 and 5/19/2015 respectively.	5/13/2015; 5/19/2015
Land Use	**LAND-3**	Submitted Solar Ecological Interpretive Center Post Construction Report on 6/22/2015.	7/16/2015
Land Use	**LAND-3**	In each Annual Compliance Report, the project owner shall provide a summary of estimated public use of the Solar / Ecological Interpretive Center and summarize any issues associated with operating and maintenance activities.	1/30/2015; 1/29/2016
Land Use	**LAND-3**	Submitted information kiosk panel design to BLM for review and approval.	12/19/2016
Noise & Vibration	**NOISE-5**	Submitted noise survey report that was conducted on 10/3/2014	10/23/2014
Geology & Paleontology	**PAL-7**	CH2M Hill submitted Paleontological Resources Report.	1/9/2014
Recreation	**REC-1**	Prior to commercial operation, the project owner shall submit notice to BLM and the Energy Commission that it has completed construction of the Solar / Ecological Interpretive Center and shall request final approval by both BLM's Authorized Officer and the CPM.	5/13/2015; 5/19/2015
Recreation	**REC-1**	After commercial operation and in each Annual Compliance Report for the life of the ISEGS project, the project owner shall provide a summary of estimated public utilization of the Solar / Ecological Interpretive Center and summarize any issues associated with operating and maintenance activities.	1/30/2015; 1/29/2016
Recreation	**REC-1**	Submitted information kiosk panel design to BLM for review and approval.	12/19/2016
Soil & Water	**S&W-01**	Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities.	1/30/2015; 1/29/2016; 1/27/2017
Soil & Water	**S&W-02**	Submitted SWPPP Annual Report electronically to State Water Resources Control Board.	6/30/2014; 6/30/2015; 7/15/2016

TECHNICAL AREA	COC No.	TABLE 1 2017 ACTIONS THAT SATISFIED THE CONDITIONS OF CERTIFICATION	SUBMITTAL DATE
Soil & Water	**S&W-03**	Annual Montioring Reports will be submitted which include Quarterly monitoring data as described in the Approved Groundwater Monitoring and Management Plan. The First Annual Report will be a Baseline Report which includes the Well Network and level monitoring report and plan	11/17/2014; 8/13/2015; 12/19/2016
Soil & Water	**S&W-04**	For years subsequent to the initial year of operation, the annual summary will also include the yearly range and yearly average water use by source. For calculating the total water use, the term "year" will correspond to the date established for the annual compliance report submittal.	1/30/2015; 1/29/2016; 1/27/2017
Soil & Water	**S&W-05**	The project owner shall prepare an annual summary of the number of heliostats failed, cause of the failure,and cleanup and mitigation performed for each failed heliostat.	1/30/2015; 1/29/2016; 1/27/2017
Soil & Water	**S&W-06**	Submitted annual groundwater monitoring report to CEC, BLM and San Bernardino County.	11/17/2014; 8/13/2015; 12/19/2016; 7/6/2017; 10/24/2017
Traffic & Transportion	**TRANS-2**	Solar Partners/NRG coordinated with appropriate agencies to complete the inspections along the ROW to identify sections to be repaired.	7/31/2014
Traffic & Transportion	**TRANS-3**	Submitted Heliostat Positioning Plan addendum/update to CEC and BLM.	12/10/2014; 12/10/2015; 12/7/2016; 12/11/2017
Transmission Lines	**TLSN-2**	Pre and post energization measurement report was submitted to CEC and BLM.	7/31/2014
Transmission Lines	**TLSN-3**	During the first 5 years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report to be provided to BLM's Authorized Officer and the CPM.	1/30/2015; 1/29/2016; 1/27/2017
Visual Resources	**VIS-1**	The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report.	1/30/2015; 1/29/2016; 1/27/2017
Visual Resources	**VIS-2**	The project owner shall report landscape maintenance activities, including replacement of dead or dying vegetation, for the previous year of operation in each Annual Compliance Report.	1/30/2015; 1/29/2016; 1/27/2017
Waste Management	**WASTE-6**	Documentation of actual volume of wastes generated and the waste management methods used during the year. This report is submitted with the annual compliance report.	1/30/2015; 1/29/2016; 1/27/2017
Biolgical Opinion		Submitted Ivanpah 5-year Final EMP Report to USFWS, BLM and CEC: Process- and Scale-based Determinants of Survival for Translocated Mojave Desert Tortoises in the Ivanpah Valley, California; April 2011 through May 2017	11/29/2017

Exhibit 2

ISEGS Compliance Matrix

(COMP-7 Item 1)

Ivanpah SEGS Operations Compliance Matrix rev 01/7/2018

In accordance with CEC Condition of Certification COMP-05 and COMP-07 Item 7, the following is the updated Compliance Matrix showing the status of all conditions of certification during the reporting period.

Amendment approved by CEC on 2/13/2013
Amendment approved by CEC on 9/15/2014
Amendment approved by CEC on 11/19/2015

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Air Quality Auxiliary Boilers	AQ-01	Operation of this equipment must be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below	Any non-compliant operations shall be listed in the Annual Compliance Report (COMPLIANCE-7).	In Progress	Annually	1/30/2015; 1/29/2016; 1/27/2017			Submitted in the Annual Compliance Report
Air Quality Auxiliary Boilers	AQ-02	The owner/operator shall operate this equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application for this permit, which produce the minimum emission of air contaminants.	As part of the Annual Compliance Report (COMPLIANCE-7), the project owner shall include information on the date, time, and duration of any violation of this permit condition.	On-going	Annually	1/30/2015; 1/29/2016; 1/27/2017			Submitted in the Annual Compliance Report
Air Quality Auxiliary Boilers	AQ-03	This boiler shall use only natural gas as fuel and shall be equipped with a meter measuring fuel consumption. ~~in standard cubic feet.~~	As part of the Annual Compliance Report (COMPLIANCE-7), the project owner shall include proofs that only pipeline quality, or Public Utility Commission regulated natural gas are used for the boilers.	On-going	Annually	1/30/2015; 1/29/2016; 1/27/2017		11/19/2015	Gas consumption monitoring in progress. NG supply comes from KRGT pipeline that meets this requirement. Submitted in the Annual Compliance Report
Air Quality Auxiliary Boilers	AQ-04	The owner owner/operator shall maintain a current, on-site (at a central location if necessary) log for this equipment for five (5) years, which shall be provided to District, state or federal personnel upon request. This log shall include calendar year fuel use for this equipment in standard cubic feet, or BTU's, and daily hours of operation.	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or Energy Commission staff.	On-going	N/A				Operations logs for each Boiler is maintained and up to date.
Air Quality Auxiliary Boilers	AQ-06	The owner/operator shall perform Annual Compliance Tests in accordance with the District Compliance Test Procedural Manual. Prior to performing these annual tests, the boiler shall be tuned in accord with the manufacturer's specified tune-up procedure, by a qualified technician. Subsequent tests shall demonstrate that this equipment does not exceed the following emission maximums: Pollutant / ppmvd / Lb/MMBtu / Lb/hr *NOx 9.0 0.011 ~~2.5~~ 2.7 (per USEPA Methods 7E and 19 ~~and 20)~~ SO~~x~~2 1.7 0.003 ~~0.6~~ 0.7 *CO 25.0 0.018 ~~4.2~~ 4.6 4.5 (per USEPA Method 10) VOC 12.6 0.0054 ~~1.2~~ 1.3 (per USEPA Methods 25A and 18) PM10 n/a 0.007 1.7 (per USEPA Methods 5 or 201A, and 202 ~~5 & 202 or CARB Method 5)~~ *corrected to 3% oxygen, on a dry basis, averaged over one hour Opacity shall be conducted per Method 9; Flue gas flow rate shall be quantified in dscf per USEPA Methods 1 through 5.	The project owner shall notify the District and the CPM within fifteen (15) working days before the execution of the performance compliance test required in this condition. The test results shall be submitted to the District and to the CPM within 60 days of the date of the tests. The owner or operator of an affected facility shall provide the Administrator at least 30 days prior notice of any performance test, except as specified under other subparts, to afford the Administrator the opportunity to have an observer present [40 CFR 60.8 (d)].	2015 Completed; Upcoming for 2016	ANNUALLY Notification Required 15 working days (30 days) prior compliance tests. Report Submittal within 60 days from the date of tests	• Notification prior Annual Compliance Test was submitted on 2/24/2016. • Unit 1 Annual Compliance Test was completed on 3/30/2016; Test Result submitted on 5/16/2016. • Unit 2 Annual Compliance Test was completed on 3/31/2016; Test Result submitted on 5/16/2016. • Unit 3 Annual Compliance Test was completed on 4/01/2016; Test Result submitted on 5/16/2016. • Notification prior Annual Compliance Test was submitted on 1/5/2017. • Unit 1 Annual Compliance Test was completed on 2/16/2017; Test Result submitted on 3/28/2017. • Unit 2 Annual Compliance Test was completed on 2/15/2017; Test Result submitted on 3/28/2017. • Unit 3 Annual Compliance Test was completed on 2/14/2017; Test Result submitted on 3/28/2017.		2/13/2013; 11/19/2015	Auxiliary Boilers Annual Tune-up was completed on 3/23/2016. Auxiliary Boilers Annual Tune-up was completed on 2/13/2017.

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Air Quality Auxiliary Boilers	AQ-07	This boiler *(Boilers 1, 2, and 3)* shall be operated in compliance with all applicable requirements of 40 CFR 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (NSPS Db).	The project owner shall complete and submit to the CPM a **COMPLIANCE PLAN** that provides a list of the 40 CFR 60 Subpart Db plans, tests, and recordkeeping requirements and their compliance schedule dates as applicable for the ISEGS Boilers 1, 2 and 3 at least 30 days prior to first fire of the boilers or earlier as necessary for compliance with Subpart Db.	COMPLETED (CONSTRUCTION)	30 days prior to First Fire	22-Aug-2012			Plan submitted for Unit 1 8-22-12, First Fire Unit 1 took place 11/18/12; Actual First Fire Notification Dates: 11/28/12 (Unit 1); 1/30/13 (Unit 2) & 4/9/13 (Unit 3)
Air Quality Auxiliary Boilers	AQ-08	Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits.	Complying with Condition of Certification AQ-3 shall be used to demonstrate compliance with this condition.	On-going	N/A	1/30/2015; 1/29/2016; 1/27/2017			Natural Gas Sulfur contents are maintained and up to date.
Air Quality Auxiliary Boilers	AQ-09	The owner/operator shall continuously monitor and record fuel flow rate and flue gas oxygen level.	At least 120 days prior to construction of the boiler stacks, the project owner shall provide the District for approval, and the CPM for review, a detailed drawing and a plan on how the measurements and recordings, required by this condition, will be performed by the chosen monitoring system	Submitted	120 days prior construction of boiler stacks	28-Aug-2011			Fuel Flow rates and flue gas oxygen level are recorded and monitored. Download from the system occurs every quarter.
Air Quality Auxiliary Boilers	AQ-10	In lieu of installing CEMs to monitor NOx emissions, and pursuant to 40 CFR 60 Subpart Db, Section 60.49b(c), the owner/operator shall monitor boiler operating conditions and estimate NOx emission rates per a District approved emissions estimation plan. The plan shall be based on the initial source tests as required by condition AQ-5, and annually pursuant to condition AQ-6. The plan shall include test results, operating parameters, analysis, conclusions and proposed NOx estimating relationship consistent with established emission chemistry and operational effects.	This initial plan shall be submitted to the District for approval, and the CPM for review, within 360 days of the initial startup. Any proposed changes to a District-approved plan shall include subsequent test results, operating parameters, analysis, and any other pertinent information to support the proposed changes. The District must approve any emissions estimation plan or revision for estimated NOx emissions to be considered valid.	Submitted	360 days from Initial Start-up	11/18/2013; 11/12/2015; 6/21/2016	21-Jun-2016		Submitted Petition for Low Mass Emissions Certification to predict Nox emissions on 11/12/2015. An updated Emissions Estimation Plan was submitted on 6/21/2016. Approval from MDAQMD was received on 6/21/2016
Air Quality Auxiliary Boilers	~~AQ-11~~	~~The owner/operator shall comply with all applicable recordkeeping and reporting requirements of NSPS Db.~~	~~During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.~~	~~On-going~~	N/A			**11/19/2015**	
Air Quality Auxiliary Boilers	AQ-12	~~This boiler shall not burn more than 0.9 MMSCF of natural gas in any single day, and no more than~~ *The combined fuel use from the auxiliary boilers and nighttime preservation boilers shall not exceed* ~~328~~ 525 MMSCF *of natural gas* in any calendar year*; combined fuel use is the sum total of natural gas combusted from Boilers with MDAQMD permit numbers; B010375, and B011544 (Ivanpah 1) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair ; B010376 and B011572 (Ivanpah 2) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair ; B010377 and B011573 (Ivanpah 3) and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair .* ~~a. These limits shall not apply during the facility commissioning period. The commissioning period shall begin the first time fuel is fired in the boiler. The commissioning period shall end when the facility achieves commercial operation, but no later than 180 days after first fire.~~	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	Completed for 2015. On-going for 2016	NA	1/31/2014; 1/30/2015; 1/29/2016; 1/27/2017		2/13/2013; **9/15/2014**	AQ amendments approved by CEC on 3/13/2013. Subsequent amendment was approved by CEC on 9/15/2014. Submitted with the Annual Compliance Report
CONDITIONS APPLICABLE TO IVANPAH 1,2, & 3 EMERGENCY FIRE PUMPS. MDAQMD APPLICATION NUMBERS/PERMIT NUMBERS; 0009312 (E010380), 00009315 (E010378) AND 00009319 (E010384)									
Air Quality Fire Pumps	AQ-13	This ~~system~~ *engine, certified in accordance with 40 Code of Federal Regulations (CFR) part 89, and after treatment control device (if any)* shall be installed, operated and maintained ~~in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants~~ *according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by 40 CFR 60 Subparts 60.4205 and 60.4211.* Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. ~~*(Note reference to Model 2010 Tier III engine)*~~	During site inspection, the project owner shall make all records and reports available to the District, ARB, EPA or CEC staff.	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality Fire Pumps	~~AQ-16~~ *AQ-14*	~~These~~ *This* units shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per ~~CARB~~ Diesel or equivalent requirements. *[17 California Code of Regulations (CCR) 93115; 60.4207(b)]*	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			13-Feb-2013	Sulfur certifications from diesel supplier are being maintained on site.
Air Quality Fire Pumps	~~AQ-18~~ *AQ-16*	~~These~~ *This* units shall be limited to use for emergency *purposes.* ~~power, defined as in response to a fire or when commercially available power has been interrupted.~~ In addition, this unit shall be operated no more than ~~0.5~~ 1.0 *hours per day for a total of* 50 hours per year for testing and maintenance. ~~, excluding compliance source testing. Time required for source testing will not be counted toward the~~ *The* 50 hour ~~per year~~ limit. *can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel dueled CI engine when operated per and in accord with the National Fire protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies.[[District Rule 1302(C)(2)(a) and Rule 1304(D)(1)(a)] and 17CCR93115.3(n)] [Hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]*	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			2/13/2013; **11/19/2015**	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Air Quality Fire Pumps	~~AQ-20~~ *AQ-17*	**The owner/operator shall maintain a*n* operations log for ~~these~~ *this* units current and on-site~~,~~ *(* either at the engine location or at a on-site location*)* , for a minimum of ~~two (2)~~ *five (5)* years, ~~and for another year where it can be made available to the District staff within 5 working days from the District's request,~~ and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below: a. Date of each use and duration of each use (in hours); b. Reason for use (testing & maintenance, emergency, required emission testing*, etc.*); c. *Monthly and* ~~C~~a lendar year operation in terms of fuel consumption (in gallons) and total hours *[17 CCR 93115]* ; and, d. Fuel sulfur concentration (the owner/operator may use the supplier's certification of sulfur content if it is maintained as part of this log)*. [17 CCR 93115]* ~~e. Documentation of maintenance as per manufacturer's recommendations and good maintenance practices.~~**	**During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.**	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality Fire Pumps	***AQ-18***	***These engines may operate in response to fire suppression requirements and needs. [Rule 204].***	***During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.***	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality Fire Pumps	~~AQ-21~~ *AQ-19*	~~These fire protection~~ *This* units ~~are~~ *is* **subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (~~Title~~ 17 CCR *§* 93115) *and 40 Code of Federal Regulations (CFR) Part 60, Subpart III (NSPS)* . In the event of conflict between these conditions and the ATCM *or NSPS* , the more stringent requirements shall govern.**	~~Not necessary.~~ ***The project owner shall submit to the District and the CPM the engine specifications at least 30 days prior to purchasing the engines for review and approval demonstrating that the engines meet the ATCM and NSPS emission limit requirements at the time of engine purchase.***	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
CONDITIONS APPLICABLE TO IVANPAH 1,2, & 3 EMERGENCY GENERATORS. MDAQMD APPLICATION NUMBERS/PERMIT NUMBERS; 0009313 (E010381), 00009316 (E010379) AND 00009317 (E010382)									
Air Quality Emergency Generators	~~AQ-23~~ *AQ-20*	~~Engine may operate in response to notification of impending rotating outage if the area utility has ordered rotating outages in the area where the engine is located or expects to order such outages at a particular time, the engine is located in the area subject to the rotating outage, the engine is operated no more than 30 minutes prior to the forecasted outage, and the engine is shut down immediately after the utility advises that the outage is no longer imminent or in effect. (Refers to three (3) Model Year 2010, Tier II engines)~~ ***This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205, and 60.4211]***	**During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.**	On-going	N/A			13-Feb-2013	AQ amendments approved by CEC on 3/13/13. Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017
Air Quality Emergency Generators	~~AQ-24~~ *AQ-21*	**This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. *[17 CCR 93115; 60.4207(b)]***	**During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.**	On-going	N/A			13-Feb-2013	Verified and certified in compliance during MDAQMD site inspection on 7/13/2017
Air Quality Emergency Generators	***AQ-23***	***This unit shall not be used to provide power during a voluntary power outage and/or power reduction initiated under an Interruptible Service Contract IISC), Demand Response Program (DRP), Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier. [17 CCR 93115] [40 CFR 60 Subpart IIII allowance for DRP streamlined out.]***	***During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.***	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality Emergency Generators	~~AQ-27~~ *AQ-24*	**This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than ~~0.5~~ *1.0 hours per day of* 50 hours per year~~, and no more than 0.5 hours per day~~ for testing and maintenance~~, excluding compliance source testing. Time required for source testing will not be counted toward the 50 hour per year limit.~~ *[NSR and 17 CCR 93115] [Hours allowed by 60.42 (f) streamlined out.]***	**During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.**	On-going	N/A			2/13/2013; **11/19/2015**	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.

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Air Quality Emergency Generators	~~AQ-28~~ *AQ-25*	**The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:** **a. Date of each use and duration of each use (in hours);** **b. Reason for use (testing & maintenance, emergency, required emission testing*, etc.*);** **c. *Monthly and* ~~C~~*a*lendar year operation in terms of fuel consumption (in gallons) and total hours *[17 CCR 93115]* ; *and,*** **~~d.~~ Fuel sulfur concentration (the owner/operator may use the supplier's certification of sulfur content if it is maintained as part of this log) *[17 CCR 93115]* ~~and,~~** **~~e. Documentation of maintenance as per manufacturer's recommendations and good maintenance practices.~~**	**During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.**	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality Emergency Generators	~~AQ-29~~ *AQ-26*	**This ~~genset~~ *unit* is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR §93115) *and 40 CFR 60 Part 60, Subpart III (NSPS)* . In the event of conflict between these conditions and the ATCM *or NSPS*, the more stringent requirements shall govern.**	~~**Not necessary.**~~ ***The project owner shall submit to the District and the CPM the engine specifications at least 30 days prior to purchasing the engines for review and approval demonstrating that the engines meet the ATCM and NSPS emission limit requirements at the time of engine purchase.***	On-going	N/A			13-Feb-2013	
CONDITIONS APPLICABLE TO IVANPAH 1,2, & 3 (Three -3) NIGHTTIME PRESERVATION BOILERS. MDAQMD APPLICATION NUMBERS/PERMIT NUMBERS; MD100000063 (B011544). MD100000064 (B011572) & MD100000065 (B011573)									
Air Quality - Nighttime Preservation Boilers	***AQ-27***	***Operation of this equipment must be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.***	***Any non-compliant operations shall be listed in the Annual Compliance report (COMPLIANCE-7).***	On-going	Annually beginning January 2015	1/30/2015; 1/29/2016; 1/27/2017		13-Feb-2013	Submitted with the Annual Compliance Report
Air Quality - Nighttime Preservation Boilers	***AQ-28***	***The owner/operator shall operate this equipment in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles and consistent with all information submitted with the application for this permit, which produce the minimum emission of air contaminants.***	***As part of the Annual Compliance Report (COMPLIANCE-7), the project owner shall include information on the date, time, and duration of any violation of this permit condition.***	On-going	Annually beginning January 2015	1/30/2015; 1/29/2016; 1/27/2017		13-Feb-2013	Submitted with the Annual Compliance Report
Air Quality - Nighttime Preservation Boilers	***AQ-29***	***This boiler shall use only natural gas as fuel and shall be equipped with a meter measuring fuel consumption in standard cubic feet.***	***As part of the Annual Compliance Report (COMPLIANCE-7), the project owner shall include proof that only pipeline quality, or Public Utility Commission regulated natural gas is used in these boilers.***	On-going	Annually beginning January 2015	1/30/2015; 1/29/2016; 1/27/2017		13-Feb-2013	Submitted with the Annual Compliance Report NG supply comes from KRGT pipeline that meets this requirement.
Air Quality - Nighttime Preservation Boilers	***AQ-30***	***The owner/operator shall maintain a current, on-site (at a central location if necessary) log for this equipment for five (5) years, which shall be provided to District, state, or federal personnel upon request. This log shall include calendar year fuel use for this equipment in standard cubic feet, or BTUs, and daily hours of operation.***	***During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or Energy Commission staff.***	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality - Nighttime Preservation Boilers	***AQ-31***	***The owner/operator shall perform annual tune-ups in accordance with the unit manufacturer's specified tune-up procedure, by a qualified technician.***	***During site inspection, the project owner shall make all records arid reports available to the District, ARB, U.S. EPA or Energy Commission staff.***	Completed in 2015. Upcoming in 2016	N/A			13-Feb-2013	Completed in 2015. Completed in 2016; Completed in 2017; Upcoming in 2018
Air Quality - Nighttime Preservation Boilers	***AQ-32***	***Records of fuel supplier certifications of fuel sulfur content shall be maintained to demonstrate compliance with the sulfur dioxide and particulate matter emission limits.***	***Condition of Certification AQ-29 shall be used to demonstrate compliance with this condition.***	On-going	N/A			13-Feb-2013	Natural Gas Sulfur contents are maintained and up to date. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality - Nighttime Preservation Boilers	***AQ-33***	***The owner/operator shall continuously monitor and record fuel 'flow rate.***	***At least 120 days prior to construction of the boiler stacks, the project owner shall provide the District for approval, and the CPM for review, a . detailed drawing and a plan on how the measurements and recordings, required by this condition, will be performed by the chosen monitoring system.***	On-going	120 day prior construction of the Boiler Stacks	21-Aug-2011		13-Feb-2013	Fuel Flow rates are recorded and monitored. Download from the system occurs every quarter. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.

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Air Quality - Nighttime Preservation Boilers	AQ-34	The combined fuel use from the auxiliary boiler and the nighttime preservation boiler shall not exceed ~~328~~ 525 MMSCF of natural gas in any calendar year; combined fuel use is the sum total of natural gas combusted from Boilers with MDAQMD permit numbers; B010375 and B011544 (Ivanpah 1) **and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair** ; B010376 and B011572 (Ivanpah 2) **and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair** ; B01 0377, and B011573 (Ivanpah 3) **and shall not exceed a total of 525 mmscf in any calendar year in that boiler pair** .	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	Completed in 2013. On-going for 2014	N/A	1/30/2015; 1/29/2016; 1/27/2017		2/13/2013; **9/15/2014**	Submitted with the Annual Compliance Report in 2016. Gas consumption log for each equipment pair is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
CONDITIONS APPLICABLE TO COMMON AREA EMERGENCY GENERATOR, MDAQMD APPLICATION NUMBERS/PERMIT NUMBERS MD100000061 (E011546)									
Air Quality - Common Area Emergency Generator	AQ-35	This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205, and 60.42111	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			13-Feb-2013	Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality - Common Area Emergency Generator	AQ-36	This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15 ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115;.60.4207(b)]	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			13-Feb-2013	Sulfur certification from the diesel supplier is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality - Common Area Emergency Generator	AQ-38	This unit shall not be used to provide power during a voluntary power outage and/or power reduction initiated under an Interruptible Service Contract (ISC), Demand Response Program (ORP), Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier. [17 CCR 93115] [40 CFR 60 Subpart IIII allowance for DRP streamlined out.]	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality - Common Area Emergency Generator	AQ-39	This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than ~~0.5~~ **1.0** hrs per day for a total of 50 hours per year for testing and maintenance. [NSR and 17 CCR 93115] [Hours allowed by 60.42(f) streamlined out.]	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			2/13/2013; **11/19/2015**	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality - Common Area Emergency Generator	AQ-40	The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below: a. Date of each use and duration of each use (in hours); b. Reason for use (testing & maintenance, emergency, required emission testing, etc.); c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR 93115]; and, d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115]	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
CONDITIONS APPLICABLE TO THE COMMON AREA EMERGENCY FIRE PUMP, MDAQMD APPLICATION NUMBERS/PERMIT NUMBERS; MD100000062 (E011547)									
Air Quality - Common Area Emergency Fire Pump	AQ-42	This engine, certified in accordance with 40 CFR Part 89, and after treatment control device (if any) shall be installed, operated and maintained according to the manufacturer's emission-related written instructions. Further, the owner/operator shall change only those emission-related settings that are permitted by the manufacturer. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [40 CFR Part 60 Subparts 60.4205 and 60.4211]	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			13-Feb-2013	

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Air Quality - Common Area Emergency Fire Pump	AQ-43	This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. [17 CCR 93115; 60.4207(b)]	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			13-Feb-2013	Sulfur certification from the diesel supplier is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality - Common Area Emergency Fire Pump	AQ-45	This unit shall be limited to use for emergency purposes. ~~power, defined as in response to a fire or when commercially available power has been interrupted.~~ In addition, this unit shall be operated no more than ~~0.5~~ 1.0 hrs per day for a total of 50 hours per year for testing and maintenance. The 50 hour limit can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel fueled CI engine operated per and in accord with the National Fire Protection Association (NFPA) 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies. [[District Rule 1302(C)(2)(a) and Rule 1304 (D)(1)(a)] and 17 CCR 93115.3(n)] [Hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			2/13/2013; **11/19/2015**	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality - Common Area Emergency Fire Pump	AQ-46	The owner/operator shall maintain an operations log for this unit current and on-site (or at a central location) for a minimum of five (5) years, and this log shall be provided to District, State and Federal personnel upon request. . The log shall include, at a minimum, the information specified below: a. Date of each use and duration of each use (in hours); b. Reason for use (testing & maintenance, emergency, required emission testing, etc.); c. Monthly and calendar year operation in terms of fuel consumption (in gallons) and total hours [17 CCR93115]; and, d. Fuel sulfur concentration (the % may use the supplier's certification of sulfur content if it is maintained as part of this log.) [17 CCR 93115].	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality - Common Area Emergency Fire Pump	AQ-47	These engines may operate in response to fire suppression requirements and needs. [Rule 204].	During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.	On-going	N/A			13-Feb-2013	Operations log for each equipment is maintained on site and up to date. MDAQMD verified and certified in compliance during the site audit on 8/2/2016. Verified and certified in compliance during MDAQMD site inspection on 7/13/2017.
Air Quality General	AQSC-06	**The project owner, when obtaining dedicated on or off-road vehicles for mirror washing activities and other facility maintenance activities, shall only obtain new model year vehicles that meet California on-road vehicle emission standards or appropriate U.S.EPA/California off-road engine emission standards for the model year when obtained.**	**At least 60 days prior to the start of commercial operation, the project owner shall submit to the CPM a copy of the plan that identifies the size and type of the on-site vehicle and equipment fleet and the vehicle and equipment purchase orders and contracts and/or purchase schedule. The plan shall be updated every other year and submitted in the Annual Compliance Report (COMPLIANCE-7).**	**Submitted**	60 days prior start of commercial operations	8/22/2013; 1/29/2016			Off-road vehicles for mirror washing activities plan submitted to CEC/BLM on 8/22/13; Updated in 2015 and submitted with the ACR on 1/29/2016. Updated in 2017 and submitted with the ACR in January 2018.
Air Quality General	AQSC-07	**The project owner shall provide a site operations dust control plan, including all applicable fugitive dust control measures identified in the verification of AQ-SC3 that would be applicable to reducing fugitive dust from ongoing operations; that:** **A. describes the active operations and wind erosion control techniques such as windbreaks and chemical dust suppressants, including their ongoing maintenance procedures, that shall be used on areas that could be disturbed by vehicles or wind anywhere within the project boundaries; and** **B. identifies the location of signs throughout the facility that will limit traveling on unpaved portion of roadways to solar equipment maintenance vehicles only. In addition, vehicle speed shall be limited to no more than 10 miles per hour on these unpaved roadways, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.** **The site Operations Fugitive Dust Control Plan shall include the use of durable non-toxic soil stabilizers on all regularly used unpaved roads and disturbed off-road areas, or alternative methods for stabilizing disturbed off-road areas, within the project boundaries, and shall include the inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized. The soil stabilizer used shall be a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation.** **The performance and application of the fugitive dust controls shall also be measured against and meet the performance requirements of condition AQ-SC4. The performance requirements of AQ-SC4 shall also be included in the Operations Dust Control Plan.**	**At least 60 days prior to start of commercial operation, the project owner shall submit to the BLM's Authorized Officer and the CPM for review and approval a copy of the Site Operations Dust Control Plan that identifies the dust and erosion control procedures, including effectiveness and environmental data for the proposed soil stabilizer, that will be used during operation of the project and that identifies all locations of the speed limit signs.** **Within 60 days after commercial operation, the project owner shall provide to the BLM's Authorized Officer and the CPM a report identifying the locations of all speed limit signs, and a copy of the project employee and contractor training manual that clearly identifies that project employees and contractors are required to comply with the dust and erosion control procedures and on-site speed limits.**	**Submitted**	60 days prior start of commercial operations. 60 days after commercial operations	8/27/2013; **7/30/2014;** **1/29/2016;** **1/27/2017**			**Site Operations Dust Control Plan submitted to CEC/BLM on 8/27/13;** **Revised Operations Dust Control Plan was submitted to CEC/BLM on 7/30/2014.** **Dust Control Annual Report was submitted in the Annual Compliance Report**

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Air Quality General	AQSC-08	**The project owner shall provide the CPM copies of all District issued Authority-to-Construct (ATC) and Permit-to-Operate (PTO) for the facility. The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit.**	**The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the District or U.S. Environmental Protection Agency (U.S. EPA), and any revised permit issued by the District or U.S. EPA, for the project. The project owner shall submit any ATC, PTO, and proposed air permit modification to the CPM within 5 working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.**	Submitted	Within 5 days of submittal; Within 15 days of receipt.	11/19/2013; 12/10/2015; 10/24/2017			MDAQMD ATC Permits - exp. 10/31/14 was submitted to CEC on 11/19/13. 2014 - 2015 Revised ATC/PTO (exp. 10/31/2015) were received from MDAQMD on 12/18/2014. Submittal was hold-off due to impending revisions/submittal of PTA to be consistent with CEC Conditions of Certifications. Submitted revised PTO for 3 Auxiliary Boilers with an additional condition having different requirements with AQ-6.
~~Air Quality General~~	~~AQSC-10~~	~~**The ISEGS 1, ISEGS 2, and ISEGS 3 boilers shall not exceed a total annual natural gas fuel heat input that is more than 5 percent of the total annual heat input from the sun for ISEGS1, ISEGS2, and ISEGS 3, respectively.**~~	~~**Annual natural gas fuel heat input data and annual solar heat input data for the ISEGS 1, ISEGS 2, and ISEGS 3 units showing compliance with this condition shall be provided in the Annual Compliance Report (COMPLIANCE-7). The Annual Compliance Report shall include information separately for ISEGS 1, ISEGS 2, and ISEGS 3. The initial Compliance Report shall include documentation of the methodology used to verify compliance with this condition. The documentation shall include a heat balance diagram, engineering analysis, assumptions and supporting data.**~~	Deleted	~~Annually beginning 2015~~			**9/15/2014**	AQ amendment was approved by CEC on 9/15/2014.
Biological Resources	BIO-02	***Designated Biologists Duties:*** **The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner, BLM's Authorized Officer and the CPM. The Designated Biologist Duties shall include the following:** **1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;** **2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;** **3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat;** **4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;**	**The Designated Biologist shall submit in the Monthly Compliance Report to BLM's Authorized Officer and the CPM and copies of all written reports and summaries that document biological resources compliance activities. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless his/her duties cease, as approved by BLM's Authorized Officer and the CPM.**	Completed at End of Construction (5/31/2014). **ONGOING for Operations beginning June 2014.**	Annually beginning January 2015	1/30/2015; 1/29/2016; 1/27/2017			The submittal of the final Monthly Compliance Report was in June 2014 for the month of May 2014. The first Annual Compliance Report was submitted on January 30, 2015. Submitted in the Annual Compliance Report
Biological Resources	BIO-02 (Continued)	**5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way;** **6. Notify the project owner and BLM's Authorized Officer and the CPM of any non-compliance with any biological resources condition of certification;** **7. Respond directly to inquiries of BLM's Authorized Officer and the CPM regarding biological resource issues;** **8. Maintain written records of the tasks specified above and those include in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Compliance Report;** **9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and USFWS guidelines on desert tortoise surveys and handling procedures <www.fws.gov/ventura/speciesinfo/protocols_guidelines>; and** **10. Maintain the ability to be in regular, direct communication with representatives of CDFG, USFWS, BLM's** **Authorized Officer and the CPM, including notifying these agencies of dead or injured listed species and** **reporting special-status species observations to the California Natural Diversity Data Base.**	**The Designated Biologist shall submit in the Monthly Compliance Report to BLM's Authorized Officer and the CPM and copies of all written reports and summaries that document biological resources compliance activities. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless his/her duties cease, as approved by BLM's Authorized Officer and the CPM.**	Completed at End of Construction (5/31/2014). **ONGOING for Operations beginning June 2014.**	Annually beginning January 2015	1/30/2015; 1/29/2016; 1/27/2017			The submittal of the final Monthly Compliance Report was in June 2014 for the month of May 2014. The first Annual Compliance Report was submitted on January 30, 2015. Submitted in the Annual Compliance Report
Biological Resources	BIO-04	***Biological Monitor Duties:*** **The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring of mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist shall remain the contact for the project owner, BLM's Authorized Officer and the CPM.**	**The Designated Biologist shall submit in the Monthly Compliance Report to BLM's Authorized Officer and the CPM and copies of all written reports and summaries that document biological resources compliance activities, including those conducted by Biological Monitors. If actions may affect biological resources during operation a Biological Monitor, under the supervision of the Designated Biologist, shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless their duties cease, as approved by BLM's Authorized Officer and the CPM.**	Completed at End of Construction (5/31/2014). **ONGOING for Operations beginning June 2014.**	Annually beginning January 2015	1/30/2015; 1/29/2016; 1/27/2017			The submittal of the final Monthly Compliance Report was in June 2014 for the month of May 2014. The first Annual Compliance Report was submitted on January 30, 2015. Submitted in the Annual Compliance Report

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Biological Resources	BIO-06	***Workers Environmental Awareness Program (WEAP):*** **The project owner shall develop and implement an Ivanpah SEGS-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from BLM's Authorized Officer and the CPM. The USFWS and CDFG shall be provided a copy of the WEAP for review and comment. The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel.** **The WEAP shall be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. The WEAP shall:** **1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants.** **2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that Gila monsters** **are venomous and should not be handled, and that no snakes, reptiles, or other wildlife shall be harmed;** **3. Place special emphasis on desert tortoise, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;** **4. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;** **5. Present the meaning of various temporary and permanent habitat protection measures;** **6. Identify whom to contact if there are further comments and questions about the material discussed in the program; and** **7. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.** **The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.**	**At least 60 days prior to the start of any project-related site disturbance activities, the project owner shall provide to BLM's Authorized Officer and the CPM a copy of the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.** **The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date.** **At least 10 days prior to site and related facilities mobilization, the project owner shall submit two copies of the BLM- and CPM-approved final WEAP.** **Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least six months after the start of commercial operation.** **Throughout the life of the project, the worker education program shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially** **working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to BLM's Authorized Officer and** **the CPM and upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate that they have completed the training.** **During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.**	Approved - COMPLETED (CONSTRUCTION) **ONGOING DURING OPERATIONS**	60 prior Start of Site Disturbance Activities. **ANNUALLY DURING OPERATIONS.**	6-Jul-2010	3-Oct-2010		Approved and WEAP reported in the MCR during construction. ONGOING DURING OPERATIONS;
Biological Resources	BIO-07	***Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP):*** **The project owner shall develop a BRMIMP and submit two copies of the proposed BRMIMP to the BLM-Authorized Officer and the CPM (for review and approval) and shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Desert Tortoise Translocation Plan, the Raven Management Plan, the Closure, Revegetation and Rehabilitation Plan, the Burrowing Owl Mitigation and Monitoring Plan, the Weed Management Plan and the Special Status Plant Remedial Action Plan. The BRMIMP shall be prepared in consultation with the Designated Biologist and include the following:** **1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;** **2. All biological resources conditions of certification identified as necessary to avoid or mitigate impacts;** **3. All biological resource mitigation, monitoring and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion;** **4. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;** **5. All required mitigation measures for each sensitive biological resource;** **6. A detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;** **7. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction and operation;**	**Owner shall submit the BRMIMP to the BLM Authorized Officer and the CPM at least 60 days prior to start of any project-related site disturbance activities. The BRMIMP shall contain all of the required measures included in all biological Conditions of Certification. No ground disturbance may occur prior to approval of the final BRMIMP by BLM's Authorized Officer and the CPM. BLM's Authorized Office and the CPM, in consultation with other appropriate agencies, will determine the BRMIMP's acceptability within 45 days of receipt. If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to BLM's Authorized Office and the CPM within five days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition within at least 10 days of their receipt by the project owner. Ten days prior to site and related facilities mobilization the revised BRMIMP shall be resubmitted to BLM's Authorized Officer and the CPM.**	Approved - COMPLETED (CONSTRUCTION) **ONGOING DURING OPERATIONS**	60 prior Start of Site Disturbance Activities.	7/16/2010; REVISION 2-UPDATED 4/11/2012 PER CEC REQUEST/ Revised Biological Opinion USFWS 4/22/12 added Re:Translocation			As a living document with many plans, approvals are given as revisions and updates are made to any of the plans, the latest revisions are kept on-site hard copy and electronically
Biological Resources	BIO-07 (continued)	**8. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities; include one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction. Provide planned timing of aerial photography and a description of why times were chosen. Provide a final accounting of the before/after acreages and a determination of whether additional habitat compensation is necessary in the Construction Termination Report;** **9. Duration for each type of monitoring and a description of monitoring methodologies and frequency;** **10. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;** **11. All performance standards and remedial measures to be implemented if performance standards are not met;** **12. A discussion of biological resources-related facility closure measures including a description of funding mechanism(s); and** **13. A process for proposing plan modifications to BLM's Authorized Officer and the CPM and appropriate agencies for review and approval; and**	**Owner shall notify BLM's Authorized Officer and the CPM and no less than five working days before implementing any modifications to the approved BRMIMP to obtain BLM's Authorized Officer and CPM approval.** **Any changes to the approved BRMIMP must also be approved by BLM's Authorized Officer and the CPM and in consultation with appropriate agencies to ensure no conflicts exist. Implementation of BRMIMP measures (construction activities that were monitored, species observed) will be reported in the Monthly Compliance Reports by the Designated Biologist.**	Approved - COMPLETED (CONSTRUCTION) **ONGOING DURING OPERATIONS**	Monthly MCR	7/16/2010; REVISION 2-UPDATED 4/11/2012 PER CEC REQUEST/ Revised Biological Opinion USFWS 4/22/12 added Re:Translocation			As a living document with many plans, approvals are given as revisions and updates are made to any of the plans, the latest revisions are kept on-site hard copy and electronically

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Biological Resources	BIO-07 (continued-1)	**8. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities; include one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction. Provide planned timing of aerial photography and a description of why times were chosen. Provide a final accounting of the before/after acreages and a determination of whether additional habitat compensation is necessary in the Construction Termination Report;** **9. Duration for each type of monitoring and a description of monitoring methodologies and frequency;** **10. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;** **11. All performance standards and remedial measures to be implemented if performance standards are not met;** **12. A discussion of biological resources-related facility closure measures including a description of funding mechanism(s); and** **13. A process for proposing plan modifications to BLM's Authorized Officer and the CPM and appropriate agencies for review and approval; and**	***Within 30 days after completion of project construction, the project owner shall provide to BLM's Authorized Officer and the CPM, for review and approval, a written construction termination report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases, and which mitigation and monitoring items are still outstanding.***	**Submitted**	30 days after completion of Project Construction	6/30/2014; 7/1/2014			Project Construction was completed and approved by CEC on 5/31/2014. Construction Termination Report was submitted on 6/30/14. Post-Construction Closure, Revegetation and Rehabilitation Plan Report was submitted on 7/1/2014.
Biological Resources	BIO-09	***Desert Tortoise Translocation Plan:*** **The project owner shall develop and implement a final Desert Tortoise Relocation/Translocation Plan (Plan) that is consistent with current USFWS approved guidelines, including the recently released "Translocation of Desert Tortoises (Mojave Population) from Project Sites: Plan Development Guidance, US Fish and Wildlife Service, August 2010" and meets the approval of BLM's Authorized Officer, USFWS, and CPM in consultation with CDFG. The final Plan shall be based on the draft Desert Tortoise Relocation/Translocation Plan prepared by the applicant dated May 2009 and modifications to this plan identified in the BA amendment dated June 21, 2010, and shall include all revisions deemed necessary by BLM's Authorized Officer, USFWS, and the CPM in consultation with the CDFG. Translocation of tortoise into the Mojave National Preserve will require fencing of roads within 10 km (6.2 miles) of receptor sites. Since this fencing is required as part of the translocation, it would not count towards the fencing identified in BIO-17, desert tortoise compensatory mitigation.**	**Within 60 days of publication of the Energy Commission Decision the project owner shall provide BLM's Authorized Officer and the CPM with the final version of a Desert Tortoise Relocation/Translocation Plan that has been reviewed and approved by BLM's Authorized Officer, USFWS and CPM in consultation with CDFG. BLM's Authorized Officer and the CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved translocation must be made only after consultation with BLM's Authorized Officer, USFWS, and the CPM, in consultation with CDFG.** **Within 30 days after initiation of translocation activities, the Designated Biologist shall provide to BLM's Authorized Officer and the CPM for review and approval, a written report identifying which items of the Plan have been completed, and a summary of all modifications to measures made during implementation of the Plan.**	Approved - COMPLETED (CONSTRUCTION)	Within 60 days of publication of CEC Decision	9/27/2010; Final DT Translocation Plan was submitted to BLM on 7/29/2016.	11/4/2010 (rev. 4 - BLM); Final DT Translocation Plan approved on 8/2/2016.		Revised Husbandry Plan Rev 1 Submitted Dec 3, 2012. Juvenile Desert Tortoises were translocated on Oct. 4, 2016. Juvenile Tortoises Annual Report was submitted with the Annual Compliance Report.
Biological Resources	BIO-10 (Continued-1)	**3. Remain onsite daily while vegetation salvage, grubbing, grading and heliostat installation activities are taking place to avoid or minimize take of listed species, to check for compliance with all impact avoidance and minimization measures, and to check all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protective zones.** **4. Maintain and check desert tortoise exclusion fences on a daily basis to ensure the integrity of the fence is maintained. The Designated Biologist shall be present onsite to monitor construction and determine fence placement during fence installation.** **5. Conduct compliance inspections at a minimum of once per month after clearing, grubbing, grading, and heliostat installation activities are completed and submit a monthly compliance report to BLM's Authorized Officer and the CPM ;** **6. No later than January 31 of every year the ISEGS facility remains in operation, provide BLM's Authorized Officer and the CPM an annual Listed Species Status Report, which shall include, at a minimum:** **1) a general description of the status of the project site and construction activities, including actual or projected completion dates, if known;** **2) a copy of the table in the BRMIMP with notes showing the current implementation status of each mitigation measure; and** **3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts;**	**No later than 2 calendar days following the above required notification of a sighting, kill, or relocation of a listed species, the project owner shall deliver to BLM's Authorized Officer, the CPM, CDFG, and USFWS via FAX or electronic communication the written report from the Designated Biologist describing all reported incidents of injury, kill, or relocation of a listed species, identifying who was notified, and explaining when the incidents occurred. In the case of a sighting in an active construction area, the project owner shall, at the same time, submit a map (e.g., using Geographic Information Systems) depicting both the limits of construction and sighting location to BLM's Authorized Officer, the CPM, CDFG and USFWS.**	**ONGOING DURING OPERATIONS**	Annually beginning January 2015	1/31/2011; 2011 Special Status Plants Annual Compliance Report submitted January 2012, revised March 7, 2012 and submitted; Annual Compliance Report submitted on 1/30/2015; 1/29/2016; 1/27/2017			The submittal of the final Monthly Compliance Report was in June 2014 for the month of May 2014. The first Annual Compliance Report was submitted on January 30, 2015. Submitted in the Annual Compliance Report
Biological	BIO-11 (Continued-	**11. Avoid Wildlife Pitfalls:** **a. Backfill Trenches. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the area fenced with desert tortoise exclusion fencing have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically throughout the day and at the end of each workday by the Designated Biologist or a Biological Monitor. Should a tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual as described in the Desert Tortoise Relocation/Translocation Plan. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.** **b. Avoid Entrapment of Desert Tortoise. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground and within desert tortoise habitat (i.e., outside the permanently fenced area) for one or**	**All mitigation measures and their implementation methods shall be included in the BRMIMP. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist.** **Within 30 days after completion of project construction, the project owner shall provide to BLM's Authorized Officer and the CPM, for review and approval, a written construction termination report identifying how**	**Submitted**	30 days after completion of Project Construction	6/30/2014; 7/1/2014			Project Construction was completed and approved by CEC on 5/31/2014. Construction Termination Report was submitted on 6/30/14. Post-Construction Closure, Revegetation and Rehabilitation Plan Report was submitted on 7/1/2014.

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Resources	(Continued 3)	**and within desert tortoise habitat (i.e., outside the permanently fenced area) for one or more nights, shall be inspected for tortoises before the material is moved, buried or capped. As an alternative, all such structures may be capped before being stored outside the fenced area, or placed on pipe racks. These materials would not need to be inspected or capped if they are stored within the permanently fenced area after the clearance surveys have been completed. c. Cap Heliostat Holes. All holes drilled for heliostats shall be capped the same day they are drilled. Caps shall remain on the holes until heliostats are inserted into the holes, and shall be securely fastened and sufficiently sturdy to cover the heliostat holes indefinitely. The caps shall exclude all wildlife, and shall be inspected weekly by the Designated Biologist or Biological Monitors to ensure that the caps remain in place and that birds and terrestrial wildlife have not become trapped. 12. Minimize Standing Water. Water applied to construction areas and dirt roads for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises, common ravens and coyotes to construction sites.**	**measures have been completed. The Designated Biologist shall report summarizing all available data (species of carcass, date and location collected, and cause of death) describing bird and other carcasses collected within the project site each year.**	ONGOING	Annually beginning January 2015	1/30/2015; 1/29/2016; 1/27/2017			Submitted in the Annual Compliance Report

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Biological Resources	BIO-11 (Continued-4)	**13. Dispose of Road killed Animals. Road killed animals or other carcasses detected in the project area or on roads near the project area shall be picked up immediately and delivered to the Biological Monitor. Within 1 working day of receipt of the carcass the Biological Monitor shall contact CDFG and/or USFWS for guidance on disposal or storage of the carcass.** **14. Photographic Documentation of Bird Carcasses. On-site personnel shall photograph and record the location of all bird carcasses encountered and location data to the Designated Biologist. The Designated Biologist shall identify the bird, ascertain a cause of death if possible, maintain a database of this information for all bird carcasses, and each year of operation shall provide a report summarizing this information to the CPM, BLM's Authorized Officer, CDFG, and USFWS.** **15. Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.** **16. Worker Guidelines. During construction all trash and food-related waste shall be placed in self-closing containers and removed daily from the site. Workers shall not feed wildlife or bring pets to the project site.** **Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.** **Vehicular traffic shall be confined to existing routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit when traveling on Colosseum Road and other dirt access routes within desert tortoise habitat shall not exceed 20 miles per hour.** **17. Monitor Ground Disturbing Activities Prior to Site Mobilization. If ground disturbing activities are required prior to site mobilization, such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.**	**All mitigation measures and their implementation methods shall be included in the BRMIMP. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to BLM's Authorized Officer and the CPM, for review and approval, a written construction termination report identifying how measures have been completed.** ***The Designated Biologist shall report summarizing all available data (species of carcass, date and location collected, and cause of death) describing bird and other carcasses collected within the project site each year.***	**ONGOING DURING OPERATIONS - ANNUALLY**	Annually beginning January 2015	1/30/2015; 1/29/2016; 1/27/2017			Information to be reported annually in the Annual Compliance Report
Biological Resources	BIO-12	***Raven Management Plan:*** **The project owner shall implement a Raven Management Plan that is consistent with the most current USFWS-approved raven management guidelines, and which meets the approval of USFWS, BLM Authorized Officer, and the CPM in consultation with CDFG. The draft Raven Management Plan submitted by The applicant (CH2M Hill 2008f) shall provide the basis for the final plan, subject to review and revisions from USFWS, BLM Authorized Officer and the CPM in consultation with CDFG. The project owner shall submit payment to the project sub-account of the REAT Account held by the National Fish and Wildlife Foundation (NFWF) to support the USFWS Regional Raven Management Program. The amount shall be a one-time payment of $105 per acre of permanent disturbance.**	**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 Raven 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.**	Submitted ONGOING REPORTING DURING OPERATIONS	60 days after completion of project construction. Not later than Dec. 31st each Raven Management Year	7/31/2014; 12/31/2014; 1/5/2015; 12/30/2015; 6/27/2016			Report identifying which items of the Raven Management Plan (Post Construction Raven Management Report) have been completed was submitted to CEC and BLM on 7/31/2014. Annual Monitoring Report per the Raven Management Plan was submitted on 12/31/2014. Resubmitted on 1/5/2015 with maps. **The implementation of the Raven Management Plan has been completed and awaiting for approval from BLM.**

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Biological Resources	BIO-14	***Closure, Revegetation and Rehabilitation Plan:*** **The project owner shall develop and implement a revised Closure, Revegetation and Rehabilitation Plan (Plan) in cooperation with BLM and Energy Commission staff, to guide site restoration and closure activities, including methods proposed for revegetation of disturbed areas immediately following construction and rehabilitation and revegetation upon closure of the facility. This plan must address preconstruction salvage and relocation of succulent vegetation from the site to an onsite nursery facility for storage and propagation of material to reclaim disturbed areas. In the case of unexpected closure, the plan assumes restoration activities could possibly take place prior to the anticipated lifespan of the plant. The Plan shall address all issues discussed in Biological Resources Appendix-B: Issues to Address in the *Closure, Revegetation and Rehabilitation Plan,* and shall include but is not limited to the following elements in the revised plan:** **1. Plan Purpose: The plan shall explicitly identify the objective of the revegetation plan to be re-creation of the types of habitats lost during construction and operation of the proposed solar energy facility. The final revegetation plan shall include introduction of mid- to late-successional species.** **2. Standards/Monitoring: Performance standards for success thresholds, weed cover, performance monitoring methods and schedule, and maintenance monitoring in the revised Plan shall be conducted as described in Biological Resources Appendix B.** **3. Baseline Surveys – Baseline vegetation surveys for planning restoration efforts shall be conducted as described in Biological Resources Appendix B.** **4. Vegetation Clearing: Clearing of vegetation shall be limited to areas for which final maps are provided to BLM before approval of the ROW. Clearing of vegetation will be permitted on roads, utility routes, heliostat maintenance pathways, building and parking areas, and temporary staging areas provided these are specifically documented on a georeferenced construction alignment drawing or aerial photo or shape file, showing the exact locations of soil disturbance. BLM will consider relocating specific installations prior to the beginning of construction and during construction on a case by case basis but will not approve additional acreage beyond that addressed in the current application.** **5. Vegetation Mowing; Vegetation mowing shall be limited to areas adjoining vehicle pathways used for heliostat installation to allow installation of the heliostat pylon and allow for tracking clearance under the heliostat. Vegetation mowing may be repeated during the life of the facility to maintain appropriate clearance for heliostat tracking.**	**Within 30 days after completion of project construction for each phase of development, the project owner shall provide to BLM's Authorized Officer and the CPM for review and approval, a written report identifying which items of the Closure, Revegetation and Rehabilitation 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.**	Submitted; Annually	30 days after completion of construction; Annually beginning 2015	6/30/2014; 1/30/2015; 1/29/2016; 1/27/2017			Report identifying which items of the Closure, Revegetation and Rehabilitation Plan have been completed was submitted to CEC and BLM on 6/30/2014. Revegetation Annual monitoring Report submitted in the Annual Compliance Report
			At least one year prior to planned closure and decommissioning the project owner shall submit to the BLM-Authorized Officer and the CPM a final Closure Plan for review to determine if revisions are needed. The project owner shall incorporate all required revisions to the final Closure Plan and submit to the BLM-Authorized Officer and the CPM no less than 90 days prior to the start of ground disturbing activities associated with closure and decommissioning activities.	Not Yet Started	1 year prior planned closure and decommissioning of the project				
Biological Resources	BIO-14 (Continued-1)	**6. Succulent Salvage: The revised Plan shall include a table that shows proposed succulent salvage by species the number of plants onsite, the lower threshold height for salvage, the number in each size class, and the fate of plants not salvaged. An inventory and map of proposed succulent transplants shall be provided as described in Appendix A. Information gained from succulent transplant experience gained in ISEGS 1 shall be applied to future salvage operations, as described in Biological Resources Appendix B.** **7. Seed Handling: Seed collection, testing and application shall be conducted as described in Biological Resources Appendix B, with collection areas within 10 miles of the project boundaries and on similar terrain, soil, exposure, slope, and elevation to the project site.** **8. Soil Preparation: Soil descriptions, compaction measurements, mulch application, soil storage, seed farming, mycorrhizal inoculation, and biological crust collection and storage shall be conducted as described in Biological Resources Appendix B. Soil stockpiles shall not be placed on areas that support special-status plant species or other sensitive biological resources.** **9. Weed Management. Weed management activities needed to control weeds resulting from mirror washing shall be conducted as described in Biological Resources Appendix B.** **10. Final Closure Plan. A Final Closure Plan, which addresses the final revegetation and rehabilitation activities upon closure and decommissioning of the project, shall be completed as part of the revised Plan.** **The Final Closure Plan shall include a cost estimate, adjusted for inflation, reflecting the costs of the revegetation, rehabilitation, and monitoring for the duration of time estimated to achieve the objective of recreating plant communities impacted by the project** **11. The project owner shall implement the Closure, Revegetation, and Rehabilitation Plan, Revision 3, dated July 6, 2010, with the following modifications.** **a. The long-term soil stockpiles, as discussed in Table 5-2 of the Plan, shall be no higher than 6 feet.**	**See above sections**	In Progress				

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Biological Resources	BIO-14 (Continued-2)	**b. The Preliminary Seeding Plan for Short-Term Disturbed Areas, and to be used as the basis for the seeding during final project decommissioning, shall be based upon the species list provided in Table 7-1 of the Plan rather than the species list in Table 7-2. The list may be modified at the time of decommissioning based on seed availability. c. Concrete will be removed to a minimum depth of 6 feet unless it is shown that a particular area is prone to flood hazards and a greater depth for concrete removal should be required. All concrete removed shall be hauled off the project site and disposed of in an approved facility. Crushed concrete shall not be used as backfill on the site during decommissioning. d. Succulents salvaged during project construction shall not be sold by the project owner. Should excess succulents be removed that cannot be transplanted in the Succulent Nursery Area, their disposition will be managed by BLM.**	**See above sections**	In Progress					
Biological Resources	BIO-16	**5. Submit a Burrowing Owl Mitigation and Monitoring Plan to the CPM and CDFG for review and approval prior to relocation of owls (and incorporate it into the project's BRMIMP) as well as a construction termination report with results to CDFG and CPM 30 days after completing owl relocation and monitoring and at least 30 days prior to the start of commercial operation.**	**Within 30 days after completion of owl relocation and monitoring, and the start of ground disturbance or at least 90 days prior to the sale of power, the project owner shall provide to the CDFG, CPM and BLM a written construction termination report identifying how measures have been completed.**	Submitted	30 days after completion of project construction	6/30/2014; 7/1/2014			Construction Termination Report was submitted to CEC and BLM on 6/30/2014. Post-Construction Closure, Revegetation and Rehabilitation Plan Report was submitted on 7/1/2014.
Biological Resources	BIO-17	***Desert Tortoise Compensatory Mitigation:*** **To fully mitigate for habitat loss and potential take of desert tortoise, the project owner shall provide Compensatory Mitigation at a 3:1 ratio for impacts to 3,582 acres or the area disturbed by the final project footprint. At least two thirds of the 3:1 mitigation requirement shall be achieved by acquisition, in fee title or in easement, of no less than 7,146 acres of land suitable for desert tortoise or twice the area disturbed by the final project footprint. The Energy Commission's compensatory mitigation requirement consists of habitat acquisition at a 2:1 ratio as well as the BLM's 1:1 desert tortoise mitigation approach of habitat enhancement. The project owner shall provide financial Security as specified in this condition in an amount sufficient to ensure the entire 3:1 mitigation requirement, including acquisition, initial habitat improvements and long-term management for the compensation lands to be acquired and the mitigation to be provided through BLM. The 1:1 compensatory mitigation, that will satisfy both the BLM's mitigation requirements and a portion of the Energy Commission's mitigation requirements, shall be developed in accordance with BLM's desert tortoise mitigation requirements as described in the Northern and Eastern Mojave Desert Management Plan (BLM 2002). BLM's compensatory mitigation plan, serving as one third of the 3:1 mitigation ratio consists of desert tortoise habitat enhancement including installation of at least 50 miles of desert tortoise exclusion fencing on roadways in the Northeastern Mojave Recovery Unit, and habitat restoration of at least 50 routes within the Desert Wildlife Management Area. The project owner may elect to satisfy the requirements of this condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF) [Deposit of Funds to a NFWF Account] as described in #4 of this condition. The Energy Commission requirements for acquisition of 7,164 acres of compensation lands and habitat enhancements through BLM shall include all of the following: BLM's compensatory mitigation plan, serving as one third of the 3:1 mitigation ratio required to satisfy CESA, shall consist of desert tortoise habitat enhancement, including installation of at least 50 miles of desert tortoise exclusion fencing on roadways in the Northeastern Mojave Recovery Unit, and habitat restoration of at least 50 routes within the Desert Wildlife Management Area. Areas identified for fencing include: the boundary of the town**	**The Project owner shall provide the CPM with written notice prior to the start of ground-disturbing activities on the Project site. If purchase of 7,164 acres of mitigation lands as described in this condition, or as described in BIO-22 (phasing), is not completed prior to the start of ground disturbing activities, the Project owner shall provide the CPM with approved Security prior to the start of ground-disturbing activities. The Security shall be in accordance with Item # 4 of this condition and other requirements of this condition, allowing for either Acquisition of Mitigation Lands by the project owner or use of the NFWF Account to satisfy this condition, and with BIO-22 (phasing) if the project owner elects to use that option. If the project owner elects to Deposit Funds to the NFWF Account, it shall provide documentation of deposit of the required security to the REAT-NFWF Account prior to start of ground-disturbing activities on the project site. Within 6 months of the Energy Commission decision, the project owner shall provide to the CPM for review and approval a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount for the long-term maintenance fee to fund maintenance of the proposed enhancement actions (desert tortoise exclusion fencing and DWMA route restoration). The project owner shall deposit the long-term maintenance fee into the REAT-NFWF account or another third-party recipient acceptable to the CPM in consultation with CDFG and BLM within 18 months of the Energy Commission decision. Starting with the first year following construction and continuing for the duration of project impacts, the project owner shall provide to the CPM, BLM and CDFG an annual report describing: the results of the annual inspection of fencing and rehabilitated routes; a summary of fence repairs and maintenance of reclaimed routes completed during the year; and recommendations and a cost estimate for repairs and maintenance activities needed for the upcoming year.**	COMPLETED (CONSTRUCTION)	prior to ground disturbing activities	10/4/2010, Rev 1 June 2011			Under Review, ROW GRANT EXTENSION granted until Oct 7, 2013 ongoing negotiations. BLM granted 1 year extension to 10/07/2013

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Biological Resources	BIO-17 (Continued-1)	of Nipton, Nipton Road between the California-Nevada border and the junction of I-15, Ivanpah Road, Interstate 15 from Nipton Road to the Ivanpah Dry Lake, US Highway 95 through Piute Valley from the California-Nevada border to the town of Goffs, opr the boundary for the community of Goffs. Some of these roads (e.g. portions of Nipton Road and Ivanpah Road) may require fencing associated with the tortoise translocation plan. Any fencing deemed necessary for tortoise translocation would be above and beyond the 50 miles required by this mitigation measure. In lieu of acquiring lands and implementing habitat enhancement or rehabilitation activities itself, the project owner may satisfy the requirements of this condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF) in an amount equivalent to the sum of: 1) BLM's compensatory mitigation cost to cover the cost of fencing and route restoration, calculated using formulas for biological Resource Compensation/Mitigation Cost Estimate Breakdown for use with the REAT-NFWF Mitigation Account Table of Estimated Costs dated July 13, 2010; 2) the Energy Commission's Complementary Mitigation Security for acquisition; and 3) the Long-Term Maintenance of Fencing and Habitat Restoration Fee; and 3) the NFWF administrative fee calculation, as shown in the following table: Biological Resources Mitigation/Compensation Cost Estimate Table - July 13, 20101 corrected Desert Tortoise Compensation Number of Acres 3582 Estimated number of parcels to be acquired, at 40 acres per parcel2 90 Land cost at $1000/acre3 $ 3,582,000.00 Level 1 Environmental Site Assessment at $3000/parcel $ 270,000.00 Appraisal at no less than $5,000/parcel $ 450,000.00 Initial site work - clean-up, restoration or enhancement, at $250/acre4 $ 895,500.00 Closing and Escrow Cost at $5000/parcel5 $ 450,000.00 Biological survey for determining mitigation value of land (habitat based with species specific augmentation) at $5000/parcel $ 450,000.00	A minimum of three months prior to acquisition of the property, the project owner shall submit a formal acquisition proposal to the CPM, CDFG, USFWS and BLM describing the parcels intended for purchase. No later than 18 months following the publication of the Energy Commission Decision the project owner shall provide written verification to the CPM and CDFG that the Energy Commission compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient(s). The project owner, or an approved third party, shall complete and provide written verification of the proposed compensation lands acquisition within 18 months of the start of project ground disturbing activities. If NFWF or another approved third party is being used for the acquisition, the project owner shall ensure that funds needed to accomplish the acquisition are transferred in timely manner to facilitate the planned acquisition and to ensure the land can be acquired and transferred prior to the 18-month deadline. Within six months of the land or easement purchase, as determined by the date on the title, the project owner, or an approved third party, shall provide CDFG and the CPM with a management plan for the Energy Commission compensation lands and associated funds. The CPM shall review and approve the management plan, in consultation with CDFG, BLM and the USFWS. Within 90 days after completion of project construction, the project owner shall provide to the CPM and CDFG an analysis with the final accounting of the amount of habitat disturbed during project construction. If habitat disturbance exceeds 3,582 acres, the project owner shall provide a compensation plan to the CMP and CDFG for their review and approval, in consultation with CDFG, BLM and the USFWS. The compensation plan shall be submitted no later than 90 days from the CPM's receipt of the final accounting, and shall include a description of additional funds required or lands that must be purchased to compensate for the unanticipated habitat disturbances, and a schedule for that acquisition or funding inclusive of all associated long-term management and maintenance and enhancement costs.	Submitted	90 days after completion of project construction	29-Aug-2014			
Biological Resources	BIO-17 (Continued-2)	3rd Party Administrative Costs (Land Cost x 10%)6 $ 358,200.00 Agency cost to accept land donation7 (Land Cost x 15%) x 1.17 (17% of the 15% for overhead) $ 628,641.00 SUBTOTAL - Acquisition and Initial Site Work $ 7,084,341.00 Long-term Management and Maintenance Fund (LTMM) fee at $1450/acre 8 $ 5,193,900.00 NFWF Fees Establish Project Specific Account $ 12,000.00 NFWF Management fee[3] for Acquisition and Enhancement Actions (Subtotal x 3%) $ 212,530.23 NFWF Management Fee for LTMM account (LTMM x 1%) $ 51,939.00 Subtotal of NFWF Fees $ 276,469.23 TOTAL Estimated cost for deposit in project specific REAT-NFWF Account $ 12,554,710.23 acquisition of 7,164 acres of compensation lands and maintenance of fencing and habitat enhancements shall include the following: 1. Responsibility for Acquisition of Lands: The project owner may delegate its responsibility for acquisition of compensation lands to a third party, such as a non-governmental organization supportive of Mojave Desert habitat conservation. Such delegation shall be subject to approval in writing by the CPM, in consultation with BLM, CDFG and USFWS, prior to land acquisition, enhancement or management activities. If habitat disturbance exceeds that described in this analysis, the project owner shall be responsible for funding acquisition, habitat improvements and long-term management of additional compensation lands or additional funds required to compensate for any additional habitat disturbances. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat. Water and mineral rights shall be included as part of the land acquisition. Agreements to delegate land acquisition to CDFG or an approved third party and to manage compensation lands shall be implemented within 18 months of the Energy Commission's decision.	If the project owner elects to satisfy its mitigation obligations by paying an in-lieu fee instead of acquiring compensation lands, pursuant to Fish and Game code sections 2069 and 2099 or any other applicable in-lieu fee provision, the Project owner shall notify the Commission that it would like a determination that the Project's in-lieu fee proposal meets CEQA and CESA requirements. No more than 60 days prior to ground-disturbing project activities, the project owner shall provide to the CPM for review and approval a PAR or PAR-like analysis to establish the appropriate amount for the long-term maintenance fee to fund maintenance of the proposed enhancement actions (desert tortoise exclusion fencing and DWMA route restoration). No more than 30 days prior to ground-disturbing project activities, the project owner shall deposit the long-term maintenance fee to the REAT-NFWF account or another third-party recipient approved by the CPM in consultation with CDFG. Starting with the first year following construction and continuing for the duration of project impacts, the project owner shall provide to the CPM and CDFG an annual report describing: the results of the annual inspection of fencing and rehabilitated routes; a summary of fence repairs and maintenance of reclaimed routes completed during the year; and recommendations and a cost estimate for repairs and maintenance activities needed for the upcoming year. If the project owner elects to satisfy its mitigation obligations by paying an in-lieu fee instead of acquiring compensation lands, pursuant to Fish and Game code sections 2069 and 2099 or any other applicable in-lieu fee provision, the Project owner shall notify the Commission that it would like a determination that the Project's in-lieu fee proposal meets CEQA and CESA requirements.	IN PROGRESS	**Annually beginning January 2015**	1/30/2015; 1/29/2016; 1/27/2017			Submitted in the Annual Compliance Report. The construction of 50 Miles of Tortoise Fencing along Interstates 15 and 40 were completed on 3/18/2016. Annual inspection report will be submitted with the Annual Compliance Report.

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Biological Resources	BIO-18 (continued-1)	**3. Identify and Establish Special-Status Plant Protection Areas: The project owner shall identify Special-Status Plant Protection Areas for exclusion from the project footprint and avoidance of project-related impacts of any kind to facilitate achieving the 75 % protection goal. To accurately identify the boundaries of these areas, pre-construction floristic surveys shall be conducted by a qualified botanist at the appropriate time of year for special-status plant identification including both spring and summer/fall blooming periods. Summer/fall surveys will be conducted after rains that are likely to cause plant germination and may be suspended in years where no such rains occurs. The surveys shall encompass at a minimum the three areas totaling 476 acres and labelled "Rare Plant Mitigation Area" in Project Description Figure 13 and shall extend 150 feet on both sides of the proposed gas pipeline alignment and 250 feet out from the project fence line. The locations of the Special-Status Plant Protection Areas shall be clearly depicted on all final maps and project drawings and descriptions for exclusions of all project activities.**	**On January 31st of each year following construction the owner's qualified botanist shall submit a report, including CNDDB field survey forms, describing results of off-site plant surveys for Mojave milkweed and Rusby's desert-mallow to the BLM's authorized officer, the CPM, CDFG, and CNDDB. Submittal of survey reports shall continue for a maximum of 10 years until the same number of occurrences in the project area excluding the occurrences of Special-Status Plant Protection Areas.**	**ONGOING DURING OPERATIONS**	Annual Reporting required in the Annual Compliance Report Beginning Jan. 2015	2014 Annual Compliance Report was submitted on 1/30/2015; 1/29/2016; 1/27/2017			
Biological Resources	BIO-18 (continued-2)	**4. Protection of Adjacent Occurrences: The project owner shall identify special-status plants occurrences within 250 feet of the project fence line during the pre-construction plant surveys described above. A qualified botanist shall delineate the boundaries of these special status plant occurrences prior to the initiation of ground disturbing activities. These flagged special status plant occurrences shall be designated as Environmentally Sensitive Areas on plans and specifications, and shall be protected from accidental impacts during construction (e.g. vehicle traffic, temporary placement of soils or vegetation) and from the indirect impacts of project operation (e.g., herbicide spraying, changes in upstream hydrology, etc.).**	**The project owner's qualified botanist shall submit a completion report documenting fulfillment of target goals & which describe the number of new, previously undiscovered occurrences identified & mapped using GIS techniques for each species. Mapping results shall include GPS coordinates of the plants found.** **The DB shall maintain written & photographic records of the tasks described above, and summaries of these records shall be submitted along with the MCR to the CPM, BLM AA, and CDFG.** **During operation, the DB shall submit record summaries in the Annual Compliance Report for a period not < 10 years for the Gas Pipeline Revegetation Plan, and for the life of the project for the SSPP and Monitoring Plan, and the SSP Remedial Action Plan, including funding for the seed storage.** **No less than 90 days prior to acquisition of the parcel (s) containing or adjacent to a known Mojave milkweed occurrence, the project owner, or a third-party approved by the CPM, in consultation with CDFG, shall submit a formal acquisition proposal to the CPM and CDFG describing the parcel(s) intended for purchase.**	Approved **ONGOING DURING OPERATIONS**	Annually beginning January 2015	7/2/2010 (Gas Pipeline Plan) 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) . 2014 Annual Compliance Report was submitted on 1/30/2015; 1/29/2016; 1/27/2017	Nov 9, 2010 rev 0		6/18/10 Gas Pipeline Plan 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) Designated Biologist shall submit record summaries in the ACR beginning January 2015
Biological Resources	BIO-18 (continued-2a)	**5. Develop and Implement a Special-Status Plant Protection and Monitoring Plan: The project owner shall develop and implement a Special-Status Plant Protection and Monitoring Plan for special-status plants occurring within the Special-Status Plant Protection Areas and on-site areas designated for impact minimization. The goal of the Special-Status Plant Protection and Monitoring Plan shall be to maintain the special-status plant species as healthy, reproductive populations that can be sustained in perpetuity. At a minimum, the Special-Status Plant Protection and Monitoring Plan shall:** **• establish baseline conditions and numbers of the plant occurrences in all protected areas (i.e., those to be excluded from the footprint and on-site ares to be protected) and success standards for protection of special-status plant occurrences;** **• provide information about microhabitat preferences and fecundity, essential pollinators, reproductive biology, and propagation and culture requirements for each special-status species;** **• describe measures (e.g., fencing, signage) to avoid direct construction and operation impacts to special-status plants within all protected areas;** **• describe measures to avoid or minimize indirect construction and operations impacts to special-status plants within protected areas (e.g., runoff from mirror-washing, use of soil stabilizers/tackifiers, alterations of hydrology from drainage diversions, erosion/sedimentation from disturbed soils upslope, herbicide drift, the spread of non-native plants, etc.).** **• provide a monitoring schedule and plan for assessing the numbers and condition of special-status plants; and** **• identify specific triggers for remedial action (e.g., numbers of plants dropping below a threshold);**	**Draft agreements to delegate land acquisition to CDFG or an approved third party and agreements to manage compensation lands shall be submitted to Energy Commission staff for review and approval (in consultation with CDFG) prior to land acquisition. Such agreements shall be mutually approved and executed at least 60 days prior to start of any project-related ground disturbance activities. The project owner shall provide written** **verification to the CPM that the compensation lands have been acquired and recorded in favor of the approved recipient(s). Alternatively, before beginning project ground disturbing activities, the project owner shall provide Security in accordance with this condition. Within 90 days after the land purchase, as determined by the date on the title, the project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFG, for the compensation lands and associated funds.**	Approved **ONGOING DURING OPERATIONS**	Annually beginning January 2015	7/2/2010 (Gas Pipeline Plan) 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) . 2014 Annual Compliance Report was submitted on 1/30/2015; 1/29/2016; 1/27/2017	Nov 9, 2010 rev 0		6/18/10 Gas Pipeline Plan 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) Designated Biologist shall submit record summaries in the ACR beginning January 2015

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Biological Resources	BIO-18 (continued-3)	**6. Develop Special-Status Plant Remedial Action Plan: The project owner shall develop a detailed Special-Status Plant Remedial Action Plan to be implemented if special-status plants within the 476 acres of protected area and on-site minimization "halos" fail to meet success standards described in the Special-Status Plant Protection and Monitoring Plan. The Plant Remedial Action Plan shall include specifications for ex-situ/offsite conservation of seed and other propagules, and the seed bank and other symbionts contained in the topsoil where these plants occur. The remedial measures described in the Plant Remedial Action Plan shall not substitute for plant protection or other mitigation measures. The Special-Status Plant Remedial Action Plan shall include, at a minimum:** **• guidelines for pre-construction seed collection (and/or other propagules) for each species;** **• specifications for collecting, storing, and preserving the upper layer of soil containing seed and important soil organisms;** **• detailed replacement planting program with biologically meaningful quantitative and qualitative success criteria (see Pavlik 1996), monitoring specifications, and triggers for remedial action; and** **• ecological specifications for suitable planting sites.** **7. Seed Collection : Implementation of the Special-Status Plant Remedial Action Plan would require a source of local source of seeds/propagules. In addition, seed collection would serve to preserve germplasm in the event that all mitigation fails. The project owner shall develop and implement a Seed Collection Plan to collect and store seed for Mojave milkweed, Rusby's desert-mallow, desert pincushion, nine-awned pappus grass, and Parish's club-cholla. The source of these seeds shall be from plants proposed for removal within the project footprint. The project owner shall engage the services of a qualified contractor approved by the CPM to undertake seed collection and storage.**	**See above sections**	Approved **ONGOING DURING OPERATIONS**	Annually beginning Jan. 2015	7/2/2010 (Gas Pipeline Plan) 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) . 2014 Annual Compliance Report was submitted on 1/30/2015; 1/29/2016; 1/27/2017	Nov 9, 2010 rev 0		6/18/10 Gas Pipeline Plan 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) Designated Biologist shall submit record summaries in the ACR beginning January 2015
Biological Resources	BIO-18 (continued-4)	**8. Gas Pipeline Revegetation and Monitoring: In the natural gas pipeline construction corridor where disturbed soils will be revegetated, the topsoil excavated shall be segregated, kept intact, and protected, under conditions shown to sustain seed bank viability. At a minimum, the top 2 cm of the soil shall be separately stored and preserved. Topsoil salvage, storing, and replacement shall be replaced in its original vertical orientation following pipeline installation ensuring the integrity of the top 2 cm in particular. The project owner shall prepare a Gas Pipeline Revegetation and Monitoring Plan targeted at re-establishment of Rusby's desert-mallow, desert pincushion, Mojave milkweed, and potentially other special-status plant species. The Gas Pipeline Revegetation and Monitoring Plan shall identify success criteria for re-establishment and shall continue for a period of no less than 10 years until the defined success criteria are achieved. The Gas Pipeline Revegetation and Monitoring Plan shall include measures for seeding or other remedial actions. If no individuals of Rusby's desert-mallow, desert pincushion, or Mojave milkweed, are located during the first year of monitoring, the project owner shall conduct supplemental seeding or other remedial measures in the area disturbed by natural gas pipeline installation.**	**See above sections**	Approved **ONGOING DURING OPERATIONS**	Annually beginning January 2015	7/2/2010 (Gas Pipeline Plan) 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) . 2014 Annual Compliance Report was submitted on 1/30/2015; 1/29/2016	Nov 9, 2010 rev 0		6/18/10 Gas Pipeline Plan 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) Designated Biologist shall submit record summaries in the ACR beginning January 2015
Biological Resources	BIO-18 (continued-5)	**9. Surveys on Acquired and Public Lands: The project owner shall conduct floristic surveys for Rusby's desert-mallow and Mojave milkweed on all lands that will be acquired as part of the desert tortoise compensatory mitigation requirements (see Condition of Certification BIO-17). The goal of the surveys shall be to identify at least the same number of occurrences on off-site compensation or public lands as the number of occurrences in the project area excluding the occurrences in the Special-Status Plant Protection Areas in Project Description Figure 13. If this goal is not met by surveys on proposed acquisition lands, additional surveys shall be conducted within suitable habitat on public lands. To be counted toward fulfillment of the goal the occurrences must reflect new data not previously documented in other survey efforts. The survey requirements shall include the following:** **• All surveys shall be conducted by a qualified botanist in accordance with BLM, CDFG, and CNPS plant survey guidelines;** **• Surveys shall occur the first spring after construction begins and continue each year for a maximum of ten years until the same number of Mojave Milkweed and Rusby's desert-mallow occurrences are identified on acquisition lands and/or public lands as located outside Special-Status Plant Protection Areas;** **• For each year surveys are conducted yearly survey results shall be provided to the CPM, BLM's Authorized Officer and CDFG, and shall include CNDDB field survey forms for all special-status plant species encountered during the surveys; and** **• All field survey forms shall be submitted to the CNDDB at the time of submittal to the CPM, BLM and CDFG; and**	**See above sections**	Approved **ONGOING DURING OPERATIONS**	Annually beginning January 2015	7/2/2010 (Gas Pipeline Plan) 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) . 2014 Annual Compliance Report was submitted on 1/30/2015; 1/29/2016; 1/27/2017	Nov 9, 2010 rev 0		6/18/10 Gas Pipeline Plan 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) Designated Biologist shall submit record summaries in the ACR beginning January 2015

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Biological Resources	BIO-18 (continued-6)	**• The project owner's qualified botanist shall submit a completion report documenting fulfillment of the target goals and which describe the number of new, previously undiscovered occurrences identified and mapped. Locations shall be reported with GPS coordinates compatible with inclusion in a GIS database.** **10. Security for Implementation of Plans : The project owner shall provide security adequate to fund implementation of the Special-Status Plant Protection and Monitoring Plan, the the Special-Status Plant Remedial Action Plan for the life of the project, as well as the Seed Collection Plan, and the Gas Pipeline Revegetation Monitoring Plan.** **11. Acquire Off-Site Occurrence of Mojave Milkweed or Adjacent Land: The project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes at least 30 acres supporting a viable occurrence of Mojave milkweed (or suitable habitat adjacent to a known occurrence). The terms and conditions of this acquisition or easement shall be as described in Condition of Certification BIO-17with the additional criteria that the Mojave milkweed mitigation lands:** **1) provide habitat for the special-status plant species that is of similar or better quality (e.g., in terms of native plant composition) than that impacted; 2) contain OR abut a known occurrence of Mojave milkweed, ideally with populations that are stable, recovering, or likely to recover, that shares the same watershed as the land; and 3) be adequately sized and buffered to support self-sustaining special-status plant populations. These mitigation lands may be included with the desert tortoise mitigation lands ONLY if the above criteria are met. If sufficient new Mojave milkweed occurrences are discovered on desert tortoise compensation lands (not public lands) in accordance with item 9 above prior to acquiring this land, the associated security shall be refunded to the project owner.**	**See above sections**	Approved **ONGOING DURING OPERATIONS**	Annually beginning Jan. 2015	7/2/2010 (Gas Pipeline Plan) 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) . 2014 Annual Compliance Report was submitted on 1/30/2015; 1/29/2016; 1/27/2017	Nov 9, 2010 rev 0		6/18/10 Gas Pipeline Plan 11/1/2010 SS Plant Plan 11/10/2010 SS Plant Remedial Action Plan (Seed Collection Plan included) Designated Biologist shall submit record summaries in the ACR beginning January 2015 **The Mojave Milkweed Parcel (Hudgen's parcel) has been transferred to NPS on March 17, 2017.**
Biological Resources	BIO-19	***Nelson's Bighorn Sheep Mitigation:*** **To compensate for project impacts to Nelson's bighorn sheep the project owner shall finance, construct and manage an artificial water source in the eastern part of the Clark Mountain range or in the State Line Hills outside of designated Wilderness. The project owner shall monitor and control noxious and invasive weeds within 100 feet of the artificial water source. Control of weeds shall be coordinated with the CPM and BLM staff and shall consist of removal by mechanical methods, rather than herbicides. To minimize potential impacts to Nelson bighorn sheep, the project owner shall not use barbed wire fence on the northern perimeter of the Ivanpah 3 site, unless the project owner provides evidence that such fencing is essential for security reasons.**	**Within 60 days of publication of the Energy Commission Decision the project owner shall submit to the BLM's Authorized Officer, the CPM and CDFG a Draft Bighorn Sheep Mitigation Plan identifying a proposed location for the artificial water source and providing plans for its construction and management. At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide BLM's Authorized Officer and the CPM with the final version of the Bighorn Sheep Mitigation Plan that has been reviewed and approved by the CPM. BLM, and CDFG, BLM's Authorized Officer and the CPM will determine the plan's acceptability within 30 days of receipt of the final plan.** **No later than 18 months following the publication of the Energy Commission Decision, the project owner shall provide written verification to BLM's Authorized Officer and the CPM that the construction of the artificial water source has been completed. At the same time, the project owner shall provide evidence of an agreement (Memorandum of Understanding) and a funding mechanism to provide ongoing maintenance of the water source by CDFG or some other party approved by BLM's Authorized Office and the CPM.**	APPROVED **ANNUAL REPORTING BY SCBC DURING OPERATIONS**	60 days of publication of Energy Commission Decision; 60 days prior start of ground disturbance; 18 months following publication of Energy Commission Decision	7/30/2010; Jan 2012 Rev 1 submitted; 1/30/2015; 1/29/2016; 1/27/2017	2-Oct-2012		Rev 1 dated January 2012, Approved CEC 10/2/12 email The SCBC will provide the project owner an annual report no later than January 15th of each year, and the project owner will provide to the CEC and BLM the annual report no later than January 31st of each year. ISEGS reached out to SCBS and requested an annual report but no feedback was received from SCBS since 2014.
Biological Resources	BIO-20 (Continued-1)	**4. Right of Access and Review for Compliance Monitoring: The CPM reserves the right to enter the project site or allow CDFG to enter the project site at any time to ensure compliance with these conditions. The project owner herein grants to the CPM and to CDFG employees and/or their representatives the right to enter the project site at any time, to ensure compliance with the terms and conditions and/or to determine the impacts of storm events, maintenance activities, or other actions that might affect the restoration and revegetation efforts. The CPM and CDFG may, at the CPM's discretion, review relevant documents maintained by the operator, interview the operator's employees and agents, inspect the work site, and take other actions to assess compliance with or effectiveness of mitigation measures.** **5. Notification: The project owner shall notify the CPM and CDFG, in writing, at least five days prior to initiation of project activities in jurisdictional areas as noted and at least five days prior to completion of project activities in jurisdictional areas. The project owner shall notify the CPM and CDFG of any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts, if the conditions at the site of a proposed project change in a manner which changes risk to biological resources that may be substantially adversely affected by the proposed project. The notifying report shall be provided to the CPM and CDFG no later than seven days after the 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 notifying change of conditions report shall be included in the annual reports.*** **a. Biological Conditions: a change in biological conditions includes, but is not limited to, the following: 1) 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 2) the presence of biological resources within or adjacent to the project area, whether native or nonnative, 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.**	**No less than 90 days prior to acquisition of the parcel (s) containing 175 acres of waters of the state, the project owner, or a third-party approved by the CPM, in consultation with CDFG, shall submit a formal acquisition proposal to the CPM and CDFG describing the parcel(s) intended for purchase.** **Draft agreements to delegate land acquisition to CDFG or an approved third party and agreements to manage compensation lands shall be submitted to Energy Commission staff for review and approval (in consultation with CDFG) prior to land acquisition. Such agreements shall be mutually approved and executed at least 60 days prior to start of any project-related ground disturbance activities. The project owner shall provide written verification to the CPM that the compensation lands have been acquired and recorded in favor of the approved recipient(s).** **Alternatively, before beginning project ground disturbing activities, the project owner shall provide Security in accordance with this condition.** **Within 90 days after the land purchase, as determined by the date on the title, the project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFG, for the compensation lands and associated funds.** **No fewer than 30 days prior to the start of work potentially affecting waters of the state, the project owner shall provide written verification (i.e., through incorporation into the BRMIMP) to the CPM that the above best management practices will be implemented and provide a discussion of work in waters of the state in Compliance Reports for the duration of the project.**	ONGOING	90 days prior acquisition of parcels Annual submittal required in the Annual Compliance Report	Submitted JD to CDFG, CEC, RWQCB, and BLM on 6/8/2011; 1/30/2015; 1/29/2016; 1/27/2017			ongoing negotiations. BLM granted 1 year extension to 10/07/2013; The notifying change of conditions report was submitted in the annual compliance report.

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Biological Resources	BIO-21-CEC	***Avian and Bat Monitoring and Management Plan:*** **The Project owner shall prepare and implement an Avian and Bat Monitoring and Management Plan (Plan) to monitor death and injury of birds and bats from collisions with facility features including the solar receiver tower and reflective heliostat mirrors, and exposure to bright light and heat from concentrating sunlight. The Project owner shall use the monitoring data to inform and develop an adaptive management program that would avoid and minimize Project-related avian or bat impacts. Any Project-related bird or bat deaths or injuries shall be reported to the CPM, CDFG and USFWS, and then the CPM in consultation with CDFG and USFWS, shall then determine if the Project-related bird or bat deaths or injuries warrant implementation of adaptive management measures contained in the Plan. The study design for the Plan shall be approved by the CPM in consultation with CDFG and USFWS, and, once approved, shall be incorporated into the project's BRMIMP and implemented.** **During construction, bird and bat deaths or injuries shall be reported in the Monthly Compliance Report. For one year following the beginning of power plant operation, the Designated Biologist shall submit quarterly reports to the CPM, CDFG, and USFWS. describing the results of monitoring. The monthly and quarterly reports shall provide a detailed description of any Project-related bird or bat deaths or injuries detected during the monitoring study or at any other time, including describing the dates, species found injured or dead, where found, expected cause of injury or death, other appropriate results of monitoring, and a description of adaptive management measures proposed or implemented in accordance with any applicable CDFG or USFWS guidelines to avoid or minimize deaths or injuries. Following the completion of the fourth quarter of monitoring, the Designated Biologist shall prepare an Annual Report that summarizes the year's data, analyzes any Project-related bird fatalities or injuries detected, and provides recommendations for future monitoring and any adaptive management actions needed.**	**No later than January 31st of every year the Annual Report shall be provided to the CPM, CDFG, and USFWS. Quarterly reporting shall continue until the CPM, in consultation with CDFG and USFWS determine whether more years of monitoring are needed, and whether mitigation and adaptive management measures are necessary.**	ONGOING	Annually & Quarterly	Revised Spring & Summer 2014 Reports submitted on 12/16/2014; 1/30/2015; 4/20/2015; 8/14/2015; 12/23/2015; 3/16/2016; 6/30/2016; 9/30/2016; 10/4/2016; 6/16/2017; 6/16/2017			Revised Spring & Summer 2014 Reports submitted on 12/16/2014; 2013-2014 Annual Report and 2014 Fall Report submitted on 4/20/2015; 2013-2014 Winter Report submitted on 8/14/2015; 2015 Spring Report submitted on 12/23/2015; ABMP Rev. 13 submitted on 12/23/2015; 2015 Summer Report submitted on 3/16/2016; 2015 Annual Report submitted on 6/30/2016; 2016 Avian Report submitted on 9/30/2016 2015 Winter Report submitted on 10/4/2016; 2016 Summer and Fall Avian Reports submitted on 6/16/2017;
			After two years of data collection, the project owner or contractor shall prepare a report that describes the study design and monitoring results of the Avian and Bat Monitoring and Management Plan. The report shall be submitted to the CPM, CDFG and USFWS no later than the third year after onset of Project operation.	Upcoming	Upcoming in 2016	6/30/2016; 8/15/2017; 10/3/2017			ISEGS Avian & Bat Monitoring Plan 2014-2015 Annual Report was submitted on 6/30/2016 ISEGS Avian & Bat Monitoring Plan 2015-2016 Annual Report was submitted on 8/15/2017. Avian and Bat Monitoring and Management Plan Rev. 14 was submitted on 10/3/2017.
Biological Resources	BIO-22-CEC (continued-1)	**Overview of Project Phases** **Phase 1 includes the following components (1,282 acres):** **a. Fence Colosseum Road;** **b. Fence the Construction Logistics Area (CLA) and Construct Holding Pens in the CLA;** **c. Fence, Conduct Clearance Surveys, and Construct Ivanpah 1** **d. Fence Access Road and Power Block for Ivanpah 2, and Perform Construction Within Ivanpah 2 Power Block.** **Phase 1 would include 1,282 acres of desert tortoise mitigation, as well as 10 of the 30 acres of rare plant mitigation, and 58 of the 175 acres of state waters mitigation.**	**The Project Owner shall provide written verification to the CPM, CDFG, BLM and USFWS of the compensation lands acquisition, protection, and transfer requirements and satisfaction of associated funding requirements as set forth in BIO-17, BIO-18 and BIO-20 within the following time frames: (1) For Phase 1 mitigation, verification shall be provided no later than 18 months after the start of construction of Phase 1, and (2) for Phase 2 mitigation, such verification shall be provided no later than 18 months after the start of construction of Phase 2. Other verification, notification and reporting requirements and other deadlines set forth in BIO-17, BIO-18 and BIO-20 that relate to compensation land requirements, to the option of funding mitigation through the NFWF account, or to use of approved third parties to carry out mitigation requirements also apply to Phase 1 and to Phase 2.** **Within 90 days after completion of all project related ground disturbance for each project phase, the project owner shall provide to the CPM, CDFG, BLM and USFWS an analysis, based on aerial photography, with the final accounting of the amount of habitat disturbed during Project construction.**	Submitted	90 days after Project Completion	29-Aug-2014			
Biological Resources	BIO-22-CEC (continued-1)	**Phase 2 includes the following components (2,300 acres): a. Construct Ivanpah 2 – Consists of the diagonal access roads, perimeter road for fence, channel crossings as needed, and solar field including grading of approximately 90 acres in the southwest and central regions of the solar field area;** **b. Construct Ivanpah 3 - Consists of the diagonal access roads, perimeter road for fence, channel crossings as needed, power block, and solar field including grading of approximately 120 acres in the southern and western regions of the solar field area;** **c. Other external features including roads and gas line. Phase 2 would include 2,300 acres of desert tortoise mitigation, as well as 20 of the 30 acres of rare plant mitigation, and 117 of the 175 acres of state waters mitigation.** **General Requirements** **At no time may the project owner cause ground-disturbance to any location outside of the area that has been approved for construction according to the phasing plan identified in this Condition of Certification.**	**The Project Owner shall provide written verification to the CPM, CDFG, BLM and USFWS of the compensation lands acquisition, protection, and transfer requirements and satisfaction of associated funding requirements as set forth in BIO-17, BIO-18 and BIO-20 within the following time frames: (1) For Phase 1 mitigation, verification shall be provided no later than 18 months after the start of construction of Phase 1, and (2) for Phase 2 mitigation, such verification shall be provided no later than 18 months after the start of construction of Phase 2. Other verification, notification and reporting requirements and other deadlines set forth in BIO-17, BIO-18 and BIO-20 that relate to compensation land requirements, to the option of funding mitigation through the NFWF account, or to use of approved third parties to carry out mitigation requirements also apply to Phase 1 and to Phase 2.** **Within 90 days after completion of all project related ground disturbance for each project phase, the project owner shall provide to the CPM, CDFG, BLM and USFWS an analysis, based on aerial photography, with the final accounting of the amount of habitat disturbed during Project construction.**	Submitted	90 days after Project Completion	29-Aug-2014			Phase 1 and Phase 2 securities paid, Land Acquisition in progress

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Biological Resources	BIO-22-CEC (continued-2)	**Prior to initiating construction in either phase of the Project, the project owner shall comply with all pre-construction requirements in this and other Conditions of Certification and shall notify the CPM that it has obtained a Notice to Proceed for the particular phase from the BLM. Construction activities, including work on linear and non-linear features, shall not occur outside desert tortoise exclusion areas that have been fenced and cleared in accordance with USFWS protocols and as described in Condition of Certification BIO-8 (Desert Tortoise Clearance and Exclusion Fencing). The project owner shall provide security to ensure implementation of the mitigation requirements in Conditions of Certification BIO-17 (Desert Tortoise Compensatory Mitigation), BIO-18 (Special-Status Plant Impact Avoidance and Minimization) and BIO-20 (Streambed Impact Minimization and Compensation Measures) for each of the two phases prior to any project construction associated with that phase. Phasing of security only applies to security required by the Conditions listed above. If the project owner elects to phase payments of security under either a Project Owner Acquisition or NFWF option and if the commencement of construction is delayed beyond June 1, 2011, the amount of the security (including payments to NFWF if applicable [see definition of security above]) will be adjusted by the CPM in consultation with DFG, BLM and USFWS prior to each phase to reflect the CPM's best estimate at that time of the estimated costs of land acquisition, long-term management and maintenance costs, and other costs that are included in the security computation. Those costs may be greater than the costs identified in the conditions of certification.**	**See above sections**	Phase 1 and Phase 2 securities paid, Land Acquisition in progress	90 days after Project Completion	Rev. 2 submitted 6/28/2011			Phase 1 and Phase 2 securities paid, Land Acquisition in progress
Biological Resources	BIO-22-CEC (continued-3)	**Even when security has been provided, the project owner shall complete the acquisition, protection and transfer of all compensation lands required in the conditions of certification listed above, as well as all funding requirements associated with those lands, within the time periods identified in those conditions of certification. Additional requirements within the project's conditions of certification that are not expressly phased in this condition shall be phased as necessary to carry out the purpose of this condition, and to ensure that no project construction occurs in an area for which the project owner has not provided security and obtained permission to begin construction. Examples may include such activities as construction and location of desert tortoise exclusion fencing or timing of preconstruction clearance surveys for other species. The project owner shall first obtain approval from the CPM, acting in consultation with BLM, CDFG and USFWS, for the phasing of any requirements or deadlines that are not expressly phased in conditions of certification. Security for phased construction shall be in the amounts as specified in Conditions of Certification BIO-17, -18 and -20, and may be adjusted by the CPM in consultation with DFG, BLM and USFWS based upon more accurate information provided by the project owner confirming the acreages described in this table, and on updates from the REAT agencies with more current guidance than the Desert Renewable Energy REAT Biological Resource Compensation/Mitigation Cost Estimate Breakdown for use with the REAT-NFWF Mitigation Account, July 23, 2010.**	**See above sections**	Phase 1 and Phase 2 securities paid, Land Acquisition in progress	90 days after Project Completion	Rev. 2 submitted 6/28/2011			Phase 1 and Phase 2 securities paid, Land Acquisition in progress
Biological Resources	BIO-23- BLM	**The applicant shall conduct visual biweekly surveys for bird and bat mortalities throughout the project site. In addition to the photo documentation of bird mortalities (Item #14 in BIO-11), mortalities and injuries to bats and other wildlife shall be photo documented. Additionally, data would document the species affected and any overt signs of injury resulting in death (e.g., scorched feathers). This information would be compiled and provided to the BLM on quarterly intervals for the first three years, then annually thereafter, unless otherwise requested by the BLM. This data would add to the understanding of impacts of solar facilities on avian and bat species. BLM would maintain the authority to require additional mitigation of the applicant in the future to reduce collision or heat-related injuries.** **Effectiveness: This mitigation would be highly effective in documenting avian and bat mortalities associated with the operation of the facility. If sufficient data are gathered to support the need for additional mitigation, the mitigation may ultimately be effective in reducing avian and bat injuries and mortalities if an effective mitigation measure can be identified in the future.**	**No Verification: see Effectiveness**	Ongoing	Quarterly	Revised Spring & Summer 2014 Reports submitted on 12/16/2014; 1/30/2015; 4/20/2015; 8/14/2015; 12/23/2015; 3/16/2016; 6/30/2016; 9/30/2016; 10/4/2016; 6/16/2017; 6/16/2017			Revised Spring & Summer 2014 Reports submitted on 12/16/2014; 2013-2014 Annual Report and 2014 Fall Report submitted on 4/20/2015; 2013-2014 Winter Report submitted on 8/14/2015; 2015 Spring Report submitted on 12/23/2015; ABMP Rev. 13 submitted on 12/23/2015; 2015 Summer Report submitted on 3/16/2016; 2015 Annual Report submitted on 6/30/2016; 2016 Avian Report submitted on 9/30/2016 2015 Winter Report submitted on 10/4/2016; 2016 Summer and Fall Avian Reports submitted on 6/16/2017;
Biological Resources	BIO-25-BLM	**The applicant shall monitor and control noxious and invasive weeds within 100 feet of the artificial water source. Control of weeds shall be coordinated with the BLM staff and shall consist of removal by mechanical methods, rather than herbicides.** **Effectiveness: This mitigation measure would be moderately effective in controlling noxious and invasive weeds near the artificial water source, providing better access to the site by big game.**	**No Verification: see Effectiveness**	Ongoing	N/A				

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Biological Resources	BIO-26-BLM	**The applicant shall implement all mitigation identified by the USFWS in the Biological Opinion.** **Effectiveness: This measure would be highly effective in ensuring mitigation within the USFWS' Biological Opinion was implemented.**	**No Verification: see Effectiveness**	Ongoing	N/A				
Biological Resources	BIO-27-BLM	**The project owner shall implement the Closure, Revegetation, and Rehabilitation Plan, Revision 3, dated July 6, 2010, with the following modifications.** **1. The long-term soil stockpiles, as discussed in Table 5-2 of the plan, will be no higher than 6 feet high.** **2. The Preliminary Seeding Plan for Short-Term Disturbed Areas, and to be used as the basis for the seeding during final project decommissioning, will be based upon the species list provided in Table 7-1 of the plan, rather than the species list in Table 7-2. The list may be modified at the time of decommissioning based on seed availability.** **3. Concrete will be removed to a minimum depth of 6 feet unless it is shown that a particular area is prone to flood hazards and a greater depth for concrete removal should be required. All concrete removed shall be hauled off the project site and disposed of in an approved facility. Crushed concrete will not be used as backfill on the site during decommissioning.** **4. Succulents salvaged during project construction will not be sold by the applicant. Should excess succulents be removed that cannot be transplanted in the Succulent Nursery Area, their disposition will be managed by BLM.** **Effectiveness: This measure modifies Revision 3 of the Closure, Revegetation, and Rehabilitation Plan to incorporate procedures which will increase the probability of successful site rehabilitation.**	**No Verification: see Effectiveness**	In Progress	N/A				
Biological Resources	BIO-28-BLM	**Compliance with Eagle Act. USFWS has notified BLM that due to the proximity of known occupied golden eagle territories, and that the effects of power towers on bald and golden eagles is unknown, this project has the potential to take an eagle. Due to the distance of the project site to known eagle territories, available mitigation measures (some of which are already described in other measures identified in this section), and habitat compensation associated with other species (i.e. desert tortoise), USFWS believes that this project can reach the "no net loss" standard for golden eagles identified in the Eagle Act Rule if the applicant submits and implements an Avian Protection Plan. The holder shall submit an Avian Protection Plan for approval of the Authorized Officer within 6 months of the issuance of any ROW grant for the project. The Avian Protection Plan must be implemented within one year from the date of any ROW grant Notice to Proceed.**	**No Verification: see Avian Protection Plan submittal**	Submitted	N/A	Draft Submitted Sept 2010; Revision 1 Submitted October 2010; Revision 2 Submitted May 2011			
Compliance Conditions	COMP-01	**Unrestricted Access: BLM's Authorized Officer, responsible BLM staff, the CPM, responsible Energy Commission staff, and delegated agencies or consultants shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on-site, for the purpose of conducting audits, surveys, inspections, or general site visits. Although BLM's Authorized Officer and the CPM will normally schedule site visits on dates and times agreeable to the project owner, BLM's Authorized Officer and the CPM reserve the right to make unannounced visits at anytime.**		ONGOING	N/A				
Compliance Conditions	COMP-02	**<u>Compliance Record:</u> The project owner shall maintain project files on-site or at an alternative site approved by BLM's Authorized Officer and the CPM for the life of the project, unless a lesser period of time is specified by the conditions of certification. The files shall contain copies of all "as-built" drawings, documents submitted as verification for conditions, and other project-related documents. As-built drawings of all facilities including linear facilities shall be provided to the BLM Authorized Officer for inclusion in the BLM administrative record within 90-days of completion of that portion of the facility or project.** **BLM and Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.**		SUBMITTED	90 days of completion of that portion of the facility or project	8-Dec-2014			Electronic copies of the final approved engineering plans were hand-delivered by Doug Davis to CEC on 12/8/2014.

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Compliance Conditions	COMP-03	**Compliance Verification Submittals: Each condition of certification is followed by a means of verification. The verification describes the Energy Commission's procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified as necessary by BLM's Authorized Officer and the CPM. Verification of compliance with the conditions of certification can be accomplished by the following:** **1. Monthly and/or annual compliance reports, timely filed by the project owner or authorized agent, reporting on work done and providing pertinent documentation, as required by the specific conditions of certification;** **2. Appropriate letters from delegate agencies verifying compliance;** **3. BLM and Energy Commission staff audits of project records; and/or** **4. BLM and Energy Commission staff inspections of work, or other evidence that the requirements are satisfied.** **Verification lead times associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.** **A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. The cover letter subject line shall identify the project by AFC number, the appropriate condition(s) of certification by condition number(s), and a brief description of the subject of the submittal. The project owner shall also identify those submittals not required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal and BLM/CEC submittal number.**		ONGOING	N/A	1/30/2015; 1/29/2016; 1/27/2017			Verification of compliance with the conditions of certification are submitted with the Annual Compliance Report.
Compliance Conditions	COMP-03 (Continued)	**The project owner is responsible for the delivery and content of all verification submittals to the BLM's Authorized Officer and CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.** **All hardcopy submittals shall be addressed to each of the following:** **BLM's Authorized Officer** **Compliance Project Manager** **(CACA-48668, 49502, 49503, and 49504)** **(07-AFC-5C)** **U.S. Bureau of Land Management** **California Energy Commission** **1303 South Highway 95** **1516 Ninth Street (MS-2000)** **Needles, CA 92363** **Sacramento, CA 95814** **Those submittals shall be accompanied by a searchable electronic copy, on a CD or by e-mail, as agreed upon by BLM's Authorized Officer and the CPM.** **If the project owner desires BLM and/or Energy Commission staff action by a specific date, that request shall be made in the submittal cover letter and shall include a detailed explanation of the effects on the project if that date is not met.**		ONGOING	N/A	1/30/2015; 1/29/2016; 1/27/2017			Verification of compliance with the conditions of certification are submitted with the Annual Compliance Report.
Compliance Conditions	COMP-04 (Continued)	**If the project owner anticipates commencing project construction as soon as the project is certified, it may be necessary for the project owner to file compliance submittals prior to project certification.** **Compliance submittals should be completed in advance where the necessary lead time for a required compliance event extends beyond the date anticipated for start of construction. The project owner must understand that the submittal of compliance documents prior to project certification is at the owner's own risk. Any approval by Energy Commission staff is subject to change, based upon BLM's ROW Grant and the Energy Commission Decision.** **Compliance Reporting** **There are two different compliance reports that the project owner must submit to assist BLM's Authorized Officer and the CPM in tracking activities and monitoring compliance with the terms and conditions of BLM's ROW Grant and the Energy Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to BLM's Authorized Officer and the CPM in the monthly or annual compliance reports.**		Approved - COMPLETED (CONSTRUCTION) **ONGOING DURING OPERATIONS**	**Annually beginning Jan. 2015**	5/14/2010 (draft) 6/4/2010 (final). Annual Compliance Report was submitted on 1/30/2015; 1/29/2016; 1/27/2017	2-Sep-2010		The first Annual Compliance Report was be submitted on January 2015.

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Compliance Conditions	COMP-07	**Annual Compliance Report: After construction of each power plant is complete or when a power plant goes into commercial operation, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to BLM's Authorized Officer and the CPM each year at a date agreed to by BLM's Authorized Officer and the CPM. Annual Compliance Reports shall be submitted over the life of the project unless otherwise specified by BLM's Authorized Officer and the CPM. Each Annual Compliance Report shall include the AFC number, identify the reporting period and shall contain the following:** **1. An updated compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);** **2. A summary of the current project operating status and an explanation of any significant changes to facility operations during the year;** **3. Documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter, with the condition it satisfies, and submitted as attachments to the Annual Compliance Report;** **4. A cumulative listing of all post-certification changes by the Energy Commission or changes to the BLM ROW grant or approved POD by BLM , or cleared by BLM's Authorized Officer and the CPM;** **5. An explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;** **6. A listing of filings submitted to, or permits issued by, other governmental agencies during the year;** **7. A projection of project compliance activities scheduled during the next year;** **8. A listing of the year's additions to the on-site compliance file;** **9. An evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions necessary for bringing the plan up to date [see Compliance Conditions for Facility Closure addressed later in this section]; and** **10. A listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved matters, and the status of any unresolved matters**	**After construction of each power plant is complete or when a power plant goes into commercial operation, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to BLM's Authorized Officer and the CPM each year at a date agreed to by BLM's Authorized Officer and the CPM. Annual Compliance Reports shall be submitted over the life of the project unless otherwise specified by BLM's Authorized Officer and the CPM.**	IN PROGRESS	Annually Report for Unit 1 System estimated due date April 2014 1 year from start-up scheduled for April 2013; **ANNUALLY BEGINNING JAN. 2015**	**Annual Compliance Report was submitted on 1/30/2015. 1/29/2016; 1/27/2017**			The first Annual Compliance Report was be submitted on January 2015.
Compliance Conditions	COMP-08	**Confidential Information: Any information that the project owner deems confidential shall be submitted to the Energy Commission's Dockets Unit with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information that is determined to be confidential shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq. Any information the ROW holder deems confidential shall be submitted to the BLM Authorized Officer with a written request for said confidentiality along with a justification for the request. All confidential submissions to BLM should be clearly stamped "proprietary information" by the holder when submitted.**		IN PROGRESS	As Needed	21-Jun-2016			Application for Confidential Designation - Root Cause Analysis for Unit 3 Fire Damage was submitted on 6/21/2016.
Compliance Conditions	COMP-09	**Annual Facility Compliance Fee: Pursuant to the provisions of Section 25806(b) of the Public Resources Code, the project owner is required to pay the Energy Commission an annual compliance fee, which is adjusted annually. The amount of the fee for FY2009-2010 was $19,823. The initial payment is due on the date the Energy Commission adopts the final decision. You will be notified of the amount due. All subsequent payments are due by July 1 of each year in which the facility retains its certification. The payment instrument shall be made payable to the California Energy Commission and mailed to: Accounting Office MS-02, California Energy Commission, 1516 9th St., Sacramento, CA 95814.**		ONGOING	Annually - on or before July 1st	7/1/2014; 7/1/2015; 7/1/2016; 7/1/2017			**Paid annual compliance fee to CEC**
Compliance Conditions	COMP-10	**Reports of Complaints, Notices, and Citations: Prior to the start of construction, the project owner must send a letter to property owners living within one mile of the project notifying them of a telephone number to contact project representatives with questions, complaints or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering with date and time stamp recording. All recorded complaints shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during construction and operation. The telephone number shall be provided to BLM's Authorized Officer and the CPM who will post it on the Energy Commission's web page at:** **http://www.energy.ca.gov/sitingcases/power_plants_contacts.html** **Any changes to the telephone number shall be submitted immediately to BLM's Authorized Officer and the CPM, who will update the web page.** **In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies to BLM's Authorized Officer and the CPM of all complaint forms, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the NOISE conditions of certification. All other complaints shall be recorded on the complaint form (Attachment A).**		Approved - COMPLETED (CONSTRUCTION) **IN PROGRESS DURING OPERATIONS**	within 10 days of receipt of complaints	10/7/2010; Pilot Report ACN 1238677 was submitted to CEC/BLM on 5/5/2015; Notice of Violation (NOV) from SBC CUPA was submitted to CEC/BLM on 8/4/2016; Response to Glare complaint Pilot Report ACN 1390751 was submitted to CEC/BLM/FAA on 11/10/2016.	10/7/2010; 5/5/2015;		ISEGS did not receive pilot glare complaints in 2017

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Compliance Conditions	COMP-10 (Continued)	**FACILITY CLOSURE** **At some point in the future, the project will cease operation and close down. At that time, it will be necessary to implement the Closure, Revegetation and Restoration Plan to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. Laws, Ordinances, Regulations and Standards (LORS) pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure. Closure would be conducted in accordance with Condition of Certification BIO-14 that requires the project owner to develop and implement a Closure, Revegetation and Rehabilitation Plan. There are at least three circumstances in which a facility closure can take place: planned closure, unplanned temporary closure and unplanned permanent closure.**		Approved - COMPLETED (CONSTRUCTION) **IN PROGRESS DURING OPERATIONS**	within 10 days of receipt of complaints	7-Oct-2010	7-Oct-2010		
Compliance Conditions	COMP-10 (Continued-1)	**CLOSURE DEFINITIONS** **Planned Closure** **A planned closure occurs when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.** **Unplanned Temporary Closure** **An unplanned temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster or an emergency.** **Short-term is defined as cessation of construction activities or operations of a power plant for a period less than 6 months long. Cessation of construction of operations for a period longer than 6 months in considered a permanent closure.** **Unplanned Permanent Closure** **An unplanned permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unplanned closure where the owner implements the on-site contingency plan. It can also include unplanned closure where the project owner fails to implement the contingency plan, and the project is essentially abandoned.**		Approved - COMPLETED (CONSTRUCTION) **IN PROGRESS DURING OPERATIONS**	within 10 days of receipt of complaints	7-Oct-2010	7-Oct-2010		
Compliance Conditions	COMP-11	**Planned Closure: In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure, will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a revision or update to the approved Closure, Revegetation and Rehabilitation Plan to BLM and the Energy Commission for review and approval at least 12 months (or other period of time agreed to by BLM's Authorized Officer and the CPM) prior to commencement of closure activities. The project owner shall file 50 copies and 50 CDs with the Energy Commission and 10 copies and 10 CDs with BLM (or other number of copies agreed upon by BLM's Authorized Officer and the CPM) of a proposed facility closure plan/Closure, Revegetation and Rehabilitation Plan. The plan shall:** **1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related materials that must be removed from the site;** **2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;**		Not Yet Started	12 months prior to commencement of closure activities				Submission not required at this time
Compliance Conditions	COMP-11 (Continued-1)	**3. address conformance of the plan with all applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of facility closure, and applicable conditions of certification; and.** **4. Address any changes to the site revegetation, rehabilitation, monitoring and long-term maintenance specified in the existing plan that are needed for site revegetation and rehabilitation to be successful.** **Prior to submittal of an amended or revised Closure, Revegetation and Restoration Plan, a meeting shall be held between the project owner, BLM's Authorized Officer and the Energy Commission CPM for the purpose of discussing the specific contents of the plan. In the event that there are significant issues associated with the proposed facility Closure, Revegetation and Restoration plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, BLM's Authorized Officer the CPM shall hold one or more workshops and/or BLM and the Energy Commission may hold public hearings as part of its approval procedure.** **As necessary, prior to or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities until BLM and the Energy Commission approves the facility Closure, Revegetation and Restoration plan.**		Not Yet Started	12 months prior to commencement of closure activities				Submission not required at this time

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Compliance Conditions	COMP-12	**Unplanned Temporary Closure/On-Site Contingency Plan: In order to ensure that public health and safety and the environment are protected in the event of an unplanned temporary facility closure, it is essential to have an On-Site Contingency Plan in place. The On-Site Contingency Plan will help to ensure that all necessary steps to mitigate public health and safety impacts and environmental impacts are taken in a timely manner.** **The project owner shall submit an On-Site Contingency Plan for BLM's Authorized Officer and CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by BLM's Authorized Officer and the CPM) after approval of any NTP or letter granting approval to commence construction for each phase of construction. A copy of the approved plan must be in place during commercial operation of the facility and shall be kept at the site at all times.** **The project owner, in consultation with BLM's Authorized Officer and the CPM, will update the On-Site Contingency Plan as necessary. BLM's Authorized Officer and the CPM may require revisions to the On-Site Contingency Plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the On-Site Contingency Plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by BLM's Authorized Officer and the CPM.**		Submitted - COMPLETED (CONSTRUCTION)	60 days after approval of any NTP or letter granting approval to commence work.	31-Jan-2011			
Compliance Conditions	COMP-12 (Continued)	**The On-Site Contingency Plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days, unless other arrangements are agreed to by BLM's Authorized Officer and the CPM, the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment, and the safe shutdown of all equipment. (Also see specific conditions of certification for the technical areas of Hazardous Materials Management and Waste Management.)** **In addition, consistent with requirements under unplanned permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the On-Site Contingency Plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.** **In the event of an unplanned temporary closure, the project owner shall notify BLM's Authorized Officer and the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the On- Site Contingency Plan. The project owner shall keep BLM's Authorized Officer and the CPM informed of the circumstances and expected duration of the closure.** **If BLM's Authorized Officer and the CPM determine that an unplanned temporary closure is likely to be permanent, or for a duration of more than 6 months, a Closure Plan consistent with the requirements for a planned closure shall be developed and submitted to BLM's Authorized Officer and the CPM within 90 days of BLM's Authorized Officer and the CPM's determination (or other period of time agreed to by BLM's Authorized Officer and the CPM).**		Submitted - COMPLETED (CONSTRUCTION)	60 days after approval of any NTP or letter granting approval to commence work.	31-Jan-2011			
Compliance Conditions	COMP-14	**Post Certification Changes to BLM's ROW Grant and/or the Energy Commission Decision: Amendments, Ownership Changes, Insignificant Project Changes and Verification Changes: The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, in order to modify the project (including linear facilities) design, operation or performance requirements, and to transfer ownership or operational control of the facility. The BLM ROW holder must file a written requests in the form an an application to the BLM Authorized Officer in order to change the terms and conditions of their ROW grant or POD. Written requests will be in a manner prescribed by the BLM Authorized Officer.** **It is the responsibility of the project owner to contact BLM's Authorized Officer and the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769. Implementation of a project modification without first securing BLM and either Energy Commission or Energy Commission staff approval, may result in enforcement action in accordance with section 25534 of the Public Resources Code.** **A Petition to Amend is required for changes to the project as specified below. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to BLM's Authorized Officer and the CPM, who will file it with the Energy Commission's Dockets Unit in accordance with Title 20, California Code of Regulations, section 1209.** **The criteria that determine which type of approval and the process that applies are explained below. They reflect the provisions of Section 1769 at the time this condition was drafted. If the Commission's rules regarding amendments are amended, the rules in effect at the time an amendment is requested shall apply.**		As needed	As needed				

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Compliance Conditions	COMP-14 (Continued)	**Amendment - The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, Section 1769(a), when proposing modifications to the project (including linear facilities) design, operation, or performance requirements. If a proposed modification results in deletion or change of a condition of certification, or makes changes that would cause the project not to comply with any applicable laws, ordinances, regulations or standards, the petition will be processed as a formal amendment to the Energy Commission's final decision, which requires public notice and review of the BLM-Energy Commission staff analysis, and approval by the full Energy Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(a). Upon request, the CPM will provide you with a sample petition to use as a template. The ROW holder shall file an application to amend the BLM ROW grant for any substantial deviation or change in use. The requirements to amend a ROW grant are the same as when filing a new application including paying processing and monitoring fees and rent.**		As needed	As needed	See amendments under specific condition			
Compliance Conditions	COMP-14 (Continued-1)	**Change of Ownership** **Change of Ownership - Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769(b). This process requires public notice and approval by the full Commission and BLM. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(b). Upon request, the CPM will provide you with a sample petition to use as a template. The transfer of ownership of a BLM ROW grant must be through the filing of an application for assignment of the grant.** **Insignificant Project Change - Insignificant Project Change Modifications that do not result in deletions or changes to conditions of certification, and that are compliant with laws, ordinances, regulations and standards may be authorized by BLM's Authorized Officer and the CPM as an insignificant project change pursuant to section 1769(a) (2). This process usually requires minimal time to complete, and it requires a Energy Commission 14-day public review of the Notice of Insignificant Project Change that includes the BLM and Energy Commission staff's intention to approve the modification unless substantive objections are filed. These requests must also be submitted in the form of a "Petition to Amend" as described above. BLM and the Energy Commission intend to integrate a process to jointly approve insignificant project changes to avoid duplication of approval processes and ensure appropriate documentation for the public record.** **Verification Change - A verification change may be modified by the BLM's Authorized Officer and the without requesting an amendment to the ROW Grant or Energy Commission decision if the change does not conflict with the conditions of certification and provides an effective alternate means of verification.**		As needed	As needed	See amendments under specific condition			
Cultural Resources	CUL-10	**If fill soils must be acquired from a non-commercial borrow site or disposed of to a non-commercial disposal site, unless less-than-five-year-old surveys of these sites for archaeological resources are documented to and approved by the BLM's Authorized Officer and the CPM, the CRS shall survey the borrow and/or disposal site(s) for cultural resources and record on DPR 523 forms any that are identified. When the survey is completed, the CRS shall convey the results and recommendations for further action to the project owner, the BLM's Authorized Officer, and the CPM, who will determine what, if any, further action is required. If the BLM's Authorized Officer and the CPM determine that significant archaeological resources that cannot be avoided are present at the borrow site, all these conditions of certification shall apply. The CRS shall report on the methods and results of these surveys in the CRR.**	**1. As soon as the project owner knows that a non-commercial borrow site and/or disposal site will be used, he/she shall notify the CRS and CPM and provide documentation of previous archaeological survey, if any, dating within the past five years, for CPM approval.** **2. In the absence of documentation of recent archaeological survey, at least 30 days prior to any soil borrow or disposal activities on the noncommercial borrow and/or disposal sites, the CRS shall survey the site/s for archaeological resources. The CRS shall notify the project owner, the BLM's Authorized Officer, and the CPM of the results of the cultural resources survey, with recommendations, if any, for further action.**	Ongoing	As needed				
Facility Design	GEN-1	**The project owner shall design, construct, and inspect the project in accordance with the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering LORS in effect at the time initial design plans are submitted to the chief building official (CBO) for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that all the provisions of the above applicable codes are enforced during the construction, addition, alteration, moving, demolition, repair, or maintenance of the completed facility (2007 CBC, Appendix Chapter 1, section 101.2, Scope). All transmission facilities (lines, switchyards, switching stations, and substations) are covered in the Conditions of Certification in the Transmission System Engineering section of this document.** **In the event that the initial engineering designs are submitted to the CBO when the successor to the 2007 CBSC is in effect, the 2007 CBSC provisions shall be replaced with the applicable successor provisions.** **Where, in any specific case, different sections of the code specify different materials, methods of construction, or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.** **The project owner shall ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed and materials supplied comply with the codes listed above.**	**Within 30 days following receipt of the certificate of occupancy, the project owner shall submit to BLM's Authorized Officer and the Compliance Project Manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation, and inspection requirements of the applicable LORS and the Energy Commission's decision have been met in the area of facility design. The project owner shall provide BLM's Authorized Officer and the CPM a copy of the certificate of occupancy within 30 days of receipt from the CBO (2007 CBC, Appendix Chapter 1, section 110, Certificate of Occupancy).** **Once the certificate of occupancy has been issued, the project owner shall inform BLM's Authorized Officer and the CPM at least 30 days prior to any construction, addition, alteration, moving, demolition, repair, or maintenance to be performed on any portion(s) of the completed facility that requires CBO approval for compliance with the above codes. BLM's Authorized Officer and the CPM will then determine if the CBO needs to approve the work.**	Completed	30 days following receipt of the certificate of occupancy	1/22/2015; Notified CEC/BLM on 4/27/2016 for repair/replacement of Unit 2 STG Stator Active Parts.			**The Certificate of Occupancy was issued by CEC/CBO on January 21, 2015.** **The Certificate of Occupancy was submitted to BLM on 1/22/2015.**

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Facility Design	GEN-8	**The project owner shall obtain the CBO's final approval of all completed work that has undergone CBO design review and approval. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. The project owner shall notify BLM's Authorized Officer and the CPM after obtaining the CBO's final approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site or at an alternative site approved by BLM's Authorized Officer and the CPM during the operating life of the project (2007 CBC, Appendix Chapter 1, section 106.3.1, Approval of Construction Documents). Electronic copies of the approved plans, specifications, calculations, and marked-up as-builts shall be provided to the CBO for retention by BLM's Authorized Officer and the CPM.**	**Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to BLM's Authorized Officer and the CPM, in the next monthly compliance report, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans.** After storing the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to BLM's Authorized Officer and the CPM a letter stating both that the above documents have been stored and the storage location of those documents. **Within 90 days of the completion of construction, the project owner shall provide to the CBO three sets of electronic copies of the above documents at the project owner's expense. These are to be provided in the form of "read only" (Adobe .pdf 6.0) files, with restricted (password-protected) printing privileges, on archive quality compact discs.**	COMPLETED (CONSTRUCTION) **SUBMITTED**	within 15 days of completion of any work; **within 90 days of completion of construction**	**8-Dec-2014**			**Electronic copies of the final approved engineering plans were hand-delivered by Doug Davis to CEC on 12/8/2014.**
Hazardous Materials	HAZ-1	**The project owner shall not use any hazardous materials not listed in Hazardous Materials Appendix A, below, or in greater quantities than those identified by chemical name in Hazardous Materials Appendix A, unless approved in advance by the BLM's Authorized Officer and Compliance Project Manager (CPM).**	**The project owner shall provide to BLM's Authorized Officer and the CPM in the Annual Compliance Report, a list of hazardous materials contained at the facility.**	ONGOING - ANNUALLY	ANNUALLY - To be submitted with the ACR	1/30/2015; 1/29/2016; 1/27/2017			Submitted in the Annual Compliance Report
Hazardous Materials	HAZ-2	**The project owner shall concurrently provide a Hazardous Materials Business Plan to the Hazardous Materials Division of the County of San Bernardino Fire Department, BLM's Authorized Officer and the CPM for review. After receiving comments from the Hazardous Materials Division of the County of San Bernardino Fire Department, BLM's Authorized Officer and the CPM, the project owner shall reflect all received recommendations in the final documents. If no comments are received from the county within 30 days of submittal, the project owner may proceed with preparation of final documents upon receiving comments from BLM's Authorized Officer and the CPM. . Copies of the final Hazardous Materials Business Plan shall then be provided to the Hazardous Materials Division of the County of San Bernardino Fire Department for information and to the BLM's Authorized Officer and CPM for approval.**	**At least 60 days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Hazardous Materials Business Plan to BLM's Authorized Officer and the CPM for approval.**	COMPLETED (CONSTRUCTION) **ONGOING COMPLIANCE DURING OPERATIONS**	60 days prior receiving any hazardous material on the site	9/26/2012, 11/01/12 & 12/14/12; **2/13/2013**			Chem Clean procedures submitted 9/26/12, 11/01/12 and 12/14/12. **Submitted Hazardous Materials Business Plan on 2/13/2013.** **Updated HMBP in CERS on 1/31/2017, 6/5/2017 & 8/23/2017**
Hazardous Materials	HAZ-3	**The project owner shall develop and implement a Safety Management Plan for delivery of liquid hazardous materials. The plan shall include procedures, protective equipment requirements, training and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials. This plan shall be applicable during construction, commissioning, and operation of the power plant.**	**At least sixty (60) days prior to the delivery of any liquid hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to BLM's Authorized Officer and the CPM for review and approval**	Approved - COMPLETED (CONSTRUCTION) **ONGOING COMPLIANCE DURING OPERATIONS**	60 days prior to the delivery of any liquid hazardous material to the facility	29-Apr-2013	13-Jun-2013		**Safety Management Plan submitted on 4/29/13**
Hazardous Materials	HAZ-5	**The project owner shall prepare a site-specific Operation Security Plan for the operational phase, which shall be made available to BLM's Authorized Officer and the CPM for review and approval. The project owner shall implement site security measures addressing physical site security and hazardous materials storage.**	**At least 30 days prior to the initial receipt of hazardous materials onsite, the project owner shall notify BLM's Authorized Officer and the CPM that a site-specific Operations Site Security Plan is available for review and approval. In the Annual Compliance Report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and updated certification statements are appended to the Operations Security Plan. In the Annual Compliance Report, the project owner shall include a statement that the Operations Security Plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.** **The level of security to be implemented shall not be less than that described below (as per NERC 2002). The Operations Security Plan shall include the following:** **1. Permanent full perimeter fence or wall, at least eight feet high around the Solar Field; Ivanpah Solar Electric Generating System Page 15 07-AFC-5** **2. Main entrance security gate, either hand operable or motorized;** **3. Evacuation procedures;** **4. Protocol for contacting law enforcement, BLM's Authorized Officer and the CPM in the event of suspicious activity or emergency or conduct endangering the facility, its employees, or contractors; and** **5. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;** **a. A statement (refer to sample, attachment "A") signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history, and shall be conducted in accordance with state and federal law regarding security and privacy;**	**ONGOING**	30 days prior to the initial receipt of hazardous materials **ANNUALLY beginning 2015**	1/30/2015; 1/29/2016; 1/27/2017			Submitted with the Annual Compliance Report

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Hazardous Materials	HAZ-5 (continued-1)	**The project owner shall prepare a site-specific Operation Security Plan for the operational phase, which shall be made available to BLM's Authorized Officer and the CPM for review and approval. The project owner shall implement site security measures addressing physical site security and hazardous materials storage.**	**b. A statement(s) (refer to sample, attachment "B") signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by BLM's Authorized Officer and the CPM after consultation with the project owner) that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by BLM's Authorized Officer and the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractor personnel that visit the project site. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history,** **and shall be conducted in accordance with state and federal law regarding security and privacy; 6. a. A statement (refer to sample, attachment "A") signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history, and shall be conducted in accordance with state and federal law regarding security and privacy;** **b. A statement(s) (refer to sample, attachment "B") signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by BLM's Authorized Officer and the CPM after consultation with the project owner) that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by BLM's Authorized Officer and the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractor personnel that visit the project site. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history, and shall be conducted in accordance with state and federal law regarding security and privacy;** **7. Site access controls for employees, contractors, vendors, and visitors;**	**ONGOING**	30 days prior to the initial receipt of hazardous materials **ANNUALLY beginning 2015**	1/30/2015; 1/29/2016; 1/27/2017			Submitted with the Annual Compliance Report
Hazardous Materials	HAZ-5 (continued-2)	**The project owner shall prepare a site-specific Operation Security Plan for the operational phase, which shall be made available to BLM's Authorized Officer and the CPM for review and approval. The project owner shall implement site security measures addressing physical site security and hazardous materials storage.**	**8. Closed Circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) capable of viewing, at a minimum, the main entrance gate; and** **9. Additional measures to ensure adequate perimeter security consisting of either:** **a. Security guard present 24 hours per day, seven days per week, OR** **b. Power plant personnel on-site 24 hours per day, seven days per week and all of the following:** **1) The CCTV monitoring system required in number 8 above shall include cameras that are able to pan, tilt, and zoom (PTZ), have Ivanpah Solar Electric Generating System Page 16 07-AFC-5 low-light capability, are recordable, and are able to view 100% of the perimeter fence, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; AND** **2) Perimeter breach detectors or on-site motion detectors.** **The project owner shall fully implement the security plans and obtain BLM's Authorized Officer and CPM approval of any substantive modifications to the security plans. BLM's Authorized Officer and the CPM may authorize modifications to these measures, or may require additional measures, such as protective barriers for critical power plant components (e.g., transformers, gas lines, compressors, etc.) depending on circumstances unique to the** **facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with appropriate law enforcement agencies and the project owner.**	**ONGOING**	30 days prior to the initial receipt of hazardous materials **ANNUALLY**	1/30/2015; 1/29/2016; 1/27/2017			Submitted with the Annual Compliance Report

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Hazardous Materials	HAZ-6	**The holder (project owner) shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder(s) shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b**	**A copy of any report required or requested by any Federal agency or State government entity as a result of a reportable release or spill of any toxic substances shall be furnished to BLM's Authorized Officer and the CPM concurrent with the filing of the reports with the Federal or State governmental entity.**	ONGOING	As Needed	8/15/2016; 10/13/2016; 8/21/2017; 9/11/2017, 11/3/2017;			Notified CEC/BLM on 7/29/2016 on the lube oil release on 7/29/2016 at Unit 1. The Spill Report was submitted on 8/15/2016. Notified CEC/BLM on 10/2/2016 on the lube oil release at Unit 3. The Spill Report was submitted on 10/13/2016. Submitted Spill Reports at Unit 3 on 8/21/2017, 9/11/2017, & 11/3/2017.
Land Use	LAND-1	**The project owner shall obtain a Right-of-Way Grant (ROW Grant) from the Bureau of Land Management (BLM). Among the conditions for obtaining the ROW grant, the applicant shall provide the following:** **A. Prior to issuance of any right of way grant, the project owner shall submit a final Plan(s) of Development that describes in detail the construction, operation, maintenance, and termination of the right-of-way and its associated improvements and/or facilities. The project owner shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the final approved Plan of Development. The degree and scope of these plans will vary depending upon (1) the complexity of the right-of-way or its associated improvements and/or facilities, (2) the anticipated conflicts that require mitigation, and (3) additional technical information required by BLM's Authorized Officer and the CPM. The plans will be reviewed, and if appropriate, modified by the project owner until acceptable, and approved by BLM's Authorized Officer and the CPM.** **B. A bond, acceptable to BLM's Authorized Officer, shall be furnished by the owner prior to the issuance of a Notice to Proceed with construction or at such earlier date as may be specified by BLM's Authorized Officer. The amount of this bond shall be determined by BLM's Authorized Officer. This bond must be maintained in effect until removal of improvements and restoration of the right-of-way have been accepted by BLM's Authorized Officer and the CPM.**	**At least 30 days prior to the start of construction and prior to any Notice to Proceed with construction issued by BLM's Authorized Officer and the CPM, the project owner shall provide BLM's Authorized Officer and the CPM with documentation of the following:** **A. BLM's ROW Grant and final approved Plan of Development;** **B. The bond satisfactory to BLM's Authorized Officer;** **C. Certification that the project owner acknowledges that the ISEGS development and all related construction, operation, maintenance and closure activities are to be conducted in conformance with the approved Plan of Development and within the approved ROW boundaries for the life of the project.**	COMPLETED (CONSTRUCTION) **ONGOING COMPLIANCE DURING OPERATIONS**	30 days prior to start of construction	4-Oct-2010	3/14/2012 CLA and Tortoise Pen along I-15; 5/07/12 Yates Well rd;		BLM issued ROW grants: CACA 049502 (CLA) - 10/7/10; CACA 049504 (Unit 1) - 10/7/10; CACA 048668 (Unit 2) - 10/7/10; CACA 049503 (Unit 3) - 10/7/13; CACA 049502 Amend. #1 - 3/14/11; Amend. #2 - 3/9/12; Amend. #3 - 5/2/12; Amend. #4 - 3/26/13 and Amend. #5 - 4/16/13
Land Use	LAND-3	**Prior to the start of commercial operations of the first ISEGS power plant to be constructed, the project owner shall prepare plans for a Solar / Ecological Interpretive Center to be developed to in the vicinity of the ISEGS project. The project owner in consultation with the County shall propose a location on-site or off-site that provides a vantage point to observe as many features as is possible of the ISEGS project without compromising safety or security. The project owner's plans for the Solar / Ecological Interpretive Center may be coordinated with San Bernardino County.** **The Solar / Ecological Interpretive Center shall include or make accessible to the public the following features:** **1. surfaced public parking** **2. information kiosks describing ISEGS solar energy technology;** **3. picnic area with tables,** **4. garbage cans; 5. interpretive signs identifying local landmarks and ecological features;** **6. a contained restroom facility (or reasonable access to a facility with flush toilets and sinks should the Solar / Ecological Interpretive Center be constructed adjacent to another facility having a restroom).**	**At least 30 days prior to commercial operation of the first power plant of the ISEGS development, the project owner shall submit plans to BLM's Authorized Officer and the CPM for review and approval for a Solar / Ecological Interpretive Center to be developed in the ISEGS vicinity in coordination with San Bernardino County. Within 6 months of approval of the proposed Solar /Ecological Interpretive Center plans (1) by the Commission and the BLM, for an on-site Center, or (2) by the County of San Bernardino, for an off-site Center, being final and no longer subject to administrative or judicial review, the project owner shall commence construction of the Center and shall to the extent feasible complete construction within one year following the start of construction if the Center is located off of the ISEGS site. If located onsite, then construction of the Center shall follow the completion of all ISEGS construction. Upon completion the project owner shall submit notice to BLM and the Energy Commission that it has completed construction of the Solar / Ecological Interpretive Center.** **In each Annual Compliance Report, the project owner shall provide a summary of estimated public use of the Solar / Ecological Interpretive Center and summarize any issues associated with operating and maintenance activities.**	Submitted and Approved - **ONGOING DURING PROJECT OPERATIONS**	30 days prior to commercial operations. 60 days after completion of construction **Annually beginning 2016**	9/23/2013; BLM was notified of SEIC completion and accepted on 5/13/2015; CEC was notified of SEIC completion and accepted on 5/19/2015; SEIC Post Construction report was submitted on 7/16/2015; 1/29/2016; Submitted information kiosk panel design to BLM on 12/19/2016. 1/27/2017	BLM Approved on 9/23/13; BLM accepted on 5/13/2015; CEC accepted on 5/19/2015		**9/25/13:** Solar/Ecological Interpretive Center Plan was submitted to BLM on 9/23/2013; BLM approved on 9/25/13. The Plan was submitted to CEC on 9/25/13. **1/20/2015 to 4/17/2015:** Construction period. **5/13/2015:** BLM inspected and accepted the Solar Ecological Interpretive Center. **7/16/2015:** Submitted post-construction report for the Solar Ecological Interpretive Center. Kiosk panel design approval still pending from BLM in 2017.
Noise & Vibration	NOISE-3	**The project owner shall submit to BLM's Authorized Officer and the CPM for review and approval a *noise control program* and a statement, signed by the project owner's project manager, verifying that the noise control program will be implemented throughout construction of the project. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal/OSHA standards.**	**At least 30 days prior to the start of ground disturbance, the project owner shall submit to BLM's Authorized Officer and the CPM the *noise control program* and the project owner's project manager's signed statement. The project owner shall make the program available to Cal/OSHA upon request.**	Approved - COMPLETED **ONGOING COMPLIANCE DURING OPERATIONS**	30 days prior to the start of ground disturbance	11-Aug-2010	7-Oct-2010		

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Noise & Vibration	NOISE-4	**The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that operation of the project will not cause noise complaints from residents of Primm, Nevada, or from the operator of the Primm Valley Golf Course or from visitors from the Mojave National Preserve. If legitimate project-related noise complaints are received from residents of Primm, the project owner shall perform a noise survey to demonstrate that noise levels due to plant operation do not exceed an average of 45 dBA Leq measured at the nearest residence of the community of Primm, Nevada. If legitimate project-related noise complaints are received from the operator of the Primm Valley Golf Course, or the visitors from the Mojave National Preserve, the project owner shall perform a noise survey to demonstrate that noise levels due to plant operation do not exceed an average of 55 dBA Leq measured at the nearest boundary of the golf course, or the nearest boundary of the Mojave National Preserve, respectively. No new project components creating pure-tone noises will be added to the project unless they are balanced by other plant features. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. A. The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to BLM's Authorized Officer and the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected location. The character of the plant noise shall be evaluated at the affected residential locations to determine the presence of pure tones or other dominant sources of plant noise.**	**The survey shall take place within 30 days of the receipt of the noise complaint, unless the complaint has been resolved to the complaining party's satisfaction. Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to BLM's Authorized Officer and the CPM. Included in the survey report will be a description of additional mitigation measures (if any) necessary to achieve compliance with the above-listed noise limit and a schedule, subject to BLM's Authorized Officer and CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey. Within 15 days of completion of the new survey, the project owner shall submit to BLM's Authorized Officer and the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.**	ONGOING DURING OPERATIONS	Within 30 days of the Receipt of noise Complaint				
Noise & Vibration	NOISE-5	**Following each phase (Ivanpah 1, Ivanpah 2, and Ivanpah 3) of the project's first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility. The surveys shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations sections 5095–5099 and Title 29, Code of Federal Regulations section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure. The project owner shall prepare reports of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.**	**Within 30 days after completing each survey, the project owner shall submit the noise survey report to BLM's Authorized Officer and the CPM. The project owner shall make the reports available to OSHA and Cal/OSHA upon request.**	ONGOING DURING OPERATIONS	Within 30 days after completing each survey	28-Oct-2014			Noise survey was conducted on 10/3/2014. The report was submitted to CEC and BLM on 10/28/2014.
Noise & Vibration	NOISE-6	**Noisy construction work or heavy equipment operation that causes offsite annoyance as evidenced by the filing of a legitimate noise complaint shall be restricted to 7:00 am to 7:00 pm time period. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.**	**Prior to ground disturbance, the project owner shall transmit to BLM's Authorized Officer and the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.**	Approved - COMPLETED (CONSTRUCTION)	prior to ground disturbance	28-Jul-2010	2-Sep-2010		
Geology & Paleontology	PAL-6	**The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all paleontological resource materials encountered and collected during project construction.**	**The project owner shall maintain in his/her compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after project completion and approval of BLM Authorized Officer- and CPM-approved paleontological resource report (see PAL-7). The project owner shall be responsible for paying any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to BLM's Authorized Officer and the CPM.**	ONGOING	Files are needed to be maintained for 3 years after project completion.				
Geology & Paleontology	PAL-7	**The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information, and submit it to the CPM for review and approval. The report shall include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance.**	**Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to BLM's Authorized Officer and the CPM.**	SUBMITTED	90 days after completion of ground disturbing activities	9-Jan-2014			**1/9/14:** Paleontological Resources Report was submitted by CH2M Hill to CEC and BLM on 1/9/2014.

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Recreation	REC-1	**Prior to the start of construction and in conformance with § 25529 of the Warren-Alquist Act, the project owner shall prepare plans for a Solar / Ecological Interpretive Center to be developed in the ISEGS Construction Logistics Area and submit them to BLM's Authorized Officer and the CPM for review and approval. The plans shall propose a location that if possible provides a vantage point to observe as many features as is possible of the ISEGS project without compromising ISEGS security requirements. The Solar / Ecological Interpretive Center shall include the following features:** **1. surfaced public parking for 12 vehicles (4 of which would allow vehicles with trailers);** **2. information kiosks describing ISEGS solar energy technology;** **3. picnic area with 8 shaded tables;** **4. garbage cans;** **5. interpretive signs identifying local landmarks and ecological features;** **6. a two stall contained restroom facility (or a facility with flush toilets and sinks);** **7. a drinking fountain; and** **8. native plant landscaping with plant identification labels.** **Prior to commercial operation of the first constructed power plant of the ISEGS development, the project owner shall complete construction of the Solar / Ecological Interpretive Center and request final approval by both BLM's Authorized Officer and the CPM. The project owner shall operate and maintain the Solar / Ecological Interpretive Center for the life of the ISEGS project.**	**Verification: At least 30 days prior to completion of construction of the first power plant of the ISEGS development, the project owner shall submit plans for a Solar / Ecological Interpretive Center to be developed in the ISEGS Construction Logistics Area and submit them to BLM's Authorized Officer and the CPM for review and approval.** **Prior to commercial operation, the project owner shall submit notice to BLM and the Energy Commission that it has completed construction of the Solar / Ecological Interpretive Center and shall request final approval by both BLM's Authorized Officer and the CPM.** **After commercial operation and in each Annual Compliance Report for the life of the ISEGS project, the project owner shall provide a summary of estimated public utilization of the Solar / Ecological Interpretive Center and summarize any issues associated with operating and maintenance activities.**	Submitted and Approved - ONGOING DURING PROJECT OPERATIONS	30 days prior to commercial operations. 60 days after completion of construction **Annually beginning 2016**	9/23/2013; BLM was notified of SEIC completion and accepted on 5/13/2015; CEC was notified of SEIC completion and accepted on 5/19/2015; SEIC Post Construction report was submitted on 7/16/2015; 1/29/2016; 1/27/2017	BLM Approved on 9/23/13; BLM accepted on 5/13/2015; CEC accepted on 5/19/2015		**9/25/13:** Solar/Ecological Interpretive Center Plan was submitted to BLM on 9/23/2013; BLM approved on 9/25/13. The Plan was submitted to CEC on 9/25/13. SEIC has been bid out and construction will start in early 2015. **5/13/2015:** BLM inspected and accepted the Solar Ecological Interpretive Center. **7/16/2015:** Submitted post-construction report for the Solar Ecological Interpretive Center Submitted with the Annual Compliance Report
Recreation	REC-2	**The applicant shall allow and be required to afford public access to the routes for which BLM grants a right of way, as noted above.** **Effectiveness: By allowing public access to the routes that are redirected around the project perimeter, the current level of public access to recreational areas would be maintained.**	**No Verification: see Effectiveness**	ONGOING	N/A				
Soil & Water	S&W-1	**Prior to site mobilization, the project owner shall obtain both BLM's Authorized Officer and the CPM's approval for a site specific DRAINAGE EROSION AND SEDIMENT CONTROL PLAN (DESCP) that ensures protection of water quality and soil resources of the project and all linear facilities for both the construction and operation phases of the project. This plan shall address appropriate methods and actions, both temporary and permanent, for the protection of water quality and soil resources, demonstrate no increase in off-site flooding potential, and identify all monitoring and maintenance activities. The project owner shall complete all engineering plans, reports, and documents necessary for both LM's Authorized Officer and the CPM to conduct a review of the proposed project and provide a written evaluation as to whether the proposed grading, drainage improvements, and flood management activities comply with all requirements presented herein. The plan shall be consistent with the grading and drainage plan as required by Condition of Certification CIVIL-1 and shall contain the following elements:** **Vicinity Map: A map shall be provided indicating the location of all project elements with depictions of all major geographic features to include watercourses, washes, irrigation and canals, major utilities, roads, and drainage facilities. Adjacent property owners shall be identified on the plan maps. All maps shall be presented at a legible scale.** **Site Delineation: The site and all project elements shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, underground utilities, roads, and drainage facilities. Adjacent property owners shall be identified on the plan maps. All maps shall be presented at a legible scale** **Drainage: The DESCP shall include the following elements:** **a. Topography. Topography for offsite areas are required to define the existing upstream tributary areas to the site and downstream to provide enough definition to map the existing storm water flow and flood hazard. Spot elevations shall be required where relatively flat conditions exist.** **b. Proposed Grade. Proposed grade contours shall be shown at a scale appropriate for delineation of onsite ephemeral washes, drainage ditches, and tie-ins to the existing topography.** **c. Hydrology. Existing and proposed hydrologic calculations for onsite areas and offsite areas that drain to the site; include maps showing the drainage area boundaries and sizes in acres, topography and typical overland flow directions, and show all existing, interim, and proposed drainage infrastructure and their intended direction of flow.** **d. Hydraulics. Provide hydraulic calculations to support the selection and sizing of the onsite drainage network, diversion facilities and BMPs.** **Watercourses and Critical Areas: The DESCP shall show the location of all onsite and nearby watercourses including washes, irrigation and drainage canals, and drainage ditches, and shall indicate the proximity of those features to the construction site. Maps shall identify high hazard flood prone areas.**	**The DESCP shall be consistent with the grading and drainage plan as required by Condition of Certification CIVIL-1, and relevant portions of the DESCP shall be submitted to the chief building official (CBO) for review and approval. In addition, the project owner shall do all of the following:** **a. No later than ninety (90) days prior to start of site mobilization, the project owner shall submit a copy of the DESCP to the County of San Bernardino and the RWQCB for review and comment. Both BLM's Authorized Officer and the CPM shall consider comments received from San Bernardino County and RWQCB and approve the DESCP.** **b. During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage-, erosion- and sediment control measures and the results of monitoring and maintenance activities.** **c. Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities.** **d. Provide BLM's Authorized Officer and the CPM with two (2) copies each of all monitoring or compliance reports.**	DESCP was submitted and approved **IN PROGRESS / ONGOING DURING OPERATIONS**	90 days prior to the start of site mobilization, **Annually Beginning 2015**	DESCP (Phase 1) 6/15/2010; (Phase 2) 1/28/2011; (Phase 3) 4/8/2011. Submitted with the Annual Compliance Report on 1/30/2015.; 1/29/2016; 1/27/2017	DESCP (Phase 1) 10/4/2010		Ongoing reporting in the monthly compliance report, Annual SWPP submitted 8/31/12 DESCP (Phase 1) - Approved; (Phase 2) - Submitted; (Phase 3) - Submitted; Submitted in the Annual Compliance Report

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Soil & Water	S&W-1 (continued-1)	**Site Delineation: The site and all project elements shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, underground utilities, roads, and drainage facilities. Adjacent property owners shall be identified on the plan maps. All maps shall be presented at a legible scale Drainage: The DESCP shall include the following elements: a. Topography. Topography for offsite areas are required to define the existing upstream tributary areas to the site and downstream to provide enough definition to map the existing storm water flow and flood hazard. Spot elevations shall be required where relatively flat conditions exist. b. Proposed Grade. Proposed grade contours shall be shown at a scale appropriate for delineation of onsite ephemeral washes, drainage ditches, and tie-ins to the existing topography. c. Hydrology. Existing and proposed hydrologic calculations for onsite areas and offsite areas that drain to the site; include maps showing the drainage area boundaries and sizes in acres, topography and typical overland flow directions, and show all existing, interim, and proposed drainage infrastructure and their intended direction of flow. d. Hydraulics. Provide hydraulic calculations to support the selection and sizing of the onsite drainage network, diversion facilities and BMPs. Watercourses and Critical Areas: The DESCP shall show the location of all onsite and nearby watercourses including washes, irrigation and drainage canals, and drainage ditches, and shall indicate the proximity of those features to the construction site. Maps shall identify high hazard flood prone areas.**	**The DESCP shall be consistent with the grading and drainage plan as required by Condition of Certification CIVIL-1, and relevant portions of the DESCP shall be submitted to the chief building official (CBO) for review and approval. In addition, the project owner shall do all of the following: a. No later than ninety (90) days prior to start of site mobilization, the project owner shall submit a copy of the DESCP to the County of San Bernardino and the RWQCB for review and comment. Both BLM's Authorized Officer and the CPM shall consider comments received from San Bernardino County and RWQCB and approve the DESCP. b. During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage-, erosion- and sediment control measures and the results of monitoring and maintenance activities. c. Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities. d. Provide BLM's Authorized Officer and the CPM with two (2) copies each of all monitoring or compliance reports.**	DESCP was submitted and approved **IN PROGRESS / ONGOING DURING OPERATIONS**	90 days prior to the start of site mobilization, **Annually Beginning 2015**	DESCP (Phase 1) 6/15/2010; (Phase 2) 1/28/2011; (Phase 3) 4/8/2011. Submitted with the Annual Compliance Report on 1/30/2015.; 1/29/2016; 1/27/2017	DESCP (Phase 1) 10/4/2010		Ongoing reporting in the monthly compliance report, Annual SWPP submitted 8/31/12 DESCP (Phase 1) - Approved; (Phase 2) - Submitted; (Phase 3) - Submitted; Submitted in the Annual Compliance Report
Soil & Water (Continued)	S&W-1 (continued-2)	**Clearing and Grading: The plan shall provide a delineation of all areas to be cleared of vegetation, areas to be preserved, and areas where vegetation would be cut to allow clear movement of the heliostats. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross-sections, cut/fill depths or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography tying in proposed contours with existing topography shall be illustrated. The DESCP shall include a statement of the quantities of material excavated at the site, whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported or a statement explaining that there would be no clearing and/or grading conducted for each element of the project. Areas of no disturbance shall be properly identified and delineated on the plan maps. Soil Wind and Water Erosion Control: The plan shall address exposed soil treatments to be used during construction and operation of the proposed project for both road and non-road surfaces including specifically identifying all chemical based dust palliatives, soil bonding, and weighting agents appropriate for use at the proposed project site that would not cause adverse effects to vegetation; BMPs shall include measures designed to prevent wind and water erosion including application of chemical dust palliatives after rough grading to limit water use. All dust palliatives, soil binders, and weighting agents shall be approved by both BLM's Authorized Officer and the CPM prior to use. Project Schedule: The DESCP shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element construction, and final grading/stabilization). BMP implementation schedules shall be provided for each project element for each phase of construction.**	**The DESCP shall be consistent with the grading and drainage plan as required by Condition of Certification CIVIL-1, and relevant portions of the DESCP shall be submitted to the chief building official (CBO) for review and approval. In addition, the project owner shall do all of the following: a. No later than ninety (90) days prior to start of site mobilization, the project owner shall submit a copy of the DESCP to the County of San Bernardino and the RWQCB for review and comment. Both BLM's Authorized Officer and the CPM shall consider comments received from San Bernardino County and RWQCB and approve the DESCP. b. During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage-, erosion- and sediment control measures and the results of monitoring and maintenance activities. c. Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities. d. Provide BLM's Authorized Officer and the CPM with two (2) copies each of all monitoring or compliance reports.**	DESCP was submitted and approved **IN PROGRESS / ONGOING DURING OPERATIONS**	90 days prior to the start of site mobilization, **Annually Beginning 2015**	DESCP (Phase 1) 6/15/2010; (Phase 2) 1/28/2011; (Phase 3) 4/8/2011. Submitted with the Annual Compliance Report on 1/30/2015.; 1/29/2016; 1/27/2017	DESCP (Phase 1) 10/4/2010		Ongoing reporting in the monthly compliance report, Annual SWPP submitted 8/31/12 DESCP (Phase 1) - Approved; (Phase 2) - Submitted; (Phase 3) - Submitted; Submitted in the Annual Compliance Report
Soil & Water	S&W-1 (continued-3)	**Best Management Practices: The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during project element excavation and construction, during final grading/stabilization, and after construction. BMPs shall include measures designed to control dust and stabilize construction access roads and entrances. The maintenance schedule shall include post-construction maintenance of treatment-control BMPs applied to disturbed areas following construction. Erosion Control Drawings: The erosion-control drawings and narrative shall be designed, stamped and sealed by a professional engineer or erosion control specialist. Agency Comments: The DESCP shall include copies of recommendations from the County of San Bernardino, California Department of Fish and Game (CDFG), and Lahontan Regional Water Quality Control Board (RWQCB). Monitoring Plan: Monitoring activities shall include routine measurement of the volume of accumulated sediment in the onsite drainage ditches, and storm water diversions and the requirements specified in Appendix B, C, and D.**	**The DESCP shall be consistent with the grading and drainage plan as required by Condition of Certification CIVIL-1, and relevant portions of the DESCP shall be submitted to the chief building official (CBO) for review and approval. In addition, the project owner shall do all of the following: a. No later than ninety (90) days prior to start of site mobilization, the project owner shall submit a copy of the DESCP to the County of San Bernardino and the RWQCB for review and comment. Both BLM's Authorized Officer and the CPM shall consider comments received from San Bernardino County and RWQCB and approve the DESCP. b. During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage-, erosion- and sediment control measures and the results of monitoring and maintenance activities. c. Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities. d. Provide BLM's Authorized Officer and the CPM with two (2) copies each of all monitoring or compliance reports.**	DESCP was submitted and approved **IN PROGRESS / ONGOING DURING OPERATIONS**	90 days prior to the start of site mobilization, **Annually Beginning 2015**	DESCP (Phase 1) 6/15/2010; (Phase 2) 1/28/2011; (Phase 3) 4/8/2011. Submitted with the Annual Compliance Report on 1/30/2015.; 1/29/2016; 1/27/2017	DESCP (Phase 1) 10/4/2010		Ongoing reporting in the monthly compliance report, Annual SWPP submitted 8/31/12 DESCP (Phase 1) - Approved; (Phase 2) - Submitted; (Phase 3) - Submitted; Submitted in the Annual Compliance Report

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Soil & Water	S&W-2	**The project owner shall comply with the requirements specified in Appendix B, C, and D for dredge and fill, wastewater, and storm water discharges associated with construction and industrial activity. These requirements relate to discharges, or potential discharges, of waste that could affect the quality of waters of the state, and were developed in consultation with staff of the State Water Resources Control Board and/or the applicable California Regional Water Quality Control Board (hereafter "Water Boards"). It is the Commission's intent that these requirements be enforceable by both the Commission and the Water Boards. In furtherance of that objective, the Commission hereby delegates the enforcement of these requirements, and associated monitoring, inspection and annual fee collection authority, to the Water Boards. Accordingly, the Commission and the Water Board shall confer with each other and coordinate, as needed, in the enforcement of the requirements. The project owner shall pay the annual waste discharge permit fee associated with this facility to the Water Boards. In addition, the Water Boards may "prescribe" these requirements as waste discharge requirements pursuant to Water Code Section 13263 solely for the purposes of enforcement, monitoring, inspection, and the assessment of annual fees, consistent with Public Resources Code Section 25531, subdivision (c). The project owner shall develop, obtain both BLM's Authorized Officer and CPM approval of, and implement a construction Storm Water Pollution Prevention Plan (SWPPP) for the construction of the project and an Industrial SWPPP for operation of the project.**	**At least sixty (60) days prior to commercial operation, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of the Industrial SWPPP for operation of the project for review and approval prior to commercial operation. The project owner shall retain a copy on site. *The project owner shall submit copies to both BLM's Authorized Officer and the CPM of all correspondence between the project owner and the Lahontan RWQCB regarding the WDRs for discharge of storm water associated with construction and industrial activity within ten (10) days of its receipt or submittal. .***	**ONGOING DURING OPERATIONS**	**60 days Prior to Commercial Operations**	8/27/2013; 6/30/2014; 6/30/2015; 1/29/2016; 1/27/2017			**Industrial SWPPP for Operations submitted to CEC/BLM on 8/27/13** **SWPPP Annual Reports submitted to SWRCB - 6/30/2014; 6/30/2015;** **Submitted with the Annual Compliance Report**
Soil & Water	S&W-3	**Pre-Well Installation. The project owner shall construct and operate up to two onsite groundwater wells that produce water from the IVGB. The project owner shall ensure that the wells are completed in accordance with all applicable state and local water well construction permits and requirements, including the San Bernardino County's Desert Groundwater Management Ordinance. Prior to initiation of well construction activities, the project owner shall submit for review and comment a well construction packet to the County of San Bernardino, in accordance with the County of San Bernardino Code Title 2, Division 3, Chapter 6, Article 5, containing the documentation, plans, and fees normally required for the county's well permit, with copies to both BLM's Authorized Officer and the CPM. The project shall not construct a well or extract and use groundwater until both BLM's Authorized Officer and the CPM provides approval to construct and operate the well.** **Post-Well Installation. The project owner shall provide documentation to both BLM's Authorized Officer and the CPM that the well has been properly completed. In accordance with California's Water Code section 13754,** **the driller of the well shall submit to the DWR a Well Completion Report for each well installed.** **No later than 180 days prior to the construction of the onsite groundwater wells, the project owner shall submit a Groundwater Monitoring and Management Plan to the County of San Bernardino for review and comment (see Condition of Certification Soil & Water - 6)**	**The project owner shall ensure the Well Completion Reports are submitted and shall ensure compliance with all county water well standards and requirements for the life of the wells. The project owner shall do all of the following:** **1. No later than 180 days prior to the construction of the onsite groundwater wells, the project owner shall submit a Groundwater Monitoring and Management Plan to the County of San Bernardino for review and comment (see Condition of Certification Soil & Water - 6)** **2. No later than sixty (60) days prior to the construction of the onsite groundwater wells, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of the water well construction packet submitted to the County of San Bernardino for review and comment.** **3. No later than thirty (30) days prior to the construction of the onsite water supply wells, the project owner shall submit a copy of any written comments received from the County of San Bernardino indicating whether the proposed well construction activities comply with all county well requirements and meet the requirements established by the county's water well permit program.** **4. No later than sixty (60) days after installation of each well at the project site, the project owner shall provide to both BLM's Authorized Officer and the CPM copies of the Well Completion Reports submitted to the DWR by the** **well driller. The project owner shall submit to the CPM with the Well Completion Report a copy of well drilling logs, water quality analyses, and any inspection reports.** **5. During well construction and for the operational life of the well, the project owner shall submit two (2) copies each to BLM's Authorized Officer and the CPM for review and approval any proposed well construction or operation** **changes.** **6. The project owner shall provide BLM's authorized officer and the CPM with (2) two copies each of all monitoring and other reports required for compliance with the County of San Bernardino water well standards and operation requirements.** **7. No later than fifteen (15) days after completion of the onsite water supply wells, the project owner shall submit documentation to BLM's Authorized Officer and the CPM, confirming that well drilling activities were conducted in compliance with Title 23, California Code of Regulations, Chapter 15, Discharges of Hazardous Wastes to Land, (23 CCR, sections 2510 et seq.) requirements and that any onsite drilling sumps used for project drilling activities were removed in compliance with 23 CCR section 2511(c).** **8. Annual Monitoring Reports will be submitted which include Quarterly monitoring data as described in the Approved Groundwater Monitoring and Management Plan. The First Annual Report will be a Baseline Report which includes the Well Network and level monitoring report and plan**	GWMMP Approved 11/03/10; Well Completion Reports Filed for PW-1 PW-2 MW-1(3/03/11) , Baseline First Annual Monitoring Report submitted on August 10, 2012 **ANNUAL MONITORING REPORT ONGOING**	9/23/2010(GWMMP); Baseline Report 8/1/12, 2nd Annual report 1/31/13 **ANNUALLY**	11/2/2010 Addendum to GWMMP submitted to San Bernardino Co and CEC; First Annual Report(Baseline) submitted on 8/10/12, 2nd annual Report to be submitted January 31, 2013 for 2012 data	GWMMP 11/3/2010		GWMMP Approved 11/03/10; Well Completion Reports Filed for PW-1 PW-2 MW-1(3/03/11) , Baseline First Annual Monitoring Report submitted on August 10, 2012. 9/23/2010(GWMMP); Baseline Report 8/1/12, 2nd Annual report 1/31/13

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Soil & Water	S&W-4	**The proposed project's use of groundwater during each year of construction shall not exceed an average of 200 acre-feet per year over the forty-three (43) month construction period. Groundwater use for operations activities shall not exceed 100 acre-feet per year. Prior to the use of groundwater 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(s) of water supplied to the project from this water source. The metering devices shall be operational for the life of the project.**	**Beginning six (6) months after the start of construction, the project owner shall prepare a semi-annual summary of amount of water used for construction purposes. The summary shall include the monthly range and monthly average of daily water usage in gallons per day.** **At least sixty (60) days prior to the start of construction of the proposed project, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of evidence that metering devices have been installed and are operational. The project owner shall prepare an annual summary, which will include daily usage, monthly range and monthly average of daily water usage in gallons per day, and total water used on a monthly and annual basis in acre-feet. For years subsequent to the initial year of operation, the annual summary will also include the yearly range and yearly average water use by source. For calculating the total water use, the term "year" will correspond to the date established for the annual compliance report submittal.**	Semi-annual reporting in MCR Completed. **ONGOING ANNUAL REPORTING**	2011, 2012, 2013.. **Operations annual report due on January 31st ANNUALLY**	Semi Annual Water Usage Calcs filed on 5/9/2011; 10/7/2011; 4/20/2012, 10/20/12 **1/30/2015; 1/29/2016; 1/27/2017**			Submitted with the Annual Compliance Report
Soil & Water	S&W-5 (Continued-1b)	**The project owner shall ensure that the heliostats are designed and installed to withstand storm water scour as a result of a 100-year storm event. The analysis of the storm event and resulting heliostat stability will be provided within a Pylon Insertion Depth and Heliostat Stability Report to be completed by the applicant. This analysis will incorporate results from site-specific geotechnical stability testing, as well as hydrologic and hydraulic stormwater modeling performed by the applicant. The modeling will be completed using methodology and assumptions approved by the CPM and BLM's Authorized Officer.**	**The <u>Storm Water Damage Monitoring and Response Plan</u> shall be submitted to both the BLM's authorized office and CPM for review and approval and shall include the following:** **• Detailed maps showing the installed location of all heliostats within each project phase;** **• Description of the method of removing all soil spoils should any be generated;** **• Each heliostat should be identified by a unique ID number marked to show initial ground surface at its base, and the depth of the pylon below ground;** **• Minimum Depth Stability Threshold to be maintained of pylons to meet long-term stability for applicable wind, water and debris loading effects;** **• Above and below ground construction details of a typical installed heliostat;** **• BMPs to be employed to minimize the potential impact of broken mirrors to soil resources;** **• Methods and response time of mirror cleanup and measures that may be used to mitigate further impact to soil resources from broken mirror fragments; and** **• Monitoring, documenting, and restoring the Ivanpah playa surface when impacted by sedimentation or broken mirror shards.** **A plan to monitor and inspect periodically, before first seasonal and after every storm event:** **• Security and Tortoise Exclusion Fence: Inspect for damage and buildup of sediment or debris** **• Heliostats within Drainages or subject to drainage overflow: Inspect for tilting, mirror damage, depth of scour compared to pylon depth below ground and the Minimum Depth Stability Threshold, collapse, and downstream transport.** **• Drainage Channels: Inspect for substantial migration or changes in depth, and transport of broken glass.** **• Constructed Diversion Channels: Inspect for scour and structural integrity issues caused by erosion, and for sediment and debris buildup.** **• Ivanpah Playa Surface: Inspect for changes in the surface texture and quality from sediment buildup, erosion, or broken glass.** **Short-Term Incident-Based Response:** **• Security and Tortoise Exclusion Fence: repair damage, and remove built-up of sediment and debris.** **• Heliostats: Remove broken glass, damaged structure, and wiring from the ground, and for pylons no longer meeting the Minimum Depth Stability Threshold, either replace/reinforce or remove the mirrors to avoid exposure for broken glass.**	Submitted **ONGOING REPORTING DURING OPERATIONS**	60 days Prior to Commercial Operations **ANNUALLY**	8/27/2013; 1/30/2015; 1/29/2016; 1/27/2017			Storm Water Damage Monitoring & Response Plan for Operations submitted to CEC/BLM on 8/27/13" Submitted with the Annual Compliance Report
Soil & Water	S&W-5 (Continued-1c)	**The project owner shall ensure that the heliostats are designed and installed to withstand storm water scour as a result of a 100-year storm event. The analysis of the storm event and resulting heliostat stability will be provided within a Pylon Insertion Depth and Heliostat Stability Report to be completed by the applicant. This analysis will incorporate results from site-specific geotechnical stability testing, as well as hydrologic and hydraulic stormwater modeling performed by the applicant. The modeling will be completed using methodology and assumptions approved by the CPM and BLM's Authorized Officer.**	**The <u>Storm Water Damage Monitoring and Response Plan</u> shall be submitted to both the BLM's authorized office and CPM for review and approval and shall include the following:** **• Detailed maps showing the installed location of all heliostats within each project phase;** **• Description of the method of removing all soil spoils should any be generated;** **• Each heliostat should be identified by a unique ID number marked to show initial ground surface at its base, and the depth of the pylon below ground;** **• Minimum Depth Stability Threshold to be maintained of pylons to meet long-term stability for applicable wind, water and debris loading effects;** **• Above and below ground construction details of a typical installed heliostat;** **• BMPs to be employed to minimize the potential impact of broken mirrors to soil resources;** **• Methods and response time of mirror cleanup and measures that may be used to mitigate further impact to soil resources from broken mirror fragments; and**	Submitted **ONGOING REPORTING DURING OPERATIONS**	60 days Prior to Commercial Operations **ANNUALLY**	8/27/2013; 1/30/2015; 1/29/2016; 1/27/2017			Storm Water Damage Monitoring & Response Plan for Operations submitted to CEC/BLM on 8/27/13" Submitted with the Annual Compliance Report

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Soil & Water	S&W-5 (Continued-1d)	**The project owner shall ensure that the heliostats are designed and installed to withstand storm water scour as a result of a 100-year storm event. The analysis of the storm event and resulting heliostat stability will be provided within a Pylon Insertion Depth and Heliostat Stability Report to be completed by the applicant. This analysis will incorporate results from site-specific geotechnical stability testing, as well as hydrologic and hydraulic stormwater modeling performed by the applicant. The modeling will be completed using methodology and assumptions approved by the CPM and BLM's Authorized Officer.**	**• Monitoring, documenting, and restoring the Ivanpah playa surface when impacted by sedimentation or broken mirror shards.** **A plan to monitor and inspect periodically, before first seasonal and after every storm event:** **• Security and Tortoise Exclusion Fence: Inspect for damage and buildup of sediment or debris** **• Heliostats within Drainages or subject to drainage overflow: Inspect for tilting, mirror damage, depth of scour compared to pylon depth below ground and the Minimum Depth Stability Threshold, collapse, and downstream transport.** **• Drainage Channels: Inspect for substantial migration or changes in depth, and transport of broken glass.** **• Constructed Diversion Channels: Inspect for scour and structural integrity issues caused by erosion, and for sediment and debris buildup.** **• Ivanpah Playa Surface: Inspect for changes in the surface texture and quality from sediment buildup, erosion, or broken glass.** **Short-Term Incident-Based Response:** **• Security and Tortoise Exclusion Fence: repair damage, and remove built-up of sediment and debris.** **• Heliostats: Remove broken glass, damaged structure, and wiring from the ground, and for pylons no longer meeting the Minimum Depth Stability Threshold, either replace/reinforce or remove the mirrors to avoid exposure for broken glass.**	Submitted **ONGOING REPORTING DURING OPERATIONS**	60 days Prior to Commercial Operations **ANNUALLY**	8/27/2013; 1/30/2015; 1/29/2016; 1/27/2017			Storm Water Damage Monitoring & Response Plan for Operations submitted to CEC/BLM on 8/27/13" Submitted with the Annual Compliance Report
Soil & Water	S&W-5 (Continued-2)	**The project owner shall ensure that the heliostats are designed and installed to withstand storm water scour as a result of a 100-year storm event. The analysis of the storm event and resulting heliostat stability will be provided within a Pylon Insertion Depth and Heliostat Stability Report to be completed by the applicant. This analysis will incorporate results from site-specific geotechnical stability testing, as well as hydrologic and hydraulic stormwater modeling performed by the applicant. The modeling will be completed using methodology and assumptions approved by the CPM and BLM's Authorized Officer.**	**At least sixty (60) days prior to construction, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of the Pylon Insertion Depth and Heliostat Stability Report for review and approval prior to construction. At least sixty (60) days prior to commercial operation, the project owner shall submit to both BLM's Authorized Officer and the CPM a copy of the Storm Water Damage Monitoring and Response Plan for review and approval prior to commercial operation. The project owner shall retain a copy of this plan onsite at the power plant at all times.** ***The project owner shall prepare an annual summary of the number of heliostats failed, cause of the failure, and cleanup and mitigation performed for each failed heliostat.***	Submitted **ONGOING REPORTING DURING OPERATIONS**	60 days Prior to Commercial Operations **ANNUALLY**	8/27/2013; 1/30/2015; 1/29/2016; 1/27/2017			Storm Water Damage Monitoring & Response Plan for Operations submitted to CEC/BLM on 8/27/13" Submitted with the Annual Compliance Report
Soil & Water	S&W-6 (continued-2)	**The project owner shall submit a <u>Groundwater Monitoring and Reporting Plan</u> to both BLM's Authorized Officer and the CPM for review and approval and to San Bernardino County for review and comment regarding consistency with the County of San Bernardino Code Title 2, Division 3, Chapter 6, Article 5 (Desert Groundwater Management Ordinance). The Groundwater Level Monitoring and Reporting Plan shall provide a description of the methodology for monitoring background and site groundwater levels. Monitoring shall include pre-construction, construction, and project operation water use. The primary objective for the monitoring is to establish pre-construction and project related groundwater level-that can be quantitatively compared against observed and simulated levels near the project pumping well and near potentially impacted existing wells.** **Prior to project construction, monitoring shall commence to establish preconstruction base-line conditions and shall incorporate the existing monitoring and reporting data collected for the Primm Valley Golf Club. The monitoring network shall be designed to incorporate the ongoing monitoring and reporting program** **established for the Primm Valley Golf Course. The monitoring plan and network may make use of existing wells in the basin that would satisfy the requirements for the monitoring program.**	**4. At least two (2) months prior to project construction, all water level monitoring data shall be provided to both BLM's Authorized Officer and the CPM.** **The data transmittal shall include an assessment of pre-project water level trends, a summary of available climatic information (monthly average temperature and rainfall records from the nearest weather station), and a comparison and assessment of water level data relative to the assumptions and spatial levels simulated by the applicant's groundwater model.** **5. <u>After project construction and during project operations, the project owner shall submit the monitoring data annually to both BLM's Authorized Office and the CPM.The summary shall document water level monitoring methods, the water level data, water level plots, and a comparison between pre- and post-project start-up water level trends. The report shall also include a summary of actual water use conditions, monthly climatic information (temperature and rainfall), and a comparison and assessment of water level data relative to the assumptions and spatial levels simulated by the applicant's groundwater model.</u>**	ONGOING	ANNUALLY DURING PROJECT OPERATIONS	11/17/2014; 2014 GWMR was submitted on 8/13/2015; 2015 Five-Year GWMR submitted on 12/19/2016; 2016 GWMR submitted on 7/6/2017.			8/18/2010(GWMMP); First Annual Baseline Report inch Well Monitoring, Installation & GW Level Network Report Submitted 8/10/12 ANNUAL REPORT FOR 2012 was submitted on 5/1/2013; ANNUAL REPORT FOR 2013 was submitted on 11/17/2014; An updated 2015 & 2016 GWM Reports were submitted on 10/24/2017 to include PVGC data.
Soil & Water	S&W-7	**The project owner shall recycle and reuse all process wastewater streams to the extent practicable. Prior to transport and disposal of any facility operation wastewaters that are not suitable for treatment and reuse onsite, the project owner shall test and classify the stored wastewater to determine proper management and disposal requirements. The project manager shall ensure that the wastewater is transported and disposed of in accordance with the wastewater's characteristics and classification and all applicable LORS (including any CCR Title 22 Hazardous Waste and Title 23 Waste Discharges to Land requirements).**	**Prior to transport and disposal of any facility operation wastewaters that are not suitable for treatment and reuse onsite, the project owner shall test and classify the stored wastewater to determine proper management and disposal requirements. The project manager shall ensure that the wastewater is transported and disposed of in accordance with the wastewater's characteristics and classification and all applicable LORS (including any CCR Title 22 Hazardous Waste and Title 23 Waste Discharges to Land requirements).**	ONGOING	prior to transport and disposal of any facility operation wastewater				
Soil & Water	S&W-8	**Prior to the start of construction of the sanitary waste system, the project owner shall submit to the County of San Bernardino for review and comment, and to both the BLM's authorized officer and CPM for review and approval, plans for the construction and operation of the project's proposed sanitary waste septic system and leach field. These plans shall comply with the requirements set forth in County of San Bernardino codes and Appendices B, C, and D. Project construction shall not proceed until both BLM's Authorized Officer and the CPM have approved the plans. The project owner shall remain in compliance with the San Bernardino County code requirements for the life of the project.**	**Sixty (60) days prior to the start of commercial operations, the project owner shall submit to the County of San Bernardino appropriate fees and plans for review and comment for the construction and operation of the project's sanitary waste septic system and leach field. A copy of these plans shall be submitted to both the BLM's authorized officer and CPM for review and approval. The plans shall demonstrate compliance with the sanitary waste disposal facility requirements of County of San Bernardino and Appendices B, C, and D.**	Submitted	60 days prior to start of commercial operations	25-Mar-2013			Sanitary Waste System Plan Submitted on 3/25/13

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Traffic & Transport.	TRANS-2 (continued)	**The project owner shall restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities to original or near-original condition in a timely manner, as directed by the BLM's Authorized Officer and CPM. The project owner's use of Yates Well Road shall not diminish the rights or use of the road by other BLM authorized users. Repairs and restoration of access roads may be required at any time during the construction phase of the project to assure safe ingress and egress. Prior to the start of site mobilization, the project owner shall consult with the County of San Bernardino and Caltrans District 8 and notify them of the proposed schedule for project construction. The purpose of this notification is to request that the County of San Bernardino and Caltrans consider postponement of public right-of-way repair or improvement activities in areas affected by project construction until construction is completed and to coordinate with the project owner regarding any concurrent construction related activities that are planned or in progress and cannot be postponed.**	**Within 60 calendar days after completion of construction, the project owner shall meet with BLM's Authorized Officer and the CPM, the County of San Bernardino and Caltrans District 8 to identify sections of public right-of-way to be repaired. At that time, the project owner shall establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public right-of-way repairs, the project owner shall provide a letter signed by the County of San Bernardino and Caltrans District 8 stating their satisfaction with the repairs to BLM's Authorized Officer and the CPM.**	Approved; **ONGOING**	10-Aug-2010	24-Jun-2010	2-Sep-2010		**7/31/2014:** Solar Partners/NRG is coordinating with appropriate agencies to complete the ROW inspections for repairs.

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Traffic & Transport.	TRANS-3 (continued)	**The project owner shall prepare a Heliostat Positioning Plan that would avoid potential for human health and safety hazards from solar radiation exposure.**	**2. Describe within the HPP how programmed heliostat operation would avoid potential for human health and safety hazards at locations of observers as attributable to momentary solar radiation exposure greater than the Maximum Permissible Exposure of 10 kw/m^2 (for a period of 0.25 second or less).** **3. Prepare a monitoring plan that would: a) obtain field measurements in response to legitimate complaints; b) verify that the Heliostat Positioning Plan would avoid potential for human health and safety hazards including temporary and permanent blindness at locations of observers; and** **c) provide requirements and procedures to document, investigate and resolve legitimate complaints regarding glare.** **4. The monitoring plan should be coordinated with the FAA, U.S. Department of the Navy, CalTrans, CHP, and Clark County Department of Aviation in relation to the proposed Southern Nevada Supplemental Airport and be updated on an annual basis for the first 5 years, and at 2-year intervals thereafter for the life of the project.**	Approved - ONGOING	ANNUALLY FOR THE FIRST 5 YEARS	Heliostat Positioning Plan was submitted on 1/14/2013. Revision 1 was submitted on 4/19/2013. Approved by BLM on 6/13/13. Revision 1 was resubmitted on 9/13/13. **Approved by CEC on 12/10/13** **Submitted HPP Report 2nd Flyover on 8/29/2014** ***HPP Addendum/Update was submitted on 12/10/2014;*** ***HPP addendum/update submitted on 12/10/2015;*** ***Response to Glare complaint Pilot Report ACN 1353100 was submitted to CEC/BLM/FAA on 8/16/2016.*** ***Response to Glare complaint Pilot Report ACN 1390751 was submitted to CEC/BLM/FAA on 11/10/2016;*** ***HPP addendum/update submitted on 12/7/2016;*** ***HPP Update submitted on 12/11/2017***	6/13/2013 **12/10/13;**		Heliostat Positioning Plan Addendum / Update was submitted to BLM and CEC on 12/10/2014; Also submitted in the Annual Compliance Reports
Traffic & Transport.	TRANS-4	**The project owner shall prepare a Power Tower Luminance Monitoring Plan to provide procedures to conduct periodic monitoring and to document, investigate and resolve complaints regarding distraction effects to aviation, vehicular and pedestrian traffic associated with the power towers.**	**Within 60 days prior to commercial operation of the first ISEGS power plant to become operational, the project owner shall provide a Power Tower Luminance Monitoring Plan applicable for the ISEGS Project for review and approval by BLM's Authorized Officer and the CPM. The plan shall specify procedures to document, investigate and resolve complaints regarding glare, and report these to BLM's Authorized Officer and the CPM within 10 days of receiving a complaint.** **The project owner shall evaluate the effects of the intensity of the luminance of light reflected from the power tower receivers for the following scenarios:** **A. Within 90 days following commercial operation;** **B. After the initial 5 years of operation;** **C. If a major design change is implemented that results in an increase of the reflective luminance of the power towers for each of the three ISEGS power plants (Ivanpah 1, 2 and 3); and** **D. After receiving a legitimate complaint regarding a distraction associated with the power towers.**	Submitted and Approved - **ONGOING DURING PROJECT OPERATIONS**	60 days Prior Commercial Operations. 90 days Following Commercial Operations. **After the Initial 5 years of Operation**	4/18/13: Power Tower Luminance Monitoring Plan Submitted on 4/5/2013. Approved by BLM on 6/13/13. Revision 1 was resubmitted on 9/13/13. **Approved by CEC on 12/10/13;** **Response to Glare complaint Pilot Report ACN 1353100 was submitted to CEC/BLM/FAA on 8/16/2016.** **Response to Glare complaint Pilot Report ACN 1390751 was submitted to CEC/BLM/FAA on 11/10/2016.**	6/13/2013 **12/10/13**		ISEGS received Pilot Report ACN 1353100 and ACN 1390751 during the reporting period.

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Traffic & Transport.	TRANS-4 (continued-1)	**The project owner shall prepare a Power Tower Luminance Monitoring Plan to provide procedures to conduct periodic monitoring and to document, investigate and resolve complaints regarding distraction effects to aviation, vehicular and pedestrian traffic associated with the power towers.**	**The Power Tower Luminance Monitoring Plan shall include provisions for the following:** **1. Coordination of luminance evaluations with the FAA, U.S. Department of the Navy, CalTrans, CHP, and with Clark County Department of Aviation in relation to the proposed Southern Nevada Supplemental Airport;** **2. Reporting within 30 days after completing luminance measurements required under this plan; the project owner shall submit a summary report to FAA, U.S. Department of the Navy, CalTrans, San Bernardino County, SANBAG, CHP and Clark County Department of Aviation for review and comment, and to BLM's Authorized Officer and the CPM for review and approval.** **3. Measurement of luminance at the locations where any distraction effects have been reported and at the locations nearest the power towers from the four sides of the power plant boundaries, and the nearest public road, which may be substituted for one of the sides of the power tower of each of the three power plants during the time of day when values would be highest;** **4. Measurement of luminance using an illuminance meter, photometer, or similar device and reporting of data in photometric units; the measurements are intended to provide a relative and quantifiable measure of luminance that can be associated with any observed and reported distraction effect from the power tower receivers that may support anticipation and investigation of any future effects.**	Approved - COMPLETED **ONGOING DURING PROJECT OPERATIONS**	60 days Prior Commercial Operations. 90 days Following Commercial Operations. **After the Initial 5 years of Operation**	4/18/13: Power Tower Luminance Monitoring Plan Submitted on 4/5/2013. Approved by BLM on 6/13/13. Revision 1 was resubmitted on 9/13/13. **Approved by CEC on 12/10/13;** **Response to Glare complaint Pilot Report ACN 1353100 was submitted to CEC/BLM/FAA on 8/16/2016.** **Response to Glare complaint Pilot Report ACN 1390751 was submitted to CEC/BLM/FAA on 11/10/2016.**	6/13/2013 **12/10/13**		ISEGS received Pilot Report ACN 1353100 and ACN 1390751 during the reporting period.
Traffic & Transport.	TRANS-4 (continued-2)	**The project owner shall prepare a Power Tower Luminance Monitoring Plan to provide procedures to conduct periodic monitoring and to document, investigate and resolve complaints regarding distraction effects to aviation, vehicular and pedestrian traffic associated with the power towers.**	**5. Provisions for identifying and implementing appropriate mitigation measures if reported distraction is determined to be legitimate and if power tower luminance is determined to be causing a safety concern; The project owner shall consider and propose any reasonable mitigation measures that are technically and financially feasible. The mitigation measures may include surface treatment or material changes to increase absorption and reduce reflectivity of the power tower receivers, road signage, screening or other reasonable measures.** **6. Post-mitigation verification; Within 30 days following the implementation of mitigation measures designed to reduce reflectivity of the power towers, the project owner shall repeat the luminance measurements to demonstrate the effectiveness of mitigation measures and prepare a supplemental survey report for review and comment by FAA, U.S. Department of the Navy, CalTrans, San Bernardino County, SANBAG, CHP and Clark County Department of Aviation, and for review and approval by BLM's Authorized Officer and the CPM.**	Approved - COMPLETED	Post Mitigation Verification - within 30 days following implementation of Mitigation Measures	4/18/13: Power Tower Luminance Monitoring Plan Submitted on 4/5/2013. Approved by BLM on 6/13/13. Revision 1 was resubmitted on 9/13/13. **Approved by CEC on 12/10/13;** **Response to Glare complaint Pilot Report ACN 1353100 was submitted to CEC/BLM/FAA on 8/16/2016.** **Response to Glare complaint Pilot Report ACN 1390751 was submitted to CEC/BLM/FAA on 11/10/2016.**	6/13/2013 **12/10/13**		ISEGS received Pilot Report ACN 1353100 and ACN 1390751 during the reporting period.

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Transmission System Engineering	TSE-7	**The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent BLM authorized officer, CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95 or NESC; Title 8, CCR, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders"; applicable interconnection standards; NEC; and related industry standards. In case of non-conformance, the project owner shall inform BLM's Authorized Officer, the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.**	**Within 60 days after first synchronization of the project, the project owner shall transmit to BLM's Authorized Officer, the CPM and CBO:** **1. "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC; Title 8, California Code of Regulations, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders"; applicable interconnection standards; NEC; and related industry standards, and these conditions shall be provided concurrently.** **2. An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. "As built" drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for BLM's Authorized Officer or CPM audit as set forth in the "Compliance Monitoring Plan."** **3. A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge**	COMPLETED (CONSTRUCTION)	60 days After First Synchronization	19-Nov-2013			Submitted As-Built engineering description of the electrical, mechanical, structural and civil portion of the transmission facilities
Transm. Lines	TLSN-2	**The project owner shall use a qualified individual to measure the strengths of the electric and magnetic fields from the line at the points of maximum intensity along the route for which the applicant provided specific estimates. The measurements shall be made before and after energization according to the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures. These measurements shall be completed no later than 6 months after the start of operations.**	**The project owner shall file copies of the pre-and post-energization measurements with BLM's Authorized Officer and the CPM within 60 days after completion of the measurements.**	**Submitted**	60 days after Completion of Measurements	31-Jul-2014			**Pre and Post Energization Measurement Report was submitted on 7/31/2014.**
Transm. Lines	TLSN-3	**The project owner shall ensure that the rights-of-way of the proposed generation tie lines are kept free of combustible material, as required under the provisions of section 4292 of the Public Resources Code and section 1250 of Title 14 of the California Code of Regulations.**	**During the first 5 years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report to be provided to BLM's Authorized Officer and the CPM.**	Ongoing - Annually	First 5 years of Plant Operation	1/30/2015; 1/29/2016; 1/27/2017			Submitted with the Annual Compliance Report

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Visual Resources	VIS-1	***Surface Treatment of Project Structures and Buildings:*** **The project owner shall treat the surfaces of all project structures and buildings visible to the public, other than surfaces that are included to direct or reflect sunlight, such that a) their colors minimize visual intrusion and contrast by blending with the existing tan and brown color of the surrounding landscape; and b) their colors and finishes do not create excessive glare. The transmission line conductors shall be nonspecular and non-reflective, and the insulators shall be non-reflective and non-refractive.** **The project owner shall submit for CPM review and approval, a specific Surface Treatment Plan that will satisfy these requirements.**	**At least 90 days prior to specifying to the vendor the colors and finishes for each set of structures or buildings that are surface treated during manufacture, the project owner shall submit the proposed treatment plan to BLM's Authorized Officer and the CPM for review and approval and simultaneously to San Bernardino County for review and comment. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a plan with the specified revision(s) for review and approval by BLM's Authorized Officer and the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to BLM's Authorized Officer and the CPM for review and approval. BLM's Authorized Officer and the CPM shall review and approve the Surface Treatment Plan or identify any material deficiencies within thirty (30) days of receipt.** **The treatment plan shall include:** **A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;** **B. A list of each major project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system;** **C. One set of color brochures or color chips showing each proposed color and finish;** **D. A specific schedule for completion of the treatment; and** **E. A procedure to ensure proper treatment maintenance for the life of the project.** **The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by BLM's Authorized Officer and the CPM. Subsequent modifications to the treatment plan are prohibited without BLM's Authorized Officer and CPM approval.** **Prior to the start of commercial operation, the project owner shall notify BLM's Authorized Officer and the CPM that surface treatment of all listed structures and buildings has been completed and they are ready for inspection and shall submit to each one set of electronic color photographs from the same key observation points identified in (d) above. The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify: a) the condition of the surfaces of all structures and buildings at the end of the reporting year; b) maintenance activities that occurred during the reporting year; and c) the schedule of maintenance activities for the next year.**	Approved During Construction. **ONGOING ANNUAL REPORTING DURING OPERATIONS**	90 days Prior Specifying to the Vendor the Colors and Finishes. **ANNUAL REPORTING REQUIRED DURING PROJECT OPERATIONS**	6/30/2010; 11/4/2010 (amend. 1 & 2); 12/8/2010 (amend. 3 & 4); 4/5/2011 (amend. 5 & 6); Plan Revision 1 May 27, 2011; Revision 1.2 submitted June 27, 2011; Revision 1.3 submitted September 7, 2011; 1/30/2015; 1/29/2016; 1/27/2017	10/7/2010; 11/23/2010 (amend. 1 & 2); 1/10/2011 (amend. 3 & 4); 4/15/2011 (amend. 5); 5/2/2011 (amend. 6)		Submitted in the Annual Compliance Reports

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Visual Resources	VIS-2	***Landscape Screening of Golf Course:*** **At the request of, and in consultation with BLM's Authorized Officer, the CPM and the golf course owner, the project owner shall prepare a perimeter landscape screening plan to reduce the visibility of the proposed ISEGS project as seen from the golf course. The purpose of the plan shall be to provide screening of the power project, particularly the mirror fields, while retaining as much of the scenic portion of the overall views of Ivanpah Valley and Clark Mountains as feasible. The design approach shall be developed with prior consultation with the golf course owner, and implemented only at the golf course owner's request.** **The project owner shall submit to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the golf course owner for review and comment a preliminary conceptual landscaping plan whose objective is to provide an attractive visual screen to views of the ISEGS project mirror fields. Upon approval by BLM's Authorized Officer and the CPM and golf course owner, the project owner shall submit to** **BLM's Authorized Officer and the CPM for review and approval and simultaneously to the golf course owner** **for review and comment a landscaping plan whose proper implementation will satisfy these requirements.** **The plan shall not be implemented until the project owner receives final approval from BLM's Authorized** **Officer and the CPM.**	**The landscaping plan shall be submitted to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the golf course owner for review and comment at least 90 days prior to installation of the landscaping. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM and simultaneously to the golf course owner a revised plan for review and approval by BLM's Authorized Officer and the CPM. The plan shall include:** **A. A detailed landscape, grading, and irrigation plan, at a reasonable scale. The plan shall demonstrate how the requirements stated above shall be met. The plan shall provide a detailed installation schedule demonstrating installation of as much of the landscaping as early in the construction process as is feasible in coordination with project construction.** **B. A list (prepared by a qualified professional arborist familiar with local growing conditions) of proposed species, specifying installation sizes, growth rates, expected time to maturity, expected size at five years and at maturity, spacing, number, availability, and a discussion of the suitability of the plants for the site conditions and mitigation objectives, with the objective of providing the widest possible range of species from which to choose;** **C. Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project;** **D. A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project; and** **E. One set each for BLM's Authorized Officer and the CPM of 11"x17" color photo simulations of the proposed landscaping at five years and twenty years after planting, as viewed from adjoining segments of I-15 .** **The plan shall not be implemented until the project owner receives final approval from BLM's Authorized Officer and the CPM.** **The planting must occur during the first optimal planting season following site mobilization. The project owner shall simultaneously notify BLM's Authorized Officer and the CPM and the golf course owner within seven days after completing installation of the landscaping, that the landscaping is ready for inspection.** **The project owner shall report landscape maintenance activities, including replacement of dead or dying vegetation, for the previous year of operation in each Annual Compliance Report.**	COMPLETED LANDSCAPING WORKS. MAINTENANCE WORKS IN PROGRESS	ANNUALLY (To be included in the Annual Compliance Report)	1/30/2015; 1/29/2016; 1/27/2017			Landscaping along the Golf Course was completed. Landscape maintenance monitoring in progress and shall be reported in the Annual Compliance Report. A letter from Primm Valley Golf Club dated 9/16/2015 informed Solar Partners that they will permanently take over responsibilities for the well-being of the replaced trees and relieving Solar Partners of any future financial/reporting obligation for the maintenance of the Golf Course Landscape Screening under the requirement of this Condition of Certification. A copy of the letter was submitted with the 2015 Annual Compliance Report on 1/29/2016 and on 1/27/2017.
Visual Resources	VIS-4 (Continued-1)	***Temporary and Permanent Exterior Lighting:*** **To the extent feasible, consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting and all temporary construction lighting such that a) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas; b) lighting does not cause excessive reflected glare; c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting; d) illumination of the project and its immediate vicinity is minimized, and e) the plan complies with local policies and ordinances.** **The project owner shall submit to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the County of San Bernardino for review and comment a lighting mitigation plan.**	**E. All lighting shall be of minimum necessary brightness consistent with operational safety and security; and** **F. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.** **The project owner shall not order any exterior lighting until receiving BLM Authorized Officer and CPM approval of the lighting mitigation plan.** **Prior to commercial operation, the project owner shall notify BLM's Authorized Officer and the CPM that the lighting has been completed and is ready for inspection.** ***If after inspection, BLM's Authorized Officer and the CPM notify the project owner that modifications to the lighting are needed, within 30 days of receiving that notification the project owner shall implement the modifications and notify BLM's Authorized Officer and the CPM that the modifications have been completed and are ready for inspection.***	Approved - COMPLETED (CONSTRUCTION) AS NEEDED DURING OPERATIONS	Within 30 days of Receiving Notification from BLM & CEC	11/1/2010; 12/14/2010 (amend. 1)	Amend 1 approved by BLM and CEC on 1/11/2012		Lighting Plan Addendum 1 submitted 11/02/12
Waste Mgmt.	WASTE-5	**Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify BLM's Authorized Officer and the CPM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.**	**The project owner shall notify BLM's Authorized Officer and the CPM in writing within 10 days of becoming aware of an impending enforcement action. BLM's Authorized Officer and the CPM shall notify the project owner of any changes that will be required in the way project-related wastes are managed.**	As needed	As needed				

Technical Area	COC No.	Description	Verification	Compliance Status	Required Submittal Date	Date Submitted	Approval Date	Date of Amendment	NOTES
Waste Mgmt.	WASTE-6	**The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the facility and shall submit the plan to BLM's Authorized Officer and the CPM for review and approval. The plan shall contain, at a minimum, the following:** **• a detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;** **• management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;** **• information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;** **• a detailed description of how facility wastes will be managed and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and** **• a detailed description of how facility wastes will be managed and disposed upon closure of the facility.**	**The project owner shall submit the Operation Waste Management Plan to BLM's Authorized Officer and the CPM for approval no less than 30 days prior to the start of project operation. BLM's Authorized Officer and the CPM shall approve or identify any material deficiencies in the Operation Waste Management Plan within 30 days following receipt of the Plan. The project owner shall submit any required revisions to BLM's Authorized Officer and the CPM within 20 days of notification from BLM's Authorized Officer and the CPM that revisions are necessary.** **The project owner shall also document in each *Annual Compliance Report* the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.**	Operations Waste Management Plan was submitted on 9/24/2013	30 days Prior to the Start of Project Operations **Annual Reporting Required in the Annual Compliance Report**	9/24/2013; 1/30/2015; 1/29/2016; 1/27/2017			Operations Waste Management Plan was submitted on 9/24/2013; Actual volume of wastes generated submitted in the Annual Compliance Report
Waste Mgmt.	WASTE-7	**The project owner shall ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are reported, cleaned up, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.**	**The project owner shall document all unauthorized releases and spills of hazardous substances, materials, or wastes that occur on the project property or related pipeline and transmission corridors. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; amount of contaminated soil/material generated; how release was managed and material cleaned up; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements imposed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release. Copies of the unauthorized spill documentation shall be provided to BLM's Authorized Officer and the CPM within 30 days of the date the release was discovered.**	As needed/ONGOING REPORTED IN MCR	As needed	8/15/2016; 10/13/2016; 8/21/2017; 9/11/2017, 11/3/2017;			Notified CEC/BLM on 7/29/2016 on the lube oil release on 7/29/2016 at Unit 1. The Spill Report was submitted on 8/15/2016. Notified CEC/BLM on 10/2/2016 on the lube oil release at Unit 3. The Spill Report was submitted on 10/13/2016. Submitted Spill Reports at Unit 3 on 8/21/2017, 9/11/2017, & 11/3/2017.
Worker Safety & FP	WS-2	**The project owner shall submit to BLM's Authorized Officer and the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:** **• An Operation Injury and Illness Prevention Plan;** **• An Emergency Action Plan;** **• Hazardous Materials Management Program;** **• Fire Prevention Program (8 CCR § 3221); and;** **• Personal Protective Equipment Program (8 CCR §§ 3401-3411).**	**At least thirty (30) days prior to the start of first-fire or commissioning, the project owner shall submit to BLM's Authorized Officer and the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to BLM's Authorized Officer and the CPM from the San Bernardino County Fire Department stating the Fire Department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.** **The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to BLM's Authorized Officer and the CPM for review and approval concerning compliance of the program with all applicable Safety Orders. The Operation Fire Prevention Plan and the Emergency Action Plan shall also be submitted to the San Bernardino County Fire Department for review and comment.**	**Submitted Project Operations Safety and Health Program to BLM's Authorized Officer and the CPM and SBCFD.**	30 days Prior Start of First Fire or Commissioning	**19-Nov-2013**			
Worker Safety & FP	WS-5	**The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in its use and shall be on-site whenever the workers that they supervise are on-site: the Construction Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift foremen. During operations, all power plant employees shall be trained in its use. The training program shall be submitted to BLM's Authorized Officer and the CPM for review and approval.**	**At least thirty (30) days prior to the start of site mobilization the project owner shall submit to BLM's Authorized Officer and the CPM proof that a portable AED exists on site and a copy of the training and maintenance program for review and approval.**	Approved (Construction) ONGOING DURING OPERATIONS.	30 days Prior Site Mobilization	13-Aug-2010	2-Sep-2010		

Exhibit 3

Air Quality Conditions of Certification

Appendix A

Conditions of Certification
AQ-1 & AQ-27

Project Owner Statement Pertaining to Equipment Non-Compliant Operations

energyservices
an NRG service

NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 3, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Project Owner Statement Pertaining to Equipment Non-compliant Operations that shall be Listed in the Annual Compliance Report (COMPLIANCE-7) to fulfill California Energy Commission Conditions of Certification, AQ-1 and AQ-27

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certifications AQ-01 and AQ-27 of the Commission's approval of the Ivanpah Solar Electric Generating System, we are providing the following statement as a requirement in the Annual Compliance Report:

Operation of all auxiliary boilers and nighttime preservation boilers are conducted in compliance with all specifications and requirements submitted with the applications under which the permits were issued. Mojave Desert Air Quality Management District (MDAQMD) conducted an Air Quality Inspection on July 13, 2017, and reported that the facility is in full compliance with these Conditions of Certification and MDAQMD permit conditions. There are no non-compliant air quality operations to be listed in the annual compliance report.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Appendix B

Conditions of Certification
AQ-2 & AQ-28

Project Owner Statement Pertaining to Violations in Equipment Operations

energyservices
an NRG service

NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 3, 2018

Mr. Joseph Douglas
Compliance Project Manager
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1516 9th Street
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Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Project Owner/Operator Statement Pertaining to Violations in Equipment Operations that shall be Included in the Annual Compliance Report (COMPLIANCE-7) to fulfill California Energy Commission Conditions of Certifications, AQ-2 and AQ-28

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certifications AQ-2 and AQ-28 of the Commission's approval of the Ivanpah Solar Electric Generating System, we are providing the following statement as a requirement in the Annual Compliance Report:

The owner's/operator's operation of all auxiliary boilers and nighttime preservation boilers are in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles, and consistent with all information submitted with the permit applications. Mojave Desert Air Quality Management District (MDAQMD) conducted an Air Quality Inspection on July 13, 2017, and reported that the facility is in full compliance with these Conditions of Certification. There are no air quality violations or operational non-compliance information to be included in the annual compliance report.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Appendix C

Conditions of Certification
AQ-3 & AQ-29

Project Owner Statement
Pertaining to Use of Natural Gas
As Fuel for the Boilers

energyservices
an NRG service

NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 3, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Project Owner/Operator Statement Pertaining to Use of Natural Gas as Fuel for the Boilers and Include Proofs in the Annual Compliance Report (COMPLIANCE-7) to fulfill California Energy Commission Conditions of Certifications, AQ-3 and AQ-29

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certifications AQ-3 and AQ-29 of the Commission's approval of the Ivanpah Solar Electric Generating System (ISEGS), we are providing the following statement as a requirement in the Annual Compliance Report:

ISEGS is using pipeline quality natural gas supplied from Kern River Gas Transmission (KRGT) Company pipeline. KRGT Company is a Public Utility Company that was previously approved for this project. Mojave Desert Air Quality Management District (MDAQMD) conducted an Air Quality Inspection on July 13, 2017, and reported that the facility is in full compliance with these Conditions of Certifications.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Appendix D

Conditions of Certification
AQ-12 & AQ-34

Auxiliary Boilers & Nighttime Preservation Boilers Gas Consumption Record

2017 - ISEGS AUXILIARY BOILERS and NIGHTTIME PRESERVATION BOILERS GAS CONSUMPTION RECORD

(Compliance with AQ-03, AQ-04, AQ-08, AQ-11, AQ-12, AQ-29, AQ-30, AQ-32 & AQ-34)

Last Reading Taken on: **31-Dec-2017**

LOCATION (MDAQMD PERMIT No.)	2017 AUXILIARY BOILER GAS CONSUMPTION				2017 NIGHTTIME PRESERVATION BOILER GAS CONSUMPTION				2017 YTD GAS CONSUMPTION				ANNUAL GAS CONSUMPTION LIMIT	2017 AVAILABLE CAPACITY FOR CONSUMPTION	2017 AVERAGE DAILY AVAILABLE CAPACITY
	(lbm)	(SCF)	(MMSCF)	(MMBTU)	(lbm)	(SCF)	(MMSCF)	(MMBTU)	(lbm)	(SCF)	(MMSCF)	(MMBTU)	(MMSCF)	(MMSCF)	(MMSCF)
Unit 1 Gas Consumption by Month:															
Jan-2017	*1,236,419*	*27,556,020*	*27.56*	*28,744.14*	*142,131*	*3,168,868.16*	*3.17*	*3,305.11*	*1,378,550*	*30,724,889*	*30.72*	*32,049.25*			
Feb-2017	*1,204,490*	*26,967,454*	*26.97*	*29,153.78*	*115,279*	*2,581,989.47*	*2.58*	*2,757.74*	*1,319,769*	*29,549,444*	*29.55*	*31,911.52*			
Mar-2017	*1,001,042*	*22,308,929*	*22.31*	*23,656.03*	*47,669*	*1,063,424.34*	*1.06*	*1,097.11*	*1,048,712*	*23,372,353*	*23.37*	*24,753.15*			
Apr-2017	*1,754,744*	*39,235,463*	*39.24*	*39,858.11*	*102,374*	*2,288,965.48*	*2.29*	*2,371.82*	*1,857,118*	*41,524,428*	*41.52*	*42,229.94*			
May-2017	*1,119,841*	*25,187,947*	*25.19*	*27,682.09*	*75,158*	*1,689,774.24*	*1.69*	*1,733.90*	*1,194,999*	*26,877,722*	*26.88*	*29,415.99*			
Jun-2017	*2,544,477*	*56,900,041*	*56.90*	*57,834.95*	*70,183*	*1,569,350.43*	*1.57*	*1,649.16*	*2,614,660*	*58,469,392*	*58.47*	*59,484.11*			
Jul-2017	*2,262,346*	*50,459,676*	*50.46*	*53,171.92*	*86,384*	*1,928,288.35*	*1.93*	*2,008.70*	*2,348,730*	*52,387,964*	*52.39*	*55,180.63*			
Aug-2017	*2,109,132*	*47,241,211*	*47.24*	*49,081.15*	*77,565*	*1,738,691.32*	*1.74*	*1,791.44*	*2,186,697*	*48,979,903*	*48.98*	*50,872.59*			
Sep-2017	*2,182,305*	*48,809,722*	*48.81*	*49,497.75*	*81,680*	*1,826,876.14*	*1.83*	*1,899.20*	*2,263,986*	*50,636,599*	*50.64*	*51,396.95*			
Oct-2017	*872,611*	*19,567,488*	*19.57*	*20,335.13*	*86,125*	*1,933,905.38*	*1.93*	*2,009.41*	*958,737*	*21,501,394*	*21.50*	*22,344.55*			
Nov-2017	*897,752*	*20,331,713*	*20.33*	*20,723.48*	*102,958*	*2,333,385.31*	*2.33*	*2,401.67*	*1,000,710*	*22,665,098*	*22.67*	*23,125.14*			
Dec-2017	*644,115*	*14,364,841*	*14.36*	*14,512.77*	*106,643*	*2,378,159.35*	*2.38*	*2,404.40*	*750,757*	*16,743,001*	*16.74*	*16,917.17*			
Ivanpah 1 Aux. Boiler (B010375) & Nighttime Preservation Boiler (B011544)	**17,829,274**	**398,930,507**	**398.93**	**414,251.32**	**1,094,150**	**24,501,677.96**	**24.50**	**25,429.67**	**18,923,424**	**423,432,185**	**423.43**	**439,680.98**	**525.00**	**101.57**	**11.29**
Unit 2 Gas Consumption by Month:															
Jan-2017	*1,228,211*	*27,373,211*	*27.37*	*28,554.56*	*103,624*	*2,310,046.68*	*2.31*	*2,409.50*	*1,331,836*	*29,683,258*	*29.68*	*30,964.06*			
Feb-2017	*1,120,737*	*25,030,228*	*25.03*	*26,100.82*	*59,133*	*1,323,901.81*	*1.32*	*1,377.38*	*1,179,871*	*26,354,130*	*26.35*	*27,478.20*			
Mar-2017	*1,499,927*	*33,491,825*	*33.49*	*37,485.04*	*54,477*	*1,217,285.88*	*1.22*	*1,265.46*	*1,554,405*	*34,709,111*	*34.71*	*38,750.50*			
Apr-2017	*2,639,607*	*59,023,176*	*59.02*	*58,961.78*	*0*	*0.00*	*0.00*	*0.00*	*2,639,607*	*59,023,176*	*59.02*	*58,961.78*			
May-2017	*1,266,182*	*28,472,664*	*28.47*	*29,084.23*	*0*	*0.00*	*0.00*	*0.00*	*1,266,182*	*28,472,664*	*28.47*	*29,084.23*			
Jun-2017	*1,750,057*	*39,099,477*	*39.10*	*41,071.05*	*0*	*0.00*	*0.00*	*0.00*	*1,750,057*	*39,099,477*	*39.10*	*41,071.05*			
Jul-2017	*1,883,284*	*41,980,645*	*41.98*	*43,273.86*	*45,937*	*1,026,765.51*	*1.03*	*1,154.78*	*1,929,221*	*43,007,410*	*43.01*	*44,428.64*			
Aug-2017	*1,002,018*	*22,442,417*	*22.44*	*24,591.06*	*89,203*	*1,998,073.07*	*2.00*	*2,036.77*	*1,091,221*	*24,440,490*	*24.44*	*26,627.84*			
Sep-2017	*1,838,732*	*41,113,424*	*41.11*	*41,972.25*	*71,544*	*1,600,567.87*	*1.60*	*1,665.06*	*1,910,276*	*42,713,991*	*42.71*	*43,637.31*			
Oct-2017	*1,212,488*	*27,205,248*	*27.21*	*29,206.89*	*75,287*	*1,690,132.06*	*1.69*	*1,702.20*	*1,287,775*	*28,895,380*	*28.90*	*30,909.10*			
Nov-2017	*1,055,360*	*23,892,578*	*23.89*	*23,452.57*	*65,589*	*1,487,587.59*	*1.49*	*1,519.62*	*1,120,949*	*25,380,166*	*25.38*	*24,972.19*			
Dec-2017	*819,771*	*18,285,954*	*18.29*	*18,527.62*	*69,720*	*1,552,509.22*	*1.55*	*1,616.26*	*889,491*	*19,838,464*	*19.84*	*20,143.88*			
Ivanpah 2 Aux. Boiler (B010376) & Nighttime preservation Boiler (B011572)	**17,316,374**	**387,410,847**	**387.41**	**402,281.73**	**634,515**	**14,206,869.69**	**14.21**	**14,747.03**	**17,950,889**	**401,617,717**	**401.62**	**417,028.76**	**525.00**	**123.38**	**13.71**
Unit 3 Gas Consumption by Month:															
Jan-2017	*1,330,516*	*29,654,488*	*29.65*	*30,932.87*	*118,267*	*2,636,410.68*	*2.64*	*2,749.92*	*1,448,783*	*32,290,899*	*32.29*	*33,682.79*			
Feb-2017	*1,186,754*	*26,623,008*	*26.62*	*28,299.99*	*94,054*	*2,102,178.78*	*2.10*	*2,265.17*	*1,280,808*	*28,725,187*	*28.73*	*30,565.16*			
Mar-2017	*1,384,267*	*30,935,542*	*30.94*	*33,037.34*	*77,639*	*1,735,789.00*	*1.74*	*1,801.76*	*1,461,905*	*32,671,331*	*32.67*	*34,839.10*			
Apr-2017	*1,526,722*	*34,161,376*	*34.16*	*34,232.80*	*92,652*	*2,071,437.75*	*2.07*	*2,131.54*	*1,619,374*	*36,232,814*	*36.23*	*36,364.34*			
May-2017	*1,140,061*	*25,641,990*	*25.64*	*29,266.79*	*76,459*	*1,719,453.12*	*1.72*	*1,768.79*	*1,216,520*	*27,361,443*	*27.36*	*31,035.58*			
Jun-2017	*2,830,923*	*63,334,409*	*63.33*	*63,468.32*	*60,449*	*1,351,961.53*	*1.35*	*1,396.70*	*2,891,372*	*64,686,370*	*64.69*	*64,865.02*			
Jul-2017	*2,064,295*	*46,083,874*	*46.08*	*48,796.15*	*69,317*	*1,547,493.17*	*1.55*	*1,617.60*	*2,133,612*	*47,631,367*	*47.63*	*50,413.75*			
Aug-2017	*1,864,705*	*41,776,313*	*41.78*	*43,188.68*	*61,652*	*1,381,059.06*	*1.38*	*1,402.65*	*1,926,358*	*43,157,372*	*43.16*	*44,591.33*			
Sep-2017	*2,261,056*	*50,572,041*	*50.57*	*51,513.26*	*65,845*	*1,472,815.77*	*1.47*	*1,550.07*	*2,326,901*	*52,044,857*	*52.04*	*53,063.33*			
Oct-2017	*682,473*	*15,316,117*	*15.32*	*15,356.72*	*50,334*	*1,130,327.35*	*1.13*	*1,133.59*	*732,806*	*16,446,444*	*16.45*	*16,490.31*			
Nov-2017	*493,014*	*11,223,926*	*11.22*	*11,829.92*	*72,622*	*1,645,608.57*	*1.65*	*1,751.59*	*565,636*	*12,869,535*	*12.87*	*13,581.50*			
Dec-2017	*514,810*	*11,485,479*	*11.49*	*11,596.76*	*65,815*	*1,467,908.34*	*1.47*	*1,466.80*	*580,626*	*12,953,388*	*12.95*	*13,063.56*			
Ivanpah 3 Aux. Boiler (B010377) & Nighttime Preservation Boiler (B011573)	**17,279,597**	**386,808,563**	**386.81**	**401,519.59**	**905,104**	**20,262,443.10**	**20.26**	**21,036.19**	**18,184,702**	**407,071,006**	**407.07**	**422,555.78**	**525.00**	**117.93**	**13.10**
2017 YTD COMBINED GAS CONSUMPTION	**52,425,246**	**1,173,149,918**	**1,173.15**	**1,218,052.64**	**2,633,769**	**58,970,990.76**	**58.97**	**61,212.89**	**55,059,015**	**1,232,120,909**	**1,232.12**	**1,279,265.52**	**1,575.00**	**342.88**	**38.10**

Appendix E

Condition of Certification AQSC-6

Onsite Vehicles and Equipment Fleet Plan for Mirror Washing and Facility Maintenance Activities

Ivanpah Solar Electric Generating System (07-AFC-5C)

On-site Vehicle and Equipment Fleet Plan for Mirror Washing and Facility Maintenance Activities (AQSC-06)

Revision 2

December 21, 2017

Revision History

Date	Revision	Action
5/23/2013	Revision 0	First Edition
12/17/2015	Revision 1	Updated Equipment Fleet for maintenance activities and mirror washing equipment
12/19/2017	Revision 2	Updated Equipment Fleet for maintenance activities and mirror washing equipment

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INTRODUCTION

In accordance with the Condition of Certification AQSC-06 of the California Energy Commission (CEC) approval of the Ivanpah Solar Electric Generating System, the project owner, when obtaining dedicated on or off-road vehicles for mirror washing activities and other facility maintenance activities, shall only obtain new model year vehicles that meet California on-road vehicle emission standards or appropriate U.S.EPA/California off-road engine emission standards for the model year when obtained.

At least 60 days prior to the start of commercial operation, the project owner shall submit to the CPM a copy of the plan that identifies the size and type of the on-site vehicle and equipment fleet and the vehicle and equipment purchase orders and contracts and/or purchase schedule. The plan shall be updated every other year and submitted in the Annual Compliance Report (COMPLIANCE-7).

The Plan was initially submitted to CEC and BLM on August 22, 2013 and based on the requirement; the Plan is due for an update once every two (2) years with the first revision being submitted with the 2015 Annual Compliance Report on January 29, 2016. This revision will be submitted with the 2017 Annual Compliance Report that will be submitted in January 2018.

PURPOSE

The purpose of this Plan is to identify the size and type of onsite/on and off-road vehicles and equipment fleet for mirror washing activities and other facility maintenance activities. During the course of plant operations and maintenance activities, various type of vehicle and equipment are being used to achieve operational and maintenance goals of the facility. It is anticipated that vehicles and equipment used for maintenance activities and mirror washing activities may change from time to time and periodic updates of this plan deemed to be necessary.

ONSITE VEHICLE AND EQUIPMENT UPDATE

ONSITE VEHICLE FLEET

In 2016, NRG owned twenty two (22) onsite vehicles and eight (8) pieces of equipment that were used for operations and maintenance activities. An additional six (6) onsite vehicles and six (6) new pieces of equipment were added to the fleet in 2016 to 2017 to meet the increasing operations and maintenance needs, including one (1) vehicle for security. These additional vehicles are not owned by NRG and are being rented. In December 2017, an additional four (4) new vehicles were purchased by NRG to meet the operation and maintenance needs.

Contractors who perform the mirror washing activities and heliostat repair in the solar field also brought in their own vehicles and equipment. There are currently seventeen (17) onsite vehicles and eight (8) pieces of equipment being used for mirror washing and heliostat repair.

A list of the current onsite on and off-road vehicle fleet and equipment for facility operations and maintenance activities are shown on Table 1 in Section 4.

MIRROR WASHING MACHINES

In August 2015, three (3) New Holland Model T7.170 Mirror Washing Machines (NT) were brought to the site to replace the Kenworth T-800 Mirror Washing Machines (FFT) for solar field mirror washing activities that were sold and removed from site in June 2014. The NT models were used as back-up for mirror washing activities through early 2016 to speed up the cleaning of mirrors in the solar field. But like the FFT models, they are also not efficient for mirror washing and used a lot of water during mirror washing operations. Since then, the NT models were never used for mirror washing activities although they are still in the facility.

Presently, the mirror washing activities are performed by a two contractors. The first utilizes power washers that are mounted on trailers with a 500 gallon water tank. These contractors use two to three teams of four people each, and can wash up to 2,000 heliostats per day.

The other utilizes portable backpack sprayers that are that sprays a small volume of water on the mirror surface, and squeegees the water and dirt off the mirror.

A list of mirror washing equipment is shown on Table 1.

ATTACHMENTS

A list of onsite vehicles and equipment fleet for facility operations and maintenance activities and mirror washing activities is shown on Table 1 below.

TABLE 1 - IVANPAH VEHICLE LISTING

VEHICLES & EQUIPMENT FOR FACILITY OPERATION AND MAINTENANCE ACTIVITIES OWNED BY NRG

DESCRIPTION	IVANPAH ID#	YEAR	MAKE	MODEL	CA LICENSE	REGISTRATION	VIN	ENGINE	TIRES		NOTES
									FRONT	REAR	
PICKUP	019	2012	FORD	F-250 SUPER DUTY 4x4	13295B1	4/11/2017 - 4/30/2018	1FT7W2B68CEA07084	6.2L GAS	LT245/75R17E	LT245/75R17E	Crew use
PICKUP	020	2012	FORD	F-250 SUPER DUTY 4x4	13294B1	4/11/2017 - 4/30/2018	1FT7W2B62CEA80628	6.2L GAS	LT245/75R17E	LT245/75R17E	Crew use
PICKUP	012	2012	CHEVROLET	SILVERADO 1500 4X4	67866C1	7/2/2017 - 7/1/2018	3GCPKREA6CG107438	4.8l FLEX FUEL	P265/70R17	P265/70R17	Took Possession 3/2014
PICKUP	74117 (11)	2011	CHEVROLET	SILVERADO 1500	98702B1	12/31/2017 - 12/31/2018	3GCPCREA0BG374117				Took Possession 8/28/14
PICKUP	77240 (13)	2011	CHEVROLET	SILVERADO 1500	98703B1	12/31/2017 - 12/31/2018	3GCPCREA3BG377240				Took Possession 8/28/15
PICKUP	33351	2001	FORD	F-350 XL SUPER DUTY	6N92142	3/31/17 - 3/31/18	1FTSW30F41EA62552	POWERSTROKE V8	LT265/75R16	LT265/75R16	Maintenance - Took Possession in December 2017
PICKUP	11557	2018	Chevy	Colorado		Pending Registration	1GCGSBEA8J1111557	2.5L GAS	M+S 265/70R16	M+S 265/70R16	Maintenance - Took Possession in December 2017
PICKUP	11258	2018	Chevy	Colorado		Pending Registration	1GCGSBEA9J1111258	2.5L GAS	M+S 265/70R16	M+S 265/70R16	Maintenance - Took Possession in December 2017
PICKUP	12852	2018	Chevy	Colorado		Pending Registration	1GCGSBEA4J1112852	2.5L GAS	M+S 265/70R16	M+S 265/70R16	Operations - Took Possession in December 2017
PICKUP	18452	2018	Chevy	Colorado		Pending Registration	1GCGSBEA7J1118452	2.5L GAS	M+S 265/70R16	M+S 265/70R16	Maintenance - Took Possession in December 2017
SIDE BY SIDE	C17		POLARIS	RANGER 500/2 SEATER				500cc EFI			Took Possession 8/29/14
SIDE BY SIDE	C18		POLARIS	RANGER 500/2 SEATER				500cc EFI			Took Possession 5/2014
SIDE BY SIDE	C19		POLARIS	RANGER 500/2 SEATER				500cc EFI			Took Possession 8/29/14
SIDE BY SIDE	C20		POLARIS	RANGER 500/2 SEATER				500cc EFI			Took Possession 8/29/14
SIDE BY SIDE	C21		John Deere	Gator 625i			1M0625GSCAM010611				Took Posession 10/8/14
SIDE BY SIDE	C30		POLARIS	RANGER 500/2 SEATER				500cc EFI			Took Possession 8/28/14
SIDE BY SIDE	C31		POLARIS	RANGER 500/2 SEATER				500cc EFI			Took Possession 8/28/14
SIDE BY SIDE	C45		John Deere	Gator 625i			1M0625GSAAM010442				Took Possession 10/8/14
SIDE BY SIDE	C47	2012	POLARIS	RANGER 500/4 SEATER				500cc EFI			Took possession in 2013
SIDE BY SIDE	C48	2012	POLARIS	RANGER 500/4 SEATER				500cc EFI			Took possession in 2013
SIDE BY SIDE	C49	2012	POLARIS	RANGER 500/4 SEATER				500cc EFI			Took possession in 2013
SIDE BY SIDE	C50	2012	POLARIS	RANGER 500/4 SEATER				500cc EFI			Took possession in 2013
SIDE BY SIDE	C51		Kawasaki	Mule 4010							Took Possession 10/8/14
SIDE BY SIDE	C55		E-Z-GO	ST 4x4							No Cage - Took Possession 8/27/14 - Honda Engine
SIDE BY SIDE	C56		IR	1550 XRT							No Cage
SIDE BY SIDE	C62		Kawasaki	Mule 4010							Took Possession 10/8/14
SKID STEER			Catapillar	259B3			S/N YYZ01301	Diesel			Attachments: 12" Auger; 18" Auger; 66" bucket; 46" Fork Carriage; 48" Pallet Forks; A19B Auger; BH150 Backhoe; 12" Backhoe Bucket; BA18 Hydraulic Broom & Harness. Purchased 2014
TELE-HANDLER FORK-LIFT			Catapillar	TL1055				Diesel			Purchased 7/2014
MAN-LIFT	CE002609		Genie	Z-135			Z13512-1579	Diesel			Purchased 8/2014
MIRROR TRAILER											Non-Motorized
MIRROR TRAILER											Non-Motorized
MIRROR TRAILER											Non-Motorized
Water Tank Trailers (Buffaloes)											Purchased from Argus 2013: Non-motorized
Water Tank Trailers (Buffaloes)											Purchased from Argus 2013: Non-motorized

ADDITIONAL VEHICLES & EQUIPMENT FOR FACILITY OPERATION AND MAINTENANCE ACTIVITIES NOT OWNED BY NRG

DESCRIPTION	IVANPAH ID#	YEAR	MAKE	MODEL	LICENSE	REGISTRATION	VIN	ENGINE	TIRES		NOTES
									FRONT	REAR	
PICKUP	800-01-7020	2014	FORD	F-150	58786K1 (CA)	3/31/17 - 3/31/18	1FTFW1EF7EKD77142	V8	LT245/75R17	P245/75R17	Maintenance
PICKUP		2015	DODGE	RAM 1500	CJ-60722 (AZ)	EXPIRED 07/31/17	1C6RR7KT1FS704001	5.7L HEMI	P245/70R17	P245/70R17	Warehouse
PICKUP	FL1109 Z98170	2011	DODGE	RAM 1500 4x4	17815 (TN)	7/28/15 - 8/31/16	1D7RV1GP8BS649480	V8	P245/70R17	P245/70R17	Maintenance
PICKUP	PILB#152	2014	FORD	F-150	34227U1 (CA)	1/31/17 - 1/31/18	1FTFW1EF0EKG24047	V8	P245/70R17	P245/70R17	Security Truck
SIDE BY SIDE	C53		John Deere	Gator 625i							
SIDE BY SIDE			Kawasaki	Mule 3000							
Forklift	P42		Yale	Lift Truck Model				Electric			Warehouse
Forklift	800		Toyota	8FGU25				Propane			Warehouse
Forklift	CE005732		Caterpillar	2C500				Propane			Warehouse
Water Truck	1050054				85528K1 (CA)						
Welding Machine			Caterpillar	Big Blue 300 Pro				Diesel			
Portable Air Compressor			Atlas Copco	XAS185 CD7				Diesel			

VEHICLES FOR MIRROR WASHING ACTIVITIES OWNED BY NRG

DESCRIPTION	IVANPAH ID#	YEAR	MAKE	MODEL	CA LICENSE	REGISTRATION	VIN	ENGINE	TIRES		NOTES
									FRONT	REAR	
MIRROR WASHING MACHINES (NT)	1		New Holland	T7.170				131 HP Tier 4a			Delivered from Coalinga 8/29/15
MIRROR WASHING MACHINES (NT)	2		New Holland	T7.170			ZCBMN21227	131 HP Tier 4a			Delivered from Coalinga 8/29/15
MIRROR WASHING MACHINES (NT)	3		New Holland	T7.170				131 HP Tier 4a			Delivered from Coalinga 8/29/15

VEHICLES and EQUIPMENT FOR MIRROR WASHING ACTIVITIES/BROKEN HELIOSTAT CLEAN-UP OWNED BY CONTACTOR

DESCRIPTION	IVANPAH ID#	YEAR	MAKE	MODEL	CA LICENSE	REGISTRATION	VIN	ENGINE	TIRES		NOTES
									FRONT	REAR	
PICKUP	11	2017	FORD	F150			1FTEW1EP7HFA10890		275/55/20	275/55/20	General Use
PICKUP	12	2017	FORD	F150			1FTEW1EP0HKC45283		276/70/17	276/70/17	Mirror Washing
TRUCK	10	2000	GMC	C-Series			1GDJ7H1D0YJ904772		11R22.5	11R22.5	Broken Mirror Clean up
TRUCK	1	1998	Daihatsu	HiJet			V-S11OP-TMRS		145R-12	145R-12	Broken Mirror Clean up
TRUCK	2	1998	Suzuki	Gray			GD-DB52T		145R-12	145R-12	Broken Mirror Clean up
TRUCK	3	2006	Suzuki	Carry			EBD-DA63T		145R-12	145R-12	Broken Mirror Clean up
TRUCK	4	1997	Daihatsu	HiJet			V-S11OP-ZMRS		145R-12	145R-12	Mirror Washing
TRUCK	9	2006	Daihatsu	HiJet			TE-S21OP-DMDK		145R-12	145R-12	Mirror Washing
TRUCK	13	1998	Daihatsu	HiJet			V-S11OP-TMPS		145R136PRLT	145R136PRLT	Mirror Washing
SIDE BY SIDE	6	2011	Gator	TS 4x2			1MO4X2SJHCMO72063		22.5x10x8	22.5x10x8	Mirror Washing
SIDE BY SIDE	7	2011	Gator	TS 4x2			1MO4X2SJECM072064		25x10X10	25x10X10	Mirror Washing
SIDE BY SIDE	8	2010	Kawasaki	4010 trans			KAF950G		145R-12	145R-12	Mirror Washing
SIDE BY SIDE	15	2012	Kawasaki	600			KAF400B		25x10X10	25x10X10	Broken Mirror Clean up
	14	2012	KUBOTA	RTV					25X11X10	25X11X10	Broken Mirror Clean up
	16	2012	KUBOTA	RTV					25X11X10	25X11X10	Mirror Washing
	17	2012	KUBOTA	RTV					25X11X10	25X11X10	Mirror Washing
	18	2012	KUBOTA	RTV					25X11X10	25X11X10	Mirror Washing
Fork Lift	817677	2006	Terex	Fork					12-16.5 NHS	12-16.5 NHS	Yard - Broken Mirror Clean up
Water Tank Trailers (Buffaloes)	1226035	2014	Water Buffalo	Traditional			EQ5000268777		ST225/75/D15	ST225/75/D15	Mirror Washing
Water Tank Trailers (Buffaloes)	1	2014	Water Buffalo	Costume Made			109ES221400222		ST205/75/D15	ST205/75/D15	Mirror Washing
Water Tank Trailers (Buffaloes)	825768RA	2014	Water Buffalo	Square Fender			ICQFA0821C673		ST225/75/D15	ST225/75/D15	Mirror Washing
Water Tank Trailers (Buffaloes)	11844387	2014	Water Buffalo	Traditional					ST225/75/D15	ST225/75/D15	Mirror Washing
Water Tank Trailers (Buffaloes)	10083823	2014	Water Buffalo	Traditional					ST225/75/D15	ST225/75/D15	Mirror Washing
Water Tank Trailers (Buffaloes)	10173630	2014	Water Buffalo	Traditional					ST225/75/D15	ST225/75/D15	Mirror Washing
Water Tank Trailers (Buffaloes)	1225624	2014	Water Buffalo	Traditional			EQ5000268811		ST225/75/D15	ST225/75/D15	Mirror Washing

Appendix F

Condition of Certification AQSC-7

Dust Control Annual Report

NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 5, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Operations Dust Control Annual Report, to fulfill California Energy Commission Condition of Certification, AQSC-7

Dear Mr. Douglas and Mr. Ahrens,

In accordance with Section 5.1 of the Operations Dust Control Plan submitted under the requirements of Condition of Certification AQSC-7 of the Commission's approval of the Ivanpah Solar Electric Generating System, we are providing the following recordkeeping and reporting requirements of the Operations Dust Control Plan as a requirement in the Annual Compliance Report:

Requirement #1: For dust suppressants, the CARB equipment precertification Executive Order and Evaluation Report or EPA Environmental Technology Verification Report, as appropriate. Only dust suppressants certified through CARB's Equipment Precertification Program 4 or U.S. EPA's Environmental Technology Verification Program 5 will be used onsite, unless approved in advance in writing by the CEC CPM. Dust suppressants that are disallowed by California's Regional Water Quality Control Boards and/or the Mojave Desert AQMD will not be utilized.

Water is the only medium of dust suppressant used in the ISEGS facility. However, there were no site activities requiring dust abatement during the reporting period.

Requirement #2: Documentation of any fugitive dust complaints made to the Mojave Desert AQMD (where ISEGS was subsequently notified), and documentation of any fugitive dust complaints made directly with the ISEGS.

ISEGS did not receive any fugitive dust complaints during the reporting period, either from the Mojave Desert AQMD or directly.

energyservices
an NRG service
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

Requirement #3: Copies of any fugitive dust violations received, and immediate actions taken to return to compliance.

ISEGS did not receive any fugitive dust violations during the reporting period.

Requirement #4: A record of each visible dust plume response performed under Section 4.0. The record will identify the date and time that a visible dust plume meeting the criteria of Section 4.2 was observed; the source of the dust plume; the specific mitigation measures directed under Steps 1, 2, or 3; the time that the specific mitigation measures were directed under Steps 1, 2, or 3; the effectiveness of each mitigation measure directed, and a record of any appeals/responses to/from the CEC CPM or the Bureau of BLM Authorized Officer in relation to the shutdown of dust plume generating activities.

ISEGS implemented standard control measures as listed in section 3.3 of the Operations Dust Control Plan. Per section 4.0, the Environmental Specialist (VEE Certified) monitored the site for dust plumes. No visible plumes were observed either 400 feet upwind from any regularly occupied structure not owned by ISEGS or 200 feet beyond the centerline of a linear feature. No additional response as outlined in section 4.0 was required.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Exhibit 4

Biological Resources
Conditions of Certification

Appendix G

Conditions of Certification BIO-2, BIO-4, BIO-10, BIO-11, BIO-18, BIO-20, & BIO-21

2017 Annual Biological Report

Ivanpah Solar Electric Generating System

California Energy Commission (07-AFC-5C)
Bureau of Land Management
(CACA-48668, 49502, 49503, and 49504)
Conditions of Certification BIO-2, BIO-4, BIO-10, BIO-11, BIO-18, BIO-20, BIO-21

Annual Biological Report

January 1, 2017 – December 31, 2017
Reporting Period

January 15, 2018

Prepared by: Designated Biologist
(on behalf of Solar Partners I, II, VIII LLC's)

100302 Yates Well Road
Nipton, CA 92364

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1.0 Introduction

This report is submitted in accordance with condition of certification (COC) BIO-2, BIO-4, BIO-10, BIO-11, BIO-18, BIO-20 and BIO-21 of the California Energy Commission (CEC) Ivanpah Solar Electric Generating System (ISEGS) Commission Decision (07-AFC-5C) and terms, conditions, and stipulations of the Bureau of Land Management (BLM) right of way agreement (CACA-48668, 49502, 49503, and 49504). Each of these conditions requires reporting on an annual basis for particular aspects of the project related to biological resources. The requirements of each of these conditions are outlined below and this report addresses each of these requirements.

BIO-2 and BIO-4 require:

> "During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report."

BIO-10 requires:

> The Designated Biologist will provide the Bureau of Land Management (BLM) Authorized Officer (AO) and the CEC Compliance Project Manager (CPM) with an annual Listed Species Status Report which shall include at a minimum: "1) A general description of the status of the project site and construction activities, including actual or projected completion dates, if known; 2) a copy of the table in the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) for the Ivanpah Solar Electric Generating System, San Bernardino County, California (07-AFC-5C), COC BIO-7 with notes showing the current implementation status of each mitigation measure; and 3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts."

BIO-11 requires:

> "The Designated Biologist shall provide to the CPM, BLM's Authorized Officer, CDFG, and USFWS an annual report summarizing all available data (species of carcass, date and location collected, and cause of death) describing bird and other carcasses collected within the project site each year."

BIO-18 requires:

> "During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report for a period not less than 10 years for the Gas Pipeline Revegetation Plan, and for the life of the project for the Special-Status Plant Protection and Monitoring Plan, and the

Special-Status Plant Remedial Action Plan, including funding for the seed storage."

BIO-20 requires:

> "A copy of the notify change of conditions report shall be included in the annual reports"

BIO-21 requires:

> "Following the completion of the fourth quarter of monitoring, the Designated Biologist shall prepare an Annual Report that summarizes the year's data, analyzes any Project-related bird fatalities or injuries detected, and provides recommendations for future monitoring and any adaptive management actions needed."

This report provides the required information for BIO-2, BIO-4, BIO-10, BIO-20 and the data for non-avian species as required in BIO-11. Avian reporting as required by BIO-11, BIO-21, and terms, conditions, and stipulations of the BLM right of way agreement is provided under separate cover. In addition, BIO-18 requirements are provided under a separate cover. This report provides an update on the project status, the BRMIMP table, an assessment of mitigation measures, and a summary of data for non-avian species.

2.0 Project Status

On December 30, 2013, Ivanpah 1 commenced commercial operations. On December 31, 2013, Ivanpah 2 and 3 commenced commercial operations. As a result of the commencement of commercial operations, the management of the environmental compliance at the facility was transferred to NRG Energy Services (NRG), the operator of the facility.

NRG operated the ISEGS facility from January 1, 2017 through December 31, 2017. The Designated Biologist and/or Biological Monitors are still present at the facility four (4) days a week. In addition the designated biologist is on call twenty-four hours a day working with NRG to implement the CEC's conditions of certifications, terms, conditions, and stipulations of the BLM right of way agreement, and the USFWS biological opinion mitigation measures.

2.1 Operations Monitoring Summary

Monitoring of environmental conditions within the project fence line boundaries included but were not limited to kit fox activity, weed presence and management, nesting birds, and fence line integrity. In addition, biological staff responded to reports of wildlife presence or incidents involving wildlife throughout the facility.

On a typical weekday:

- The designated biologist or biological monitor inspected the three units and the construction logistic areas (CLA), for fence integrity and fence repairs, weed presence, nesting birds, kit fox activity, presence of avian and bat mortalities and injuries, and compliance with raven mitigation measures.

- The designated biologist or biological monitor performed maintenance on avian deterrent systems at Ivanpah Units 1, 2, and 3.

- The designated biologist monitored the installed Roadrunner best management practice measures within the fence line of Unit 1.

2.1.1 Ivanpah 1, 2, and 3, Construction Logistics Areas, and Colosseum Road

The designated biologist or biological monitor performed the following activities:

- Monitored fences for breaches
- Surveyed for weeds
- Monitored tortoise activity

- Performed maintenance on Bird Buffer and Bird Gard
- Responded to the presence or incident involving wildlife
- Collected raven and nesting bird data
- Collected incidental bird and bat carcasses

2.1.2 Construction in 2017

In 2017, one construction activity was undertaken at the facility within the project fence line. The construction was to mitigate an area that showed evidence of soil erosion. This area was west of the former Heliostat Assembly Building. The area was graded, and straw waddles were installed along the slope at specific intervals to mitigate future erosion. Prior to the commencement of the work, the area was surveyed by the designated biologist for the presence of noxious weeds, rare plants, mammals, nesting birds, or other wildlife. Noxious weeds were identified in the area prior to the construction and removed in accordance with established procedures, prior to construction.

2.1.3 Interstate 15 Pen

A biological monitor periodically surveyed fences for breaches and weeds. A biological monitor escorted all fence line repair workers when repairs were necessary.

3.0 Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)

BIO-10 requires a copy of the table in the BRMIMP with notes showing the current implementation status of each mitigation measure. See **Appendix A** for a copy of the BRMIMP table.

4.0 Assessment of Mitigation Measures

Mitigation measures discussed in this section are limited to those measures included as BIO-6 Worker Environmental Awareness Program, BIO-8 Desert Tortoise Clearance Surveys and Fencing, BIO-9 Desert Tortoise Translocation Plan, BIO-10 Desert Tortoise Compliance Verification, BIO-11 Impact Avoidance and Minimization Measures, BIO-12 Raven Management, BIO-13 Weed Management Measures, BIO-15 Nest Surveys, BIO-16 Burrowing Owl Impact Avoidance and Minimization Measures, BIO-17 Desert Tortoise Compensatory Mitigation, BIO-19 Special-status Plant Impact Avoidance and Minimization, and BIO-20 Streambed Impact Avoidance and Minimization .

The measures described below represent best management practices that were either specified in the CEC License, BLM ROW or developed independently at the site. For each of these broad categories of measures a succinct summary and an evaluation of the effectiveness is provided as required under BIO-10

4.1 Worker Environmental Awareness Program BIO-6

The approved Worker Environmental Awareness Program (WEAP) was implemented throughout 2017. Prior to commencing work all workers are trained upon arrival at the site or provided an annual WEAP training refresher. Training records are maintained on-site and available by request.

4.2 Impact Avoidance and Minimization Measures BIO-11

BIO-11 requires impact avoidance and minimization measures to protect biological resources during construction. BIO-11 contains seventeen specific measures and each of these measures is evaluated below.

4.2.1 Limit Disturbance Areas

In 2017, no construction activities took place within the project fence line that required delineation with stakes, and there was no additional storage of soils. All project vehicles were parked within the project fence line. No measures were undertaken for this measure and therefore, no evaluation is presented.

4.2.2 Minimize Road Impacts

Established roads exist at the site and site fencing constrains vehicles to these areas. No new roads were constructed within the ISEGS fence line in 2017. Monitors supervised any activities that occurred outside of the fence line, and ensured workers stayed on existing roads.

4.2.3 Minimize Traffic Impacts

Vehicular traffic during project operations was confined to existing routes of travel to and from the project site. Cross-country vehicle and equipment use outside designated work areas is prohibited. The speed limit is 20 miles per hour within the project area or on maintenance roads for linear facilities. All workers go through a site orientation. The orientation discusses the site egress route, prohibition of cross-

country travel, the requirement of a biological monitor outside of the project fence line, and the speed limit on access routes. Orientation of all workers has been an effective means ensuring workers are aware of the mitigation measure. There have been no recorded instances of workers traveling cross-country, using equipment outside the project fence line, or using alternative routes of travel to and from the site. Biologists have reported instances of vehicles going over 20 miles an hour on paved roads on-site. This information was brought to the Facility General Manager who immediately addressed the issue with site staff during a morning meeting to reinforce this requirement.

4.2.4 Monitoring During Construction occurring as part of Maintenance Activities

This mitigation measure was successful as at least one biological monitor was at the site when there was potential to disturb soil, vegetation, and wildlife during 2017. The Designated Biologist was available by cell phone when offsite to respond as needed. See Section 2.1 Operations Monitoring Summary for more details.

4.2.5 Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas

Staging areas for operations on the plant site are within the areas that had been fenced with desert tortoise exclusion fencing and cleared. These areas were concentrated rather than dispersed, with the primary staging areas located in the eastern portion of the CLA, and within the paved parking lot of the power blocks. This mitigation measure was effective during 2017.

4.2.6 Avoid Use of Toxic Substances

Separate cover in this annual report discusses hazardous materials used on-site. See reporting for HAZ-01 and HAZ-06, provided under separate cover.

4.2.7 Minimize Lighting Impacts

The installation of downcast lighting on-site has been effective, and prevents casting light into adjacent wildlife habitat. Nighttime lighting was discontinued on all Unit towers in July 2014, with the exception of the required FAA lighting. Illumination in the towers will only be used when required for maintenance. The results of these mitigation measures continue to be monitored and evaluated.

4.2.8 Badger Surveys

Per the requirements of COC BIO-11, no badger surveys were conducted, and no known badger dens were located onsite in 2017. No images of badgers were captured on cameras located on the ISEGS site. However, two incidental observations were made of badgers onsite. On March 1, 2017 an avian biologist observed a badger in the Unit 2 solar field. The badger was chasing a rabbit at the time the biologist observed it. On April 18, 2017, an avian biologist observed a badger in the Unit 2 solar field foraging amongst the creosote bushes.

Per COC BIO-2, the American Badger observations were submitted to the California Natural Diversity Data Base. No measures were undertaken for these species and therefore, no evaluation is presented.

4.2.9 Gila Monster Surveys

Per the requirements of COC BIO-11, no Gila monster surveys were conducted, and no Gila monsters were observed onsite in 2017. No measures were undertaken for these species, and therefore no evaluation is presented.

4.2.10 Avoid Vehicle Impacts to Desert Tortoise

Except for work on the gas line, the Long-Distance Translocation Pen ("I-15 Pen"), and offsite mitigation fences, all vehicles were confined to the area enclosed by desert tortoise exclusion fencing. WEAP training emphasized that workers should routinely inspect the ground beneath vehicles for the presence of wildlife prior to moving the vehicle. Biological monitors reminded workers of the requirement to inspect under vehicles. Outside of fenced areas, biological monitors were responsible to search under all vehicles they escorted. Monitors were required to escort all vehicles traveling on offsite roads. These protective measures were effective at avoiding vehicle impacts to desert tortoise. Adult and juvenile tortoises, snakes, lizards, and small mammals have been found under vehicles, and allowed to move or, if necessary, are manually moved out of harm's way per applicable protocols**.**

4.2.11 Avoid Wildlife Pitfalls

During 2017 there were no open trenches or pipes stored outside areas fenced with desert tortoise exclusion fences. After the mirrors were installed, several hundred pylons remained uncapped. Biological monitors covered uncapped pylons with temporary caps that were weighted to maintain position. Pylons capped using this method are located on the exterior of the solar field. These temporary caps are preventing entrapment until mirrors are installed in the future.

4.2.12 Minimize Standing Water

No activities on-site required dust abatement during 2017. Therefore, no wildlife was attracted to standing water resulting from dust abatement activities.

4.2.13 Dispose of Road-killed Animals

Carcasses of small mammals (rabbits and rodents) and reptiles found in the project area and along access roads were removed by biological monitors as soon as they were detected. Per the Raven Management Plan, carcasses are disposed of in covered containers to prevent scavenging by ravens or other scavengers. See Section 5.2 for a list of onsite wildlife fatalities disposed of in 2017.

4.2.14 Bird Carcasses

Bird carcasses found onsite were photographed, and the location was recorded. A database is maintained of the date, bird species, location data, and suspected cause of death. WEST Inc. performed the avian and bat injury and fatality surveys during 2017, and this data is presented under separate cover.

4.2.15 Minimize Spills of Hazardous Materials

All vehicles were routinely inspected and maintained in accordance with servicing specifications. A Construction Waste Management Plan was prepared in accordance with WASTE-3, and an Operations Waste Management Plan prepared in accordance with WASTE-6. The annual report for WASTE-6 is provided separately. All spills were reported according to applicable county, state and federal requirements.

4.2.16 Worker Guidelines

All workers and visitors to the site were provided a basic orientation that included specific instruction on biological resources, safety, placement of trash, etc. in accordance with CEC COCs. In addition, workers were provided additional instruction in the worker orientations. All workers were informed as part of the worker training of the requirement that pets were not allowed onsite nor were wildlife to be fed. All site visitors and workers were made aware of the firearms restrictions through worker and visitor orientations.

4.2.17 Monitor Ground Disturbing Activities Prior to Site Mobilization

No site mobilization requiring monitoring of ground disturbing activities occurred in 2017.

4.3 Raven Management, BIO-12

During 2017, the Raven Management Plan objectives were implemented per COC BIO-12 and the 2011 Biological Opinion. The goal of the Raven Management Plan is to deter raven depredation of hatchling and juvenile desert tortoises in Ivanpah Valley. The Raven Management Plan was designed to implement mitigation measures, which would discourage the presences of ravens on-site. The Raven Management Plan specifies measures to prevent raven access to anthropogenic food and water resources (i.e. lids on dumpster, remove and dispose of all road-killed animals on the project site, and use of water in a manner that does not result in puddling), employee education, and reporting of raven nests observed on-site.

Biologists continue to work with NRG to ensure Raven Management Plan mitigation measures are implemented on-site. All dumpsters on-site have lids with a metal bar to secure the lids. Any observations of an open garbage dumpster or trashcan containing food was immediately closed and secured.

If an observation was made of water runoff or minor water accumulation created by leaking fixtures in the power blocks, a raven proof spill containment pan was placed under the leak until a more permanent fix was possible by the maintenance department. In addition, when anthropogenic water sources for ravens are identified, these features are addressed directly if possible with repairs, barriers, or engineering alterations, and workers, technicians, or supervisors are informed how to prevent ravens from accessing water.

All road-killed wildlife observed on-site is reported immediately to the designated biologist. A biologist removes the road-killed wildlife and disposes of it in an appropriate manner. All birds and bats are transferred to WEST for processing and storage within the on-site freezer.

Employee education is provided as part of the on-site orientation program and Worker Environmental Awareness Program. The education program covers disposing of food in proper receptacles, not leaving water bottles or food in areas accessible to ravens, speed limits on-site, and reporting road-killed animals to the designated biologist. Where ravens are observed procuring human food or anthropogenic sources of water, the work crews and supervisors in the area are informed and raven protocols are reviewed directly with the field personnel involved.

No raven nests were observed on-site during 2017.

4.4 Weed Management Activities, BIO-13

Biological monitors conducted monthly weed surveys throughout the site during the active growing season (February through November) in accordance with COC BIO-13 requirements. Data was collected when noxious weeds were located, the plants were collected, and both were transferred to the Designated Biologist for reporting and disposal. All weed surveys were successfully implemented and completed according to the Weed Management Plan and 2011 USFWS Biological Opinion. A report summarizing weed management activities on-site is provided under a separate cover.

4.5 Closure, Revegetation and Rehabilitation Plan, BIO-14

A report summarizing the assessments of the Closure, Revegetation and Rehabilitation Plan is provided under a separate cover.

4.6 Nesting Birds, BIO-15

Per the requirements of COC BIO-15, no pre-construction surveys for nesting birds were required for the ISEGS site in 2017. No nests were found incidentally on the site by avian biologists during 2017.

4.7 Burrowing Owls, BIO-16

Per the stipulations of COC BIO-16, no pre-construction surveys for burrowing owls were required or warranted on the ISEGS site in 2017. No visual or auditory detections were made of burrowing owls on the ISEGS site during 2017, and no photos of owls on motion sensor cameras placed at mammal burrows and shelter sites were collected. No indication of the presence of burrowing owl was observed in 2017 by biological monitors on the site.

No measures were undertaken for these species, and therefore no effectiveness evaluation is presented.

4.8 Desert Tortoise Compensatory Mitigation, BIO-17

As part of the compensatory mitigation for desert tortoise, 50 miles of desert tortoise exclusion fence was required to be installed. The installation commenced along Interstates 15 and 40 in October 2015. Construction was completed on March 17, 2016. The fence is inspected and maintained by a third party with funds provided from an endowment for the compensatory mitigation. A report summarizing fence inspection and maintenance is provided under a separate cover.

Habitat acquisition was completed through the California Department of Fish and Wildlife (CDFW) SB34 program in accordance with BIO-17. This program preserved in perpetuity over 7000 acres of wildlife habitat for various species, including desert tortoise. In addition, an endowment was established as part of the program to provide for the wildlife management on these lands in accordance with BIO-17.

August 28, 2013 marked the completion of restoring and habitat restoration of at least 50 routes within the Desert Wildlife Management Area managed by the BLM. During August and September of 2014 all fifty-one routes were inspected as part of an annual inspection and a report was submitted to BLM on the findings of the inspection. On February 26, 2015 BLM confirmed the requirements of this condition were satisfied. Therefore, no further reporting is required.

4.9 Special-status Plant Impact Avoidance and Minimization, BIO-18

A report summarizing the assessments of the mitigations measures is under a separate cover.

4.10 Streambed Impact Avoidance and Minimization, BIO-20

See **Appendix B** for reports on change of biological conditions from 2017. Each of the reports satisfies this condition.

4.11 Bird or Bats Injuries and Fatalities, BIO-21

Per the requirements of COC BIO-21, the Designated Biologist was informed of any avian or bat injury or fatality discovered on the site in 2017, and each incident was documented and reported as per the ABMMP. Per COC BIO-21 all listed bird or bat species or special-status species observed were

submitted to the California Natural Diversity Data Base. The surveying, reporting, and data analysis for avian and bat injury and fatality were performed as prescribed in the ABMMP by WEST Inc. The results of these are presented under separate cover.

4.11.1 Avian and Bat Monitoring and Management Plan (ABMMP)

Avian biologists and personnel from West Inc. implemented the ABMMP during 2017. All results and actions, including deterrence measures are reported as part of the ABMMP and are provided under separate cover.

4.12 Desert Tortoises BIO-8, BIO-9, BIO-10

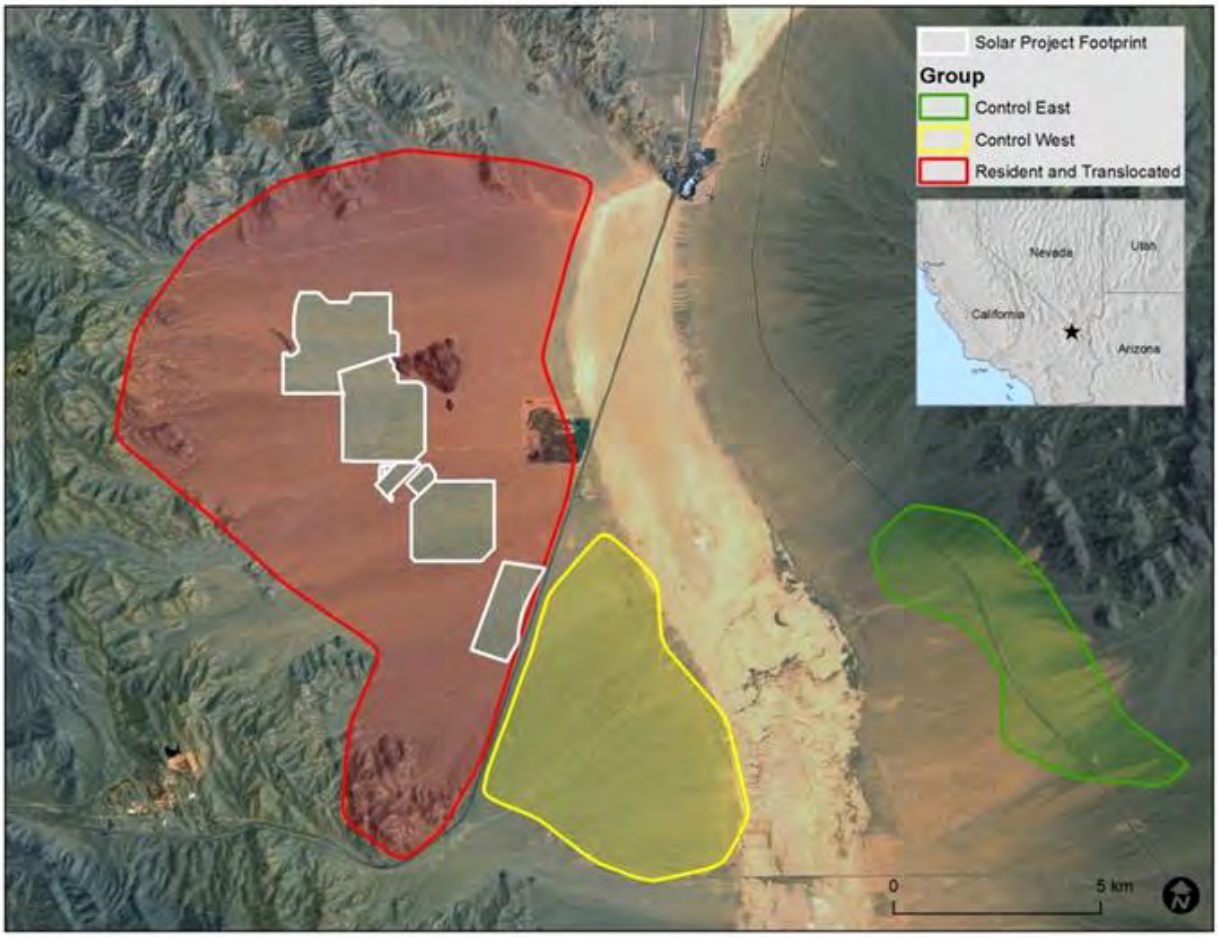
The following section describes the ISEGS desert tortoise best management practices that were prescribed as part of the CEC License Conditions and 2011 Revised Biological Opinion. ISEGS has also independently developed additional measures for tortoises.

Between October 2010 (ISEGS project construction start) and December 31, 2017, tortoises were numbered on the site, and in the recipient and control areas as part of the project (Figure 1). Collectively these 517 tortoises will further be referred to as "monitored tortoises." See **Table 1** below for definitions of ISEGS monitored tortoise types. Monitored tortoises are broken down into three general groups: (1) **translocated tortoises**, or numbered tortoises initially located within the site boundaries (235 total, includes long-distance translocation tortoises, short-distance translocation tortoises, Head Start (Juvenile) tortoises (includes tortoises hatched in captivity), and never tracked tortoises); (2) **resident tortoises**, or numbered tortoises initially located in the recipient area surrounding the site (126 total); and (3) **control tortoises**, or numbered tortoises initially located in the control area (156 total). Other tortoises that exist in the recipient and control areas will be referred to as "unmarked, unmonitored tortoises" throughout the report.

Table 1: Definition of ISEGS Monitored Tortoise Types

Tortoise Type	Sub-Type	Definition
Translocated	Long-Distance Translocation	Numbered tortoises initially located within site boundaries whose mean location was greater than 500 meters from the perimeter fence.
Translocated	Short-Distance Translocation	Numbered tortoises initially located within site boundaries whose mean location was less than 500 meters from the perimeter fence
Translocated	Head Start (Juvenile)	Numbered tortoises initially located within site boundaries with a strait mid-line carapace length (MCL) of less than 120 mm. Head Start tortoises include tortoises hatched in the holding pens.
Translocated	Never Tracked	Numbered tortoises initially located within the site boundaries with a strait mid-line carapace length (MCL) of less than 120mm after the commencement of commercial operations.
Resident		Numbered tortoises initially located in the recipient area surrounding the site.
Control		Numbered tortoises initially located in the control area.

Figure 1: Locations of ISEGS Tortoise Groups



Of the 517 total monitored tortoises, 20 of these were not affixed with radio transmitters, and thus are not technically monitored. Of the 20 non-transmittered tortoises, 10 were numbered and not affixed with radio transmitters because they were only necessary for a one-time blood sampling effort and not for monitoring, five were not transmittered because their carapaces were either too small or misshapen such that they could not hold a transmitter, four were juveniles found inside the project boundaries during operations, and one sub-adult was found along Yates Well Road during operations. These tortoises were numbered, a health assessment completed, and released outside the project boundaries. See **Table 2** below for a summary of monitored tortoises. Also note that these numbers include tortoises that died or were found dead initially. See the section on "Tortoise Fatalities" below for more information. See **Appendix C** for the ISEGS 2017 Desert Tortoise Disposition Table. See maps in **Appendix D** for initial and current locations of all monitored tortoises.

Table 2: Summary of Monitored Tortoises

Tortoise Size and Sex	Translocated	Resident	Control	Total
Male >159 mm MCL	44	61	66	**171**
Female >159 mm MCL	40	45	59	**144**
Sex Unknown >159 mm MCL	7	3	4	**14**
120-159 mm MCL	27	6	13	**46**
0-119 mm MCL	117*	11	14	**142**
Total	**235**	**126**	**156**	**517**

* Includes 57 tortoises hatched in captivity.

4.12.1 Tortoise Discoveries - 2017

On May 27, 2017 an NRG employee encountered a tortoise on Yates Well Road while driving to the site. The employee watched the tortoise from a distance to ensure the tortoise's safety until a biologist arrived. Once the biologist arrived the tortoise was marked with a number, BS362 and received a health assessment prior to being translocated to the recipient site on May 27, 2017. See **Table 3** below for details.

Table 3: New Project Tortoises in 2017

Tort ID	Tortoise Type	Tortoise Status	Sex	Initial MCL	Initial Site	Initial Date
BS362	Resident	Not Tracked	Unknown	42	Yates Well Road	27-May-2017

4.12.2 Holding Pens

There were no tortoises housed within the holding pens during 2017. The holding pens (located in Construction Logistics Area West (Common West) of the ISEGS project site) consisted of 84 (20 by 20 meter) adult tortoise pens, and 24 smaller (ten by ten meters) juvenile tortoise (Head Start) pens enclosed in a predator-proof facility. .

4.12.3 Head Start

The Head Start facility did not house any tortoises during 2017. The ISEGS Head Start facility was designed to house all live translocated tortoises that were under 120 mm MCL at the time of capture (68 tortoises) and all tortoises that hatched in captivity in 2011 (39 tortoises- Fourteen Head Start tortoises that had originally hatched in the holding pens were permanently transferred to the Mojave National Preserve Head Start facility on April 26 and 27, 2012, per instructions by the BLM and USFWS reducing the number of hatched-in-captivity tortoises on-site from 53 to 39.). The Head Start facility is located within the holding pen area and is comprised of two structures containing (24) ten by ten meter pens. Metal flashing surrounds each pen and contains man-made tortoise burrows constructed of perforated PVC pipe. The entire facility is surrounded by chain-link fence, and was covered in netting to prevent predation by birds and mammals.

4.12.4 Desert Tortoise Health Analyses and ELISA Testing

Per the requirements of the 2011 Revised Biological Opinion, health analyses were conducted on all transmittered monitored tortoises (translocated, recipient and control). The prevalence of *Mycoplasma agassizii* and *Mycoplasma testudineum* in the population of tortoises associated with the ISEGS project was unknown before the project began.

Spring health assessments were conducted on the majority of monitored tortoises. Fall health assessments were conducted on all of the long-distance translocated tortoises. A typical health assessment included a visual evaluation for clinical signs of disease (as determined by a data form created by the USFWS specifically for tortoise translocations associated with solar projects), size measurements, and photos. For animals over 100 grams, a series of specimen samples including blood and oral swabs were collected and sent to laboratories for analysis. Blood samples were spun down in centrifuges to separate plasma from red blood cells. The plasma was sent to the University of Florida for ELISA testing. ELISA tests to detect antibodies for both *M. agassizii* and *M. testudineum* were conducted. For *M. agassizii* titer levels of less than 32 were considered negative for exposure; titer levels of 32 were suspect and titer levels greater than 32 were positive. For *M. testudineum* titer levels of less than 32 were negative, 32 and 64 suspect, and 128 and greater positive. The ELISA results from the health assessments on the transmittered monitored tortoises (short-distance translocated, recipient and control) are used as part of the Effectiveness Monitoring Program (EMP) required by the 2011 Revised Biological Opinion. See ISEGS ELISA results in **Appendix E** for 2017.

4.12.5 Translocations

During 2017, continued monitoring of a portion of the translocated tortoises occurred. Three types of translocations have occurred at ISEGS:

1) Short-distance translocation occurred in April 2012

2) Long-distance translocation occurred in September 2012

3) Head Start (Juvenile) translocation occurred in October 2016

The 2011 Revised Biological Opinion requires an investigation of the drivers of post-translocation survival. The results of these mitigation measures continue to be monitored and evaluated.

4.12.6 Short-Distance Translocations

Short-distance translocation refers to the translocation method employed for the tortoises (>120 mm MCL) whose known home range center was located less than 500 meters from the ISEGS perimeter fence. From January to June 2017, all short-distance translocated tortoises were tracked weekly during the active season and every other week during the inactive season. Starting in June 2017 the short-distance tortoises were tracked monthly.

4.12.7 Long-Distance Translocation

Long-distance translocation refers to the translocation method employed for the tortoises greater than 120 mm MCL whose known home range center was located greater than 500 meters from the ISEGS perimeter fence. Those tortoises were translocated into a long-distance translocation pen (Interstate 15 Pen) per the requirements of the ISEGS Desert Tortoise Translocation Plan, the 2011 Biological Opinion and the Conditions of Certification on September 23, 2012. All long-distance translocated tortoises were tracked weekly during the active season and every other week during the inactive season.

During the first week in October all thirteen long-distance translocated tortoises had transmitters and iButtons removed as authorized by BLM and USFWS. All thirteen of these tortoises were located in the Interstate 15 pen and will remain in the pen until the fence is removed. The fence is slated for removal in 2021 unless agency guidance recommends earlier removal. See map in **Appendix F** for final locations of long-distance tanslocated tortoises.

4.12.8 Head Start Translocation

See **Appendix G** for Ivanpah Solar Electric Generating System Juvenile Desert Tortoise Translocation 2017 Annual Report.

4.12.9 Effectiveness Monitoring Program

The Effectiveness Monitoring Program (EMP) commenced in April 2012 following the translocation of the short-distance translocated tortoises. The EMP followed the short-distance translocated, resident, and control tortoises for five years. During the five years comprehensive fieldwork was completed to collect

data on tortoise survival and its anticipated drivers. The data collected was analyzed to determine the processes and scales influencing tortoise survival over the five-year period. A five-year report was submitted to the agencies in November 2017 summarizing the results of the Effectiveness Monitoring Program.

4.12.10 Life of the Project Tortoises

NRG will continue to monitor ninety tortoises (30 short-distance translocated, 30 residents, and 30 control) for an additional five years. The remaining 107 EMP tortoises (18 short-distance translocated, 44 resident, and 45 control) were scheduled to have their transmitters and iButtons removed during the fall of 2017. To date, 99 of the 107 tortoises have had their transmitter and iButton removed. The remaining eight tortoises were inaccessible, and will be tracked monthly until they emerge in the Spring of 2018. Once the tortoises emerge their transmitters and iButtons will be removed. See maps in **Appendix H** for final locations of EMP tortoises.

4.12.11 Tortoise Transfer

United States Geological Survey (USGS) is completing a 30-year desert tortoise study in Ivanpah Valley. As part of this study, NRG transferred monitoring of 24 desert tortoises from the Ivanpah tortoise monitoring program to the USGS. This transfer was approved by the USFWS and BLM.

In May 2016, NRG transferred 5 desert tortoises they had been monitored on Control East site to USGS for future monitoring. In October 2017, NRG transferred 19 tortoises they had been monitored on Control and Recipient sites to USGS for future monitoring. .

In addition, NRG transferred all red blood cell samples collected during spring of 2017 health assessments. This included the short and long-distance translocated, residents, and control desert tortoises. All available health and encounter data will be provide to USGS in January 2018.

See maps in **Appendix I** for final locations of tortoises transferred to USGS.

4.12.12 Tortoise Fatalities

See summary and maps in **Appendix J** of all monitored tortoise fatalities in 2017.

Fatalities are broken down into three categories: Effectiveness Monitoring Program (EMP), Tortoise Fatalities and Head Start tortoises. There were a total of 2 EMP fatalities in 2017. Of these 2 fatalities one was a control and one was a resident tortoise. Since translocation of the short-distance tortoises commenced in the spring of 2012, a total of 64 tortoise fatalities have been discovered among the control, resident, and short and long-distance translocated in the control and recipient areas. Of the 64 tortoises 21 were control tortoises, 20 resident tortoises, and 23 translocated tortoises.

From June 1 – September 30, 2017 there was a total of 8 tortoise fatalities. Of the 8 fatalities, two were short-distance translocated, five control, and one resident tortoise. All of these fatalities occurred prior to transmitters being removed from the 107 seven tortoises in October 2017. Thus, these tortoise fatalities are not being included into the life of the project portion of the study.

There were no fatalities among the Life of the Project tortoises during 2017.

There were a total of 26 Head Start (juvenile) fatalities in 2017. Of these 26 fatalities, nine occurred inside the I-15 pen and seventeen occurred outside the I-15 pen. The suspected causes of death for 23 of the fatalities were Canid or Badger. The suspected causes of death for the remaining 3 tortoises were hyperthermia, rodents, and natural causes.

4.13 Precipitation Events and Fence Monitoring

Precipitation events were recorded several times during 2017. These events are detailed in **Table 4**. Immediately following each storm, after the cessation of runoff, site fences were inspected and designated biologist and biological monitors worked to temporarily repair any breach and remove debris from tortoise guards. As a result, following each event, the fence integrity was restored sufficiently to prevent tortoise from accessing the cleared areas. Therefore, tortoises did not have the opportunity to enter the site as a result of these measures. All rain data presented in Table 4 was obtained from the weather station located at the quarantine pens.

Table 4: ISEGS Precipitation Data for 2017

DATE	Jan-2017	Feb-2017	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017
	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)
1	0.02	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0.01	0	0	0	0	0	0	0	0.03	0	0	0
6	0	0	0	0	0	0	0	0	0.08	0	0	0
7	0	0	0	0	0	0	0	0	0.03	0	0	0
8	0	0	0	0	0	0	0.02	0	0.4	0	0	0
9	0.23	0	0	0	0	0	0	0	0.06	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0.04	0	0	0	0	0	0	0	0	0	0
12	0.01	0.01	0	0	0	0	0	0	0	0	0	0
13	0.35	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0.02	0	0	0	0	0	0	0	0	0	0
18	0	0.32	0	0	0	0	0	0	0	0	0	0
19	0.21	0.01	0	0	0	0	0.44	0	0	0	0	0
20	0.24	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0.15	0	0	0	0
22	0.35	0	0	0	0	0	0	0	0	0	0	0
23	0.08	0	0	0	0	0	0	0	0	0	0	0
24	0.03	0	0	0	0	0	0.05	0	0	0	0	0
25	0	0	0	0	0	0	0	0.28	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0.01	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	---	0	0	0	0	0	0.02	0	0	0	0
30	0	---	0	0	0	0	0	0	0	0	0	0
31	0	---	0	---	0	---	0	0.11	0	0	0	0
MTD	**1.53**	**0.41**	**0.00**	**0.00**	**0.00**	**0.00**	**0.51**	**0.56**	**0.60**	**0.00**	**0.00**	**0.00**
YTD	**3.61**											

In accordance with the 2011 Revised Biological Opinion and the project COCs, all tortoise proof fences and tortoise guards on-site were checked twice monthly and within 24 hours of a significant rain event for breaches by the designated biologist or biological monitor. When fence breaches were identified, they were temporarily repaired by the biologist immediately to maintain the integrity of the fence, and reported to NRG for permanent repair. Issues that had not been addressed in a timely manner with permanent repairs were reported in the monthly fence report. As a result, the integrity of the fence was maintained throughout 2017. The practices associated with monitoring and fence repair are effective.

4.14 Miscellaneous

The Designated Biologist monitors captured venomous snakes within the project boundaries that were reported by operations personnel and sub-contractors. Venomous snakes were safely relocated nearby, but outside the site perimeter. Non-venomous snakes found in harm's way were relocated a short distance away from their capture location, within the project boundary. If not in danger, non-venomous snakes were not relocated.

5.0 Summary of Data

BIO-11 requires an annual report summarizing all available data (species of carcass, date and location collected, and cause of death) describing bird and other carcasses collected within the project site each year. As previously noted, avian data is provided under separate cover. This section provides the details of all wildlife fatalities discovered at the site in 2017. Tortoise fatalities were reported previously in Section 4.12.12.

5.1 Mammal Fatalities

There were no kit fox or other large mammal fatalities discovered on-site during 2017. Smaller mammals, including jackrabbits, woodrats and kangaroo rats were discovered on-site (See Section 5.2, below).

5.2 Wildlife Fatalities

Per the Raven Management Plan BIO-12 all carcasses of small mammals (rabbits and rodents) and reptiles observed in the project area and along access roads were promptly removed by a biological monitor and disposed of in a container with a secured top so that they were not accessible to ravens or other scavengers. The following is a summary of dead wildlife collected on roads or adjacent to roads during 2017.

- 20 Black-tailed jackrabbits
- 2 Coachwhip snakes
- 1 Desert Spiny lizard
- 2 Desert Woodrats
- 3 Glossy snakes
- 3 Gopher snakes
- 1 Kangaroo rat
- 1 Long-nosed Leopard lizard
- 1 Mojave Green rattlesnake
- 2 Sidewinder rattlesnakes
- 5 Western Zebra-tailed lizards
- 1 Whiptail lizard

Appendix A

Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) Tracking Table

Table A- 1
Biological Resources Mitigation Implementation and Monitoring Plan Tracking Table

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 1: Certification by CEC	Expected Date is September 22, 2010 by CEC, and October 6, 2010 by BLM	9/22/2010 & 10/7/2010
Preliminary Stage (Fence)		
No. 2: Biologists and botanists field preparation	July 2010 – September 2010	
	Wildlife: Assemble materials required for clearance surveys and translocating tortoises. Includes fiber-optic scopes, tortoise tags. Obtain approval for Designated Biologists (DM) and Biological Monitors (BM).	9/30/2010
	Plants: During pre-construction, plant activities will include the following: Avoid impacts to rare plants by excluding from the project area a 433-acre area in the northernmost portion of Ivanpah 3 that is densely populated with rare plants; establish two additional Rare Plant Mitigation Areas in the CLA within which direct impacts to rare plants will be completely avoided; demark and/or fence Mojave milkweed and Rusby's desert mallow rare plant localities proposed for avoidance within the heliostat array to protect the rare plants from direct impacts during pre-construction and construction activities; salvage individual Mojave milkweed and Rusby's desert mallow plants that cannot be avoided for use in translocation, revegetation, and rehabilitation; salvage of all rare cactus (desert pincushion and Parish's club-cholla) onsite for use in translocation, revegetation, and rehabilitation.	11/1/2010
No. 3: Site and Construction Logistics Area (CLA) staked by land surveyors	July 2010 - September 2010	9/30/2010 for areas subject to construction in Phase I
	Administer WEAP (refer to attached BIO-6 Worker Environmental Awareness Program).	9/30/2010
	Wildlife: Survey vehicles to remain on existing roads.	9/30/2010
No. 4: Improved Colosseum Road location staked by land surveyors	July 2010 - September 2010	

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
	Administer WEAP (refer to attached BIO-*6 Worker Environmental Awareness Program).*	9/30/2010
	Wildlife: Survey vehicles to remain on existing roads.	9/30/2010
No. 5: Weed inspection station established	October 2010 – May 2013	10/6/2010
	Plants: A weed inspection station will be established on the first day of construction. Until the permanent facility is operational (see No. 26) vehicles that require washing will be monitored by security staff and turned back to be washed in Primm before returning to the site. A vehicle log will be included in monthly compliance reports.	10/6/2010
No. 6: 10-foot-wide internal perimeter road (within the staked fence line) is cleared of vegetation and graded	October 2010 – November 2010 (for Phase I of construction)	11/30/2010
	Continue to administer WEAP to all new personnel at site or all subsequent events.	Ongoing
	Administer WEAP (refer to attached BIO-6 Worker Environmental Awareness Program).	11/30/2010
	Wildlife:	
	An AB or BM will be onsite during installation of the temporary desert tortoise fence. If installation of temporary fencing, surveying or clearing is occurring at more than one location, more than one AB may need to be onsite to provide appropriate supervision. After installation of this temporary fencing and prior to initiation of construction activities, an AB and/or BM will perform a pre-construction sweep for desert tortoises. An AB will relocate any desert tortoises found in the project impact area. Desert tortoises will be moved to suitable habitat (at least 300 feet from the project site) outside the impact area and placed in a natural or artificial burrow or under a shrub, depending on time of day and year. An AB will also be available to relocate any desert tortoises that may wander into the impact area during construction. All ABs or BMs will have a copy of the Biological Opinion (Attachment B), Translocation Plan (BIO-9 attached), and be familiar with the COC BIO-11 all activities involving desert tortoise clearance surveys, handling, health assessments, and other related translocation activities.	11/30/2010

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
	Concurrent with start of perimeter fencing, construct minimum of 16 desert tortoise holding pens for use in quarantining tortoise removed from Ivanpah 1 and the CLA.	11/30/2010
	Plants: Concurrent with start of perimeter fencing, botanists will install protective fencing for rare plants and salvage any rare plants within the fence line corridor. Environmentally Sensitive Areas (ESAs) will be marked with signs.	11/30/2010
No. 7: Temporary (stand alone) tortoise fence installed on perimeter of Ivanpah 1	September 2010 – October 2010	10/29/2010
	Administer WEAP (refer to attached BIO- 6 Worker Environmental Awareness Program)..	10/29/2010
	Wildlife: An AB or BM will be onsite during installation of the temporary desert tortoise fence. If installation of temporary fencing, surveying or clearing is occurring at more than one location, more than one AB may need to be onsite to provide appropriate supervision. After installation of this temporary fencing and prior to initiation of construction activities, an AB and/or BM will perform a pre-construction sweep for desert tortoises. An AB will relocate any desert tortoises found in the project impact area. Desert tortoises will be moved to suitable habitat (at least 300 feet from the project site) outside the impact area and placed in a natural or artificial burrow or under a shrub, depending on time of day and year. An AB will also be available to relocate any desert tortoises that may wander into the impact area during construction. All ABs or BMs will have a copy of the Biological Opinion (Attachment B), Translocation Plan (BIO-9 attached), and be familiar with the COC BIO-11 for all activities involving desert tortoise clearance surveys, handling, health assessments, and other related translocation activities.	11/4/2010
	Plants: Botanists continue installation of protective fencing for rare plants and salvage plants within the fence line corridor. Environmentally Sensitive Areas (ESAs) will be marked with signs.	10/29/2010
No. 8: Permanent security/Combo fence installed on perimeter of Ivanpah 1	September 2010 – December 2010	12/31/2010
	Wildlife: Same as No. 7. Construction crews will require monitoring by DB/BMs until the fence installation is complete.	12/31/2010

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
	Plants: Botanists continue installation of protective fencing for rare plants and salvage plants within the fence line corridor.	10/29/2010
No. 9: Tortoise exclusion fence installed along Colosseum Road	September 2010 – October 2010	10/29/2010
	Wildlife: An AB or BM will be on site during installation of the fence.	10/29/2010
No. 10: Area within fenced perimeters of Ivanpah 1, and later Ivanpah 2 and 3, is completed	Ivanpah 1 and CLA: October 2010; Ivanpah 2: September 2011; Ivanpah 3: September-October 2011	Ivanpah 1 and CLA: 11/4/2010; Ivanpah 2: 9/28/2011; Ivanpah 3: 10/10/2011
	Wildlife: Within 24 hours prior to the initiation of construction of the desert tortoise-exclusion fence, a desert tortoise survey would be conducted by DB/BMs of those linear areas using techniques providing 100-percent coverage of the construction area and an additional transect along both sides of the fence line transect to provide coverage of an area approximately 90 feet wide, centered on the fence alignment. Transects would be no greater than 30 feet apart. Two passes of complete coverage would be conducted. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, would be examined to determine occupancy. Any burrow within the fence line corridor would be collapsed after confirmation that a desert tortoise does not occupy it, or if occupied, the desert tortoise has been removed.	Ivanpah 1 and CLA: 11/4/2010; Ivanpah 2: 9/28/2011; Ivanpah 3: 10/10/2011
	Within 72 hours after the area to be cleared is fully enclosed with tortoise exclusion fencing, a desert tortoise clearance survey would be initiated per USFWS protocol (USFWS 1992) and project specific Guidelines (USFWS 2008). At least three complete clearance sweeps with 100 percent coverage would be conducted as described above. Each separate survey would be walked in a perpendicular direction to allow opposing angles of observation. The area will be considered clear after two complete passes have discovered no new desert tortoises. All ABs or BMs will have a copy of the Biological Opinion (Attachment B), Translocation Plan (BIO-9 attached), and be familiar with the COC BIO-11 for all activities involving desert tortoise clearance surveys, handling, health assessments, and other related translocation activities.	Ivanpah 1 and CLA: 11/4/2010; Ivanpah 2: 9/28/2011; Ivanpah 3: 10/10/2011

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
	Conduct concurrent clearance surveys for burrowing owls (BIO-16), Gila monsters and badger (BIO-11).	Ivanpah 1 and CLA: 11/4/2010; Ivanpah 2: 9/28/2011; Ivanpah 3: 10/10/2011
	Note: Nesting bird surveys (BIO-15) are required if construction occurs between February 1 and August 31.	2/1/2012 – 8/31/2012
No. 11: Ivanpah 1, and later Ivanpah 2 and 3, is completed -- *CONTINUED*		
	Plants: Monitoring activities specific to special-status plants include: the Designated Biologist will oversee the salvage and transplantation of special-status plants designated on final project plans as "salvage". Salvaged plants will be installed in the Rare Plant Transplantation Area (RPTA); regular inspections of salvaged plants placed in the RPTA will be conducted by the Botanical Monitors to check that salvaged plants are watered and maintained as needed to maximize survivorship throughout the construction period; salvaged native plants that are stored offsite in a native plant nursery, will also be inspected by the Botanical Monitor to document that plants are maintained in good condition; the Botanical Monitor will oversee construction to confirm that no unauthorized construction activities occur in Rare Plant Avoidance Areas (RPAAs); inspections of all fenced special-status plants within the heliostat array will be conducted by the Botanical Monitor to document that avoidance fencing is maintained in good condition; fencing surrounding the Rare Plant Mitigation Areas will be inspected regularly to check that fencing is maintained in good condition; the Botanical Monitor will monitor general construction activities for compliance with regulatory terms and conditions that pertain to special-status plants; and the Botanical Monitor will notify the project owner, BLM's Authorized Officer, and the CPM of any noncompliance with any biological resources condition of certification.	5/31/2014
Construction of Fiber-optic and Gas Lines		
No. 12: Fiber-optic line construction	April 2011 – July 2012	7/2/2012
	Wildlife: DB/BMs clear area of all desert tortoises immediately prior to construction and monitor construction.	7/2/2012

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 13: Gas line construction	March 2011 – December 2013	12/10/2013
	Wildlife: DB/BMs clear area of all desert tortoises immediately prior to construction and monitor construction outside of fenced perimeter.	12/10/2013
	Plants: Prior to construction, survey and salvage special-status plants and common succulents within the linear right-of-way and sub-station and transplant to onsite nurseries. Monitor the adjacent mitigation areas to ensure construction does not intrude or extend beyond the right-of-way.	12/10/2013
Preliminary Stage (Fence) of Ivanpah 2 and 3		
No. 14: 10-foot-wide internal perimeter road (within the staked fence line) is cleared of vegetation and graded	October 2011 – January 2011	1/5/2012
	Continue to administer WEAP of all new personnel at site or all subsequent events (refer to attached BIO-6 Worker Environmental Awareness Program).	Ongoing
	Wildlife: Same as No. 6	1/5/2012
	Plants: Same as No. 6	1/5/2012
No. 15: Perimeter fence construction in Ivanpah 2	March 2011 – June 2012	6/6/2012
	Wildlife: Same as No. 7 and No.8.	6/6/2012
	Plants: Same as No. 7 and No.8	6/6/2012
No. 16: Perimeter fence construction Ivanpah 3	March 2011 – June 2012	6/13/2012
	Wildlife: Same as No. 7 and No.8.	6/13/2012
	Plants: Same as No. 7 and No.8	6/13/2012
Site Development Stage (Primarily inside fenced areas)		

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
No. 17: Rough Grading of sites	Ivanpah 1 & Common areas: November 2010 – February 2011	2/1/2011
	Ivanpah 2: January 2011 – April 2011	4/1/2011
	Ivanpah 3: April 2011 – June 2011	8/31/2011
	Wildlife: A Biological Monitor will be on site during initial grading to ensure no tortoises remain on the site. If a tortoise is found it will be translocated as previously described.	8/31/2011
	Conduct concurrent clearance surveys for burrowing owls (BIO-16), Gila monsters and badger (BIO-11).	8/31/2011
	Note: Nesting bird surveys (BIO-15) are required if construction occurs between February 1 and August 31.	2/1/2017-8/31/2017
	Plants: Rare plant protection areas, ESAs and RPAAs monitored to ensure construction activities don't intrude. Monitor for newly established special-status species and salvage and transplant to on site nurseries.	5/31/2014
No. 18: Pads, parking areas and construction laydown areas graded if needed, and construction trailers moved to locations within the CLA	November 2010 – January 2011	1/24/2011
	Wildlife: No biological monitoring required for wildlife for these construction activities as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented. Monitoring of overwintering tortoises in holding pens will be ongoing.	5/31/2014
	Plants: Same as No. 17	5/31/2014
No. 19: Locations of roads, buildings and structures staked by land surveyors	November 2010 – May 2013	5/31/2014
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection	5/31/2014

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
	measures have been implemented.	
No. 20: Grading of power block, building pads, internal roads and solar field (as necessary)	Ivanpah 1 & Common: November 2010 - October 2011	10/10/2011
	Ivanpah 2: January 2011 – November 2011	11/3/2011
	Ivanpah 3: April 2011 – June 2012	6/5/2012
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented. *(Note: Biological monitoring required as per Biological Opinion)*	5/31/2014
	Plants: Same as No. 17	5/31/2014
No. 21: Vegetation mowed to within 10-12 inches of ground surface	Ivanpah 1, CLA, Ivanpah 2, and Ivanpah 3: December 2010 – November 2012	11/22/2012
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented. *(Note: Biological monitoring required as per Biological Opinion)*	Ongoing as per biological opinion
	Plants: Same as No. 17	Ongoing
No. 22: Colosseum Road graded and paved from golf course to plant	October 2010 – November 2010	July 2011
	Wildlife: DB/BMs clear fenced area of all desert tortoises prior to construction.	11/3/2010
	Plants: No rare plants are located along Colosseum Road.	N/A
No. 23: Internal roads graded, graveled, or	Ivanpah 1: October 2010 – November 2012	9/12/2013

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
paved		
	Ivanpah 2: January 2011- February 2013	11/18/2013
	Ivanpah 3: April 2011 – February 2013	12/4/2013
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented. *(Note: Biological monitoring required as per Biological Opinion)*	Ongoing as per biological opinion
	Plants: Same as No. 17	Ongoing
No. 24: Power equipment and materials brought onsite	November 2010 – May 2014	5/31/2014
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	5/31/2014
	Plants: No monitoring necessary required for plants as long as all of the previously described construction events have occurred and resources protection measures have been implemented.	5/31/2014
No. 25: Fabrication shops erected	November 2010 – June 2011	6/28/2011
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	6/28/2011
	Plants: Same as No. 24	6/28/2011
No. 26: Permanent wheel-washing station established	January 2011 - June 2011	6/30/2011
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection	6/30/2011

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
	measures have been implemented.	
	Plants: Same as No. 24	6/30/2011
No. 27: Power block excavated and foundations poured	Ivanpah 1: February 2011 – April 2012	4/3/2012
	Ivanpah 2: April 2011 – July 2012	7/24/2012
	Ivanpah 3: June 2011 - May 2012	5/31/2012
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	5/31/2012
	Plants: Same as No. 24	5/31/2012
No. 28: Installation of underground piping and wiring	Ivanpah 1: December 2010 - May 2012	5/22/2012
	Ivanpah 2: February 2011 - April 2013	4/24/2013
	Ivanpah 3: April 2011 - September 2013	9/19/2013
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	9/19/2013
	Plants: Same as No. 24	9/19/2013
No. 29: Construction of power block	Ivanpah 1: February 2011 – December 2013	12/30/2013
	Ivanpah 2: April 2011 – December 2013	12/31/2013
	Ivanpah 3: September 2011 – December 2013	12/31/2013
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	12/31/2013

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
	Plants: Same as No. 24	12/31/2013
No. 30: Heliostat materials brought onsite	February 2011- September 2013	9/30/2013
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	9/30/2013
	Plants: Same as No. 24	9/30/2013
No. 31: Construction of Administration/warehouse building	February 2011 – November 2012	11/7/2012
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	11/7/2012
	Plants: Same as No. 24	11/7/2012
No. 32: Construction of heliostat field	Ivanpah 1: March 2011 - December 2012	12/17/2012
	Ivanpah 2: May 2011 - September 2013	9/10/2013
	Ivanpah 3: May 2012 - October 2013	10/7/2013
	Wildlife: No biological monitoring required for wildlife as long as all of the previously described construction events have occurred (e.g., perimeter fence installed) and resources protection measures have been implemented.	10/7/2013
	Plants: Rare plant protection areas, ESAs and RPAAs monitored to ensure construction activities don't intrude. Monitor for newly established special-status species and salvage and transplant to on-site nurseries.	10/7/2013
Solar plant construction	Ivanpah 1 December 2010 – January 2013	9/20/2013
	Implement all of the preceding measures for construction.	5/31/2014

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
Solar plant construction	Ivanpah 2 January 2011 – April 2013	12/15/2013
	Implement all of the preceding measures for construction.	5/31/2014
Solar plant construction	Ivanpah 3 July 2011 – August 2013	12/6/2013
	Implement all of the preceding measures for construction.	5/31/2014
Removal/Restoration Phase		
Construction completed, all construction equipment and temporary buildings removed.	March 2013 - November 2013	11/30/2013
	Wildlife: The permanent exclusion fencing would be inspected bimonthly and after major rainfall events	Ongoing
	Plants: Areas used for construction that are no longer required for operation are restored per the Closure, Revegetation and Rehabilitation Plan. Special-status plant monitoring will be conducted within the RPAAs.	Ongoing
Operation (Inside fenced areas)		
	Life of the project (45 Years)	Ongoing
	WEAP repeated annually for permanent employees, and will be routinely administered within one week of arrival to any new construction personnel.	Ongoing
	Wildlife: The permanent exclusion fencing is inspected bimonthly and after major rainfall events.	Ongoing
	Implement ongoing measures of Raven Management Plan (BIO-12).	Ongoing
	Implement ongoing measures of Tortoise Translocation Plan. Monitoring and adaptive management measures for first 3 years of operation (see BIO-9 and Biological Opinion).	Ongoing
	Implement ongoing measures of Avian and Bat Monitoring and	Ongoing

Event Description	Expected Dates and Essential Biological Resource Protection Measures	Date Completed
	Management Plan (BIO-21)	
	Plants: Maintain nursery plants. Special-status plant monitoring will be conducted within the RPAAs. An adaptive management approach will be used during long-term monitoring as per BIO-14.	Ongoing
Maintenance (Inside and outside of fenced areas)		
Class I activities (do not result in surface disturbance)	Life of the project (45 Years)	Ongoing
	Wildlife: DM/BM administers WEAP and monitors activity outside of fenced area that requires vehicles or construction equipment.	Ongoing
Class II activities (results in minimal surface disturbance)	Life of the project (45 Years)	Ongoing
	Wildlife: *DM/BM administers WEAP and monitors activity outside of fenced area that requires vehicles or construction equipment*	Ongoing
	Plants: *Minimize new disturbance – avoid vegetation.*	Ongoing
Class III activities (result in new, major, surface disturbance outside of fenced areas)	Life of the project (45 Years)	Ongoing
	Wildlife: *Implement measures established for construction activities outside of fenced areas.*	Ongoing
	Plants: Implement appropriate measures in the Closure, Revegetation and Rehabilitation Plan (BIO-14).	Ongoing
Facility Closure		
Decommissioning.	45 years from project's start of operation	Not started
	Implement measures of the Closure, Revegetation and Rehabilitation Plan (BIO-14)	Not started

Appendix B
BIO-20 Biological Change of Conditions Reports

TECHNICAL MEMORANDUM

Condition of Certification BIO-20 Change of Conditions Report for ISEGS, June 2017

PREPARED FOR:	Tim Sisk/NRG Energy Amanda Scheib/Designated Biologist
COPY TO:	CH2M Environmental Staff
PREPARED BY:	Morgan King/CH2M
DATE:	June 20, 2017
PROJECT NUMBER:	691217

Introduction

The California Energy Commission's *Ivanpah Solar Electric Generating System Commissions Decision* (2010) Condition of Certification (COC) BIO-20 states, in part, that Solar Partners' must identify:

> "…any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts… 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."

Potential changes of conditions include changes to assumptions resulting from new data provided during the operations phase of Ivanpah Solar Electric Generating (ISEGS) surveys. In spring 2017, environmental staff identified the presence of two new plant species, which is an apparent change in the biological conditions because they had not been previously identified from ISEGS.

New Plant Occurrences

Change of Conditions

The new plant species not previously observed onsite were wild horsenettle (*Solanum elaeagnifolium*) and Walker's suncup (*Chylismia [=Camissonia] walkeri* ssp. *tortilis*).

Description

Wild horsenettle is a perennial herbaceous plant in the nightshade (Solanaceae) family. It is a non-native species in California, which was introduced from elsewhere but naturalized in the wild. It occurs throughout California in elevations up to 4,000 feet above mean sea level. It occurs in disturbed habitats such as fields and roadsides mostly in sandy soils.

Wild horsenettle is an ISEGS target weed, which is defined as a species included in the California Department of Food and Agriculture (CDFA), California Invasive Plant Council (Cal-IPC), or Mojave Weed Management Area (MWMA) weed lists (CH2M, 2010; CDFA, 2017; Cal-IPC, 2017; MDRCD, 2017). Wild horsenettle is included in CDFA listing, and has B weed rating, which is defined as, "A pest of known economic or environmental detriment and, if present in California, it is of limited distribution… If found in the state, they are subject to state endorsed holding action and eradication only to provide for

containment, as when found in a nursery. At the discretion of the individual county agricultural commissioner they are subject to eradication, containment, suppression, control, or other holding action" (CDFA, 2017). Wild horsenettle is also identified as one of the 12 "problem weeds" in the MWMA (MDRCD, 2017). This species is not included on Cal-IPC lists.

Walker's suncup is an annual perennial herb in the primrose (Onagraceae) family. It is native to California and is not an ISEGS target weed. This plant occurs in desert mountains up to elevations of 5,800 feet above mean sea level, and is known from Clark Mountain vicinity west of ISEGS (Calflora, 2017).

Recommendations

No recommendations are necessary to accommodate this change in conditions. Biological staff will continue to monitor the project site for new plant species while complying with requirements BIO-18 special-status plants and BIO-13 noxious weeds (CEC, 2010).

References

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TECHNICAL MEMORANDUM

Condition of Certification BIO-20 Change of Conditions Report for ISEGS, September 2017

PREPARED FOR:	Tim Sisk/NRG Energy Amanda Scheib/Designated Biologist
COPY TO:	CH2M Environmental Staff
PREPARED BY:	Morgan King/CH2M
DATE:	September 18, 2017
PROJECT NUMBER:	691217

Introduction

The California Energy Commission's *Ivanpah Solar Electric Generating System Commissions Decision* (2010) Condition of Certification (COC) BIO-20 states, in part, that Solar Partners' must identify:

> "…any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts… 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."

Potential changes of conditions include changes to assumptions resulting from new data provided during the operations phase of Ivanpah Solar Electric Generating (ISEGS) surveys. Environmental staff identified several noxious weed species previously observed at ISEGS that had changed agency status with either California Department of Food and Agriculture (CDFA), California Invasive Plant Council (Cal-IPC), or Mojave Weed Management Area (MWMA). In September 2017, environmental staff identified the presence of one new plant species, which is an apparent change in the biological conditions because it had not been previously identified from ISEGS.

Noxious Weed Status Changes

Change of Conditions

CDFA, Cal-IPC, or MWMA changed status of five noxious weed species, previously observed at ISEGS:

- Sahara mustard (*Brassica tournefortii*) – included on CDFA, Cal-IPC, and MWMA lists of California noxious weeds
- Cheat grass (*Bromus tectorum*) - included on CDFA and Cal-IPC lists of California noxious weeds
- Bermuda grass (*Cynodon dactylon*) - included on Cal-IPC list of California noxious weeds
- Sorghum (*Sorghum halepense*) - included on CDFA list of California noxious weeds
- Puncture vine (*Tribulus terrestris*) – included on CDFA, Cal-IPC, and MWMA lists of California noxious weeds

Description

Sahara Mustard

Sahara mustard is an annual plant in the mustard (Brassicaceae) family. It is an invasive non-native species in California, which was introduced from elsewhere but naturalized in the wild. It occurs mostly in the southern third of California in elevations up to 2,600 feet above mean sea level. It occurs in sandy desert and coastal scrubs, and is known to increase fire frequency and fuel load.

When the ISEGS Weed Management Plan was written in 2010, Sahara mustard was not included in the CDFA weed lists (CH2M, 2010). In September 2017, CDFA added Sahara mustard to the list of California noxious weeds, as C weed rating (CDFA, 2017). CDFA C rating is defined as, "A pest of known economic or environmental detriment and, if present in California, it is usually widespread" (CDFA, 2017). Sahara mustard was already an ISEGS noxious weed because it is included on the Cal-IPC and MWMA lists (Cal-IPC, 2017; MDRCD, 2017).

Sahara mustard was first recorded at ISEGS in 2008. Sahara mustard has been observed since 2008 and manually removed in accordance with BIO-13 weed management protocols. Occurrences of this species were reported in the BIO-13 Annual Monitoring Reports (Solar Partners, 2015; Solar Partners, 2016; Solar Partners, 2017).

Cheat Grass

Cheat grass is an annual in the grass (Poaceae) family. It is an invasive non-native species in California, which was introduced from elsewhere but naturalized in the wild. It occurs throughout California. It is a common turf cultivar that can outcompete native plants and it has become the dominant grass in the Great Basin Desert.

When the ISEGS Weed Management Plan was written in 2010, cheat grass was not included in the CDFA weed lists (CH2M, 2010). In February 2016, CDFA added cheat grass to the list of California noxious weeds, as rank C (CDFA, 2017). Cheat grass was already an ISEGS noxious weed because it is included on the Cal-IPC list (Cal-IPC, 2017).

Cheat grass occurs at ISEGS, but it no action is required because it is not feasible to control (CH2M 2010). Occurrences of this species are not included in the BIO-13 Annual Monitoring Report.

Bermuda Grass

Bermuda grass is a perennial in the grass (Poaceae) family. It is an invasive non-native species known throughout California, which was introduced from elsewhere but naturalized in the wild. This species is a common turf and garden cultivar that when escapes into the wild will outcompete native vegetation.

When the ISEGS Weed Management Plan was written in 2010, Bermuda grass was included in the CDFA weed lists as rank C (CH2M, 2010). In April 2015, CDFA delisted Bermuda grass and was subsequently removed from CDFA weed list (CDFA, 2017). Bermuda grass is still an ISEGS noxious weed because it is included on the Cal-IPC list (2017).

Bermuda grass was first observed at ISEGS in 2014, and has not been observed since. Occurrences of this species were reported in the 2014 BIO-13 Annual Monitoring Report (Solar Partners, 2015).

Sorghum

Sorghum (also known as johnsongrass) is a perennial in the grass (Poaceae) family. It is a non-native species in California, which was introduced from elsewhere but naturalized in the wild. It occurs mostly in west and central California in elevations up to 2,600 feet above mean sea level. It occurs in disturbed habitats such as roadsides and agricultural fields.

In 2015, Sorghum was added to the California Code of Regulations (CCR) § 4500 list of Noxious Weed Species, and included in the CDFA list of California noxious weeds, as C weed rating. CDFA C rating is defined as, "A pest of known economic or environmental detriment and, if present in California, it is usually widespread" (CDFA, 2017). When the ISEGS Weed Management Plan was written in 2010, Sorghum did not meet the criteria of a noxious weed (CH2M, 2010). Sorghum is not included on the Cal-IPC or MWMA weed lists (Cal-IPC, 2017; MDRCD, 2017).

Sorghum was observed at ISEGS in 2014 in the bales and waddles onsite for storm water control. This species has not been observed since. Occurrences of this species were reported in the 2014 BIO-13 Annual Monitoring Report (Solar Partners, 2015).

Puncture Vine

Puncture vine is a prostrate annual herb in the caltrop (Zygophyllaceae) family. It is an invasive plant in California that has naturalized in the wild. It occurs throughout California in disturbed locations.

In June 2017, Cal-IPC added puncture vine to its weed list, rank "limited", which is defined as "…species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score" (Cal-IPC, 2017). This species is also included in the CCR § 4500 list of Noxious Weed Species, CDFA, and MWMA lists (CDFA, 2017; MDRCD, 2017).

Puncture vine was first identified at ISEGS in August 2011. Puncture vine has been observed and manually removed each year since first identified in accordance with BIO-13 weed management protocols. Occurrences of this species were reported in the BIO-13 Annual Monitoring Reports (Solar Partners, 2015; Solar Partners, 2016; Solar Partners, 2017).

New Plant Occurrences

Change of Conditions

The new plant species not previously observed onsite was pigweed amaranth (*Amaranthus albus*).

Description

Pigweed amaranth (also known as tumbleweed) is an annual herbaceous plant in the amaranth (Amaranthaceae) family. It is a non-native species in California, which was introduced from elsewhere but naturalized in the wild. It is not included on CDFA, Cal-IPC, or MWMA lists (CDFA, 2017; Cal-IPC, 2017; MDRCD, 2017). It occurs throughout California in elevations up to 7,000 feet above mean sea level. It occurs in disturbed habitats such as fields and roadsides.

Five individuals of pigweed amaranth were observed adjacent to the Construction Logistic Area East revegetation area. Weeds have been regularly removed from this area since initial revegetation efforts were completed in late 2015. Although this species does not meet the ISEGS noxious weed definition, biological monitors removed the individuals in accordance with BIO-13 guidelines. Occurrences of this species are not included in the BIO-13 Annual Monitoring Report.

Recommendations

Recommend revising the ISEGS Weed Management Plan (Table 1 Observed and Potentially Occurring Noxious Weeds at ISEGS) to include those noxious weed species that have changed CDFA, Cal-IPC, or MWMA status since 2010.

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Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (Solar Partners). 2017. *Ivanpah Solar Electric Generating System California Energy Commission (07-AFC-5C) Bureau of Land Management (CACA-48668, 49502, 49503, and 49504) Conditions of Certification BIO-13, Annual Weed Management Report January 1, 2016 – December 31, 2016.* Prepared by Designated Biologists. Submitted January 12, 2017.

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Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (Solar Partners). 2015. *Ivanpah Solar Electric Generating System California Energy Commission (07-AFC-5C) Bureau of Land Management (CACA-48668, 49502, 49503, and 49504) Conditions of Certification BIO-13, Annual Biological Report January 1, 2014 – December 31, 2014.* Prepared by Designated Biologists. Submitted January 31, 2015.

Appendix C
ISEGS 2017 Desert Tortoise Disposition Table

Table C1: ISEGS 2017 Desert Tortoise Disposition Table

Disposition Table Legend	
Term	**Explanation**
DTCC	Desert Tortoise Conservation Center
Inj	Injured
MNP	Mojave National Preserve
NT	Never Transmittered
OSP	Ojai Sulcata Project
USGS	United States Geological Survey
Vet in Apple Valley	Dr. Clifford Jessen, Apple Valley Animal Hospital 18107 US Highway 18 Apple Valley, CA 92307
Vet in San Diego	Dr. Thomas Boyer, Pet Hospital of Penasquitos 9888 Carmel Mountain Rd. Ste F. San Diego, CA 92129

* BS191 and BS193 have approximate Initial Process Dates

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS01	Ivanpah 1		Female	184	221	10/9/2010	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS02	Ivanpah 1		Male	264	271	10/9/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS03	Common East		Female	227	233	10/10/2010	No	Deceased (Aug 2011)											
BS04	Ivanpah 1		Male	252	264	10/10/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS05	Ivanpah 2		Male	216	258	10/7/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS06	Ivanpah 1		Male	257	280	10/12/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS07	Recipient Site		Unknown	94	174	10/12/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS08	Ivanpah 1		Female	209	214	10/12/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS09	Ivanpah 1		Male	253	259	10/14/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS10	Recipient Site		Male	277	277	10/14/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS11	Recipient Site		Female	199	227	10/16/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS12	Recipient Site		Female	209	225	10/16/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS13	Recipient Site		Male	245	246	10/19/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS14	Ivanpah 1		Female	224	237	10/19/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS15	Recipient Site		Male	190	230	10/19/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS16	Recipient Site		Female	224	227	10/19/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS17	Common East		Female	116	182	10/20/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased				
BS18	Ivanpah 1		Unknown	72	147	10/20/2010	No	Deceased (Oct 2016)											
BS19	Recipient Site		Female	118	195	10/21/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS20	Ivanpah 2		Female	215	215	10/20/2010	No	Deceased (Oct 2010)											
BS21	Ivanpah 1		Male	241	255	10/21/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transferred to USGS		
BS22	Ivanpah 1		Male	231	248	10/22/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS23	Recipient Site		Female	242	254	10/23/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS24	Common West		Male	184	227	10/25/2010	No	Deceased (Sep 2014)											
BS25	Ivanpah 1		Female	168	217	10/26/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS26	Ivanpah 1		Unknown	123	142	10/27/2010	No	Deceased (Apr 2012)											
BS27	Common East		Female	232	233	10/19/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS28	Ivanpah 1		Female	217	226	10/28/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS29	Ivanpah 1		Male	265	241	10/28/2010	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS30	Recipient Site		Male	243	264	10/29/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS31	Ivanpah 1		Female	133	217	10/29/2010	No	Deceased (May 2016)											
BS32	Ivanpah 1		Male	252	261	10/29/2010	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS33	Recipient Site		Female	228	231	10/29/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS34	Ivanpah 1		Female	214	221	10/29/2010	No	Deceased (Aug 2012)											
BS35	Ivanpah 1		Unknown	143	172	10/29/2010	No	Deceased (Jul 2012)											
BS36	Ivanpah 1		Male	150	189	10/30/2010	No	Deceased (Jul 2014)											

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS37	Ivanpah 2		Male	243	280	10/30/2010	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS38	Ivanpah 1		Female	223	235	10/30/2010	No	Deceased (May 2013)											
BS39	Ivanpah 1		Unknown	61	120	11/1/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS40	Ivanpah 1		Unknown	69	147	11/1/2010	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS41	Ivanpah 1		Female	118	202	11/1/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS42	Ivanpah 1		Unknown	53	131	12/17/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS43	Ivanpah 1		Unknown	46	115	12/20/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS44	Ivanpah 1		Female	194	223	2/16/2011	No	Deceased (Jun 2015)											
BS45	Recipient Site		Female	223	223	3/5/2011	No	Deceased (Jun 2016)											
BS46	Ivanpah 3		Female	209	224	3/5/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS47	Ivanpah 3		Female	242	240	3/8/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS48	Ivanpah 2		Unknown	86	128	3/9/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Deceased					
BS49	Ivanpah 3		Male	209	251	3/9/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS50	Ivanpah 3		Male	204	236	3/9/2011	No	Deceased (Aug 2016)											
BS51	Ivanpah 3		Male	234	243	3/10/2011	No	Deceased (Oct 2014)											
BS52	Ivanpah 3		Male	176	241	3/10/2011	No	Deceased (Aug 2016)											
BS53	Common East		Unknown	46	119	3/10/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS54	Ivanpah 3	18	Unknown	47	47	3/12/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS55	Recipient Site		Female	226	251	3/12/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transferred to USGS		
BS56	Recipient Site		Female	236	236	3/14/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS57	Ivanpah 3		Female	218	221	3/14/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Missing	Missing	Missing	Missing	Missing
BS58	Ivanpah 3		Female	138	233	3/15/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS59	Ivanpah 3		Unknown	67	92	3/15/2011	No	Moved permanentl y to OSP (Sep 2012)											
BS60	Recipient Site		Female	173	182	3/15/2011	No	Deceased (Apr 2013)											
BS61	Ivanpah 2		Female	217	223	3/15/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS62	Ivanpah 3		Male	200	241	3/15/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS63	Ivanpah 3		Unknown	40	110	3/16/2011	No	Deceased (Apr 2016)											
BS64	Ivanpah 3		Female	199	215	3/16/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS65	Ivanpah 3		Female	210	215	3/16/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS66	Ivanpah 3		Female	190	235	3/16/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS67	Ivanpah 2		Unknown	71	147	3/16/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS68	Ivanpah 2		Male	265	266	3/16/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased					
BS69	Ivanpah 3		Male	251	272	3/16/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS70	Recipient Site		Female	131	189	3/17/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS71	Ivanpah 3		Female	216	228	3/17/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS72	Ivanpah 2		Unknown	57	120	3/21/2011	No	Recipient (I-15 Pen)	Deceased										
BS73	Ivanpah 3		Unknown	47	47	3/22/2011	No	Deceased (Mar 2011)											
BS74	Recipient Site		Male	176	243	3/21/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transferred to USGS		
BS75	Recipient Site		Unknown	83	116	3/22/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS76	Recipient Site		Female	226	229	3/23/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS77	Ivanpah 2		Female	228	228	3/23/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS78	Recipient Site		Male	248	270	3/28/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS79	Ivanpah 2		Female	243	245	3/28/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS80	Ivanpah 3		Male	255	262	3/28/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS81	Ivanpah 3		Male	254	257	3/28/2011	No	Deceased (Sep 2012)											
BS82	Ivanpah 3		Male	217	239	3/28/2011	No	Moved Permanentl y to SDZ (Feb 2015)											
BS83	Ivanpah 3		Male	257	257	3/29/2011	No	Deceased (Apr 2011)											
BS84	Recipient Site		Male	237	251	3/30/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS85	Ivanpah 3		Unknown	136	153	3/30/2011	No	Deceased (Sep 2012)											
BS86	Ivanpah 3		Male	251	262	3/30/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS87	Ivanpah 3		Unknown	72	128	3/30/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS88	Ivanpah 2		Male	272	270	3/30/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS89	Recipient Site		Male	250	273	3/30/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS90	Ivanpah 3		Male	270	272	3/30/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS91	Ivanpah 3		Female	235	237	3/30/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS92	Ivanpah 2		Male	269	270	3/31/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS93	Recipient Site		Male	292	290	3/31/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS94	Ivanpah 3		Male	211	243	3/31/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS95	Ivanpah 3		Female	245	247	3/31/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS96	Recipient Site		Female	213	224	4/1/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS97	Ivanpah 3		Male	203	230	3/31/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS98	Ivanpah 3	60	Unknown	102	114	4/1/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS99	Recipient Site		Male	157	225	4/2/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transferred to USGS		
BS100	Ivanpah 1		Male	249	258	10/12/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS101	Recipient Site		Male	273	276	10/14/2010	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS102	Recipient Site		Male	270	269	10/14/2010	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS103	Ivanpah 1		Male	246	248	10/15/2010	No	Deceased (Jul 2015)											
BS104	Recipient Site		Male	265	265	10/15/2010	No	Deceased (Oct 2010)											
BS105	Recipient Site		Male	253	263	4/2/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS106	Ivanpah 3		Unknown	68	119	4/2/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased				

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS107	Recipient Site		Female	232	237	3/31/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS108	Recipient Site		Male	264	275	4/1/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS109	Recipient Site		Male	267	269	4/2/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS110	Ivanpah 3		Male	270	270	4/2/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS111	Recipient Site		Female	227	232	4/3/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS112	Common West		Unknown	44	124	4/4/2011	No	Recipient	Recipient	Recipient	Recipient	Deceased							
BS113	Recipient Site		Male	230	258	4/4/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS114	Ivanpah 3		Male	272	273	4/5/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS115	Ivanpah 3		Unknown	64	123	4/5/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Deceased							
BS116	Ivanpah 3		Male	190	232	4/5/2011	No	Deceased (Aug 2015)											
BS117	Ivanpah 2		Male	231	255	4/6/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS118	Recipient Site		Unknown	121	121	4/10/2011	No	Deceased (Apr 2011)											
BS119	Recipient Site		Unknown	57	57	4/10/2011	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS120	Recipient Site		Male	263	270	4/11/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS121	Recipient Site		Male	246	250	4/12/2011	No	Deceased (Aug 2012)											
BS122	Ivanpah 3		Male	194	215	4/12/2011	No	Deceased (May 2014)											
BS123	Ivanpah 1		Unknown	57	116	4/13/2011	No	Recipient	Recipient	Recipient	Deceased								
BS124	Recipient Site		Male	235	260	4/13/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS125	Recipient Site		Male	252	252	4/14/2011	No	Deceased (Oct 2016)											
BS126	Recipient Site		Female	232	245	4/14/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS127	Recipient Site		Female	248	255	4/13/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS128	Recipient Site		Male	207	256	4/15/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS129	Recipient Site		Male	295	291	4/16/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS130	Recipient Site		Male	245	279	4/17/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS131	Recipient Site		Male	274	272	4/18/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS132	Recipient Site		Female	205	225	4/19/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS133	Recipient Site		Female	210	227	4/20/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS134	Recipient Site		Female	228	227	4/21/2011	No	Deceased (May 2016)											
BS135	Recipient Site		Male	196	242	4/21/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS136	Recipient Site		Female	228	237	4/21/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS137	Recipient Site		Female	227	235	4/21/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS138	Recipient Site		Female	216	224	4/23/2011	No	Recipient	Deceased										
BS139	Recipient Site		Male	266	272	4/23/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transferred to USGS		
BS140	Recipient Site		Female	203	208	4/23/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transferred to USGS		
BS141	Ivanpah 2		Female	200	227	4/24/2011	No	Deceased (Jun 2016)											
BS142	Recipient Site		Male	244	260	4/24/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transferred to USGS		
BS143	Recipient Site		Male	219	233	4/24/2011	No	Deceased (Apr 2014)											

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS144	Recipient Site		Female	204	207	4/24/2011	No	Deceased (Apr 2014)											
BS145	Recipient Site		Male	284	283	4/24/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS146	Recipient Site		Female	213	221	4/24/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS147	Recipient Site		Male	270	272	4/25/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS148	Recipient Site		Male	261	260	4/24/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transferred to USGS		
BS149	Recipient Site		Male	253	263	4/25/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS150	Recipient Site		Female	208	208	4/24/2011	No	Deceased (Mar 2014)											
BS151	Recipient Site		Male	247	252	4/24/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS153	Recipient Site		Female	237	234	4/26/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS154	Recipient Site		Female	233	236	4/26/2011	No	Deceased (Jun 2016)											
BS155	Recipient Site		Male	264	264	4/26/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS156	Recipient Site		Female	198	235	4/26/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS157	Ivanpah 2		Female	142	203	4/24/2011	No	Deceased (May 2016)											
BS158	Recipient Site		Female	213	222	4/24/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS159	Recipient Site		Female	248	250	4/24/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS160	Recipient Site		Male	252	252	4/27/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS161	Recipient Site		Female	227	240	4/27/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS162	Recipient Site		Female	231	234	4/28/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS163	Recipient Site		Male	201	228	4/28/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS164	Recipient Site		Male	315	316	4/25/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS165	Recipient Site		Male	251	254	4/28/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transferred to USGS		
BS166	Recipient Site		Female	243	247	4/28/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS167	Recipient Site		Male	269	271	4/29/2011	No	Deceased (Sep 2015)											
BS168	Recipient Site		Female	239	249	4/29/2011	No	Deceased (Sep 2015)											
BS169	Recipient Site		Male	208	218	4/29/2011	No	Deceased (Aug 2012)											
BS170	Recipient Site		Female	213	227	4/29/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS171	Recipient Site		Male	254	265	4/28/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS172	Recipient Site		Male	225	251	4/28/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS173	Ivanpah 2		Female	217	220	5/11/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS174	Ivanpah 1		Unknown	59	106	5/12/2011	No	Deceased (Apr 2015)											
BS175	Ivanpah 1		Unknown	62	131	5/12/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS176	Ivanpah 3		Female	228	237	5/17/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS177	Ivanpah 2		Female	236	238	5/22/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS178	Ivanpah 1		Unknown	46	117	6/9/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS179	Ivanpah 3		Male	122	225	6/11/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS180	Recipient Site		Unknown	94	107	7/12/2011	No	Deceased (Aug 2012)											
BS181	Ivanpah 3		Unknown	62	130	7/20/2011	No	Deceased (Oct 2016)											
BS182	Ivanpah 2		Unknown	59	124	7/27/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS183	Ivanpah 2		Male	261	263	7/30/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS184	Ivanpah 3		Female	176	213	8/4/2011	No	Deceased (Aug 2014)											
BS185	Ivanpah 3		Unknown	53	125	8/6/2011	No	Recipient (I-15 Pen)	Deceased										
BS186	Ivanpah 2		Female	137	218	8/7/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS187	Ivanpah 3		Female	190	202	8/8/2011	No	Deceased (Apr 2014)											
BS188	Ivanpah 3		Unknown	75	136	8/12/2011	No	Deceased (Oct 2016)											
BS189	Ivanpah 3		Unknown	137	152	8/13/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS190	Ivanpah 3		Unknown	102	126	8/15/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS191	Ivanpah 2		Unknown	82	152	4/15/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS192	Recipient Site		Female	148	182	8/23/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS193	Ivanpah 3		Unknown	70	124	4/15/2011	No	Deceased (Oct 2016)											
BS194	Quarantine Pens		Unknown	45	100	8/25/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS195	Quarantine Pens		Unknown	43	115	8/26/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased				
BS196	Quarantine Pens		Unknown	43	86	8/26/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS197	Quarantine Pens		Unknown	45	102	8/26/2011	No	Deceased (Oct 2016)											
BS198	Quarantine Pens		Unknown	44	84	8/26/2011	No	Deceased (Oct 2016)											
BS199	Quarantine Pens		Unknown	43	91	8/26/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS200	Quarantine Pens	216	Unknown	41	55	8/29/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS201	Quarantine Pens		Unknown	43	120	8/29/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS202	Quarantine Pens		Unknown	46	85	8/29/2011	No	Deceased (Sep 2014)											
BS203	Quarantine Pens		Unknown	44	100	8/29/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS204	Quarantine Pens		Unknown	43	110	8/29/2011	No	Deceased (Oct 2016)											
BS205	Quarantine Pens		Unknown	41	107	8/29/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS206	Quarantine Pens		Unknown	31	31	8/29/2011	No	Deceased (Aug 2011)											
BS207	Quarantine Pens	201	Unknown	43	71	8/30/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS208	Quarantine Pens		Unknown	46	96	8/30/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased					
BS209	Quarantine Pens		Unknown	40	112	8/30/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS210	Quarantine Pens		Unknown	40	114	8/30/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased			
BS211	Quarantine Pens	218	Unknown	44	52	8/31/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS212	Quarantine Pens		Unknown	48	94	9/1/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS213	Quarantine Pens		Unknown	46	109	9/1/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Deceased			
BS214	Quarantine Pens		Unknown	45	110	9/1/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS215	Quarantine Pens		Unknown	44	120	9/1/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS216	Quarantine Pens		Unknown	42	102	9/1/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS217	Ivanpah 3		Male	253	266	9/3/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS218	Quarantine Pens		Unknown	38	38	9/3/2011	No	Deceased (Sep 2011)											
BS219	Quarantine Pens		Unknown	43	110	9/3/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS220	Ivanpah 3		Male	268	264	9/5/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS221	Quarantine Pens		Unknown	48	92	9/5/2011	No	Deceased (Oct 2016)											
BS222	Quarantine Pens		Unknown	44	45	9/5/2011	No	Moved permanently to MNP (Apr 2012)											
BS223	Ivanpah 3		Male	197	233	9/6/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS224	Quarantine Pens		Unknown	43	46	9/6/2011	No	Moved permanently to MNP (Apr 2012)											
BS225	Quarantine Pens		Unknown	43	46	9/6/2011	No	Moved permanently to MNP (Apr 2012)											
BS226	Quarantine Pens		Unknown	46	113	9/6/2011	No	Recipient	Recipient	Recipient	Deceased								
BS227	Quarantine Pens		Unknown	44	132	9/7/2011	No	Recipient	Recipient	Recipient	Deceased								
BS228	Quarantine Pens		Unknown	46	47	9/7/2011	No	Moved permanently to MNP (Apr 2012)											
BS229	Quarantine Pens		Unknown	41	44	9/7/2011	No	Moved permanently to MNP (Apr 2012)											
BS230	Recipient Site		Male	186	241	9/7/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS231	Quarantine Pens		Unknown	43	108	9/7/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS232	Quarantine Pens		Unknown	42	42	9/6/2011	No	Deceased (Sep 2011)											
BS233	Quarantine Pens		Unknown	44	118	9/7/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Deceased				
BS234	Quarantine Pens		Unknown	42	44	9/8/2011	No	Moved permanently to MNP (Apr 2012)											
BS235	Quarantine Pens		Unknown	44	47	9/8/2011	No	Moved permanently to MNP (Apr 2012)											
BS236	Quarantine Pens		Unknown	42	47	9/8/2011	No	Moved permanently to MNP (Apr 2012)											
BS237	Quarantine Pens		Unknown	45	45	9/9/2011	No	Moved permanently to MNP (Apr 2012)											
BS238	Quarantine Pens		Unknown	41	44	9/9/2011	No	Moved permanently to MNP (Apr 2012)											

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS239	Recipient Site		Female	224	231	9/8/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS240	Quarantine Pens		Unknown	44	46	9/9/2011	No	Moved permanentl y to MNP (Apr 2012)											
BS241	Quarantine Pens		Unknown	41	103	9/11/2011	No	Deceased (Oct 2016)											
BS242	Recipient Site		Male	210	257	9/9/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS243	Recipient Site		Unknown	134	135	9/9/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS244	Ivanpah 2		Unknown	55	92	9/10/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Deceased								
BS245	Recipient Site		Male	281	285	9/10/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS246	Ivanpah 3		Male	162	218	9/10/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS247	Ivanpah 2		Unknown	61	137	9/10/2011	No	Deceased (Nov 2016)											
BS248	Recipient Site		Male	260	272	9/10/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS249	Quarantine Pens		Unknown	45	109	9/11/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS250	Quarantine Pens		Unknown	48	48	9/12/2011	No	Moved permanentl y to MNP (Apr 2012)											
BS251	Quarantine Pens		Unknown	46	91	9/12/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased				
BS252	Ivanpah 3		Unknown	79	140	9/12/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased				
BS253	Quarantine Pens		Unknown	44	109	9/13/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Missing	Missing	Missing	Missing	Missing
BS254	Quarantine Pens		Unknown	43	102	9/13/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS255	Quarantine Pens		Unknown	43	106	9/13/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS256	Ivanpah 3		Unknown	68	116	9/13/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS257	Ivanpah 3		Female	140	201	9/14/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS258	Ivanpah 2		Unknown	81	80	9/13/2011	No	Deceased (May 2013)											
BS259	Ivanpah 3		Unknown	114	166	9/14/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS260	Ivanpah 3		Unknown	136	136	9/14/2011	No	Deceased (Aug 2012)											
BS261	Ivanpah 3		Unknown	134	146	9/14/2011	No	Deceased (Jul 2014)											
BS262	Quarantine Pens		Unknown	42	44	9/16/2011	No	Moved permanentl y to MNP (Apr 2012)											
BS263	Ivanpah 2		Unknown	74	117	9/16/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS264	Ivanpah 3		Unknown	50	50	9/17/2011	No	Deceased (Sep 2011)											
BS265	Ivanpah 3		Female	126	194	9/18/2011	No	Missing	Missing	Missing	Missing	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS266	Ivanpah 2		Male	178	201	9/18/2011	No	Deceased (Sep 2013)											
BS267	Ivanpah 3		Unknown	82	143	9/18/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased		
BS268	Ivanpah 3		Unknown	66	122	9/18/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS269	Ivanpah 3		Unknown	93	132	9/18/2011	No	Deceased (Oct 2016)											
BS270	Ivanpah 3		Male	120	184	9/18/2011	No	Recipient	Deceased										
BS271	Ivanpah 3		Unknown	59	77	9/19/2011	No	Deceased (May 2013)											

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS272	Ivanpah 3		Unknown	89	142	9/20/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS273	Ivanpah 3		Unknown	104	104	9/20/2011	No	Deceased (Oct 2012)											
BS274	Ivanpah 3		Unknown	45	100	9/20/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS275	Ivanpah 3		Female	205	236	9/20/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS276	Ivanpah 3		Unknown	69	111	9/20/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS277	Common East		Unknown	46	99	9/20/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS278	Quarantine Pens		Unknown	42	42	9/21/2011	No	Moved permanentl y to MNP (Apr 2012)											
BS279	Quarantine Pens		Unknown	48	95	9/21/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS280	Ivanpah 3		Unknown	85	145	9/21/2011	No	Deceased (Oct 2016)											
BS281	Quarantine Pens		Unknown	48	107	9/21/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS282	Ivanpah 3		Unknown	90	151	9/21/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS283	Ivanpah 2		Unknown	100	144	9/21/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS284	Quarantine Pens		Unknown	43	104	9/22/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS285	Ivanpah 3		Unknown	54	133	9/22/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased			
BS286	Ivanpah 3		Unknown	63	120	9/22/2011	No	Deceased (Oct 2016)											
BS287	Ivanpah 2		Female	111	192	9/22/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS288	Ivanpah 2		Unknown	58	101	9/23/2011	No	Recipient	Deceased										
BS289	Ivanpah 3		Female	214	246	9/22/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS290	Ivanpah 3		Female	170	231	9/25/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS291	Ivanpah 3		Female	157	226	9/23/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS292	Ivanpah 2		Unknown	103	150	9/24/2011	No	Deceased (Oct 2016)											
BS293	Ivanpah 3		Female	129	190	9/24/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS294	Ivanpah 3		Unknown	125	159	9/24/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS295	Ivanpah 2		Unknown	60	109	9/26/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS296	Ivanpah 3		Unknown	70	119	9/26/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS297	Quarantine Pens		Unknown	43	109	9/27/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS298	Ivanpah 3		Unknown	62	112	9/27/2011	No	Deceased (Oct 2016)											
BS299	Quarantine Pens		Unknown	47	111	9/29/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased			
BS300	Ivanpah 3		Unknown	47	117	9/29/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Deceased			
BS301	Ivanpah 3	210	Unknown	47	47	9/29/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS302	Ivanpah 3		Unknown	62	104	9/30/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS303	Ivanpah 3		Unknown	76	132	9/30/2011	Yes	Recipient	Recipient	At Vet in Apple Valley	Care in Office Terrarium	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS304	Ivanpah 3		Unknown	72	110	10/2/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS305	Ivanpah 3		Female	224	229	10/3/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS306	Recipient Site		Unknown	133	145	10/3/2011	No	Deceased (May 2013)											
BS307	Ivanpah 3		Unknown	64	124	10/3/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Deceased						
BS308	Ivanpah 3		Unknown	62	95	10/4/2011	No	Deceased (Jun 2014)											
BS309	Ivanpah 1		Unknown	60	60	10/4/2011	No	Deceased (Oct 2011)											
BS310	Ivanpah 3		Male	277	278	10/4/2011	No	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Transmitter Removed		
BS311	Quarantine Pens		Unknown	38	38	9/4/2011	No	Deceased (Oct 2011)											
BS312	Ivanpah 1		Unknown	65	65	10/6/2011	No	Deceased (Oct 2011)											
BS313	Recipient Site		Unknown	156	164	10/7/2011	No	Deceased (Oct 2012)											
BS314	Recipient Site		Male	209	236	10/11/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS315	Recipient Site		Male	209	212	10/14/2011	No	Deceased (Sep 2012)											
BS316	Recipient Site		Male	280	281	10/13/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS317	Recipient Site		Male	268	274	10/14/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS318	Recipient Site		Male	282	282	10/15/2011	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS319	Recipient Site		Male	277	277	10/15/2011	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS320	Recipient Site		Female	222	227	10/16/2011	No	Deceased (Dec 2016)											
BS321	Recipient Site		Female	235	240	10/15/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS322	Recipient Site		Female	220	220	10/15/2011	No	Deceased (Oct 2016)											
BS323	Recipient Site		Female	219	222	10/15/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS324	Recipient Site		Female	207	210	10/15/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS325	Recipient Site		Male	267	267	10/15/2011	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS326	Recipient Site		Unknown	97	126	10/15/2011	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS327	Recipient Site		Female	219	244	10/15/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS328	Recipient Site		Male	251	260	10/16/2011	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS329	Recipient Site		Male	265	265	10/16/2011	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS330	Recipient Site		Male	251	251	10/16/2011	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS331	Recipient Site		Male	260	260	10/16/2011	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS332	Recipient Site		Male	300	300	10/16/2011	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS333	Ivanpah 1		Unknown	43	114	10/17/2011	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS334	Recipient Site		Female	225	224	10/17/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS335	Recipient Site		Male	271	272	10/17/2011	Yes	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient
BS336	Recipient Site		Unknown	104	138	10/19/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS337	Common East		Unknown	37	37	11/28/2011	No	Deceased (Nov 2011)											

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS338	Ivanpah 2		Unknown	62	124	3/5/2012	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased				
BS339	Recipient Site		Male	167	239	3/15/2012	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS340	Ivanpah 2		Unknown	55	55	3/21/2012	No	Deceased (Mar 2012)											
BS341	Ivanpah 1		Unknown	70	115	4/3/2012	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS342	Recipient Site		Unknown	68	121	4/9/2012	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased			
BS343	Ivanpah 1		Unknown	59	78	6/2/2012	No	Deceased (Jul 2013)											
BS344	Recipient Site		Unknown	60	80	7/30/2012	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS345	Recipient Site		Unknown	105	156	8/11/2012	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Transmitter Removed		
BS346	Recipient Site		Unknown	73	92	8/30/2012	No	Deceased (Jul 2014)											
BS347	Ivanpah 3		Unknown	72	108	9/7/2012	No	Deceased (Oct 2016)											
BS348	Ivanpah 2		Unknown	74	116	9/10/2012	No	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Recipient	Deceased				
BS349	Recipient Site		Unknown	81	82	9/12/2012	No	Deceased (Jul 2013)											
BS350	Ivanpah 3		Unknown	45	100	9/25/2012	No	Deceased (Oct 2016)											
BS351	Ivanpah 3		Unknown	93	157	10/8/2012	No	Deceased (Oct 2016)											
BS352	Ivanpah 3		Unknown	101	140	10/17/2012	No	Deceased (Oct 2016)											
BS353	Recipient Site		Unknown	71	72	3/22/2013	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS354	Recipient Site		Unknown	82	143	3/26/2013	No	Recipient	Recipient	Recipient	Recipient	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS355	Ivanpah 1		Unknown	43	111	3/27/2013	Yes	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)	Recipient (I-15 Pen)
BS356	Recipient Site		Unknown	78	79	4/14/2013	No	Deceased (Aug 2013)											
BS357	Ivanpah 3		Unknown	89	89	4/23/2014	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS358	Ivanpah 1		Unknown	48	48	6/10/2014	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS359	Ivanpah 1		Unknown	50	50	12/17/2014	No	Deceased (Dec 2014)											
BS360	Ivanpah 2		Unknown	102	102	4/21/2015	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS361	Quarantine Pens		Unknown	42	42	10/12/2016	No	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS362	Recipient Site		Unknown	178	178	5/27/2017	No					Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT	Recipient-NT
BS500	Control Site		Female	243	245	3/30/2011	No	Transmitter Removed (May 2016)											
BS501	Control Site		Female	189	194	4/1/2011	No	Deceased (Nov 2014)											
BS502	Control Site		Female	217	215	4/1/2011	No	Deceased (May 2015)											
BS503	Control Site		Male	238	242	4/1/2011	Yes	Transferred to USGS (May 2016)											
BS504	Control Site		Female	198	222	4/2/2011	No	Transmitter Removed (May 2016)											

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS505	Control Site		Male	213	226	4/1/2011	No	Deceased (Sep 2013)											
BS506	Control Site		Male	252	254	4/1/2011	No	Transmitter Removed (May 2016)											
BS507	Control Site		Female	221	228	4/1/2011	No	Moved Permanentl y to SDZ (Feb 2015)											
BS508	Control Site		Male	237	247	4/1/2011	No	Transmitter Removed (May 2016)											
BS509	Control Site		Male	169	236	4/2/2011	No	Transmitter Removed (May 2016)											
BS510	Control Site		Male	256	267	4/1/2011	No	Transmitter Removed (May 2016)											
BS511	Control Site		Female	221	224	4/1/2011	No	Transmitter Removed (May 2016)											
BS512	Control Site		Male	272	276	4/1/2011	Yes	Transferred to USGS (May 2016)											
BS513	Control Site		Female	225	230	4/1/2011	Yes	Transferred to USGS (May 2016)											
BS514	Control Site		Female	158	234	4/1/2011	No	Transmitter Removed (May 2016)											
BS515	Control Site		Female	213	215	4/1/2011	No	Transmitter Removed (May 2016)											
BS516	Control Site		Unknown	48	48	4/2/2011	No	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT
BS517	Control Site		Male	220	251	4/1/2011	No	Transmitter Removed (May 2016)											
BS518	Control Site		Unknown	122	165	4/1/2011	No	Transmitter Removed (Jun 2016)											
BS519	Control Site		Female	206	207	4/1/2011	No	Transmitter Removed (May 2016)											
BS520	Control Site		Unknown	130	152	4/1/2011	No	Deceased (Jun 2013)											
BS521	Control Site		Female	137	191	4/2/2011	No	Transmitter Removed (May 2016)											
BS522	Control Site		Male	269	268	4/1/2011	No	Transmitter Removed (May 2016)											
BS523	Control Site		Female	225	225	4/2/2011	No	Transmitter Removed (May 2016)											
BS524	Control Site		Male	257	262	4/1/2011	No	Transmitter Removed (May 2016)											
BS525	Control Site		Unknown	49	49	4/2/2011	No	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS526	Control Site		Unknown	88	88	4/2/2011	No	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT
BS527	Control Site		Female	202	219	4/1/2011	No	Transmitter Removed (May 2016)											
BS528	Control Site		Unknown	65	65	4/2/2011	No	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT
BS529	Control Site		Male	233	239	4/2/2011	Yes	Transferred to USGS (May 2016)											
BS530	Control Site		Male	205	238	4/1/2011	No	Transmitter Removed (May 2016)											
BS531	Control Site		Female	203	205	4/1/2011	No	Transmitter Removed (May 2016)											
BS532	Control Site		Female	203	207	4/1/2011	No	Deceased (Apr 2014)											
BS533	Control Site		Female	200	211	4/2/2011	Yes	Transferred to USGS (May 2016)											
BS534	Control Site		Male	226	227	4/2/2011	No	Transmitter Removed (May 2016)											
BS535	Control Site		Male	238	245	4/2/2011	No	Transmitter Removed (May 2016)											
BS536	Control Site		Unknown	122	148	4/2/2011	No	Deceased (Jul 2014)											
BS537	Control Site		Male	236	244	4/3/2011	No	Transmitter Removed (May 2016)											
BS538	Control Site		Female	216	229	4/3/2011	No	Transmitter Removed (May 2016)											
BS539	Control Site		Male	240	248	10/8/2011	No	Control	Control	Control	Control	Control	Control	Control	Deceased				
BS540	Control Site		Male	198	210	10/8/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS541	Control Site		Male	249	248	10/8/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS542	Control Site		Male	270	273	10/8/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS543	Control Site		Female	241	246	10/8/2011	No	Deceased (May 2016)											
BS544	Control Site		Male	214	212	10/9/2011	No	Deceased (Sep 2012)											
BS545	Control Site		Female	197	206	10/8/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS546	Control Site		Male	218	223	10/9/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS547	Control Site		Female	225	225	10/9/2011	No	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT	Control-NT
BS548	Control Site		Unknown	86	132	10/9/2011	No	Control	Control	Control	Control	Control	Control	Control	Deceased				
BS549	Control Site		Male	217	236	10/9/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS550	Control Site		Male	278	276	10/9/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS551	Control Site		Male	266	268	10/9/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS552	Control Site		Male	285	284	10/9/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS553	Control Site		Male	256	263	10/9/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS554	Control Site		Female	216	226	10/10/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS555	Control Site		Female	222	220	10/10/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS556	Control Site		Female	157	227	10/9/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS557	Control Site		Unknown	133	132	10/11/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS558	Control Site		Male	246	247	10/11/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS559	Control Site		Female	232	230	10/10/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS560	Control Site		Female	228	229	10/11/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS561	Control Site		Male	160	215	10/11/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS562	Control Site		Male	118	180	10/11/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS563	Control Site		Male	267	269	10/11/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS564	Control Site		Male	265	273	10/11/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS565	Control Site		Male	249	255	10/11/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS566	Control Site		Female	211	240	10/11/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS567	Control Site		Male	266	267	10/11/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS568	Control Site		Female	186	197	10/11/2011	No	Deceased (Mar 2016)											
BS569	Control Site		Female	235	237	10/11/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS570	Control Site		Male	260	257	10/11/2011	No	Deceased (Aug 2015)											
BS571	Control Site		Male	256	261	10/11/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS572	Control Site		Female	236	235	10/11/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transferred to USGS		
BS573	Control Site		Male	248	253	10/11/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transferred to USGS		
BS574	Control Site		Unknown	167	171	10/12/2011	No	Deceased (Jul 2013)											
BS575	Control Site		Male	260	259	10/12/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS576	Control Site		Female	242	247	10/12/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS577	Control Site		Female	220	227	10/12/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS578	Control Site		Male	268	266	10/12/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS579	Control Site		Male	217	219	10/12/2011	No	Control	Control	Control	Control	Deceased							
BS580	Control Site		Male	133	204	10/12/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS581	Control Site		Unknown	100	101	10/12/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS582	Control Site		Female	226	228	10/12/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transferred to USGS		
BS583	Control Site		Female	215	216	10/12/2011	No	Control	Control	Control	Control	Control	Control	Control	Deceased				
BS584	Control Site		Unknown	133	134	10/13/2011	No	Deceased (Aug 2012)											
BS585	Control Site		Unknown	80	78	10/13/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS586	Control Site		Male	274	277	10/13/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transferred to USGS		
BS587	Control Site		Unknown	107	168	10/13/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS588	Control Site		Male	138	218	10/13/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS589	Control Site		Male	237	252	10/13/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS590	Control Site		Male	272	279	10/13/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transferred to USGS		
BS591	Control Site		Female	216	223	10/13/2011	No	Deceased (Sep 2014)											

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS592	Control Site		Male	115	197	10/13/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS593	Control Site		Female	218	219	10/13/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS594	Control Site		Male	182	210	10/13/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS595	Control Site		Female	216	227	10/13/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS596	Control Site		Female	235	235	10/14/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS597	Control Site		Male	268	272	10/13/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS598	Control Site		Female	234	238	10/14/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS599	Control Site		Female	215	228	10/13/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS600	Control Site		Male	254	256	10/13/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS601	Control Site		Unknown	90	91	10/14/2011	No	Deceased (May 2012)											
BS602	Control Site		Male	207	218	10/14/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transferred to USGS		
BS603	Control Site		Unknown	109	108	10/14/2011	No	Deceased (May 2012)											
BS604	Control Site		Female	189	195	10/14/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transferred to USGS		
BS605	Control Site		Female	219	237	10/14/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS606	Control Site		Male	198	234	10/14/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS607	Control Site		Unknown	88	161	10/14/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS608	Control Site		Male	243	250	10/14/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS609	Control Site		Male	241	251	10/14/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transferred to USGS		
BS610	Control Site		Female	152	214	10/14/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS611	Control Site		Unknown	104	146	10/15/2011	No	Control	Control	Control	Control	Control	Control	Control	Deceased				
BS612	Control Site		Unknown	81	139	10/15/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS613	Control Site		Female	224	223	10/15/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS614	Control Site		Male	271	275	10/15/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS615	Control Site		Male	284	282	10/15/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS616	Control Site		Female	240	257	10/15/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS617	Control Site		Male	179	240	10/15/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS618	Control Site		Male	274	272	10/15/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS619	Control Site		Female	221	222	10/9/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS620	Control Site		Female	187	211	10/15/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS621	Control Site		Female	199	200	10/15/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS622	Control Site		Unknown	76	96	10/15/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS623	Control Site		Female	223	225	10/15/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS624	Control Site		Unknown	99	161	10/15/2011	No	Control	Control	Control	Control	Control	Control	Control	Deceased				
BS625	Control Site		Male	272	275	10/15/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transferred to USGS		
BS626	Control Site		Unknown	173	173	10/16/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing

Tort ID	Initial Process Location (GIS)	Pen #	Sex	Initial MCL	Recent MCL	Initial Process Date	Transmitter (Yes/No)	2017 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BS627	Control Site		Unknown	61	70	10/16/2011	Yes	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS628	Control Site		Male	226	234	10/16/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transferred to USGS		
BS629	Control Site		Female	150	200	10/16/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS630	Control Site		Female	143	219	10/16/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS631	Control Site		Female	222	227	10/16/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS632	Control Site		Unknown	93	129	10/16/2011	No	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing	Missing
BS633	Control Site		Unknown	67	115	10/16/2011	No	Deceased (May 2015)											
BS634	Control Site		Male	130	200	10/16/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS635	Control Site		Female	159	221	10/16/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS636	Control Site		Female	271	278	10/16/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS637	Control Site		Unknown	121	129	10/16/2011	No	Deceased (Mar 2012)											
BS638	Control Site		Male	260	260	10/16/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS639	Control Site		Male	210	243	10/16/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS640	Control Site		Unknown	76	120	10/17/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS641	Control Site		Male	232	239	10/16/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS642	Control Site		Female	200	200	10/17/2011	No	Deceased (Jul 2016)											
BS643	Control Site		Male	221	234	10/17/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS644	Control Site		Male	265	268	10/17/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS645	Control Site		Male	269	272	10/17/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS646	Control Site		Female	227	229	10/17/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS647	Control Site		Unknown	93	147	10/17/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS648	Control Site		Male	261	262	10/17/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS649	Control Site		Female	246	249	10/17/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS650	Control Site		Male	264	274	10/17/2011	Yes	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control
BS651	Control Site		Male	247	261	10/17/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS652	Control Site		Male	234	237	10/17/2011	No	Deceased (May 2014)											
BS653	Control Site		Male	196	216	10/17/2011	No	Deceased (Jul 2015)											
BS654	Control Site		Female	152	210	10/15/2011	No	Control	Control	Control	Control	Control	Control	Control	Control	Control	Transmitter Removed		
BS655	Control Site		Unknown	88	94	10/18/2011	No	Deceased (Sep 2012)											

Appendix D

Maps of ISEGS Initial and Current Locations of All Monitored Tortoises

635000 636000 637000 638000 639000 640000 641000 642000 643000 644000 645000 646000 647000 648000

3935000 3934000 3933000 3932000 3931000 3930000 3929000 3928000 3927000

BS15 BS03 (Dead) BS103 (Dead) BS11 BS12 BS126 BS362
BS06 BS14
BS27 BS04 BS25 BS101 BS08 BS242
BS10 BS34 (Dead) BS38 (Dead) BS44 (Dead) BS113 BS09
BS100 BS32 BS02 BS137
BS22 BS29
BS16 BS28
Ivanpah 1
BS133
BS111
BS01
BS125 (Dead) BS154(Dead)
BS127
BS124
BS21 BS13 BS74
BS145 BS60 (Dead) BS139
BS140 BS138 (Dead)
Recipient - I 15 Pen
BS148
BS146
BS143(Dead)
BS144 (Dead) BS142
BS150 (Dead) BS151
BS158
BS339
BS324
BS325
BS315(Dead)
BS319
BS323
BS331
BS332
BS330
BS317
BS322 (Dead) BS321
BS96
BS329
BS320(Dead)
BS328
BS248
BS239
BS318

N

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS

Site Boundary
Cleared Areas
Ring Roads
Initial Tortoise Location (Female)
Initial Tortoise Location (Male)
Initial Tortoise Location (Unsexed Adult)

0 0.5 1 Kilometers

This map should not be used for site specific purposes.
Proprietary and confidential. For use by Solar Partners I, II, and VIII only.

Figure D1
Initial Tortoise Locations (>=160 mm)
Recipient Sites - Ivanpah 1
Ivanpah Solar Electric Generating System

635000 636000 637000 638000 639000 640000 641000 642000 643000 644000 645000 646000

3935000 3934000 3933000 3932000 3931000 3930000 3929000 3928000

BS337(Dead)
BS17(Dead)
BS277
BS36 (Dead)
BS19
BS41
BS355
BS112 (Dead)
BS53
BS07
BS31(Dead)
BS333
BS341
BS175
BS312(Dead)
BS343(Dead)
BS35(Dead)
BS174(Dead)
BS42
BS26(Dead)
BS119
BS178
BS18 (Dead)
BS39
BS40
BS309(Dead)
BS306(Dead)
BS358
BS359(Dead)
Ivanpah 1
BS43
BS123(Dead)
BS326
BS353
Recipient - I 15 Pen
BS243
BS192

Hatched In Captivity

BS194 BS195 BS196 BS197 BS198 BS199 BS200 BS201
BS202 BS203 BS204 BS205 BS206 BS207 BS208 BS209
BS210 BS211 BS212 BS213 BS214 BS215 BS216 BS218
BS219 BS221 BS222 BS224 BS225 BS226 BS227 BS228
BS229 BS231 BS232 BS233 BS234 BS235 BS236 BS237
BS238 BS240 BS241 BS249 BS250 BS251 BS253 BS254
BS255 BS262 BS278 BS279 BS281 BS284 BS297 BS299
BS311 BS361

N

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN,

Inital Tortoise Locations
Ring Roads
Site Boundary
Cleared Areas

0 0.5 1 *Kilometers*

This map should not be used for site specific purposes.
Proprietary and confidential. For use by Solar Partners I, II, and VIII only.

Figure D2
Initial Tortoise Locations (<160 mm)
Recipient Sites - Ivanpah 1
Ivanpah Solar Electric Generating System

633000 634000 635000 636000 637000 638000 639000 640000 641000 642000 643000 644000

3940000 3939000 3938000 3937000 3936000 3935000 3934000

BS30
BS163
BS162
BS170
BS165
BS172
BS167(Dead)
BS168(Dead)
BS105
BS107
BS109
BS171
BS169 (Dead)
BS55
BS89
BS108
BS161
BS49
BS91
BS84
BS166
BS64
BS71
BS130
BS33
BS90
BS50 (Dead)
BS160
BS128
BS47
BS80
BS275
BS83(Dead)
BS52(Dead)
BS290
BS129
BS217
BS82
BS97
BS95
BS62
BS46
BS246
BS51 (Dead)
BS230
BS310
BS86
BS116 (Dead)
BS122(Dead)
BS56
BS93
BS184 (Dead)
BS45(Dead)
BS66
BS57
BS131
BS289
BS121(Dead)
BS187 (Dead)
BS147
BS110
BS156
BS94
BS132
BS305
BS78
BS223
BS69
BS104(Dead)
BS114
Ivanpah 3
BS266 (Dead)
BS102
BS81 (Dead)
BS220
BS153
BS155
BS79
BS183
BS120
BS176
BS65
BS76
BS316
BS173
BS92
BS117
BS134(Dead)
BS135
BS159
BS23
BS37
Ivanpah 2
BS136
BS245
BS88
BS164
BS68 (Dead)
BS177
BS05
BS141 (Dead)
BS61
BS20 (Dead)
BS77
BS314
BS24 (Dead)
BS149
BS334
BS327
BS335

N

Source: Esri, DigitalGeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS

Site Boundary
Cleared Areas
Ring Roads
Initial Tortoise Location (Female)
Initial Tortoise Location (Male)
Initial Tortoise Location (Unknown Sex)

0 0.5 1 Kilometers

This map should not be used for site specific purposes.
Proprietary and confidential. For use by Solar Partners I, II, and VIII only.

Figure D3
Initial Tortoise Locations (>=160 mm)
Recipient Sites- Ivanpah 2 & 3
Ivanpah Solar Electric Generating System

634000 635000 636000 637000 638000 639000 640000 641000 642000 643000

3940000 3939000 3938000 3937000 3936000 3935000

BS342(Dead)
BS349(Dead)
BS346(Dead)
BS354
BS336
BS356(Dead)
BS352(Dead)
BS345
BS85(Dead)
BS269 (Dead)
BS98
BS99
BS59
BS118(Dead)
BS106(Dead)
BS70
BS351 (Dead)
BS73(Dead)
BS276
BS344
BS180(Dead)
BS271(Dead)
BS270(Dead)
BS87
BS308(Dead)
BS257
BS190
BS286(Dead)
BS296
BS181(Dead)
BS268
BS304
BS282
BS264(Dead)
BS267(Dead)
BS307 (Dead)
BS261 (Dead)
BS291
BS252(Dead)
BS189
BS298(Dead)
BS256
BS272
BS265
BS185(Dead)
BS313(Dead)
BS280(Dead)
BS293
BS259
BS63(Dead)
BS58
BS347 (Dead)
BS188 (Dead)
BS260 (Dead)
BS350(Dead)
BS54
BS179
BS294
BS301
BS300 (Dead)
Ivanpah 3
BS357
BS115(Dead)
BS263
BS72(Dead)
BS258(Dead)
BS340(Dead)
BS274
BS285 (Dead)
BS302
BS186
BS182
BS303
BS288(Dead)
BS75
BS287
BS283
BS67
BS338(Dead)
BS295
BS360
BS292(Dead)
BS247(Dead)
BS48(Dead)
Ivanpah 2
BS157(Dead)
BS244(Dead)
BS348(Dead)
Pens
BS273(Dead)

Hatched In Captivity

BS194 BS195 BS196 BS197 BS198 BS199 BS200 BS201
BS202 BS203 BS204 BS205 BS206 BS207 BS208 BS209
BS210 BS211 BS212 BS213 BS214 BS215 BS216 BS218
BS219 BS221 BS222 BS224 BS225 BS226 BS227 BS228
BS229 BS231 BS232 BS233 BS234 BS235 BS236 BS237
BS238 BS240 BS241 BS249 BS250 BS251 BS253 BS254
BS255 BS262 BS278 BS279 BS281 BS284 BS297 BS299
BS311 BS361

BS191: Unknown initial position in Unit 2
BS193: Unknown Initial position in Unit 3

N

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping,

Initial Tortoise Locations
Site Boundary
Ring Roads
Cleared Areas

0 0.5 1 *Kilometers*

This map should not be used for site specific purposes.
Proprietary and confidential. For use by Solar Partners I, II, and VIII only.

Figure D4
Initial Tortoise Locations (< 160 mm)
Recipient Sites- Ivanpah 2 & 3
Ivanpah Solar Electric Generating System

650000 651000 652000 653000 654000 655000 656000 657000 658000 659000 660000 661000

3933000 3932000 3931000 3930000 3929000 3928000

BS502(Dead)
BS537
BS505 (Dead)
BS534
BS516
BS519
BS522
BS517
BS530
BS532(Dead)
BS527
BS535
BS531
BS538
BS528
BS525
BS512
BS524
BS523
BS500
BS521
BS508
BS518
BS511
BS513
BS514
BS507 (SDZ)
BS509
BS536(Dead)
BS503
BS526
BS504
BS533
BS529
BS501(Dead)
BS520(Dead)
BS506
BS510
BS515

N

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping,

▲ *Initial Tortoise Location (Female)*
● *Initial Tortoise Location (Male)*
● *Initial Tortoise Location (Juvenile)*
■ *Initial Tortoise Location (Unknown Sex)*

0 0.5 1 *Kilometers*

This map should not be used for site specific purposes.
Proprietary and confidential. For use by Solar Partners I, II, and VIII only.

Figure D5
Initial Tortoise Locations
Control East
Ivanpah Solar Electric Generating System

639000 640000 641000 642000 643000 644000 645000 646000 647000 648000 649000 650000

3932000 3931000 3930000 3929000 3928000 3927000 3926000

Recipient-
I15 Pen

BS539
(Dead)
BS576
BS619
BS556
BS561
BS550
BS551
BS564
BS540
BS559
BS541
BS543(Dead)
BS567
BS548(Dead)
BS545
BS542
BS582
BS573
BS553
BS575
BS572
BS650
BS569
BS555
BS581
BS644
BS586
BS655
(Dead)
BS628
BS611(Dead)
BS606
BS593
BS609
BS639
BS651
BS625
BS591(Dead)
BS636
BS648
BS627
BS626
BS590
BS638
BS653(Dead)
BS637
(Dead)
BS610
BS589
BS640
BS604
BS596
BS599
BS580
BS629
BS607
BS574
(Dead)
BS571
BS602
BS597
BS587
BS631
BS563
BS633
(Dead)
BS603
(Dead)
BS577
BS632
BS630
BS605
BS560
BS649
BS641
BS634
BS647
BS621
BS594
BS583
(Dead)
BS652(Dead)
BS643
BS646
BS585
BS645
BS544(Dead)
BS554
BS613
BS578
BS601
(Dead)
BS570(Dead)
BS595
BS546
BS552
BS608
BS562
BS547
BS620
BS549
BS615
BS598
BS558
BS557
BS616
BS612
BS624(Dead)
BS635
BS600
BS565
BS642(Dead)
BS592
BS622
BS584
(Dead)
BS568(Dead)
BS623
BS588
BS614
BS579
(Dead)
BS566
BS617
BS618
BS654

N

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping,

Site Boundary
Initial Tortoise Location (Female)
Initial Tortoise Location (<160 mm)
Initial Tortoise Location (Male)
Initial Tortoise Location (Unknown Sex)

0 0.5 1 Kilometers

This map should not be used for site specific purposes.
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Figure D6
Initial Tortoise Locations
Control West
Ivanpah Solar Electric Generating System

634000 635000 636000 637000 638000 639000 640000 641000 642000 643000 644000 645000 646000

3935000 3934000 3933000 3932000 3931000 3930000 3929000 3928000

BS41 BS113 BS126 BS101 BS06 BS14 BS25 BS27 BS02 BS16 BS22 BS327 BS04 BS314 BS334(M) BS10 Ivanpah 1 BS133 BS09 BS137(M) BS100 BS124 BS127 BS335 BS28 BS117 BS353(M) BS146 I15 Pen BS192(M) BS243(M) BS248

N

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Map Symbol

- ***Recent Tortoise Location (Female)***
- ***Recent Tortoise Location (<160 mm)***
- ***Recent Tortoise Location (Male)***
- ***Recent Tortoise Location (Unknown Sex)***
- ***(M) Indicates 'Missing' Status***
- ***Transmitter To Be Removed***
- ***Site Boundary***
- ***Ring Roads***
- ***Cleared Areas***

0 0.5 1 *Kilometers*

This map should not be used for site specific purposes. Proprietary and confidential. For use by Solar Partners I, II, and VIII only.

Figure D7
Recent Locations
Life Of Project Tortoises
Ivanpah 1 and Recipient Sites
Ivanpah Solar Electric Generating System

634000 635000 636000 637000 638000 639000 640000 641000 642000

3940000 3939000 3938000 3937000 3936000 3935000

BS173 BS162 BS186 BS217 BS95 BS161 BS336(M) BS66 BS89 BS91 BS354(M) BS84 BS62 BS275 BS109 BS290 BS166 BS344(M) BS160 BS33 BS135 BS257 BS90 BS46 BS189(M) BS131 BS56 BS147 BS183 BS93 BS132 BS70 BS305(M) BS57(M) BS156 BS69 BS220 BS114 BS153 BS79 BS92 BS176 BS75(M) BS316 BS77 BS159 BS245 BS23 BS136 BS61

Ivanpah 3

Ivanpah 2

Coloseum Rd

N

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Map Symbol

- ***Recent Tortoise Location (Female)***
- ***Recent Tortoise Location (<160 mm)***
- ***Recent Tortoise Location (Male)***
- ***Recent Tortoise Location (Unknown Sex)***
- ***(M) Indicates 'Missing' Status***
- ***Transmitter To Be Removed***
- ***Site Boundary***
- ***Ring Roads***
- ***Cleared Areas***

0 0.5 1 *Kilometers*

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Figure D8
Recent Locations
Life Of Project Tortoises
Ivanpah 2, 3 and Recipient Sites
Ivanpah Solar Electric Generating System

640000 641000 642000 643000 644000 645000 646000 647000 648000 649000

3931000 3930000 3929000 3928000 3927000 3926000

I-15
Pen

BS577(M)
BS540(M)
BS541
BS550
BS556
BS559
BS553
BS545
BS575
BS650
BS581(M)
BS638
BS636
BS627(M)
BS648
BS626(M)
BS597
BS632(M)
BS630
BS571
BS560
BS649
BS562
BS546(M)
BS629
BS585(M)
BS621
BS634
BS613
BS620
BS595
BS615
BS598
BS557(M)
BS600
BS565
BS646
BS549
BS622(M)
BS566

Nipton Rd
Nipton Rd

N

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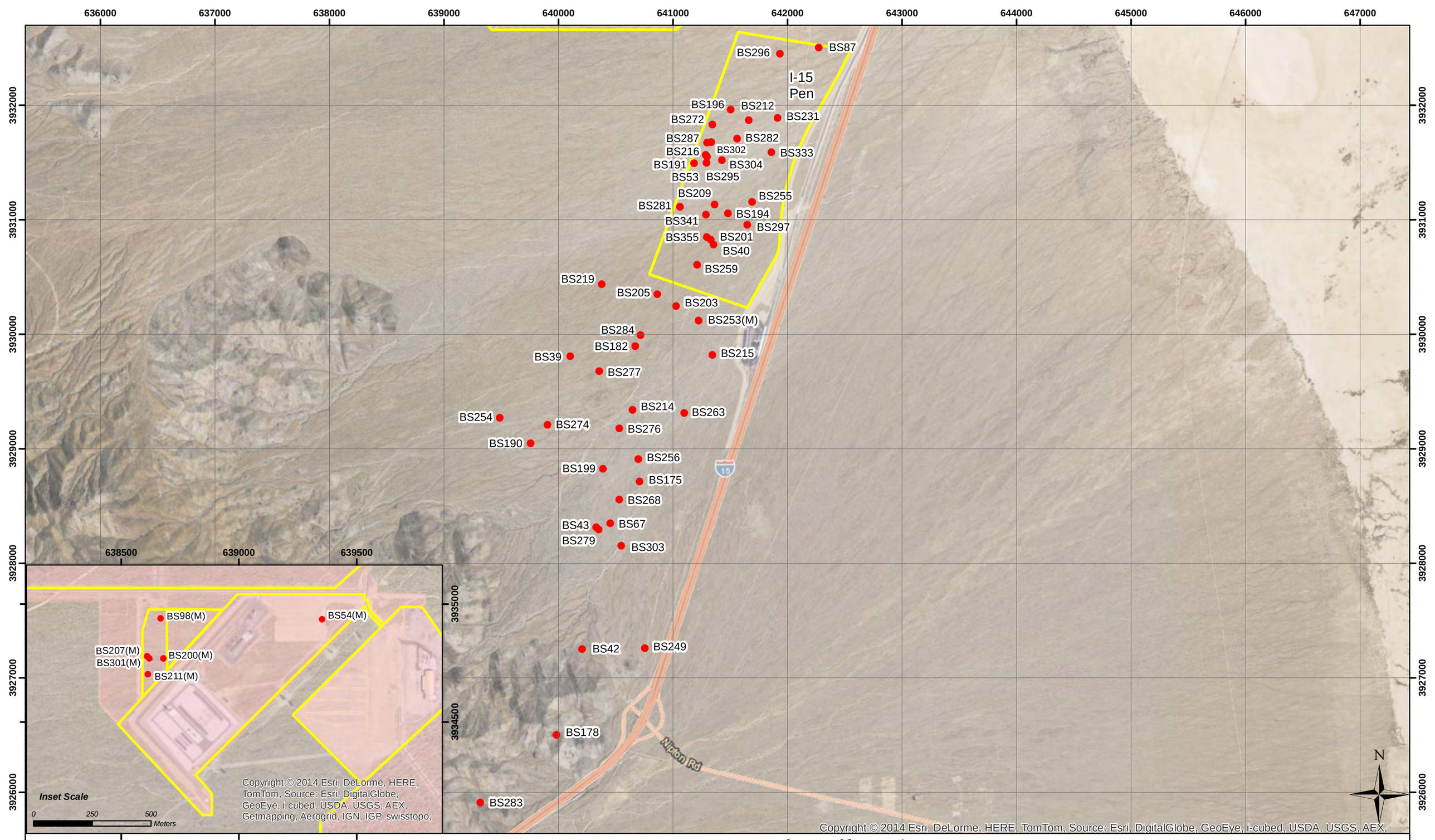
Map Symbol

- ***Recent Tortoise Location (Female)***
- ***Recent Tortoise Location (<160 mm)***
- ***Recent Tortoise Location (Male)***
- ***Recent Tortoise Location (Unknown Sex)***
- ***(M) Indicates 'Missing' Status***
- ***Transmitter To Be Removed***
- ***Site Boundary***
- ***Ring Roads***
- ***Cleared Areas***

0 0.5 1 *Kilometers*

This map should not be used for site specific purposes. Proprietary and confidential. For use by Solar Partners I, II, and VIII only.

Figure D9
Recent Locations
Life Of Project Tortoises
Ivanpah Control West
Ivanpah Solar Electric Generating System



This map should not be used for site specific purposes. Proprietary and confidential. For use by Solar Partners I, II, and VIII only.

Figure D10
Recent Locations for Juvenile Desert Tortoises (with Pen Inset Map)
Ivanpah Solar Electric Generating System

Appendix E
ISEGS 2017 ELISA Results

Table E1: ISEGS EMP and Long Distance Tortoises ELISA Results for 2017

Tortoise ID	Tortoise Type	Sex	MCL	Sample Date	*M. agassizii* Result	*M. testudineum* Result
BS01	Translocatee (Adult Found Onsite)	Female	221	16-May-2017	Negative	Negative
BS01	Translocatee (Adult Found Onsite)	Female	221	9-Sep-2017	Negative	Negative
BS02	Translocatee (Adult Found Onsite)	Male	271	18-May-2017	Suspect	Suspect
BS04	Translocatee (Adult Found Onsite)	Male	264	19-May-2017	Negative	Negative
BS05	Translocatee (Adult Found Onsite)	Male	258	15-May-2017	Positive	Positive
BS06	Translocatee (Adult Found Onsite)	Male	280	25-May-2017	Negative	Negative
BS07	Resident	Unknown	174	19-May-2017	Negative	Suspect
BS08	Translocatee (Adult Found Onsite)	Female	214	16-May-2017	Negative	Negative
BS09	Translocatee (Adult Found Onsite)	Male	259	25-May-2017	Negative	Negative
BS10	Resident	Male	277	18-May-2017	Negative	Negative
BS11	Resident	Female	227	15-May-2017	Negative	Negative
BS12	Resident	Female	225	16-May-2017	Negative	Negative
BS13	Resident	Male	246	17-May-2017	Negative	Negative
BS14	Translocatee (Adult Found Onsite)	Female	237	16-May-2017	Negative	Negative
BS15	Resident	Male	230	18-May-2017	Negative	Negative
BS16	Resident	Female	227	18-May-2017	Negative	Suspect
BS17	Translocatee (Adult Found Onsite)	Female	182	16-May-2017	Negative	Negative
BS19	Resident	Female	195	15-May-2017	Negative	Negative
BS21	Translocatee (Adult Found Onsite)	Male	255	17-May-2017	Negative	Negative
BS22	Translocatee (Adult Found Onsite)	Male	248	17-May-2017	Negative	Negative
BS23	Resident	Female	254	16-May-2017	Negative	Negative
BS25	Translocatee (Adult Found Onsite)	Female	217	16-May-2017	Negative	Negative
BS27	Translocatee (Adult Found Onsite)	Female	233	19-May-2017	Negative	Negative
BS28	Translocatee (Adult Found Onsite)	Female	226	17-May-2017	Negative	Negative
BS29	Translocatee (Adult Found Onsite)	Male	241	15-May-2017	Negative	Suspect
BS29	Translocatee (Adult Found Onsite)	Male	241	9-Sep-2017	Negative	Negative
BS30	Resident	Male	264	15-May-2017	Negative	Negative
BS32	Translocatee (Adult Found Onsite)	Male	261	24-May-2017	Negative	Negative
BS32	Translocatee (Adult Found Onsite)	Male	261	10-Sep-2017	Negative	Negative
BS33	Resident	Female	231	25-May-2017	Negative	Suspect
BS37	Translocatee (Adult Found Onsite)	Male	280	15-May-2017	Negative	Negative
BS37	Translocatee (Adult Found Onsite)	Male	280	9-Sep-2017	Negative	Negative
BS41	Translocatee (Adult Found Onsite)	Female	202	15-May-2017	Negative	Negative
BS46	Translocatee (Adult Found Onsite)	Female	224	19-May-2017	Negative	Negative
BS47	Translocatee (Adult Found Onsite)	Female	240	17-May-2017	Negative	Negative
BS49	Translocatee (Adult Found Onsite)	Male	251	16-May-2017	Negative	Negative
BS55	Resident	Female	251	16-May-2017	Negative	Negative
BS56	Resident	Female	236	19-May-2017	Negative	Negative
BS57	Translocatee (Adult Found Onsite)	Female	221	18-May-2017	Negative	Negative
BS58	Translocatee (Adult Found Onsite)	Female	233	16-May-2017	Negative	Negative
BS58	Translocatee (Adult Found Onsite)	Female	233	9-Sep-2017	Negative	Suspect
BS61	Translocatee (Adult Found Onsite)	Female	223	15-May-2017	Negative	Negative
BS62	Translocatee (Adult Found Onsite)	Male	241	18-May-2017	Negative	Negative
BS64	Translocatee (Adult Found Onsite)	Female	215	19-May-2017	Negative	Negative
BS65	Translocatee (Adult Found Onsite)	Female	215	17-May-2017	Negative	Negative
BS66	Translocatee (Adult Found Onsite)	Female	235	15-May-2017	Negative	Negative
BS68	Translocatee (Adult Found Onsite)	Male	266	19-May-2017	Negative	Negative
BS69	Translocatee (Adult Found Onsite)	Male	272	17-May-2017	Negative	Negative
BS70	Resident	Female	189	18-May-2017	Negative	Negative
BS71	Translocatee (Adult Found Onsite)	Female	228	18-May-2017	Negative	Negative
BS74	Resident	Male	243	17-May-2017	Suspect	Suspect
BS76	Resident	Female	229	16-May-2017	Negative	Negative

Tortoise ID	Tortoise Type	Sex	MCL	Sample Date	*M. agassizii* Result	*M. testudineum* Result
BS77	Translocatee (Adult Found Onsite)	Female	228	16-May-2017	Negative	Negative
BS78	Resident	Male	270	17-May-2017	Negative	Negative
BS79	Translocatee (Adult Found Onsite)	Female	245	15-May-2017	Negative	Negative
BS80	Translocatee (Adult Found Onsite)	Male	262	16-May-2017	Negative	Negative
BS84	Resident	Male	251	16-May-2017	Negative	Negative
BS86	Translocatee (Adult Found Onsite)	Male	262	18-May-2017	Negative	Suspect
BS88	Translocatee (Adult Found Onsite)	Male	270	16-May-2017	Negative	Negative
BS89	Resident	Male	273	16-May-2017	Negative	Negative
BS90	Translocatee (Adult Found Onsite)	Male	272	17-May-2017	Negative	Negative
BS91	Translocatee (Adult Found Onsite)	Female	237	17-May-2017	Negative	Negative
BS92	Translocatee (Adult Found Onsite)	Male	270	15-May-2017	Negative	Negative
BS93	Resident	Male	290	4-Jun-2017	Suspect	Suspect
BS94	Translocatee (Adult Found Onsite)	Male	243	15-May-2017	Negative	Negative
BS94	Translocatee (Adult Found Onsite)	Male	243	8-Sep-2017	Negative	Negative
BS95	Translocatee (Adult Found Onsite)	Female	247	17-May-2017	Negative	Negative
BS96	Resident	Female	224	18-May-2017	Negative	Negative
BS97	Translocatee (Adult Found Onsite)	Male	230	16-May-2017	Negative	Negative
BS99	Resident	Male	225	16-May-2017	Negative	Negative
BS100	Translocatee (Adult Found Onsite)	Male	258	18-May-2017	Negative	Negative
BS101	Resident	Male	276	16-May-2017	Negative	Negative
BS102	Resident	Male	269	15-May-2017	Negative	Negative
BS105	Resident	Male	263	17-May-2017	Negative	Negative
BS107	Resident	Female	237	16-May-2017	Negative	Negative
BS108	Resident	Male	275	18-May-2017	Negative	Negative
BS109	Resident	Male	269	17-May-2017	Negative	Negative
BS110	Translocatee (Adult Found Onsite)	Male	270	17-May-2017	Negative	Negative
BS111	Resident	Female	232	16-May-2017	Negative	Negative
BS113	Resident	Male	258	16-May-2017	Negative	Negative
BS114	Translocatee (Adult Found Onsite)	Male	273	24-May-2017	Negative	Suspect
BS117	Translocatee (Adult Found Onsite)	Male	255	18-May-2017	Negative	Negative
BS120	Resident	Male	270	17-May-2017	Negative	Negative
BS124	Resident	Male	260	15-May-2017	Negative	Negative
BS126	Resident	Female	245	16-May-2017	Negative	Negative
BS127	Resident	Female	255	15-May-2017	Negative	Negative
BS128	Resident	Male	256	16-May-2017	Negative	Negative
BS129	Resident	Male	291	19-May-2017	Negative	Suspect
BS130	Resident	Male	279	18-May-2017	Negative	Negative
BS131	Resident	Male	272	17-May-2017	Negative	Negative
BS132	Resident	Female	225	17-May-2017	Negative	Negative
BS133	Resident	Female	227	16-May-2017	Negative	Negative
BS135	Resident	Male	242	17-May-2017	Negative	Negative
BS136	Resident	Female	237	16-May-2017	Suspect	Suspect
BS137	Resident	Female	235	16-May-2017	Negative	Negative
BS139	Resident	Male	272	19-May-2017	Negative	Negative
BS140	Resident	Female	208	18-May-2017	Negative	Negative
BS142	Resident	Male	260	16-May-2017	Negative	Negative
BS145	Resident	Male	283	18-May-2017	Negative	Negative
BS146	Resident	Female	221	19-May-2017	Negative	Negative
BS147	Resident	Male	272	19-May-2017	Suspect	Suspect
BS148	Resident	Male	260	19-May-2017	Negative	Negative
BS149	Resident	Male	263	19-May-2017	Suspect	Suspect
BS151	Resident	Male	252	17-May-2017	Negative	Negative
BS153	Resident	Female	234	18-May-2017	Negative	Negative
BS155	Resident	Male	264	18-May-2017	Negative	Negative

Tortoise ID	Tortoise Type	Sex	MCL	Sample Date	*M. agassizii* Result	*M. testudineum* Result
BS156	Resident	Female	235	18-May-2017	Negative	Negative
BS158	Resident	Female	222	16-May-2017	Negative	Negative
BS159	Resident	Female	250	17-May-2017	Negative	Negative
BS160	Resident	Male	252	16-May-2017	Negative	Negative
BS161	Resident	Female	240	18-May-2017	Negative	Suspect
BS162	Resident	Female	234	18-May-2017	Negative	Suspect
BS163	Resident	Male	228	19-May-2017	Negative	Negative
BS164	Resident	Male	316	18-May-2017	Negative	Negative
BS165	Resident	Male	254	19-May-2017	Negative	Negative
BS166	Resident	Female	247	25-May-2017	Negative	Negative
BS170	Resident	Female	227	17-May-2017	Negative	Negative
BS171	Resident	Male	265	19-May-2017	Negative	Suspect
BS172	Resident	Male	251	19-May-2017	Negative	Negative
BS173	Translocatee (Adult Found Onsite)	Female	220	15-May-2017	Negative	Negative
BS176	Translocatee (Adult Found Onsite)	Female	237	15-May-2017	Negative	Negative
BS177	Translocatee (Adult Found Onsite)	Female	238	15-May-2017	Negative	Negative
BS179	Translocatee (Adult Found Onsite)	Male	225	16-May-2017	Negative	Negative
BS179	Translocatee (Adult Found Onsite)	Male	225	8-Sep-2017	Negative	Negative
BS183	Translocatee (Adult Found Onsite)	Male	263	18-May-2017	Negative	Negative
BS186	Translocatee (Adult Found Onsite)	Female	218	15-May-2017	Negative	Negative
BS217	Translocatee (Adult Found Onsite)	Male	266	15-May-2017	Negative	Negative
BS220	Translocatee (Adult Found Onsite)	Male	264	15-May-2017	Negative	Negative
BS223	Translocatee (Adult Found Onsite)	Male	233	18-May-2017	Suspect	Suspect
BS230	Resident	Male	241	15-May-2017	Negative	Negative
BS239	Resident	Female	231	18-May-2017	Negative	Negative
BS242	Resident	Male	257	18-May-2017	Negative	Suspect
BS245	Resident	Male	285	16-May-2017	Negative	Negative
BS246	Translocatee (Adult Found Onsite)	Male	218	16-May-2017	Suspect	Suspect
BS248	Resident	Male	272	24-May-2017	Negative	Negative
BS257	Translocatee (Adult Found Onsite)	Female	201	18-May-2017	Negative	Negative
BS265	Translocatee (Adult Found Onsite)	Female	194	19-May-2017	Negative	Suspect
BS265	Translocatee (Adult Found Onsite)	Female	194	10-Sep-2017	Negative	Negative
BS275	Translocatee (Adult Found Onsite)	Female	236	25-May-2017	Negative	Negative
BS289	Translocatee (Adult Found Onsite)	Female	246	17-May-2017	Negative	Negative
BS289	Translocatee (Adult Found Onsite)	Female	246	8-Sep-2017	Negative	Negative
BS290	Translocatee (Adult Found Onsite)	Female	231	15-May-2017	Negative	Negative
BS291	Translocatee (Adult Found Onsite)	Female	226	15-May-2017	Negative	Negative
BS291	Translocatee (Adult Found Onsite)	Female	226	10-Sep-2017	Negative	Negative
BS293	Translocatee (Adult Found Onsite)	Female	190	15-May-2017	Negative	Negative
BS293	Translocatee (Adult Found Onsite)	Female	190	8-Sep-2017	Negative	Suspect
BS294	Translocatee (Adult Found Onsite)	Unknown	159	15-May-2017	Suspect	Suspect
BS294	Translocatee (Adult Found Onsite)	Unknown	159	10-Sep-2017	Negative	Negative
BS310	Translocatee (Adult Found Onsite)	Male	278	15-May-2017	Negative	Negative
BS310	Translocatee (Adult Found Onsite)	Male	278	8-Sep-2017	Negative	Negative
BS314	Resident	Male	236	18-May-2017	Negative	Negative
BS316	Resident	Male	281	24-May-2017	Negative	Negative
BS317	Resident	Male	274	17-May-2017	Negative	Negative
BS321	Resident	Female	240	18-May-2017	Negative	Negative
BS323	Resident	Female	222	17-May-2017	Negative	Negative
BS324	Resident	Female	210	17-May-2017	Negative	Negative
BS327	Resident	Female	244	18-May-2017	Negative	Negative
BS328	Resident	Male	260	18-May-2017	Negative	Negative
BS335	Resident	Male	272	17-May-2017	Negative	Negative
BS339	Resident	Male	239	17-May-2017	Negative	Negative

Tortoise ID	Tortoise Type	Sex	MCL	Sample Date	*M. agassizii* Result	*M. testudineum* Result
BS342	Resident	Unknown	121	19-May-2017	Negative	Negative
BS345	Resident	Unknown	156	16-May-2017	Negative	Negative
BS539	Control West	Male	248	19-May-2017	Negative	Negative
BS541	Control West	Male	248	19-May-2017	Negative	Negative
BS542	Control West	Male	273	21-May-2017	Negative	Negative
BS545	Control West	Female	206	20-May-2017	Negative	Negative
BS548	Control West	Unknown	132	22-May-2017	Negative	Negative
BS549	Control West	Male	236	21-May-2017	Negative	Negative
BS550	Control West	Male	276	21-May-2017	Negative	Negative
BS551	Control West	Male	268	20-May-2017	Negative	Negative
BS552	Control West	Male	284	23-May-2017	Suspect	Negative
BS553	Control West	Male	263	21-May-2017	Negative	Negative
BS554	Control West	Female	226	23-May-2017	Positive	Negative
BS555	Control West	Female	220	21-May-2017	Negative	Negative
BS556	Control West	Female	227	2-Jun-2017	Negative	Negative
BS558	Control West	Male	247	23-May-2017	Negative	Suspect
BS559	Control West	Female	230	21-May-2017	Negative	Negative
BS560	Control West	Female	229	21-May-2017	Negative	Negative
BS561	Control West	Male	215	20-May-2017	Negative	Negative
BS562	Control West	Male	180	20-May-2017	Negative	Suspect
BS563	Control West	Male	269	23-May-2017	Negative	Negative
BS564	Control West	Male	273	20-May-2017	Negative	Suspect
BS565	Control West	Male	255	20-May-2017	Negative	Negative
BS566	Control West	Female	240	20-May-2017	Negative	Negative
BS567	Control West	Male	267	19-May-2017	Negative	Negative
BS569	Control West	Female	237	22-May-2017	Negative	Negative
BS571	Control West	Male	261	21-May-2017	Negative	Negative
BS572	Control West	Female	235	20-May-2017	Negative	Suspect
BS573	Control West	Male	253	20-May-2017	Negative	Suspect
BS575	Control West	Male	259	21-May-2017	Negative	Negative
BS576	Control West	Female	247	19-May-2017	Negative	Negative
BS578	Control West	Male	266	21-May-2017	Negative	Negative
BS580	Control West	Male	204	21-May-2017	Negative	Negative
BS582	Control West	Female	228	21-May-2017	Negative	Negative
BS583	Control West	Female	216	21-May-2017	Negative	Negative
BS586	Control West	Male	277	22-May-2017	Negative	Negative
BS587	Control West	Unknown	168	22-May-2017	Negative	Negative
BS588	Control West	Male	218	20-May-2017	Negative	Suspect
BS589	Control West	Male	252	20-May-2017	Negative	Negative
BS590	Control West	Male	279	22-May-2017	Negative	Negative
BS592	Control West	Male	197	21-May-2017	Negative	Negative
BS593	Control West	Female	219	21-May-2017	Negative	Negative
BS594	Control West	Male	210	23-May-2017	Negative	Negative
BS595	Control West	Female	227	21-May-2017	Negative	Negative
BS596	Control West	Female	235	22-May-2017	Negative	Negative
BS597	Control West	Male	272	20-May-2017	Negative	Suspect
BS598	Control West	Female	238	23-May-2017	Negative	Negative
BS599	Control West	Female	228	22-May-2017	Negative	Negative
BS600	Control West	Male	256	23-May-2017	Negative	Negative
BS602	Control West	Male	218	21-May-2017	Negative	Negative
BS604	Control West	Female	195	20-May-2017	Negative	Suspect
BS605	Control West	Female	237	20-May-2017	Negative	Negative
BS606	Control West	Male	234	21-May-2017	Negative	Negative
BS607	Control West	Unknown	161	19-May-2017	Negative	Negative

Tortoise ID	Tortoise Type	Sex	MCL	Sample Date	*M. agassizii* Result	*M. testudineum* Result
BS608	Control West	Male	250	23-May-2017	Negative	Negative
BS609	Control West	Male	251	22-May-2017	Negative	Negative
BS610	Control West	Female	214	21-May-2017	Negative	Negative
BS611	Control West	Unknown	146	20-May-2017	Negative	Negative
BS612	Control West	Unknown	139	23-May-2017	Negative	Negative
BS613	Control West	Female	223	2-Jun-2017	Negative	Suspect
BS614	Control West	Male	275	23-May-2017	Negative	Suspect
BS615	Control West	Male	282	22-May-2017	Negative	Suspect
BS616	Control West	Female	257	22-May-2017	Negative	Suspect
BS617	Control West	Male	240	20-May-2017	Negative	Negative
BS618	Control West	Male	272	23-May-2017	Negative	Negative
BS619	Control West	Female	222	21-May-2017	Negative	Negative
BS620	Control West	Female	211	22-May-2017	Negative	Negative
BS621	Control West	Female	200	2-Jun-2017	Negative	Negative
BS623	Control West	Female	225	23-May-2017	Suspect	Negative
BS624	Control West	Unknown	161	21-May-2017	Negative	Negative
BS625	Control West	Male	275	21-May-2017	Negative	Negative
BS628	Control West	Male	234	20-May-2017	Negative	Suspect
BS629	Control West	Female	200	20-May-2017	Negative	Negative
BS630	Control West	Female	219	2-Jun-2017	Negative	Negative
BS631	Control West	Female	227	19-May-2017	Negative	Negative
BS634	Control West	Male	200	2-Jun-2017	Negative	Negative
BS635	Control West	Female	221	23-May-2017	Negative	Suspect
BS636	Control West	Female	278	19-May-2017	Negative	Negative
BS638	Control West	Male	260	19-May-2017	Negative	Negative
BS639	Control West	Male	243	20-May-2017	Negative	Negative
BS640	Control West	Unknown	120	19-May-2017	Negative	Negative
BS641	Control West	Male	239	20-May-2017	Negative	Negative
BS643	Control West	Male	234	20-May-2017	Negative	Negative
BS644	Control West	Male	268	19-May-2017	Negative	Negative
BS645	Control West	Male	272	20-May-2017	Negative	Negative
BS646	Control West	Female	229	23-May-2017	Negative	Negative
BS647	Control West	Unknown	147	20-May-2017	Negative	Negative
BS648	Control West	Male	262	19-May-2017	Negative	Negative
BS649	Control West	Female	249	20-May-2017	Negative	Negative
BS650	Control West	Male	274	9-Jun-2017	Negative	Negative
BS651	Control West	Male	261	20-May-2017	Negative	Negative
BS654	Control West	Female	210	21-May-2017	Negative	Negative

Table E2: ISEGS Head Start (Juvenile) ELISA Results for 2017

Tortoise ID	Tortoise Type	Sex	MCL	Sample Date	*M. agassizii* Result	*M. testudineum* Result
BS39	Translocatee (Juvenile Found Onsite)	Unknown	120	8-May-2017	Negative	Negative
BS39	Translocatee (Juvenile Found Onsite)	Unknown	120	16-Sep-2017	Negative	Negative
BS40	Translocatee (Juvenile Found Onsite)	Unknown	147	13-May-2017	Negative	Negative
BS40	Translocatee (Juvenile Found Onsite)	Unknown	147	27-Sep-2017	Negative	Suspect
BS42	Translocatee (Juvenile Found Onsite)	Unknown	131	15-Sep-2017	Negative	Negative
BS43	Translocatee (Juvenile Found Onsite)	Unknown	115	9-May-2017	Negative	Suspect
BS43	Translocatee (Juvenile Found Onsite)	Unknown	115	16-Sep-2017	Positive	Positive
BS48	Translocatee (Juvenile Found Onsite)	Unknown	128	5-May-2017	Negative	Negative
BS53	Translocatee (Juvenile Found Onsite)	Unknown	119	6-May-2017	Negative	Negative
BS53	Translocatee (Juvenile Found Onsite)	Unknown	119	30-Sep-2017	Negative	Suspect
BS67	Translocatee (Juvenile Found Onsite)	Unknown	147	9-May-2017	Negative	Negative
BS67	Translocatee (Juvenile Found Onsite)	Unknown	147	16-Sep-2017	Negative	Negative
BS87	Translocatee (Juvenile Found Onsite)	Unknown	128	5-May-2017	Negative	Negative
BS87	Translocatee (Juvenile Found Onsite)	Unknown	128	15-Sep-2017	Negative	Negative
BS112	Translocatee (Juvenile Found Onsite)	Unknown	124	19-May-2017	Negative	Negative
BS175	Translocatee (Juvenile Found Onsite)	Unknown	131	9-May-2017	Negative	Negative
BS175	Translocatee (Juvenile Found Onsite)	Unknown	131	6-Oct-2017	Negative	Suspect
BS178	Translocatee (Juvenile Found Onsite)	Unknown	117	7-May-2017	Suspect	Suspect
BS178	Translocatee (Juvenile Found Onsite)	Unknown	117	15-Sep-2017	Suspect	Suspect
BS182	Translocatee (Juvenile Found Onsite)	Unknown	124	27-Sep-2017	Negative	Suspect
BS190	Translocatee (Juvenile Found Onsite)	Unknown	126	16-May-2017	Negative	Negative
BS190	Translocatee (Juvenile Found Onsite)	Unknown	126	17-Sep-2017	Negative	Negative
BS191	Translocatee (Juvenile Found Onsite)	Unknown	152	6-May-2017	Negative	Negative
BS191	Translocatee (Juvenile Found Onsite)	Unknown	152	28-Sep-2017	Negative	Negative
BS194	Translocatee (Hatched in Captivity)	Unknown	100	13-May-2017	Negative	Negative
BS194	Translocatee (Hatched in Captivity)	Unknown	100	28-Sep-2017	Negative	Suspect
BS196	Translocatee (Hatched in Captivity)	Unknown	86	14-Sep-2017	Negative	Suspect
BS199	Translocatee (Hatched in Captivity)	Unknown	91	16-May-2017	Negative	Negative
BS199	Translocatee (Hatched in Captivity)	Unknown	91	17-Sep-2017	Negative	Suspect
BS201	Translocatee (Hatched in Captivity)	Unknown	120	20-May-2017	Negative	Negative
BS201	Translocatee (Hatched in Captivity)	Unknown	120	5-Oct-2017	Negative	Negative
BS203	Translocatee (Hatched in Captivity)	Unknown	100	23-Sep-2017	Negative	Suspect
BS205	Translocatee (Hatched in Captivity)	Unknown	107	21-May-2017	Negative	Negative
BS205	Translocatee (Hatched in Captivity)	Unknown	107	23-Sep-2017	Negative	Negative
BS208	Translocatee (Hatched in Captivity)	Unknown	96	16-May-2017	Negative	Negative
BS209	Translocatee (Hatched in Captivity)	Unknown	112	6-May-2017	Negative	Negative
BS209	Translocatee (Hatched in Captivity)	Unknown	112	29-Sep-2017	Negative	Suspect
BS210	Translocatee (Hatched in Captivity)	Unknown	114	8-May-2017	Negative	Negative
BS212	Translocatee (Hatched in Captivity)	Unknown	94	3-May-2017	Negative	Negative
BS212	Translocatee (Hatched in Captivity)	Unknown	94	14-Sep-2017	Negative	Negative
BS213	Translocatee (Hatched in Captivity)	Unknown	109	21-May-2017	Negative	Negative
BS214	Translocatee (Hatched in Captivity)	Unknown	110	16-Sep-2017	Negative	Negative
BS215	Translocatee (Hatched in Captivity)	Unknown	120	7-May-2017	Negative	Negative
BS215	Translocatee (Hatched in Captivity)	Unknown	120	27-Sep-2017	Negative	Negative
BS216	Translocatee (Hatched in Captivity)	Unknown	102	6-May-2017	Negative	Negative
BS216	Translocatee (Hatched in Captivity)	Unknown	102	23-Sep-2017	Negative	Negative
BS219	Translocatee (Hatched in Captivity)	Unknown	110	20-May-2017	Negative	Negative
BS219	Translocatee (Hatched in Captivity)	Unknown	110	30-Sep-2017	Negative	Negative

Tortoise ID	Tortoise Type	Sex	MCL	Sample Date	*M. agassizii* Result	*M. testudineum* Result
BS231	Translocatee (Hatched in Captivity)	Unknown	108	14-Sep-2017	Negative	Negative
BS233	Translocatee (Hatched in Captivity)	Unknown	118	3-May-2017	Negative	Negative
BS249	Translocatee (Hatched in Captivity)	Unknown	109	7-May-2017	Negative	Negative
BS249	Translocatee (Hatched in Captivity)	Unknown	109	15-Sep-2017	Suspect	Suspect
BS251	Translocatee (Hatched in Captivity)	Unknown	91	21-May-2017	Negative	Negative
BS252	Translocatee (Juvenile Found Onsite)	Unknown	140	20-May-2017	Negative	Negative
BS254	Translocatee (Hatched in Captivity)	Unknown	102	8-May-2017	Negative	Negative
BS254	Translocatee (Hatched in Captivity)	Unknown	102	16-Sep-2017	Negative	Suspect
BS255	Translocatee (Hatched in Captivity)	Unknown	106	13-May-2017	Negative	Negative
BS255	Translocatee (Hatched in Captivity)	Unknown	106	27-Sep-2017	Negative	Negative
BS256	Translocatee (Juvenile Found Onsite)	Unknown	116	17-Sep-2017	Negative	Negative
BS259	Translocatee (Juvenile Found Onsite)	Unknown	166	20-May-2017	Negative	Negative
BS259	Translocatee (Juvenile Found Onsite)	Unknown	166	27-Sep-2017	Negative	Suspect
BS263	Translocatee (Juvenile Found Onsite)	Unknown	117	7-May-2017	Negative	Negative
BS263	Translocatee (Juvenile Found Onsite)	Unknown	117	17-Sep-2017	Negative	Suspect
BS267	Translocatee (Juvenile Found Onsite)	Unknown	143	16-May-2017	Negative	Negative
BS267	Translocatee (Juvenile Found Onsite)	Unknown	143	17-Sep-2017	Negative	Negative
BS268	Translocatee (Juvenile Found Onsite)	Unknown	122	9-May-2017	Negative	Suspect
BS268	Translocatee (Juvenile Found Onsite)	Unknown	122	17-Sep-2017	Suspect	Suspect
BS272	Translocatee (Juvenile Found Onsite)	Unknown	142	3-May-2017	Negative	Negative
BS272	Translocatee (Juvenile Found Onsite)	Unknown	142	23-Sep-2017	Negative	Suspect
BS274	Translocatee (Juvenile Found Onsite)	Unknown	100	8-May-2017	Negative	Negative
BS274	Translocatee (Juvenile Found Onsite)	Unknown	100	16-Sep-2017	Negative	Suspect
BS276	Translocatee (Juvenile Found Onsite)	Unknown	111	17-Sep-2017	Negative	Suspect
BS277	Translocatee (Juvenile Found Onsite)	Unknown	99	8-May-2017	Negative	Negative
BS277	Translocatee (Juvenile Found Onsite)	Unknown	99	16-Sep-2017	Negative	Negative
BS279	Translocatee (Hatched in Captivity)	Unknown	95	16-Sep-2017	Suspect	Suspect
BS281	Translocatee (Hatched in Captivity)	Unknown	107	29-Sep-2017	Negative	Suspect
BS282	Translocatee (Juvenile Found Onsite)	Unknown	151	3-May-2017	Negative	Negative
BS282	Translocatee (Juvenile Found Onsite)	Unknown	151	14-Sep-2017	Negative	Suspect
BS283	Translocatee (Juvenile Found Onsite)	Unknown	144	15-Sep-2017	Negative	Suspect
BS284	Translocatee (Hatched in Captivity)	Unknown	104	23-Sep-2017	Negative	Negative
BS287	Translocatee (Juvenile Found Onsite)	Female	192	5-May-2017	Suspect	Negative
BS287	Translocatee (Juvenile Found Onsite)	Female	192	14-Sep-2017	Suspect	Suspect
BS295	Translocatee (Juvenile Found Onsite)	Unknown	109	30-Sep-2017	Negative	Negative
BS296	Translocatee (Juvenile Found Onsite)	Unknown	119	3-May-2017	Negative	Negative
BS296	Translocatee (Juvenile Found Onsite)	Unknown	119	15-Sep-2017	Negative	Negative
BS297	Translocatee (Hatched in Captivity)	Unknown	109	6-May-2017	Negative	Negative
BS297	Translocatee (Hatched in Captivity)	Unknown	109	28-Sep-2017	Suspect	Suspect
BS299	Translocatee (Hatched in Captivity)	Unknown	111	19-May-2017	Negative	Negative
BS300	Translocatee (Juvenile Found Onsite)	Unknown	117	13-May-2017	Negative	Negative
BS302	Translocatee (Juvenile Found Onsite)	Unknown	104	14-Sep-2017	Negative	Negative
BS303	Translocatee (Juvenile Found Onsite)	Unknown	132	6-Oct-2017	Negative	Suspect
BS304	Translocatee (Juvenile Found Onsite)	Unknown	110	6-May-2017	Negative	Negative
BS304	Translocatee (Juvenile Found Onsite)	Unknown	110	28-Sep-2017	Suspect	Suspect
BS307	Translocatee (Juvenile Found Onsite)	Unknown	124	23-May-2017	Negative	Negative
BS333	Translocatee (Juvenile Found Onsite)	Unknown	114	23-Sep-2017	Negative	Negative
BS338	Translocatee (Juvenile Found Onsite)	Unknown	124	8-May-2017	Negative	Negative
BS341	Translocatee (Juvenile Found Onsite)	Unknown	115	13-May-2017	Negative	Negative
BS341	Translocatee (Juvenile Found Onsite)	Unknown	115	27-Sep-2017	Negative	Negative

Tortoise ID	Tortoise Type	Sex	MCL	Sample Date	*M. agassizii* Result	*M. testudineum* Result
BS348	Translocatee (Juvenile Found Onsite)	Unknown	116	19-May-2017	Negative	Negative
BS355	Translocatee (Juvenile Found Onsite)	Unknown	111	20-May-2017	Negative	Negative
BS355	Translocatee (Juvenile Found Onsite)	Unknown	111	27-Sep-2017	Negative	Negative

Appendix F

ISEGS Final Locations of Long-Distance Translocated Tortoises

640000 641000 642000 643000 644000

393300 393200 393100

Ivanpah 1

BS294
BS265
BS291
BS32
BS94
BS179
BS01
BS37
BS58
BS293
BS289
I-15
Recipient
Pen
BS29
BS310

Copyright:© 2014 Esri, DeLorme, HERE, TomTom, Source: Esri, DigitalGlobe, GeoEye, i-cubed,

N

MapSymbol

Female ***Male*** ***Non-Adult (<160 mm)***

Site Boundary ***Cleared Areas***

0 0.5 1 *Km*

This map should not be used for site specific purposes.
Proprietary and confidential.
For use by Solar Partners I, II, and VIII only.

Figure F1
Final Positions - Terminated Monitoring
Long Distance Translocated Tortoises
Ivanpah Solar Electric Generating System

Appendix G

ISEGS Juvenile Desert Tortoise Translocation 2017 Annual Report

IVANPAH SOLAR ELECTRIC GENERATING SYSTEM
JUVENILE DESERT TORTOISE TRANSLOCATION

2017 Annual Report
January 1, 2017 – December 31, 2017

Prepared for: **Solar Partners I, II, and VIII.**
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Section 1.0 – Introduction

1.1 Background

The translocation of juvenile desert tortoises at the Ivanpah Solar Electric Generating System (ISEGS) is a mitigation requirement indicated in the *Revised Biological Opinion for ISEGS* (USFWS, 2011). The *ISEGS Juvenile Desert Tortoise Translocation Plan* has been incorporated into the *ISEGS Biological Resources Mitigation Implementation and Monitoring Plan* (BRMIMP) and follows procedures outlined in the *Guidelines for Clearance and Translocation of Desert Tortoises from the Ivanpah Solar Electric Generating System Project* (USFWS, 2008) as well as the translocation guidelines specified in the *Desert Tortoise Recovery Plan* (USFWS, 1994).

1.2 Initial Juvenile Tortoise Encounters

The ISEGS Quarantine Facility is located at the Ivanpah Solar Electric Generating Facility off Colosseum Road in Construction Logistics Areas West (Commons West) and south of the Ivanpah 2 access gate. Juvenile desert tortoises are defined as those measuring <120mm MCL (midline carapace length). All juveniles originally held at the quarantine pens were either encountered during clearance surveys, while monitoring construction activities, during operations, or were hatched in captivity from adult female tortoises held at the quarantine pens prior to their translocation. Table 1 shows the initial encounter locations and totals.

Table 1. Translocated Tortoises – Initial Encounter Sites

Site	Number of Tortoises
Commons East	2
Commons West	1
Unit 1	11
Unit 2	15
Unit 3	33
Hatched in Quarantine Facility	35

1.3 Recipient Site

The juvenile tortoise recipient site, as identified by the USFWS Biological Opinion, extends south from Unit 1 to Interstate-15 (I-15) and along the western edge of I-15 from Yates Well Road to Nipton Road. The fenced portion of the recipient site, the I-15 pen, begins approximately two kilometers south of the Yates Well Road exit and extends south for 2.5 kilometers along the I-15 tortoise exclusion fence and to

the west one kilometer (Figure 1). For future reference "Recipient Site" will refer to the area outside the I-15 pen while "I-15 Pen" will refer to the area inside the I-15 pen.

1.4 Release

As specified in the 2011 revised biological opinion, juvenile desert tortoises were to be translocated in cohorts of 30 once they reached a size of 120mm MCL or until they had been held for five years. Since a group of 30 tortoises did not reach the 120mm MCL requirement before the five-year holding period was reached, all tortoises were released during one translocation event October 1-4, 2016.

Section 2.0 – Translocation

2.1 Overview

The juvenile desert tortoise release points were systematically determined using the following methodology. First, the tortoises were divided into groups based on whether they were hatched in captivity or were brought to the quarantine facility from encounter locations on the project site. Second, those groups were then divided into nine size classes in 10mm increments from 80mm to 189mm (Table 2). From each 10mm size class bracket, tortoises were then randomly assigned an "Inside I-15 Pen" or "Outside I-15 Pen" disposition for a total of 48 tortoises inside the I-15 pen and 49 tortoises outside the I-15 pen (Table 3). Lastly, release points were selected under the criteria that no point would be within 150 meters from a fence and points would be separated on the roughly east-west axis by 150 meters and by 175 meters on the roughly north-south axis. Appendix A provides the disposition details for each of the 97 juvenile tortoises released. The October 2016 translocation release points are shown in Figure 1.

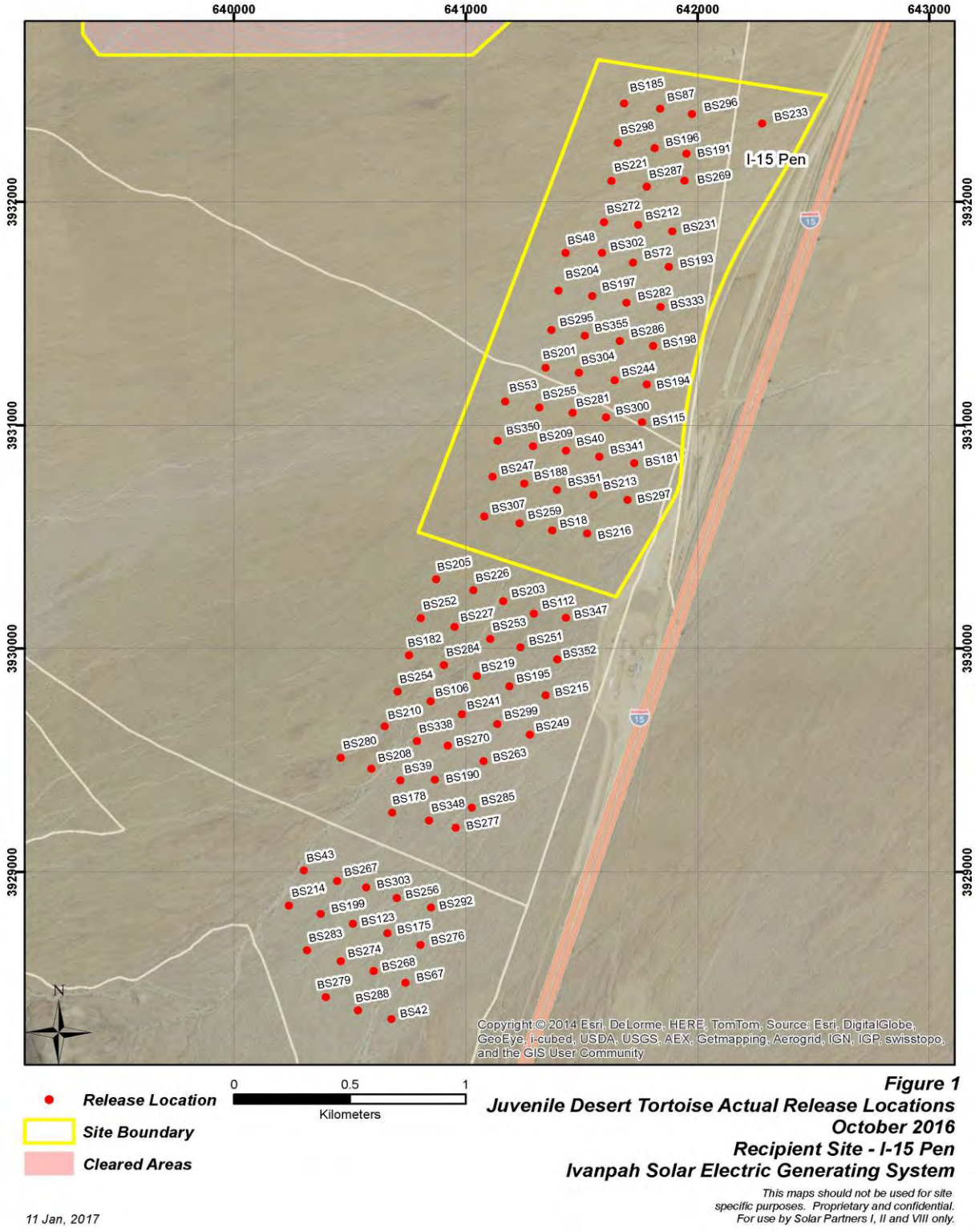
Table 2. Translocated Tortoises – Size Class Summary

MCL (mm)	Number of Tortoises
80-89	6
90-99	13
100-109	36
110-119	11
120-129	15
130-139	10
140-149	4
170-179	1
180-189	1
Total	**97**

Table 3. Translocated Tortoises – Disposition Summary

Tortoise Size and Sex	Inside I-15 Pen	Outside I-15 Pen
Male >159 mm MCL	0	1
Female >159 mm MCL	1	0
Sex Unknown >159 mm MCL	1	0
120-159 mm MCL	19	19
0-119 mm MCL	27	29
Totals	**48**	**49**

Figure 1. ISEGS Juvenile Desert Tortoise Translocation: 2016 Actual Release Points



Section 3.0 – Juvenile Tortoise Monitoring

3.1 Juvenile Tortoise Encounters

In 2017, biologists conducted radio tracking of the juvenile desert tortoises once a week during the active season from mid-February to mid-November and every other week during the inactive season from January 1 to mid-February and mid-November to December 31. Data collected includes the date, time, geographic coordinates, location in the landscape and activity. Seventy-eight tortoises were monitored as of January 1, 2017. Throughout 2017, there were 26 juvenile fatalities bringing the total number of juveniles monitored to 52 by the end of the year. Recent encounter locations are shown in Figure 2.

3.2 Missing Tortoises

BS253 is currently the only missing juvenile desert tortoise. Its transmitter was located on the ground outside of the I-15 pen. Biologist have spent time searching for BS253 and will continue to look for BS253 in the field when performing scheduled telemetry. This tortoise was in an area of high predation.

3.3 Juvenile Tortoise Radio Transmitters

There was a total of 148 juvenile tortoise transmitter events in 2017 which consisted of 122 transmitter exchanges and 26 transmitter removals due to fatalities.

3.4 Juvenile Tortoise Interventions

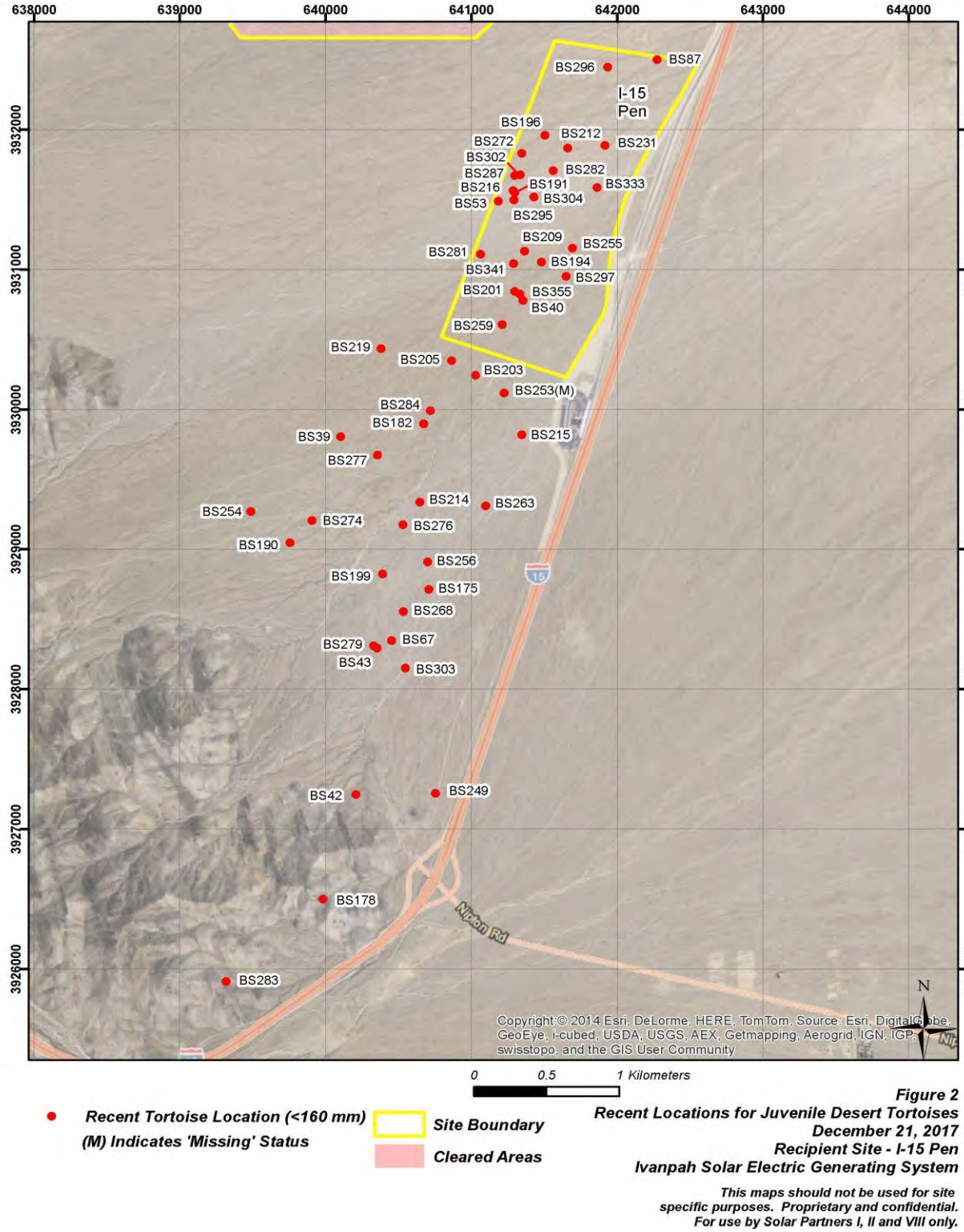
In 2017 nine tortoises required an intervention for various reasons:

- Four tortoises were flipped on their carapace and were placed on their plastron.
- One tortoise was located 30m from interstate 15 near the Nipton Road exit and was relocated out of harm's way to a location 500m from the highway.
- Two tortoises were encountered with injuries from a canid attack. One animal succumbed to its wounds at the veterinarian office and one survived after veterinary care.
- One tortoise was encountered in the open during freezing temperatures in January and was relocated to a nearby burrow.
- One tortoise (previously attacked by canid and returned from veterinary care) was returned to the veterinarian to address health concerns related to the attack. This tortoise was later released back into the wild.

3.5 Ongoing Evaluation

Translocated juvenile tortoises will continue to be monitored weekly during the active season and every other week throughout the inactive season until October 2021.

Figure 2. ISEGS Juvenile Desert Tortoise Translocation: Recent Encounter Locations



Section 4.0 – Health Analysis and ELISA Testing

4.1 2017 Health Assessments

Health is a vital component to the survival of a species. There are many factors that pose a potential threat to the desert tortoise and its prolonged survival in the Mojave Desert. One of the threats to desert tortoise survival is the prevalence of upper respiratory tract disease (URTD) caused by the bacteria *Mycoplasma agassizii* and *Mycoplasma testudineum.* Habitat loss, herpesvirus, as well as trauma from animal predation and human interactions are other factors that can have a negative impact on tortoise survival. To determine the health of the ISEGS tortoise population, biologists conduct health examinations of each animal being monitored. The 2011 *Revised Biological Opinion for ISEGS* specifies that health assessments will be conducted on all translocated juvenile desert tortoises in the spring and fall each year. Health assessment data will be collected using the *USFWS Health Assessment Data Collection Form for Translocated Desert Tortoises* and will follow the guidelines in the *USFWS Desert Tortoise Health Evaluation Handbook*.

To measure the health of the ISEGS desert tortoise population, several factors are evaluated during the bi-annual health assessments. First, the tortoise is evaluated for clinical signs of disease such as abnormal respiration; nasal erosion or discharge; and eye discharge, redness, swelling or other abnormalities. Second, the shell and limbs are examined for any abnormalities or trauma. The tortoise is weighed and measured and the body condition score (BCS), a metric of general health, is determined. Next, the tortoise's mouth is inspected for ulcers, plaques or discoloration that could indicate a herpesvirus infection. While examining the mouth, swabs of the oral cavity are collected which are later sent to the USFWS laboratory at UCLA, Los Angeles, California for banking. Lastly, blood is drawn for ELISA testing. These data are then evaluated for each animal to determine the overall health of the animal and the population.

As outlined in the *ISEGS Juvenile Desert Tortoise Translocation Plan,* blood samples for ELISA testing are only taken from a randomly selected half of the tortoises each spring and from all tortoises each fall. The Department of Infectious Disease and Pathology at the University of Florida, Gainesville, Florida perform the ELISA testing on all ISEGS desert tortoise blood samples. The ELISA test detects antibodies for *M. agassizii* and *M. testudineum,* the bacteria responsible for URTD in desert tortoises. To determine if an animal is sick or has had past exposure, antibody titers are evaluated. An antibody titer is the measurement of the greatest dilution of serum that will still elicit a positive result. The presence of antibodies does not necessarily mean an animal is sick, only that it has had exposure to a pathogen at

some point. For this reason, the clinical evaluation along with the diagnostic test results are used to determine the health of an animal. Previously established antibody titer cutoff values were used for the ELISA test. For *M. agassizii*, values less than 32 are considered negative, values equal to 32 are considered suspect and values greater than 32 are positive. For *M. testudineum*, values <32, 32 and 64, and >128 are considered negative, suspect, and positive respectively.

In May 2017, 69 health assessments were performed with 49 blood samples collected. In September 2017, there were 52 assessments, each with a blood sample, for a total of 101 blood samples in 2017. The Juvenile Tortoise Status Table, shows the most recent morphometrics, BCS and ELISA results for all juvenile tortoises, including deceased animals (See **Appendix** A). A summary of 2017 ELISA results is shown in Table 5. Of the 101 blood samples tested in 2017, there were 91 and 71 negative results for *M. agassizii* and *M. testudineum* respectively. *M. agassizii* returned nine suspect results while *M. testudineum* had 29 suspect results. Each bacterium had one positive result.

Table 5. Translocated Tortoises – 2017 ELISA Results Summary

Health Season	Health Assessments	Blood Sample	*M. agassizii* Negative	*M. agassizii* Suspect	*M. agassizii* Positive	*M. testudineum* Negative	*M. testudineum* Suspect	*M. testudineum* Positive
May 2017	69	49	47	2	0	46	3	0
September 2017	52	52	44	7	1	25	26	1
Totals	121	101	91	9	1	71	29	1

Section 5.0 – Tortoise Fatalities

5.1 Summary of Tortoise Fatalities

There were 26 total translocated desert tortoise fatalities in 2017: 15 juveniles (size class <120mm MCL), 10 sub-adults (size class 121mm-159mm MCL), and 1 adult (size class >159mm MCL) (Table 6). Comparatively, 2016 had 19 total fatalities from October through December. Of the 26 fatalities in 2017, 23 were suspected to be caused by canids, one each for suspected hyperthermia and rodent attack, and one death due to natural causes (Table 7). Of the 97 tortoises originally translocated, 52 remain alive and are evenly distributed between the recipient site and I-15 pen (Table 8).

Table 9 shows fatality details for each tortoise. Fatality locations can be seen in Figure 4.

Table 6. Translocated Tortoise Fatalities 2017 – Size Class Summary.

Release Site	<121mm MCL	121mm-159mm MCL	>159mm MCL	Totals
Inside I-15 Pen	5	4	0	***9***
Outside I-15 Pen	10	6	1	***17***
Totals	***15***	***10***	***1***	**26**

Table 7. Translocated Tortoise Fatalities 2017 – Suspected Cause of Death Summary.

Release Site	Canid	Hyperthermia	Natural Causes	Rodents	Totals
Inside I-15 Pen	8	1	*0*	*0*	***9***
Outside I-15 Pen	15	0	*1*	*1*	***17***
Totals	***23***	***1***	***1***	***1***	**26**

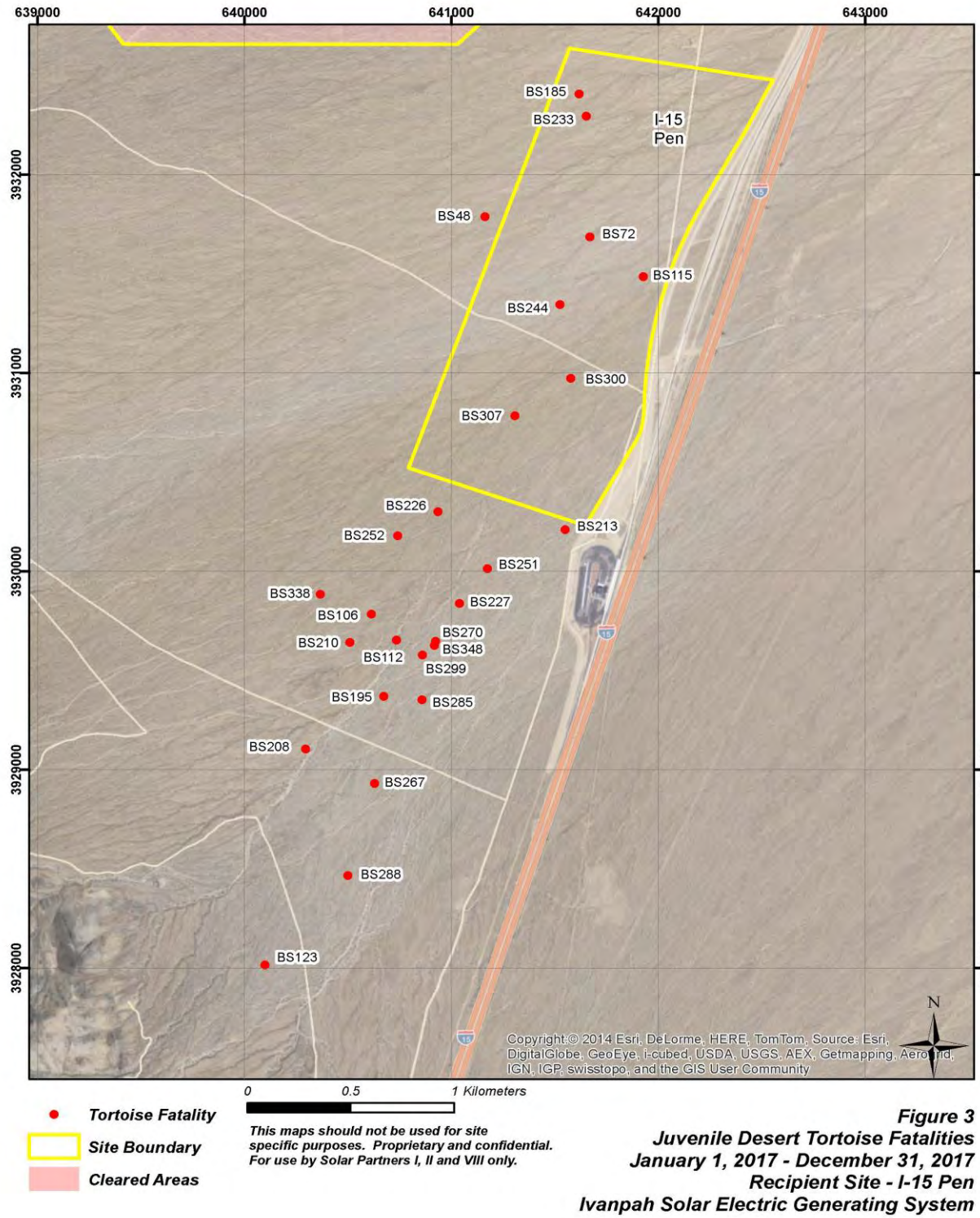
Table 8. Translocated Tortoise Fatalities 2016 and 2017 – Cumulative Fatality Summary.

Release Site	Released	2016 Fatalities	2017 Fatalities	Remaining
Inside I-15 Pen	48	14	*9*	***25***
Outside I-15 Pen	49	5	*17*	***27***
Totals	***97***	***19***	***26***	**52**

Table 9. Translocated Tortoise Fatalities 2017 - Details

Tort ID	Release Site	Sex	MCL	Date Carcass Encountered	Weeks Alive Post Release	Suspected Cause of Death
BS288	Recipient Site	Unknown	101	8-Feb-2017	18	Natural Causes
BS185	I-15 Pen	Unknown	125	9-Feb-2017	18	Canid-Badger
BS270	Recipient Site	Male	184	22-Feb-2017	20	Canid-Badger
BS72	I-15 Pen	Unknown	120	24-Feb-2017	20	Canid-Badger
BS123	Recipient Site	Unknown	116	8-Apr-2017	27	Canid-Badger
BS226	Recipient Site	Unknown	113	21-Apr-2017	28	Canid-Badger
BS227	Recipient Site	Unknown	132	27-Apr-2017	29	Canid-Badger
BS244	I-15 Pen	Unknown	92	28-Apr-2017	29	Hyperthermia
BS115	I-15 Pen	Unknown	123	2-May-2017	30	Canid-Badger
BS112	Recipient Site	Unknown	124	31-May-2017	34	Canid-Badger
BS307	I-15 Pen	Unknown	124	10-Jun-2017	36	Canid-Badger
BS48	I-15 Pen	Unknown	128	7-Jul-2017	39	Canid-Badger
BS208	Recipient Site	Unknown	96	13-Jul-2017	40	Canid-Badger
BS252	Recipient Site	Unknown	140	3-Aug-2017	43	Rodents
BS195	Recipient Site	Unknown	115	3-Aug-2017	43	Canid-Badger
BS348	Recipient Site	Unknown	116	11-Aug-2017	44	Canid-Badger
BS338	Recipient Site	Unknown	124	11-Aug-2017	44	Canid-Badger
BS251	Recipient Site	Unknown	91	12-Aug-2017	44	Canid-Badger
BS233	I-15 Pen	Unknown	118	18-Aug-2017	45	Canid-Badger
BS106	Recipient Site	Unknown	119	19-Aug-2017	45	Canid-Badger
BS210	Recipient Site	Unknown	114	8-Sep-2017	48	Canid-Badger
BS285	Recipient Site	Unknown	133	8-Sep-2017	48	Canid-Badger
BS299	Recipient Site	Unknown	111	8-Sep-2017	48	Canid-Badger
BS300	I-15 Pen	Unknown	117	15-Sep-2017	49	Canid-Badger
BS213	I-15 Pen	Unknown	109	15-Sep-2017	49	Canid-Badger
BS267	Recipient Site	Unknown	143	6-Oct-2017	52	Canid-Badger

Figure 3. ISEGS Juvenile Desert Tortoise Translocation: 2017 Fatality Locations



Appendix A – Juvenile Tortoise Status Table

Tort ID	Tort Status	Initial Disposition	Initial Encounter Site	Initial Encounter Date	Release Site	Release Date	Sex	Initial MCL	Recent MCL	Recent Mass	Recent BCS	Recent Health Exam Date	Recent ELISA Results M. agassizii	Recent ELISA Results M. testud.	Annual Encounters
BS18	Dead	Wild Capture	Ivanpah 1	10/20/10	I-15 Pen	10/1/16	Unknown	72	147	645		9/30/16	Negative	Negative	0
BS39	Tracked	Wild Capture	Ivanpah 1	11/1/10	Recipient Site	10/2/16	Unknown	61	120	465	5	9/16/17	Negative	Negative	50
BS40	Tracked	Wild Capture	Ivanpah 1	11/1/10	I-15 Pen	10/3/16	Unknown	69	147	830	4	9/27/17	Negative	Suspect	47
BS42	Tracked	Wild Capture	Ivanpah 1	12/17/10	Recipient Site	10/1/16	Unknown	53	131	640	5	9/15/17	Negative	Negative	47
BS43	Tracked	Wild Capture	Ivanpah 1	12/20/10	Recipient Site	10/1/16	Unknown	46	115	375	5	9/16/17	Positive	Positive	50
BS48	Dead	Wild Capture	Ivanpah 2	3/9/11	I-15 Pen	10/3/16	Unknown	86	128	535		5/5/17	Negative	Negative	25
BS53	Tracked	Wild Capture	Common East	3/10/11	I-15 Pen	10/4/16	Unknown	46	119	430	5	9/30/17	Negative	Suspect	50
BS67	Tracked	Wild Capture	Ivanpah 2	3/16/11	Recipient Site	10/1/16	Unknown	71	147	835	5	9/16/17	Negative	Negative	47
BS72	Dead	Wild Capture	Ivanpah 2	3/21/11	I-15 Pen	10/3/16	Unknown	57	120	305		10/2/16	Negative	Negative	4
BS87	Tracked	Wild Capture	Ivanpah 3	3/30/11	I-15 Pen	10/4/16	Unknown	72	128	655	5	9/15/17	Negative	Negative	47
BS106	Dead	Wild Capture	Ivanpah 3	4/2/11	Recipient Site	10/2/16	Unknown	68	119	350		5/19/17	Negative	Negative	31
BS112	Dead	Wild Capture	Common West	4/4/11	Recipient Site	10/3/16	Unknown	44	124	390		5/19/17	Negative	Negative	20
BS115	Dead	Wild Capture	Ivanpah 3	4/5/11	I-15 Pen	10/3/16	Unknown	64	123	490		10/2/16	Negative	Negative	14
BS123	Dead	Wild Capture	Ivanpah 1	4/13/11	Recipient Site	10/1/16	Unknown	57	116	302		9/30/16	Negative	Negative	10
BS175	Tracked	Wild Capture	Ivanpah 1	5/12/11	Recipient Site	10/1/16	Unknown	62	131	490	5	10/6/17	Negative	Suspect	49
BS178	Tracked	Wild Capture	Ivanpah 1	6/9/11	Recipient Site	10/2/16	Unknown	46	117	385	5	9/15/17	Suspect	Suspect	48
BS181	Dead	Wild Capture	Ivanpah 3	7/20/11	I-15 Pen	10/2/16	Unknown	62	130	415		10/1/16	Negative	Negative	0

Tort ID	Tort Status	Initial Disposition	Initial Encounter Site	Initial Encounter Date	Release Site	Release Date	Sex	Initial MCL	Recent MCL	Recent Mass	Recent BCS	Recent Health Exam Date	Recent ELISA Results M. agassizii	Recent ELISA Results M. testud.	Annual Encounters
BS182	Tracked	Wild Capture	Ivanpah 2	7/27/11	Recipient Site	10/4/16	Unknown	59	124	485	5	9/27/17	Negative	Suspect	48
BS185	Dead	Wild Capture	Ivanpah 3	8/6/11	I-15 Pen	10/4/16	Unknown	53	125	345		10/3/16	Negative	Negative	3
BS188	Dead	Wild Capture	Ivanpah 3	8/12/11	I-15 Pen	10/2/16	Unknown	75	136	450		10/1/16	Negative	Negative	0
BS190	Tracked	Wild Capture	Ivanpah 3	8/15/11	Recipient Site	10/2/16	Unknown	102	126	555	5	9/17/17	Negative	Negative	49
BS191	Tracked	Wild Capture	Ivanpah 2	4/15/11	I-15 Pen	10/4/16	Unknown	82	152	780	5	9/28/17	Negative	Negative	49
BS193	Dead	Wild Capture	Ivanpah 3	4/15/11	I-15 Pen	10/3/16	Unknown	70	124	350		10/2/16	Negative	Negative	0
BS194	Tracked	Hatchling	Quarantine Pens	8/25/11	I-15 Pen	10/4/16	Unknown	45	100	270	5	9/28/17	Negative	Suspect	48
BS195	Dead	Hatchling	Quarantine Pens	8/26/11	Recipient Site	10/3/16	Unknown	43	115	345		5/16/17	Negative	Negative	29
BS196	Tracked	Hatchling	Quarantine Pens	8/26/11	I-15 Pen	10/4/16	Unknown	43	86	190	5	9/14/17	Negative	Suspect	47
BS197	Dead	Hatchling	Quarantine Pens	8/26/11	I-15 Pen	10/2/16	Unknown	45	102	205		10/1/16	Negative	Negative	0
BS198	Dead	Hatchling	Quarantine Pens	8/26/11	I-15 Pen	10/1/16	Unknown	44	84	113		9/30/16	Negative	Negative	0
BS199	Tracked	Hatchling	Quarantine Pens	8/26/11	Recipient Site	10/1/16	Unknown	43	91	205	5	9/17/17	Negative	Suspect	48
BS201	Tracked	Hatchling	Quarantine Pens	8/29/11	I-15 Pen	10/1/16	Unknown	43	120	455	5	10/5/17	Negative	Negative	50
BS203	Tracked	Hatchling	Quarantine Pens	8/29/11	Recipient Site	10/3/16	Unknown	44	100	270	5	9/23/17	Negative	Suspect	48
BS204	Dead	Hatchling	Quarantine Pens	8/29/11	I-15 Pen	10/3/16	Unknown	43	110	240		10/2/16	Negative	Negative	0
BS205	Tracked	Hatchling	Quarantine Pens	8/29/11	Recipient Site	10/4/16	Unknown	41	107	305	5	9/23/17	Negative	Negative	48
BS208	Dead	Hatchling	Quarantine Pens	8/30/11	Recipient Site	10/2/16	Unknown	46	96	195		5/16/17	Negative	Negative	26
BS209	Tracked	Hatchling	Quarantine Pens	8/30/11	I-15 Pen	10/3/16	Unknown	40	112	355	5	9/29/17	Negative	Suspect	49

Tort ID	Tort Status	Initial Disposition	Initial Encounter Site	Initial Encounter Date	Release Site	Release Date	Sex	Initial MCL	Recent MCL	Recent Mass	Recent BCS	Recent Health Exam Date	Recent ELISA Results M. agassizii	Recent ELISA Results M. testud.	Annual Encounters
BS210	Dead	Hatchling	Quarantine Pens	8/30/11	Recipient Site	10/2/16	Unknown	40	114	335		5/8/17	Negative	Negative	34
BS212	Tracked	Hatchling	Quarantine Pens	9/1/11	I-15 Pen	10/4/16	Unknown	48	94	220	5	9/14/17	Negative	Negative	47
BS213	Dead	Hatchling	Quarantine Pens	9/1/11	I-15 Pen	10/2/16	Unknown	46	109	280		5/21/17	Negative	Negative	35
BS214	Tracked	Hatchling	Quarantine Pens	9/1/11	Recipient Site	10/1/16	Unknown	45	110	340	5	9/16/17	Negative	Negative	48
BS215	Tracked	Hatchling	Quarantine Pens	9/1/11	Recipient Site	10/3/16	Unknown	44	120	440	5	9/27/17	Negative	Negative	48
BS216	Tracked	Hatchling	Quarantine Pens	9/1/11	I-15 Pen	10/1/16	Unknown	42	102	310	5	9/23/17	Negative	Negative	48
BS219	Tracked	Hatchling	Quarantine Pens	9/3/11	Recipient Site	10/3/16	Unknown	43	110	340	5	9/30/17	Negative	Negative	51
BS221	Dead	Hatchling	Quarantine Pens	9/5/11	I-15 Pen	10/4/16	Unknown	48	92	145		10/3/16	Negative	Negative	0
BS226	Dead	Hatchling	Quarantine Pens	9/6/11	Recipient Site	10/4/16	Unknown	46	113	270		10/3/16	Negative	Negative	14
BS227	Dead	Hatchling	Quarantine Pens	9/7/11	Recipient Site	10/4/16	Unknown	44	132	415		10/3/16	Negative	Negative	14
BS231	Tracked	Hatchling	Quarantine Pens	9/7/11	I-15 Pen	10/4/16	Unknown	43	108	320	5	9/14/17	Negative	Negative	47
BS233	Dead	Hatchling	Quarantine Pens	9/7/11	I-15 Pen	10/4/16	Unknown	44	118	320		5/3/17	Negative	Negative	31
BS241	Dead	Hatchling	Quarantine Pens	9/11/11	Recipient Site	10/2/16	Unknown	41	103	225		10/1/16	Negative	Negative	0
BS244	Dead	Wild Capture	Ivanpah 2	9/10/11	I-15 Pen	10/1/16	Unknown	55	92	168		9/30/16	Negative	Negative	15
BS247	Dead	Wild Capture	Ivanpah 2	9/10/11	I-15 Pen	10/2/16	Unknown	61	137	510		10/1/16	Negative	Negative	0
BS249	Tracked	Hatchling	Quarantine Pens	9/11/11	Recipient Site	10/2/16	Unknown	45	109	295	5	9/15/17	Suspect	Suspect	48
BS251	Dead	Hatchling	Quarantine Pens	9/12/11	Recipient Site	10/3/16	Unknown	46	91	130		5/21/17	Negative	Negative	31
BS252	Dead	Wild Capture	Ivanpah 3	9/12/11	Recipient Site	10/4/16	Unknown	79	140	550		5/20/17	Negative	Negative	29

Tort ID	Tort Status	Initial Disposition	Initial Encounter Site	Initial Encounter Date	Release Site	Release Date	Sex	Initial MCL	Recent MCL	Recent Mass	Recent BCS	Recent Health Exam Date	Recent ELISA Results M. agassizii	Recent ELISA Results M. testud.	Annual Encounters
BS253	Missing	Hatchling	Quarantine Pens	9/13/11	Recipient Site	10/3/16	Unknown	44	109	280	4	5/21/17	Negative	Negative	30
BS254	Tracked	Hatchling	Quarantine Pens	9/13/11	Recipient Site	10/2/16	Unknown	43	102	340	5	9/16/17	Negative	Suspect	48
BS255	Tracked	Hatchling	Quarantine Pens	9/13/11	I-15 Pen	10/4/16	Unknown	43	106	360	5	9/27/17	Negative	Negative	47
BS256	Tracked	Wild Capture	Ivanpah 3	9/13/11	Recipient Site	10/1/16	Unknown	68	116	475	5	9/17/17	Negative	Negative	50
BS259	Tracked	Wild Capture	Ivanpah 3	9/14/11	I-15 Pen	10/1/16	Unknown	114	166	1140	5	9/27/17	Negative	Suspect	48
BS263	Tracked	Wild Capture	Ivanpah 2	9/16/11	Recipient Site	10/2/16	Unknown	74	117	455	5	9/17/17	Negative	Suspect	48
BS267	Dead	Wild Capture	Ivanpah 3	9/18/11	Recipient Site	10/1/16	Unknown	82	143	880		9/17/17	Negative	Negative	39
BS268	Tracked	Wild Capture	Ivanpah 3	9/18/11	Recipient Site	10/1/16	Unknown	66	122	505	5	9/17/17	Suspect	Suspect	47
BS269	Dead	Wild Capture	Ivanpah 3	9/18/11	I-15 Pen	10/4/16	Unknown	93	132	500		10/3/16	Negative	Negative	0
BS270	Dead	Wild Capture	Ivanpah 3	9/18/11	Recipient Site	10/2/16	Male	120	184	1200		10/1/16	Negative	Negative	5
BS272	Tracked	Wild Capture	Ivanpah 3	9/20/11	I-15 Pen	10/4/16	Unknown	89	142	730	5	9/23/17	Negative	Suspect	47
BS274	Tracked	Wild Capture	Ivanpah 3	9/20/11	Recipient Site	10/1/16	Unknown	45	100	225	5	9/16/17	Negative	Suspect	48
BS276	Tracked	Wild Capture	Ivanpah 3	9/20/11	Recipient Site	10/1/16	Unknown	69	111	370	5	9/17/17	Negative	Suspect	48
BS277	Tracked	Wild Capture	Common East	9/20/11	Recipient Site	10/2/16	Unknown	46	99	295	5	9/16/17	Negative	Negative	48
BS279	Tracked	Hatchling	Quarantine Pens	9/21/11	Recipient Site	10/1/16	Unknown	48	95	235	5	9/16/17	Suspect	Suspect	48
BS280	Dead	Wild Capture	Ivanpah 3	9/21/11	Recipient Site	10/2/16	Unknown	85	145	580		10/1/16	Negative	Negative	0
BS281	Tracked	Hatchling	Quarantine Pens	9/21/11	I-15 Pen	10/4/16	Unknown	48	107	355	4	9/29/17	Negative	Suspect	50
BS282	Tracked	Wild Capture	Ivanpah 3	9/21/11	I-15 Pen	10/2/16	Unknown	90	151	730	5	9/14/17	Negative	Suspect	47

Tort ID	Tort Status	Initial Disposition	Initial Encounter Site	Initial Encounter Date	Release Site	Release Date	Sex	Initial MCL	Recent MCL	Recent Mass	Recent BCS	Recent Health Exam Date	Recent ELISA Results M. agassizii	Recent ELISA Results M. testud.	Annual Encounters
BS283	Tracked	Wild Capture	Ivanpah 2	9/21/11	Recipient Site	10/1/16	Unknown	100	144	730	5	9/15/17	Negative	Suspect	48
BS284	Tracked	Hatchling	Quarantine Pens	9/22/11	Recipient Site	10/3/16	Unknown	43	104	340	5	9/23/17	Negative	Negative	48
BS285	Dead	Wild Capture	Ivanpah 3	9/22/11	Recipient Site	10/2/16	Unknown	54	133	465		5/16/17	Negative	Negative	33
BS286	Dead	Wild Capture	Ivanpah 3	9/22/11	I-15 Pen	10/1/16	Unknown	63	120	315		9/30/16	Negative	Negative	0
BS287	Tracked	Wild Capture	Ivanpah 2	9/22/11	I-15 Pen	10/4/16	Female	111	192	1630	5	9/14/17	Suspect	Suspect	46
BS288	Dead	Wild Capture	Ivanpah 2	9/23/11	Recipient Site	10/1/16	Unknown	58	101	215		9/30/16	Negative	Negative	3
BS292	Dead	Wild Capture	Ivanpah 2	9/24/11	Recipient Site	10/1/16	Unknown	103	150	670		9/30/16	Negative	Negative	0
BS295	Tracked	Wild Capture	Ivanpah 2	9/26/11	I-15 Pen	10/2/16	Unknown	60	109	345	5	9/30/17	Negative	Negative	51
BS296	Tracked	Wild Capture	Ivanpah 3	9/26/11	I-15 Pen	10/4/16	Unknown	70	119	480	5	9/15/17	Negative	Negative	47
BS297	Tracked	Hatchling	Quarantine Pens	9/27/11	I-15 Pen	10/1/16	Unknown	43	109	350	5	9/28/17	Suspect	Suspect	51
BS298	Dead	Wild Capture	Ivanpah 3	9/27/11	I-15 Pen	10/4/16	Unknown	62	112	295		10/3/16	Negative	Negative	0
BS299	Dead	Hatchling	Quarantine Pens	9/29/11	Recipient Site	10/2/16	Unknown	47	111	275		5/19/17	Negative	Negative	34
BS300	Dead	Wild Capture	Ivanpah 3	9/29/11	I-15 Pen	10/4/16	Unknown	47	117	315		5/13/17	Negative	Negative	35
BS302	Tracked	Wild Capture	Ivanpah 3	9/30/11	I-15 Pen	10/3/16	Unknown	62	104	325	5	9/14/17	Negative	Negative	47
BS303	Tracked	Wild Capture	Ivanpah 3	9/30/11	Recipient Site	10/1/16	Unknown	76	132	535	5	10/6/17	Negative	Suspect	42
BS304	Tracked	Wild Capture	Ivanpah 3	10/2/11	I-15 Pen	10/1/16	Unknown	72	110	395	5	9/28/17	Suspect	Suspect	49
BS307	Dead	Wild Capture	Ivanpah 3	10/3/11	I-15 Pen	10/1/16	Unknown	64	124	365		5/23/17	Negative	Negative	23
BS333	Tracked	Wild Capture	Ivanpah 1	10/17/11	I-15 Pen	10/2/16	Unknown	43	114	440	5	9/23/17	Negative	Negative	48

Tort ID	Tort Status	Initial Disposition	Initial Encounter Site	Initial Encounter Date	Release Site	Release Date	Sex	Initial MCL	Recent MCL	Recent Mass	Recent BCS	Recent Health Exam Date	Recent ELISA Results M. agassizii	Recent ELISA Results M. testud.	Annual Encounters
BS338	Dead	Wild Capture	Ivanpah 2	3/5/12	Recipient Site	10/2/16	Unknown	62	124	445		5/8/17	Negative	Negative	29
BS341	Tracked	Wild Capture	Ivanpah 1	4/3/12	I-15 Pen	10/3/16	Unknown	70	115	495	5	9/27/17	Negative	Negative	48
BS347	Dead	Wild Capture	Ivanpah 3	9/7/12	Recipient Site	10/3/16	Unknown	72	108	240		10/2/16	Negative	Negative	0
BS348	Dead	Wild Capture	Ivanpah 2	9/10/12	Recipient Site	10/2/16	Unknown	74	116	350		5/19/17	Negative	Negative	30
BS350	Dead	Wild Capture	Ivanpah 3	9/25/12	I-15 Pen	10/3/16	Unknown	45	100	210		10/2/16	Negative	Suspect	0
BS351	Dead	Wild Capture	Ivanpah 3	10/8/12	I-15 Pen	10/2/16	Unknown	93	157	660		10/1/16	Negative	Negative	0
BS352	Dead	Wild Capture	Ivanpah 3	10/17/12	Recipient Site	10/3/16	Unknown	101	140	580		10/2/16	Negative	Negative	0
BS355	Tracked	Wild Capture	Ivanpah 1	3/27/13	I-15 Pen	10/2/16	Unknown	43	111	350	5	9/27/17	Negative	Negative	48

Appendix H
Maps of ISEGS Final Locations of EMP Tortoises

626000 628000 630000 632000 634000 636000 638000 640000 642000 644000 646000 648000 650000 652000

3942000 3940000 3938000 3936000 3934000 3932000 3930000 3928000

BS49
BS246
BS128
BS171
BS30
BS07
BS170
BS336(M)
BS80
BS223
BS172
BS95
BS108
BS230
BS105
BS107
BS97
BS71
BS345
BS344(M)
BS86
BS64
BS47
BS354(M)
BS130
BS189(M)
BS129
BS56
Ivanpah 3
BS305(M)
BS163
BS57(M)
BS156
BS78
BS155
BS110
BS120
BS176
BS102
BS164
BS65
BS316
BS75(M)
BS76
BS159
BS77
Ivanpah 2
BS88
BS177
BS05
BS19
BS11
BS12
BS145
BS08
BS334(M)
BS111
Ivanpah 1
BS137(M)
BS15
BS13
BS353(M)
I-15
Pen
BS149
BS151
BS324
BS158
BS339
BS323
BS317
BS192(M)
BS96
BS243(M)
BS248
BS328
BS242
BS321
BS239

N

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User

626

MapSymbol, Transfer Year

- *Female, 2017*
- *Male, 2017*
- *Non-Adult, 2017*
- *Unsexed Adult, 2017*
- *(M) Indicates 'Missing' Status*
- *Transmitter To Be Removed*
- *Site Boundary*
- *Ring Roads*
- *Cleared Areas*

0 1 2 Kilometers

This map should not be used for site specific purposes. Proprietary and confidential. For use by Solar Partners I, II, and VIII only.

Figure H1
Final Positions - Terminated Monitoring
Effectiveness Monitoring Program
Recipient Sites
Ivanpah Solor Electric Generating System

642000 644000 646000 648000 650000 652000 654000 656000 658000 660000

3934000 3932000 3930000 3928000 3926000 3924000

BS561
BS577(M)
BS540(M)
BS619
BS551
BS564
BS576
BS567
I-15
Pen
BS542
BS607
BS644
BS569
BS581(M)
BS555
BS627(M)
BS626(M)
BS580
BS596
BS599
BS587
BS563
BS640
BS593
BS631
BS610
BS632(M)
BS647
BS589
BS605
BS643
BS546(M)
BS639
BS641
BS645
BS594
BS585(M)
BS606
BS608
BS651
BS554
BS578
BS558
BS557(M)
BS616
BS635
BS654
BS612
BS623
BS622(M)
BS592
BS617
BS552
BS618
BS588
BS614

BS534
BS517
BS519
BS537
BS522
BS538
BS504
BS535
BS527
BS530
BS531
BS500
BS524
BS523
BS521
BS508
BS518
BS514
BS509
BS511
BS506
BS515
BS510

N

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User

MapSymbol, Transfer Year

Female, 2016

Male, 2016

Unsexed Adult, 2016

Female, 2017

Male, 2017

Non-Adult, 2017

Unsexed Adult, 2017

(M) Indicates 'Missing' Status

Transmitter To Be Removed

Site Boundary

Cleared Areas

0 1 2 Kilometers

This map should not be used for site specific purposes. Proprietary and confidential. For use by Solar Partners I, II, and VIII only.

Figure H2
Final Positions-Terminated Monitoring
Effectiveness Monitoring Program
Control Sites
Ivanpah Solor Electric Generating System

Appendix I

Maps of ISEGS Final Locations of Tortoises Transferred to USGS

632000 633000 634000 635000 636000 637000 638000 639000 640000 641000 642000 643000 644000 645000 646000 647000

394000 393900 393800 393700 393600 393500 393400 393300 393200

BS99
BS165
BS55
Ivanpah 3
Ivanpah 2
Ivanpah 1
BS140
BS21
BS74
BS148
BS139
BS142

N

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MapSymbol, Transfer Year

Female, 2017

Male, 2017

Site Boundary

Cleared Areas

0 0.5 1 Km

This map should not be used for site specific purposes.
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For use by Solar Partners I, II, and VIII only.

Figure I1
Final Positions
Tortoises Transferred to USGS Recipient Sites
Ivanpah Solar Electric Generating System

642000 643000 644000 645000 646000 647000 648000 649000 650000 651000 652000 653000 654000 655000 656000 657000

393400 393300 393200 393100 393000 392900 392800 392700 392600

BS582
BS609
BS586
BS573
BS572
BS628
BS625
BS602
BS604
BS590
BS512
BS513
BS533
BS503
BS529

Nipton Rd

N

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MapSymbol, Transfer Year

- ***Female, 2016***
- ***Male, 2016***
- ***Female, 2017***
- ***Male, 2017***
- ***Site Boundary***
- ***Cleared Areas***

0 0.5 1 Km

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Figure I2
Final Positions
Tortoises Transferred to USGS Control Sites
Ivanpah Solar Electric Generating System

Appendix J
Summary and Maps of ISEGS 2017 Tortoise Fatalities

Table J1: ISEGS 2017 Effectiveness Monitoring Program Tortoise Fatalities

Tort ID	Tortoise Type	Sex	MCL (latest)	Date Carcass Found	Suspected Cause of Death
BS138	Resident	Female	224	23-Feb-2017	Canid
BS579	Control West	Male	219	15-May-2017	Hyperthermia; Flipped on back

632000 634000 636000 638000 640000 642000 644000 646000 648000 650000 652000

3938000 3936000 3934000 3932000 3930000 3928000 3926000

Ivanpah 3

Ivanpah 2

Ivanpah 1

BS138

I-15
Pen

BS579

Nipton Rd

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N

Map Symbol

- ***Recent Tortoise Location (Female)***
- ***Recent Tortoise Location (<160 mm)***
- ***Recent Tortoise Location (Male)***
- ***Recent Tortoise Location (Unknown Sex)***
- ***Site Boundary***
- ***Cleared Areas***

0 1 2 *Kilometers*

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Figure J1
Effectiveness Monitoring Program
Tortoise Fatalities
January 1, 2017 - May 31, 2017
Ivanpah Solar Electric Generating System

Table J2: ISEGS Head Start (Juvenile) Tortoise Fatalities

Tort ID	Tortoise Type	Translocation Type	Sex	MCL (latest)	Date Carcass Found	Suspected Cause of Death
BS288	Translocatee (Juvenile Found Onsite)	2016 Out I-15	Unknown	101	8-Feb-2017	Natural Causes
BS185	Translocatee (Juvenile Found Onsite)	2016 In I-15	Unknown	125	9-Feb-2017	Canid-Badger
BS270	Translocatee (Juvenile Found Onsite)	2016 Out I-15	Male	184	22-Feb-2017	Canid-Badger
BS72	Translocatee (Juvenile Found Onsite)	2016 In I-15	Unknown	120	24-Feb-2017	Canid-Badger
BS123	Translocatee (Juvenile Found Onsite)	2016 Out I-15	Unknown	116	8-Apr-2017	Canid-Badger
BS226	Translocatee (Hatched in Captivity)	2016 Out I-15	Unknown	113	21-Apr-2017	Canid-Badger
BS227	Translocatee (Hatched in Captivity)	2016 Out I-15	Unknown	132	27-Apr-2017	Canid-Badger
BS244	Translocatee (Juvenile Found Onsite)	2016 In I-15	Unknown	92	28-Apr-2017	Hyperthermia
BS115	Translocatee (Juvenile Found Onsite)	2016 In I-15	Unknown	123	2-May-2017	Canid-Badger
BS112	Translocatee (Juvenile Found Onsite)	2016 Out I-15	Unknown	124	31-May-2017	Canid-Badger
BS307	Translocatee (Juvenile Found Onsite)	2016 In I-15	Unknown	124	10-Jun-2017	Canid-Badger
BS48	Translocatee (Juvenile Found Onsite)	2016 In I-15	Unknown	128	7-Jul-2017	Canid-Badger
BS208	Translocatee (Hatched in Captivity)	2016 Out I-15	Unknown	96	13-Jul-2017	Canid-Badger
BS195	Translocatee (Hatched in Captivity)	2016 Out I-15	Unknown	115	3-Aug-2017	Canid-Badger
BS252	Translocatee (Juvenile Found Onsite)	2016 Out I-15	Unknown	140	3-Aug-2017	Rodents
BS338	Translocatee (Juvenile Found Onsite)	2016 Out I-15	Unknown	124	11-Aug-2017	Canid-Badger
BS348	Translocatee (Juvenile Found Onsite)	2016 Out I-15	Unknown	116	11-Aug-2017	Canid-Badger
BS251	Translocatee (Hatched in Captivity)	2016 Out I-15	Unknown	91	12-Aug-2017	Canid-Badger
BS233	Translocatee (Hatched in Captivity)	2016 In I-15	Unknown	118	18-Aug-2017	Canid-Badger
BS106	Translocatee (Juvenile Found Onsite)	2016 Out I-15	Unknown	119	19-Aug-2017	Canid-Badger
BS210	Translocatee (Hatched in Captivity)	2016 Out I-15	Unknown	114	8-Sep-2017	Canid-Badger
BS285	Translocatee (Juvenile Found Onsite)	2016 Out I-15	Unknown	133	8-Sep-2017	Canid-Badger
BS299	Translocatee (Hatched in Captivity)	2016 Out I-15	Unknown	111	8-Sep-2017	Canid-Badger
BS213	Translocatee (Hatched in Captivity)	2016 In I-15	Unknown	109	15-Sep-2017	Canid-Badger
BS300	Translocatee (Juvenile Found Onsite)	2016 In I-15	Unknown	117	15-Sep-2017	Canid-Badger
BS267	Translocatee (Juvenile Found Onsite)	2016 Out I-15	Unknown	143	6-Oct-2017	Canid-Badger

638000 639000 640000 641000 642000 643000 644000 645000

3932000 3931000 3930000 3929000 3928000

BS185
BS233
I-15
Pen
BS48
BS72
BS115
BS244
BS300
BS307
BS226
BS252
BS213
BS251
BS338
BS227
BS106
BS270
BS210
BS348
BS112
BS299
BS195
BS285
BS208
BS267
BS288
BS123

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N

Tortoise Fatality
Cleared Areas
Site Boundary

0 0.5 1 *Kilometers*

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Figure J2
Juvenile Desert Tortoise Fatalities
January 1, 2017 - December 31, 2017
Ivanpah Solar Electric Generating System

Table J3: ISEGS Tortoise Fatalities from June 1 - September 30, 2017

Tort ID	Tortoise Type	Translocation Type	Sex	MCL (latest	Date Carcass	Suspected Cause of Death
BS68	Translocatee (Adult Found Onsite)	2012 Short	Male	266	8-Jul-2017	Unknown
BS17	Translocatee (Adult Found Onsite)	2012 Short	Female	182	8-Aug-2017	Unknown
BS583	Control West		Female	216	11-Aug-2017	Hyperthermia; Flipped on back
BS624	Control West		Unknown	161	11-Aug-2017	Hyperthermia; Flipped on back
BS611	Control West		Unknown	146	12-Aug-2017	Hyperthermia; Flipped on back
BS539	Control West		Male	248	13-Aug-2017	Hyperthermia; Flipped on back
BS548	Control West		Unknown	132	13-Aug-2017	Hyperthermia; Flipped on back
BS342	Resident		Unknown	121	18-Sep-2017	Hyperthermia; Flipped on back

632000 634000 636000 638000 640000 642000 644000 646000 648000 650000 652000

3938000 3936000 3934000 3932000 3930000 3928000

Ivanpah 3

Ivanpah 2

Ivanpah 1

I-15 Pen

BS342

BS17

BS68

BS539

BS548

BS611

BS583

BS624

Nipton Rd

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N

Map Symbol

- ***Recent Tortoise Location (Female)***
- ***Recent Tortoise Location (<160 mm)***
- ***Recent Tortoise Location (Male)***
- ***Recent Tortoise Location (Unknown Sex)***
- ***Site Boundary***
- ***Cleared Areas***

0 1 2 *Kilometers*

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Figure J3
Tortoise Fatalities
June 1 - September 30, 2017
Ivanpah Solar Electric Generating System

Appendix H

Condition of Certification BIO-13

Weed Management Plan Annual Report

Ivanpah Solar Electric Generating System
California Energy Commission (07-AFC-5C)
Bureau of Land Management
(CACA-48668, 49502, 49503, and 49504)
Conditions of Certification BIO-13

Annual Biological Report
January 1, 2017 – December 31, 2017
Reporting Period
Submitted
January 31, 2018

Prepared by: Designated Biologist on behalf of Solar Partners I, II, VIII LLC

100302 Yates Well Road
Nipton, CA 92364

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Table 1. Summary of Noxious Weed Species Observed During 2017 at ISEGS **4**

Introduction

This annual compliance report pertains to weed management activities at Ivanpah Solar Electric Generating System (ISEGS). Compliance with this plan is required by the Bureaus of Land Management Right-of-Way Grant, California Energy Commissions (CEC) Conditions of Certification (COC's) BIO-13, and Revised 2011 United States Fish and Wildlife Service (USFWS) Biological Opinion.

Weed Management Activities

The Weed Management Plan's protocols implemented in 2017 continue to be an effective method at identifying and controlling weed establishment within the ISEGS facility. Weed establishment early in the project was an anticipated result of the disturbance areas created during the construction of the ISEGS facility. Weed management will continue for the first several years of operation to mitigate the increased potential of weed establishment. In 2017, weeds identified at the facility were manually removed, and disposed of off site by the Designated Biologist.

Biological monitors and/or the Designated Biologist conducted semi-monthly weed surveys throughout the site during the active growing season (February through November), in accordance with the CECs BIO-13 requirements. Data was collected and reported to the Designated Biologist, including the location and type of noxious weeds. In addition, non-native plants were located. All non-native plants and noxious weeds were collected, and transferred to the Designated Biologist for disposal. All weed surveys were successfully implemented and completed according to the Weed Management Plan (Revision 2) and 2011 USFWS Biological Opinion (8-8-10-F-24R).

Nine noxious weed species and 3,429 individuals were found throughout the project site in 2017. In addition 2 weed species comprising 7 individuals that are not classified as noxious were also found at the project site. Not all of these species meet the criteria of the Weed Management Plan's target weed species; however, all were treated as noxious weeds and removed from the facility. See table 1 for number of each species found in 2017. The 9 noxious weed species were: Field Bindweed (*Convolvulus arvensis),* Halogeton (*Halogeton glomeratus*), Kochia (*Kochia scoparia*), London rocket (*Sisymbrium irio*), Puncture Vine (*Tribulus terrestris*), Russian thistle (*Salsola tragus*), Sahara mustard (*Brassica tournefortii*), Tansy mustard (*Descurainia sophia*), and Wild horsenettle (*Solanum elaeagnifolium).* The 2 weed species that are not classified as noxious are: Spiny sow thistle (*Sonchus asper*) and Tumbling mustard (*Descurainia sophia).*

Table 1. Summary of Noxious Weed Species Observed During 2017 at ISEGS

Weed Species	Colosseum Road	CLA-E	CLA-W	Ivanpah 1	Ivanpah 2	Ivanpah 3	Total per Species
Field Bindweed	0	23	0	0	0	0	23
Halogeton	3	35	0	4	0	0	42
Kochia	2	0	0	0	0	0	2
London Rocket	7	0	956	137	34	1503	2637
Puncture vine	0	141	1	0	0	53	195
Russian Thistle	155	43	10	53	80	153	494
Sahara mustard	0	0	0	0	0	0	0
Spiny sow thistle	0	0	0	0	0	1	1
Tansy mustard	1	0	0	0	1	0	2
Tumbling mustard	1	0	5	0	0	0	6
Wild horsenettle	0	29	1	0	2	2	34
Total per Location	169	271	973	194	117	1712	---
Total Plants Observed and Removed Onsite During 2017							**3436**

In 2017, a total of 3,436 individual weeds were removed from the project site, as compared to 4,710 individuals removed from the project site in 2016. Eleven species of weeds were removed from the project site in 2017, whereas ten species of weeds were removed in 2016. The reduction in number of weeds could be attributed to removal of weeds prior to going to seed in 2016. The goal is to reduce the number of weed species, and total weeds observed each year. The total number of individual weeds decreased in 2017. The goal was met for reducing the total number of weeds in 2017. There was an increase in the number of weed species removed in 2017. There were eleven weed species removed in 2017 whereas in 2016 ten weed species were removed. An increase in one weed species in any given year is not deemed a significant increase in the number of species found on the project site compared to 2016. The most significant contribution to the reduction in weeds in 2017 is likely the result of surveying areas where weeds went to seed in previous years. During 2017, the locations of weed species were recorded to inform survey locations for 2018. In order to reduce future potential increases in individual numbers of weeds and number of weed species biologists will survey areas where weeds were observed going to seed on a more frequent basis in 2018.

Appendix I

Condition of Certification BIO-14

Revegetation Annual Monitoring Report for Short-Term Disturbance

CONDITION OF CERTIFICATION BIO-14

Revegetation Monitoring Report for Short-term Disturbance

Ivanpah Solar Electric Generating System

(BLM ROW: CACA-49502)

Prepared for

Solar Partners II, LLC; Solar Partners I, LLC;
and Solar Partners VIII, LLC

January 2018

ch2m:

2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

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Acronyms and Abbreviations

%	percent
115 kV	115-kV gen-tie line
33 kV	33-kV gen-tie line
BIO-13	Condition of Certification Biology -13 Weed Management Plan
BIO-14	Condition of Certification Biology -14 Closure, Revegetation and Rehabilitation Plan
BIO-18	Condition of Certification Biology -18 Special-status Plant Impact and Avoidance and Minimization
BLM	Bureau of Land Management
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CH2M	CH2M HILL Engineers, Inc.
CLA	Construction Logistics Area
cm	centimeter
CNNDB	California Natural Diversity Database
COC	Condition of Certification
ft.	foot/feet
ft^2	square foot
gen-tie	generation tie
GPS	global positioning system
ISEGS	Ivanpah Solar Electric Generating System
km	kilometer
kV	kilovolt
m	meter
m^2	square meter
MW	megawatt
NGL	natural gas pipeline
No.	number
NRG	NRG Energy Services, LLC
O&M	Operations and Maintenance
POD	Plan of Development
Revegetation Plan	*Closure, Revegetation and Rehabilitation Plan for Ivanpah Solar Electric Generating System*
ROW	right-of-way

Solar Partners	Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
Weed Plan	*Weed Management Plan for the Ivanpah Solar Electric Generating System*
WR	Well Road

SECTION 1

Introduction

1.1 Project Description

Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (Solar Partners) are the owners of the Ivanpah Solar Electric Generating System (ISEGS), a nominal 370-megawatt (MW) solar energy project in southern California's Mojave Desert, near the Nevada border. The project was developed by BrightSource Energy, Inc. and is operated for Solar Partners by NRG Energy Services, LLC (NRG). The project is located on a 3,471-acre (1,405 hectares) site west of the Ivanpah Dry Lake, on land managed by the Bureau of Land Management (BLM). CH2M HILL Engineers, Inc. (CH2M) provides environmental compliance support during operations of the solar facility.

Ivanpah 1 (the southern unit) covers approximately 913.5 acres (370 hectares); Ivanpah 2 (the middle unit) covers approximately 1,077 acres (436 hectares); and Ivanpah 3 (the northern unit) is larger and covers approximately 1,235 acres (500 hectares). The remaining disturbance areas include common access roads, gas lines, generation tie-lines (gen-tie), and operations facilities. All three units share an administration building, operations and maintenance (O&M) building, a substation located between Ivanpah 1 and 2, and paved roads to access each unit. The project ties into the existing Kern River natural gas transmission line about 0.5-mile (0.8 kilometer [km]) north of the Northern Rare Plant Mitigation Area and into the Southern California Edison 230/115-kilovolt (kV) line that crosses between the Ivanpah 1 and 2 sites (Figure 1-1) (CEC, 2010).

1.2 Report Objective

This report presents the results of the annual revegetation monitoring of 48.94 acres (19.8 hectares) of short-term and temporary disturbance within the Construction Logistics Area (CLA) and shared ancillary facilities for the ISEGS. The CLA consists of two separate locations, which are referred to as CLA East and CLA West (Figure 1-1). All monitoring (or "disturbed") sites were treated according to the restoration measures prescribed in the project-specific *Closure, Revegetation and Rehabilitation Plan for Ivanpah Solar Electric Generating System* (*Revegetation Plan*) (CH2M, 2010b), and as required by the BLM Right-of-Way (ROW) Grant (BLM, 2010) and the California Energy Commission's (CEC's) Condition of Certification (COC) BIO-14 (CEC, 2010). The ROW Grant provides independent reclamation bond numbers for each independent part of the facility. The CLA and common ancillary facilities reclamation bond number for the short-term and temporary disturbance discussed in this report is BLM ROW CACA-49502 (BLM, 2010).

This report provides the results of the application of two separate monitoring protocols: revegetation and weed monitoring. Revegetation monitoring refers to quantitative vegetation assessments using belt transects and relevé plots, where success criteria are based on perennial plant cover and species richness (CH2M, 2010b). The *Revegetation Plan* (CH2M, 2010b) specifies the use of standard analyses of plant data recovered from belt transects and relevé plots, such as density, diversity, and survivorship. These values are not used to determine success *per se,* but they provide useful additional information on the condition of the vegetation and the progress of recovery. The *Revegetation Plan* requires 10 years of revegetation monitoring, or until the success criteria are met, in which case revegetation monitoring may be completed in less than 10 years.

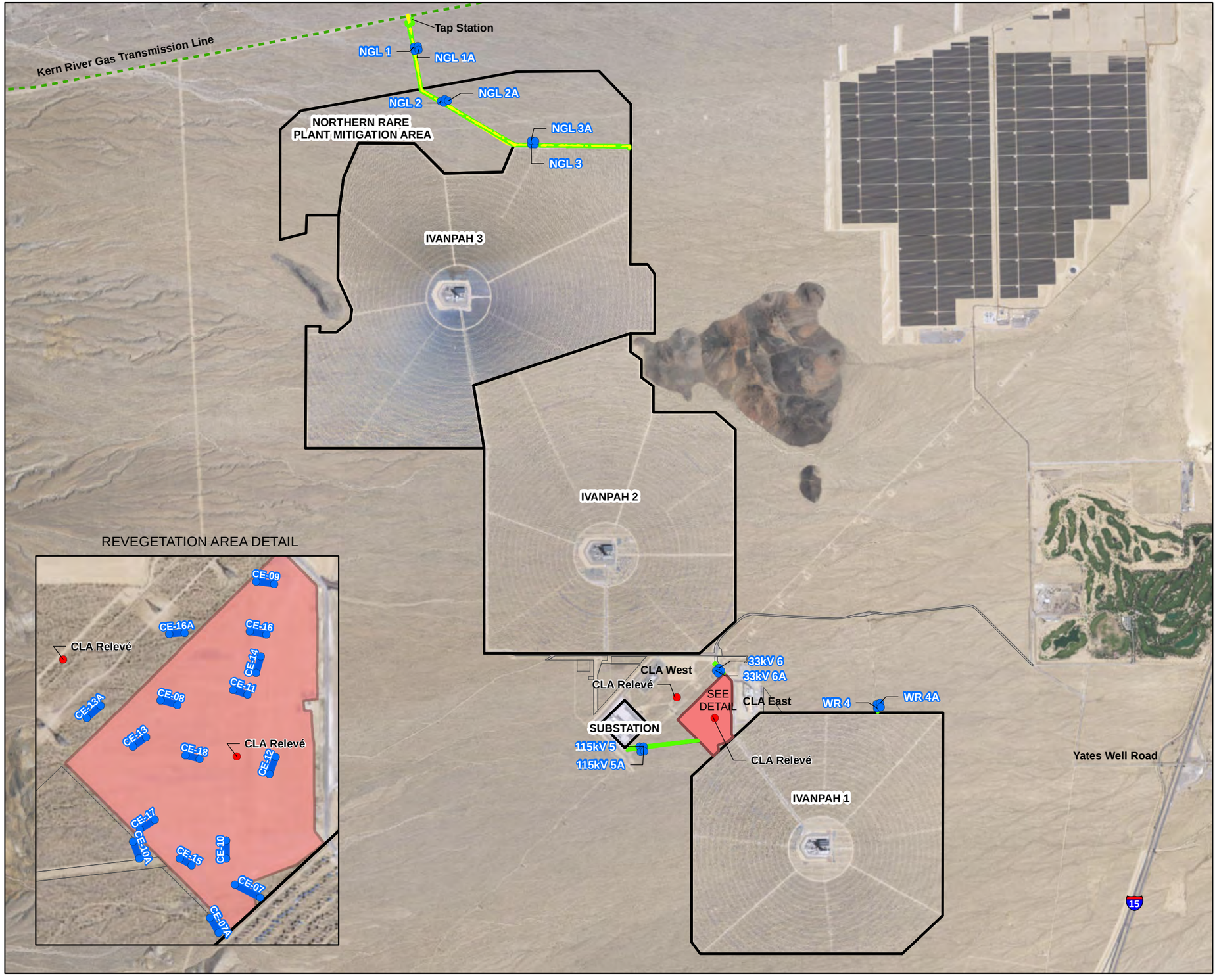
Noxious weed monitoring and management within revegetation sites is required by the *Weed Management Plan for the Ivanpah Solar Electric Generating System* (*Weed Plan*) (CH2M, 2010c), a standalone document that included as Appendix A of the *Revegetation Plan,* as required by COC BIO-13 (CEC, 2010). Weed management and monitoring requirements are concurrently guided by the U.S. Fish

and Wildlife Service's (USFWS) *Biological Opinion on BrightSource Energy's Ivanpah Solar Electric Generating System Project* (USFWS, 2011). Weed monitoring results of the revegetation locations are provided in this document but are independent of the success criteria (CH2M, 2010). Weed monitoring is scheduled for 10 years after revegetation treatment, and is staggered, based on when disturbance is completed. In 2017, the frequency of weed monitoring occurred in accordance with Year 2, Year 4, and Year 5 requirements. Weed monitoring occurred on all short-term disturbance sites in 2017.

Annual revegetation monitoring was staggered, depending on when disturbance was complete. This report provides Year 2 and Year 5 revegetation monitoring results for different sites that were completed in 2015 and 2012, respectively. Year 2 monitoring occurred on an area of short-term disturbance 40.1 acres (16 hectares) in size, on the western side of CLA East, completed in 2015 (Figure 1-1). Year 5 monitoring was conducted on a temporary disturbance area of 0.38 acres (0.15 hectares) associated with the 33-kV gen-tie linear between Ivanpah 1 and Ivanpah 2, completed in 2012. Monitoring of the 6.03 acres (2.44 hectares) natural gas pipeline (NGL) linear was not conducted in 2017 (Year 4) because this area is measured every other year; monitoring will resume in Year 5 (2018; CH2M, 2010b).

In 2017, one monitoring site (belt transect) within the CLA East revegetation area met *Revegetation Plan* success goals after only 2 years post-revegetation treatment. The monitoring locations are shown on Figure 1-1.[1]

[1] In 2015, *Revegetation Plan* success criteria were met on four monitoring sites, two NGL linear monitoring sites (including the NGL tap station), the well road (WR), and the 115-kV gen-tie line. Weed monitoring occurred at these locations in 2017, and will continue for 10 years post-revegetation treatment.



LEGEND

- Permanent Photographic Plot at End of Belt Transect
- Relevé
- Belt Transect
- Project Site
- 2012 Revegetation Area
- 2013 Revegetation Area
- 2015 Revegetation Area

Notes:
2012 Revegetation Area Acreage:
33 kV Line - 0.38 acres
115 kV Line - 2.18 acres
Well Road - 0.10 acres
Gas Line Tap Station - 0.15 acres
Natural Gas Line - 6.03 acres

2013 Revegetation Area Acreage:
Natural Gas Line - 1.9 acres

2015 Revegetation Area Acreage:
Construction Logistics Area East - 40.1 acres

CLA = Construction Logistics Area
kV = kilovolt
NGL = natural gas pipeline

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

N

0 0.25 0.5
Miles

Figure 1-1
2017 Annual
Revegetation Monitoring Locations
Ivanpah Solar Electric Generating System
San Bernardino County, California

SECTION 2

Methods

The methods section includes all monitoring sites, even though some revegetation monitoring sites were not assessed in Year 4 (2017). For example, the NGL sites[2] were not monitored this year, but this section includes a discussion of these sites. Weed monitoring occurs on every monitoring site, every year.

2.1 Revegetation Monitoring and Progress Assessment

Revegetation monitoring and success criteria for ISEGS are guided by the *Technical Basis Document*, which is included as Appendix C of the *Revegetation Plan* (CH2M, 2010b). Success criteria are based on perennial plant species, including perennial grasses and succulents, and do not include annual species because their populations fluctuate drastically from year to year.

2.1.1 Vegetation Sampling

The *Revegetation Plan* (CH2M, 2010b) states that each 10 acres (4 hectares) of disturbance requires a minimum sample of three belt transects. The location and timing of construction-related disturbances varied, and vegetation sample locations were therefore adjusted to the size and location of each disturbance. Table 2-1 provides the acreage and vegetation sampling sites at each sampled disturbed location and, for comparison, the estimated disturbance in the project's Plan of Development (POD) (CH2M, 2010a).

Success criteria are different for revegetation monitoring sites based on elevation and location within the facility (CH2M, 2010b). These monitoring sites had the following success criteria standards:

1. The NGL and NGL tap station were associated with Ivanpah 3 success criteria
2. Well Road (WR), 115-kV gen-tie line (115-kV), 33-kV gen-tie line (33-kV), and the western side of CLA East were associated with the CLA success criteria

Within the western side of CLA East (40.1 acres [16.2 hectares]), 12 monitoring locations were established on the disturbed area (3 sampling sites for each 10-acre portion [4 hectares]). In addition, four control sample sites were established in undisturbed areas for comparison with the western side of CLA East. Because of the acreage and layout of the 33-kV location, one representative belt transect was chosen within the disturbed revegetation area. The other revegetation disturbance locations were not surveyed in 2017 and details of the vegetation sampling locations are not described in this report. Figure 1-1 shows the location of all vegetation sampling locations.

[2] Monitoring on the NGL will occur in Year 5 (2018).

Table 2-1. Revegetation Monitoring Sampling Locations and Acreages

Location (Year Revegetation Complete)	Disturbed Belt Transect	Undisturbed Belt Transect	Actual Revegetation Acres[a]	POD - Estimated Area in Acres[a]
Ivanpah 3 Area (2012 and 2013)				
NGL from Ivanpah 3 to the Tap Point at Kern River Gas Transmission [b, d, e]	NGL-1, NGL-2, NGL-3	NGL-1A, NGL-2A, NGL-3A	6.03	5.1
Kern River Gas Transmission Tap Station [d]	None	None	0.15 [c]	0.9
CLA (2012 and 2015) [f]				
WR north of Ivanpah 1 [d]	WR-4	WR-4A	0.1	NI
Underground 115-kV between Ivanpah 1 and substation [d]	115kV-5	115kV-5A	2.18	3.4
33-kV	33kV-6	33kV-6A	0.38	NI
Western side of CLA East [d]	CE-07, CE-08, CE-09, CE-10, CE-11, CE-12, CE-13, CE-14, CE-15, CE-16, CE-17, CE-18	CE-07A, CE-10A, CE-13A, CE-16A	40.1	49.3
Total Acreage			**48.94**	**58.7**

[a] Areas may differ because the POD area was a pre-construction estimate.

[b] 1.9 acres treated in 2013

[c] Revegetation area differs from POD because the area inside the tap station fencing was not revegetated

[d] Revegetation success criteria were met in 2015 for NGL-1, NGL-1A, NGL-2, NGL-2A, WR-4, WR-4A, 115kV-5, and 115kV-5A (CH2M, 2016). Revegetation success criteria were met in 2017 for CE-18. Weed monitoring will continue at these locations for 10 years post-revegetation treatment (see Table 4-3 for the weed monitoring schedule).

[e] Monitoring was not conducted on NGL-3 in 2017 because this area is measured every other year; monitoring will resume in 2018.

[f] Revegetation was completed on the well road, 115-kV, and 33-kV in 2012. Revegetation was completed on western side of CLA East in 2015.

Notes:

NI = not included in POD calculations

To be consistent with international scientific standards, the quantitative data generated in plant-ecological sampling, such as that required here by the *Revegetation Plan,* are gathered using tools graduated in the metric system. Conversions to the English system are provided below, and the results reported as English units (e.g., acres), as needed for direct comparison to the success criteria.

Within the disturbed areas, eighteen 30-meter (m) (98-foot [ft.]) by 4-m (13-ft.) belt transects (120 square meters [m^2]; 1,292 square feet [ft^2] each) were staked with a capped t-post at each end of the transect axis. In 2017, vegetation sampling was required at 13 of the 18 disturbed locations. Revegetation monitoring was not conducted on the remaining five locations because success criteria were met in 2015 on four locations, the fifth is only monitored every other year, and monitoring will resume in 2018. As a control comparison, five 120-m^2 (1,292 ft^2) belt transect locations were chosen within the undisturbed vegetation adjacent to the disturbed sample plots. The undisturbed transects were chosen along the same orientation as the disturbed transects and approximately 30 m (98 ft.) from the edge of disturbance.

On linear features, sampling locations were named from north to south. On nonlinear features (western side of CLA East), sampling locations were randomly assigned as a representative sample of the entire

area. Random samples were chosen by overlaying a numbered grid over the revegetation area and running a random number generator. A random number generator was also used to determine orientation: north-south, east-west, northeast-southwest, and northwest-southeast. Sampling locations within disturbed locations are numbered 1 through 18, and associated undisturbed locations include the number and letter A. Vegetation sampling locations were recorded using a Garmin global positioning system (GPS) and are provided on a map with an aerial photograph base layer (Figure 1-1).

2.1.1.1 Belt Transects

Perennial plant cover was recorded along the centerline of each transect as a percent of total transect length. Botanists assessed cover by stretching a tape measure along the transect axis between the capped t-posts and measuring the distance that foliar canopies of perennial plants intercepted the tape measure. Field data were collected on datasheets and then transcribed to a Microsoft Excel database for analysis. Transect locations were marked by capped t-posts placed at the start and end of the 30-m (98-ft.) axis and recorded using a GPS, for later relocation.

Belt transects were formed by placing two 4-m-long (13-ft.) sticks at the ends of and perpendicular to the 30-m-long (98-ft.) transect axis, thus, describing a rectilinear area (the 'belt') of 120 m^2 (1,292 ft^2). Individuals were counted if they had vegetative cover that intersected the belt transect. Perennial species were counted as separate individuals when clumps of stems protruded from different locations on the ground. This is most common for creosote bush (*Larrea tridentata*), white bursage (also known as burrobrush; *Ambrosia dumosa*), and Mojave yucca (*Yucca schidigera*). Individual Mojave yucca trunks were counted separately.

Perennial species richness was recorded within the belt transect as the number of unique perennial species. The Revegetation Plan (CH2M, 2010b) states that richness should be averaged over three belt transects and one circular relevé plot (Section 2.1.1.2 provides a description of a relevé plot). Because of the small acreage and linear nature of the NGL, WR, 115-kV, and 33-kV revegetation locations, a relevé plot was not included in the richness analysis of disturbed locations. A relevé plot was used in the richness calculations on the CLA East revegetation monitoring sites.

2.1.1.2 Relevé Plots

Relevé plots were used to calculate perennial species' richness by counting the number of species in the plot (CNPS, 2000). The number of plants from the relevé plot will be used as a value in the average perennial species richness calculations.

Two 12-m-radius (39-ft.) relevé plots were established, one to sample the undisturbed vegetation adjacent to the western side of CLA East and one to sample disturbed vegetation at western side of CLA East (Figure 1-1). The total area of each relevé plot was 452 m^2 (4,778 ft^2). The only disturbed relevé plot was established on the western side of CLA East, and will be used as a value in the average perennial species richness calculations. Richness calculation will be used in determining success of the monitoring sites. Because of the small acreage and linear nature of the NGL, WR, 115-kV and 33-kV disturbance areas, relevé plots were not established in these disturbed areas. For these locations, this analysis is required by field monitoring protocol and will not be used in determining success (CH2M, 2010b).

2.1.1.3 Survivorship

Perennial species density measurements (that is, number of live individuals present per unit area) were used to estimate survivorship. For this measurement, the unit area is defined as each 120-m^2 (1,292-ft^2) belt transect. The population present at the time of the first monitoring session (t_1) is defined as the original cohort. Survivorship at Year 1 is set to 1.0 for the original cohort of perennials and will be equal to the proportion of the population surviving at subsequent monitoring dates. Values can be either greater or less than 1, depending on whether there is reduction of or recruitment to the population

within the sampled area. This analysis is required by field monitoring protocol, and will not be used in determining success (CH2M, 2010b).

2.1.1.4 Photographic Documentation

At each belt transect monitoring site, permanent photo locations were established at the start and end of the line. Each location was permanently marked in the field with a capped t-post, which also represents the start and end of the belt transect. These locations were recorded with a Garmin GPS and are shown on maps of the monitoring sites. A meter stick or range pole was used as a scale to illustrate the relative size of plants in photographs. Photographs are provided in Appendix A.

2.2 Data Analysis

2.2.1 Species Richness Calculations

Perennial species richness is defined as the total number of unique species per unit area at each sampling site within a revegetation location. Species richness is calculated independently for the two 33-kV CLA belt transects, 33kV-6 and 33kV-6A, because of the small acreage and linear nature. The Revegetation Plan (CH2M, 2010b) states that richness should be averaged over three belt transects and one circular relevé plot for each 10-acre (4-hectare) disturbance area. Richness averages were conducted for the 12 disturbed CLA belt transects (CE-07 through 18) and the disturbed CLA East relevé plot. Because of the small acreage and linear nature of the NGL, WR, 115-kV, and 33-kV revegetation locations, a relevé plot was not included in the richness analysis of disturbed locations.

2.2.2 Species Diversity Calculations

Perennial species diversity was calculated using Simpson's Index of Diversity (Simpson, 1949) using the following formula:

$$1 - D = 1 - \frac{\sum n(n-1)}{N(N-1)} \qquad \text{(Eq. 1)}$$

Where:

1 – D = Index of diversity
N = Total number of individual perennials
n = Number of individuals of a particular species

2.2.3 Progress Criteria

The *Revegetation Plan* (CH2M, 2010b) provides the following revegetation success criteria:

- ***Monitoring Duration***: 10 years or until success criteria are met (the period would be extended on a yearly basis if the criteria are not met after 10 years)
- ***Vegetation Cover Success Criterion***: 60 percent of pre-disturbance cover of perennials
- ***Species Richness Success Criterion***: 60 percent of pre-disturbance perennial species richness

To avoid ambiguities, the *Revegetation Plan* (CH2M, 2010b) (Table 7-4, page 7-36) specified baseline values of pre-disturbance vegetation cover and species richness. For the purpose of this document, the success criteria values reflect 60 percent of the baseline cover and richness values of 120 m^2 (1,292 ft^2) (as compared to 100 m^2 [1,076 ft^2] presented in the Revegetation Plan) for ease of analysis (Table 2-2). These baseline data are used to compare the perennial cover and species richness values measured during this reporting period.

Table 2-2. Success Criteria for Perennial Cover and Richness Values

Unit/Area	60 Percent Perennial Plant Cover	60 Percent Perennial Species Richness[a]
Ivanpah 1	8%	3
Ivanpah 2 and CLA	11%	6
Ivanpah 3 and NGL	13%	8
Channels and Washes	4%	2

[a] Richness values are presented as number of perennial species.

The *Revegetation Plan* (CH2M, 2010b) (Appendix D, Table D-8, page 12) also provided cover and richness criteria at Years 2, 5, and 8 as interim goals. Richness is defined as number of perennial species per unit area. Analysis includes comparing the actual monitoring results to these interim goals presented in Table 2-3.

Table 2-3. Revegetation Success Criteria at Years 2, 5, and 8

Parameter	Year 2	Year 5	Year 8
Perennial Plant Cover	No cover criteria; however, a minimum of 1,500 plants per acre	8%	12%
Species Richness (100 m^2)	3	5	10

Notes:

These goals are general success guidelines excerpted from Revegetation Plan (CH2M, 2010b) (Appendix D, Table D-8, page 12) and are not specific success criteria to units or areas, as outlined in Table 2-2.

% = percent

2.2.4 Schedule and Reporting

Monitoring of revegetation progress will be conducted for a period of 10 years from the date of revegetation, or until the success criteria provided in Table 2-2 are met (CH2M, 2010b). If success criteria are not met within 10 years, monitoring extensions will be assessed by the BLM and CEC on a year-by-year basis, until success criteria are met. Monitoring will be performed annually during the first 3 years following revegetation and every other year, thereafter. Weed monitoring will occur for 10 years after revegetation treatment, independent of the progress of revegetation. The weed monitoring frequency is described in Section 2.3, Weed Management.

According to the Revegetation Plan (CH2M, 2010b), revegetation monitoring reports will be submitted to an adaptive management stakeholders' board within 30 days of each board meeting and annually submitted to the BLM and CEC. In the absence of a stakeholders' board, reports summarizing the previous year's monitoring results are being submitted to BLM and CEC yearly, or every other year according to the monitoring schedule described previously.

2.3 Weed Management

The Weed Plan (CH2M, 2010c) and Biological Opinion (USFWS, 2011) established the post-construction revegetation weed monitoring schedule. Monitoring was to occur monthly for the first 2 years after revegetation construction and then quarterly for the third and fourth years, followed by semiannual monitoring, for a total of 7 years (according to the Weed Plan), or for 10 years (according to the Biological Opinion). To resolve the conflict in duration, Solar Partners chose to follow the more conservative 10-year monitoring duration required by the Biological Opinion.

Most disturbed acreage was linear, so to gather monitoring data, biological staff walked two transects within the approximately 15-m-wide (approximately 50-ft.) corridors: one transect outbound and one

transect returning. In the western half of CLA East, biological staff walked 30-ft. (9-m) spaced transects, alternating between north-south oriented transects and east-west oriented transects. During the first several years of monitoring, the qualified botanist may recommend increasing the monitoring frequency during the growing season to account for increased weed establishment. Each weed or grouping of weeds were recorded using a GPS. In addition, information was collected on species, number of individuals, whether they went to seed, and general location and the results cataloged in a spreadsheet. Weeds were then manually removed, bagged, and disposed of offsite at an approved municipal waste disposal container.

SECTION 3

Results

3.1 Revegetation Assessment

3.1.1 Background

In 2015, *Revegetation Plan* success criteria were met on four revegetation monitoring sites, two NGL linear monitoring sites (including the NGL tap station), the WR, and the 115-kV gen-tie line (CH2M, 2016). The results of these revegetation monitoring sites are not discussed further in this report.

3.1.2 Dates and Staff

Annual assessment of revegetation progress was conducted on May 30 through June 3, 2017, by CH2M botanists, Morgan King and Onkar Singh.

3.2 Survey Findings

Data from the 13 disturbed sites (identified as 33kV-6, CE-07, CE-08, CE-09, CE-10, CE-11, CE-12, CE-13, CE-14, CE-15, CE-16, CE-17, and CE-18) and 5 nearby undisturbed sites (33kV-6A, CE-07A, CE-10A, CE-13A, and CE-16A) were evaluated for comparison and are summarized herein.

3.2.1 Initial Establishment: Species Composition

Table 3-1 provides the three most abundant perennial species at sampled sites based on individual counts of percent cover along 30-m (98-ft.) belt transects. The most abundant perennials in the disturbed sites are brittlebush (*Encelia farinosa*), cheesebush (*Ambrosia salsola*), creosote bush, desert marigold (*Baileya multiradiata*), Nevada jointfir (*Ephedra nevadensis*), and white bursage. The Revegetation Plan (CH2M, 2010b) recognized that white bursage and cheesebush were well-adapted to disturbed habitats and might be expected to be pioneers on recently disturbed soils. The most common perennial species in the undisturbed sites include: creosote bush, cheesebush, littleleaf ratany (*Krameria erecta*), Nevada jointfir, and white bursage.

Table 3-1. Most Abundant Perennial Plant Taxa in Disturbed and Undisturbed Sites, Ordered by Percent Cover

Sample Site (Year[a])	Disturbed (percent cover)	Undisturbed (percent cover)
33kV-6 and 33kV-6A (Year 5)		
1	Cheesebush (23.0)	Creosote bush (13.3)
2	White bursage (3.6)	White bursage (6.6)
3	Creosote bush (3.1)	--
CE-07 and CE-07A (Year 2)		
1	White bursage (1.1)	Creosote bush (4.8)
2	--	Nevada jointfir (4.2)
3	--	White bursage (4.2)
CE-08 (Year 2)		
1	White bursage (2.3)	
2	Cheesebush (0.1)	See undisturbed control site results for CE-7A
3	--	

Table 3-1. Most Abundant Perennial Plant Taxa in Disturbed and Undisturbed Sites, Ordered by Percent Cover

Sample Site (Year[a])	Disturbed (percent cover)	Undisturbed (percent cover)
CE-09 (Year 2)		
1	White bursage (2.5)	
2	--	See undisturbed control site results for CE-7A
3	--	
CE-10 and CE-10A (Year 2)		
1	White bursage (2.5)	Littleleaf ratany (7.2)
2	Desert marigold (1.8)	White bursage (6.5)
3	Cheesebush (1.7)	Creosote bush (5.6)
CE-11 (Year 2)		
1	White bursage (1.0)	
2	Desert marigold (0.3)	See undisturbed control site results for CE-10A
3	Nevada jointfir (0.0)	
CE-12 (Year 2)		
1	White bursage (2.3)	
2	Creosote bush (0.3)	See undisturbed control site results for CE-10A
3	--	
CE-13 and CE-13A (Year 2)		
1	White bursage (1.5)	White bursage (12.1)
2	--	Creosote bush (3.1)
3	--	Littleleaf ratany (1.7)
CE-14 (Year 2)		
1	White bursage (4.1)	
2	Creosote bush (0.2)	See undisturbed control site results for CE-13A
3	Brittlebush (0.2)	
CE-15 (Year 2)		
1	White bursage (1.6)	
2	Brittlebush (0.2)	See undisturbed control site results for CE-13A
3	--	
CE-16 and CE-16A (Year 2)		
1	White bursage (0.7)	Creosote bush (8.3)
2	--	White bursage (4.8)
3	--	Cheesebush (2.6)
CE-17 (Year 2)		
1	White bursage (3.2)	
2	Desert marigold (1.3)	See undisturbed control site results for CE-16A
3	--	
CE-18 (Year 2)		
1	White bursage (14.9)	
2	Cheesebush (0.5)	See undisturbed control site results for CE-16A
3	--	

[a] Year number indicates number of years since revegetation treatment

Notes:

-- = Not observed

Although annual species' use of the revegetation areas does not pertain to the success criteria (CH2M, 2010b), it is important to note that these species are also establishing and using the disturbance areas. Native plant species establishment decreases erosion and slows disturbance for adapted species establishment. The following annual species were observed in the revegetation areas:

- Brittle spineflower (*Chorizanthe brevicornu*)
- Devil's spineflower (*Chorizanthe rigida*)
- Narrow-leaved cryptantha (*Cryptantha angustifolia*)
- Western tansy mustard (*Descurainia pinnata* ssp. *glabra*)
- Palmer's buckwheat (*Eriogonum palmerianum*)
- Modest pepperweed (*Lepidium lasiocarpum*)
- Broad fruited combseed (*Pectocarya platycarpa*)
- Nut winged combseed (*Pectocarya heterocarpa*)

Annual growth on the disturbed areas also includes the following weed species:

- Sahara mustard (*Brassica tournefortii*)
- Red brome (*Bromus madritensis* ssp. *rubens*)
- Redstem stork's bill (*Erodium cicutarium*)
- Halogeton (*Halogeton glomeratus*)
- Russian thistle (*Salsola tragus*)
- Arabian schismus (*Schismus arabicus*)
- London rocket (*Sisymbrium irio*)
- Puncture vine (*Tribulus terrestris*)

Several of these species are allowed to colonize as pioneer species on revegetation areas (CH2M 2010c). Weed species are discussed further in Section 3.2.8, Weed Management.

3.2.2 Perennial Density

Perennial density was determined as the number of perennial plants, irrespective of species, per 120-m^2 (1,292-ft^2) belt transect, and is provided in Table 3-2. Perennial density in the disturbed sites has increased over time, as shown by Figure 3-1. Contrary to expectations, the perennial density at the undisturbed sites has changed over time. As shown in Table 3-2, perennial densities in the disturbed sites ranged from 45 (CE-15) to 1,519 (33kV-6).

Table 3-2. Perennial Density in Disturbed and Undisturbed Sample Sites

Sample Site	Disturbed					Undisturbed				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
CLA Sites (Year 2 and Year 5) [a, b]										
33kV-6 and 33-kV-6A	89	110	2,052	--	1,519	135	90	137	--	136
CE-07 and CE-07A	--	--	--	39	70	--	--	--	574	370
CE-08	--	--	--	2	468	--	--	--	--	--
CE-09	--	--	--	37	591	--	--	--	--	--
CE-10 and CE-10A	--	--	--	529	530	--	--	--	842	604
CE-11	--	--	--	3	1,038	--	--	--	--	--
CE-12	--	--	--	47	378	--	--	--	--	--
CE-13 and CE-13A	--	--	--	0	214	--	--	--	184	146
CE-14	--	--	--	27	1,270	--	--	--	--	--
CE-15	--	--	--	69	45	--	--	--	--	--
CE-16 and CE-16A	--	--	--	2	670	--	--	--	135	123
CE-17	--	--	--	108	210	--	--	--	--	--
CE-18	--	--	--	1	796	--	--	--	--	--

[a] Year 2 monitoring occurred on CE-07 through CE-18; Year 5 monitoring occurred on 33kV-6.

[b] No monitoring occurred on the 33kV-6 site in 2016 because this site is monitored every other year.

Notes:

Perennial density is calculated as the number of plants per 120 m^2 (1,292 ft^2)

-- = Not applicable

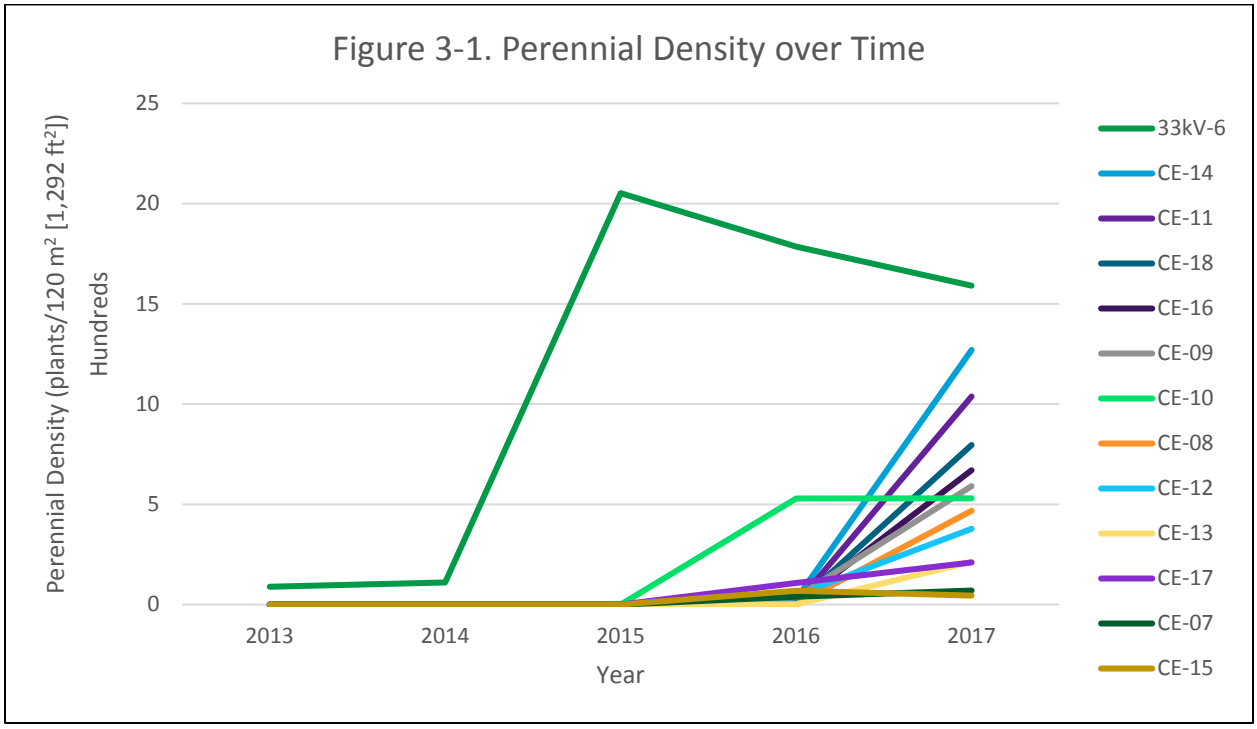


Figure 3-1. Perennial Density over Time
Ivanpah Solar Electric Generating System

3.2.3 Perennial Cover

The perennial cover in the disturbed and undisturbed sites is presented in Table 3-3. The Year 2 and Year 5 results for the CLA revegetation monitoring sites show perennial cover ranging from 0.7 to 29.9 percent. The perennial cover in the undisturbed sites ranges from 14.5 to 20.3 percent.

Table 3-3. Percent Perennial Cover in Disturbed and Undisturbed Sample Sites during 2017

	Disturbed					Undisturbed
Sample Site (Year)	**2013 (%)**	**2014 (%)**	**2015 (%)**	**2016 (%)**	**2017 (%)**	**2017 (%)**
CLA Sites (Year 2 and Year 5)[a, b]						
33kV-6 and 33kV-6A	0	13	37	--	29.9	20
CE-07 and CE-07A	--	--	--	0	1.1	14.5
CE-08	--	--	--	0	2.4	--
CE-09	--	--	--	0	2.5	--
CE-10 and CE-10A	--	--	--	1	9.7	20.3
CE-11	--	--	--	0	1.3	--
CE-12	--	--	--	0	2.5	--
CE-13 and CE-13A	--	--	--	0	1.5	19
CE-14	--	--	--	0	4.5	--
CE-15	--	--	--	0	1.8	--
CE-16 and CE-16A	--	--	--	0	0.7	15.7
CE-17	--	--	--	0	4.5	--
CE-18	--	--	--	0	15.4	--

[a] Year 2 monitoring occurred on CE-07 through CE-18; Year 5 monitoring occurred on 33kV-6.

[b] No monitoring occurred on the 33kV-6 site in 2016 because this site is monitored every other year.

Note:

-- = not applicable

3.2.4 Perennial Species Richness and Diversity

The richness and diversity parameters are interrelated expressions, or different ways of enumerating the abundance of plant species in a community. This section provides 2017 monitoring results for these parameters.

3.2.4.1 Species Richness

Perennial species richness is presented in Table 3-4 for each sample site (richness is the total number of species present within a 120-m^2 [1,292-ft^2] area for small areas; or for large enough areas, the average number of species present within three 120-m^2 [1,292-ft^2] area belt transects and one relevé plot). During Year 2 monitoring of the western side of CLA East, richness at the disturbed sites was approaching, or greater than, the number at the undisturbed sites. On the disturbed sites, species richness ranged from 5 to 10 species. At the undisturbed sites, species richness ranged from 4 to 15 species.

Table 3-4. Perennial Species Richness in Disturbed and Undisturbed Sample Sites during 2017

	Perennial Species Richness					
	Disturbed [a]					Undisturbed
Site (Year)	2013	2014	2015	2016	2017	2017
CLA Sites (Year 2 and Year 5) [b, c]						
33kV-6 and 33kV-6A	2	1	4	--	5	4
CE-07, CE-08, CE-09, and CE-07A	--	--	--	4	9	15
CE-10, CE-11, CE-12, and CE-10A	--	--	--	4	10	12
CE-13, CE-14, CE-15, and CE-13A	--	--	--	4	9	10
CE-16, CE-17, CE-18, and CE-16A	--	--	--	4	10	7

[a] Because of the size and distribution of the 33-kV location, perennial species richness was calculated based on the total number of perennial species in one belt transect. On large enough revegetation areas (western side of CLA East), perennial species richness is calculated as an average between three belt transects and one relevé plot. See results for CLA East disturbed relevé plot in Table 3-7. Averages are rounded to nearest whole number.

[b] Year 2 monitoring occurred on CE-07 through CE-18; Year 5 monitoring occurred on 33kV-6.

[c] No monitoring occurred on the 33kV-6 site in 2016 because this site is monitored every other year.

Note:

-- = not applicable

3.2.4.2 Diversity

Perennial diversity, as expressed by Simpson's Index (Simpson, 1949) (see Section 2.2.2) is presented in Table 3-5 for each sample site. Perennial diversity was overall lower in the disturbed sites than in the undisturbed sites, except for 33kV-6. Diversity in the disturbed sites ranged from 0.06 to 0.57 and in the undisturbed sites from 0.39 to 0.71. In previous years, several locations had zero diversity, which means that there was only one perennial species observed at that monitoring site. The CLA East revegetation monitoring sites, in their second year of monitoring had mixed results with respect to diversity, with diversity values increasing in half the sites, and decreasing in the other half.

Table 3-5. Perennial Diversity in Disturbed and Undisturbed Sample Sites during 2017

	Simpson's Index of Diversity (1-D)					
	Disturbed					Undisturbed
Site (Year)	2013	2014	2015	2016	2017	2017
CLA Sites (Year 2 and Year 5)[a, b]						
33kV-6 and 33kV-6A	0.22	0	0.53	--	0.57	0.45
CE-07 and CE-7A	--	--	--	0.36	0.06	0.53
CE-08	--	--	--	0	0.21	--
CE-09	--	--	--	0.25	0.21	--
CE-10 and CE-10A	--	--	--	0.20	0.28	0.39
CE-11	--	--	--	0	0.10	--
CE-12	--	--	--	0.39	0.20	--
CE-13 and CE-13A	--	--	--	0	0.24	0.64
CE-14	--	--	--	0.37	0.23	--
CE-15	--	--	--	0.22	0.21	--
CE-16 and CE-16A	--	--	--	0	0.22	0.71
CE-17	--	--	--	0.31	0.34	--
CE-18	--	--	--	0	0.22	--

Source: Simpson, E. H. (1949). "Measurement of Diversity". Nature. 163: 688.

[a] Year 2 monitoring occurred on CE-07 through CE-18. Year 5 monitoring occurred on 33kV-6.

[b] No monitoring occurred on the 33kV-6 site in 2016 because this site is monitored every other year.

Notes:

The higher the index of diversity, the greater the diversity at a site.

-- = not applicable

3.2.4.3 Survivorship

Table 3-6 presents the survivorship or growth rates for the revegetation and control sites. As noted in Section 2.1.1.3 the Year 1 live perennial individuals represent the original cohort, and survivorship was set to 1.0 for future survivorship calculations. Survivorship or growth rate values greater than 1.0 indicate that more individuals are present in the belt transect than during Year 1, and values less than 1.0 indicate that fewer individuals are present. In the CLA East revegetation monitoring sites, the general trend was increased survivorship in Year 2 when compared with Year 1 results, excluding CE-10, which stayed the same, and CE-15, which decreased. The control sites for CLA East decreased survivorship. The 33kV-6 Year 5 results are consistent except that disturbed sites will have significantly higher growth rates when compared with Year 1.

Table 3-6. Perennial Survivorship in Disturbed and Undisturbed Sample Sites

	Disturbed					Undisturbed				
Sample Site	**2013**	**2014**	**2015**	**2016**	**2017**	**2013**	**2014**	**2015**	**2016**	**2017**
CLA Sites (Year 2 and Year 5) [a, b]										
33kV-6 and 33kV-6A	1	1.24	23.06	--	17.07	1	0.67	1.01	--	1.01
CE-07 and CE-07A	--	--	--	1	1.79	-	--	--	1	0.64
CE-08	--	--	--	1	234	-	--	--	--	--
CE-09	--	--	--	1	15.97	-	--	--	--	--
CE-10 and CE-10A	--	--	--	1	1	-	--	--	1	0.72
CE-11	--	--	--	1	346	-	--	--	--	--
CE-12	--	--	--	1	8.04	-	--	--	--	--
CE-13 and CE-13A	--	--	--	1	214	-	--	--	1	0.79
CE-14	--	--	--	1	47.04	-	--	--	--	--
CE-15	--	--	--	1	0.65	-	--	--	--	--
CE-16 and CE-16A	--	--	--	1	335	-	--	--	1	0.91
CE-17	--	--	--	1	1.94	-	--	--	--	--
CE-18	--	--	--	1	796	--	--	--	--	--

[a] Year 2 monitoring occurred on CE-07 through CE-18. Year 5 monitoring occurred on 33kV-6.

[b] No monitoring occurred on the 33kV-6 site in 2016 because this site is monitored every other year.

Notes:

The higher the index of diversity, the greater the diversity at a site.

-- = not applicable

3.2.4.4 Relevé Plots

Table 3-7 provides the observed perennial species at two relevé plots, one on an undisturbed CLA and one on the disturbed western side of CLA East. The undisturbed CLA relevé plot had 22 species observed. The western side of CLA East disturbed relevé plot during Year 2 monitoring had 15 species, which is an increase from 7 species observed during Year 1.

Table 3-7. Relevé Plots Observed Perennial Species List on Disturbed and Undisturbed Areas during 2017

		Undisturbed	Disturbed
Scientific Name	**Common Name**	**Relevé Plot (South, CLA)**	**Relevé Plot (CLA East)**
Ambrosia dumosa	White bursage	X	X
Ambrosia eriocentra	Wooly bursage	--	X
Ambrosia salsola	Cheesebush	--	X
Baileya multiradiata	Desert marigold	--	X
Brickellia californica	California brickellbush	X	--
Cylindropuntia acanthocarpa	Buckhorn cholla	X	--
Cylindropuntia echinocarpa	Silver cholla	X	--
Cylindropuntia ramomissima	Pencil cholla	X	--
Dasyochloa pulchellum	Fluff grass	X	X
Echinocereus engelmannii	Engelmann's hedgehog cactus	X	--
Encelia farinose	Brittlebush	--	X
Encelia virginensis	Virgin River brittlebush	--	X
Ephedra nevadensis	Nevada jointfir	X	X
Eriogonum fasciculatum	California buckwheat	X	X
Eriogonum inflatum	Desert trumpet	X	--
Euphorbia albomarginatus	Whitemargin sandmat	X	--
Grusonia parishii	Dead man’s cholla	X	--
Hilaria rigida	Big galleta grass	X	X
Krameria erecta	Pima ratany	X	X
Krascheninnikovia lanata	winterfat	--	X
Larrea tridentata	Creosote bush	X	X
Lycium cooperi	peach thorn	X	--
Opuntia basilaris	Beavertail cactus	X	--
Porophyllum gracile	Slender poreleaf	X	X
Senegalia greggii	Catclaw acacia	X	--
Sphaeralcea ambigua	Desert globe mallow	X	--
Stephanomeria paucliflora	Brown plume wirelettuce	X	X
Yucca schidigera	Mojave yucca	X	--
Total Perennial Plant Species Observed in Plot		**22**	**15**

Notes:

X = observed

-- = not observed

3.2.5 Photographic Documentation

Photographs of the disturbed and undisturbed locations are provided in Appendix A.

3.2.6 Weed Management

In 2017, weed monitoring requirements (USFWS, 2011) were staggered based on when the revegetation treatment was completed (see Table 4-3 for the weed monitoring schedule). The western side of CLA East was monitored monthly according to Year 2 criteria. Because of the number of weeds observed in 2016 at CLA East, weed monitoring occurred twice-monthly during the growing season (March through October). The remaining areas were monitored quarterly (NGL linear) or semiannually (NGL tap station, WR, 115-kV, and 33-kV) according to Year 4 and Year 5 criteria.

Weed monitoring occurred on the six revegetation sites between January 1 and December 31, 2017. During this time, a total of 312 individual plants of the 6 noxious weed species shown in Table 3-8 were observed (see also Figure 3-2). The six noxious weed species observed were:

- Sahara mustard (*Brassica tournefortii*)
- Halogeton (*Halogeton glomeratus*)
- Russian thistle (*Salsola tragus*)
- London rocket (*Sisymbrium irio*)
- Silverleaf nightshade (*Solanum elaeagnifolium*)
- Puncture vine (*Tribulus terrestris*)

Table 3-8. Summary of Weed Species Observed at Revegetation Locations 2017

	Revegetation Location[a]					
Noxious Weed Species	**NGL**	**NGL Tap Station**	**WR**	**115-kV**	**33-kV**	**Western side of CLA East**
Sahara mustard	0	0	0	0	0	29
Halogeton	0	0	0	0	0	76
Russian thistle	0	0	0	0	0	105
London rocket	0	0	0	0	0	69
Silverleaf nightshade	0	0	0	0	0	4
Puncture vine	0	0	0	0	0	29
Total per Location	**0**	**0**	**0**	**0**	**0**	**312**
Total Observed						**312**

[a] Weed monitoring included the entire disturbed revegetation area, including the sampling sites.

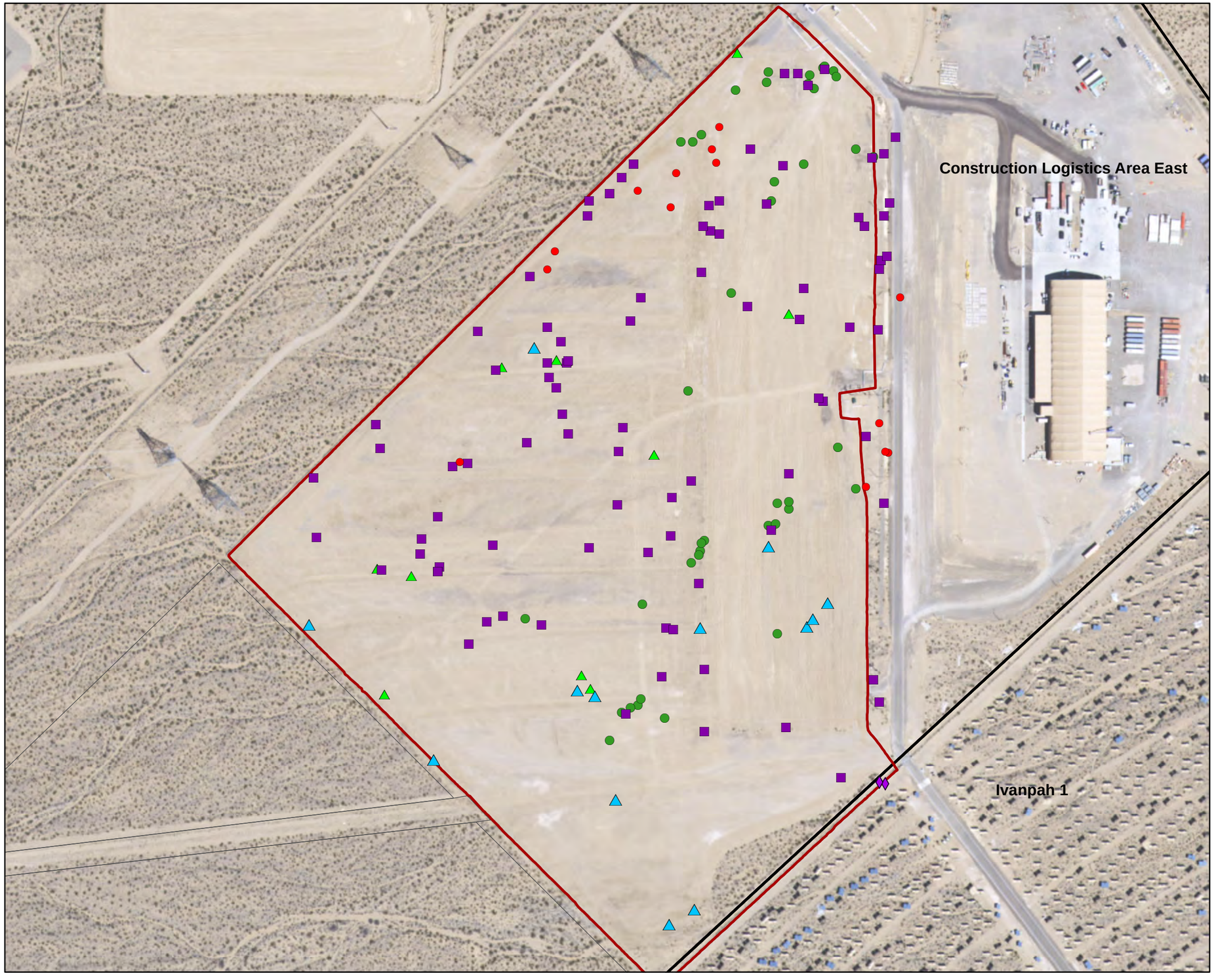
In 2017, all weed individuals were found at the western side of CLA East revegetation during Year 2 monitoring (Table 3-8). The most common weed species observed was Russian thistle, which was observed throughout the area (Figure 3-2). The second and third most observed species were halogeton and London rocket. All individuals were removed by hand and disposed of according to the Weed Plan (CH2M, 2010c).

Between 2016 and 2017, the total number of weeds decreased at the western side of CLA East. In 2016, a total of 1,407 individuals of 9 species were observed, and in 2017, a total of 312 individuals of 6 species were observed. Several species increased observed numbers as compared to last year. One new species, silverleaf nightshade, was also observed. Biological staff documented that approximately 40 percent of the individuals had dispersed seeds.

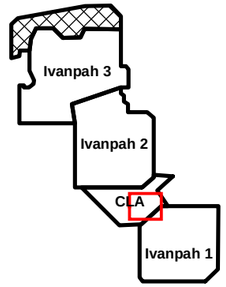
No weed species were observed in the revegetation locations (NGL, NGL tap station, WR, 115-kV, or 33-kV) during Year 4 and Year 5 monitoring; annual weed monitoring was staggered based on when revegetation was complete. This indicates that implementation of the Weed Plan (CH2M, 2010c) is successfully attaining the goals of removing noxious weeds before they can set seed and of minimizing

the transport of additional weed propagules to the site. At these sites, they are meeting the Revegetation Plan (CH2M, 2010b) goal that revegetation sites have less than 15 percent weed cover.

In the western side of CLA East, biological staff also observed weed species that do not meet the BIO-13 noxious weed species definition and those BIO-13 noxious weed species that are not feasible to manually control. Pigweed amaranth (*Amaranthus albus*) is a non-native plant that does not meet the BIO-13 noxious weed definition. Biological monitors removed five individuals in accordance with BIO-13 control requirements. Red brome, redstem stork's bill, and Arabian schismus are BIO-13 noxious weed species that are allowed to colonize revegetation areas as pioneer species (CH2M, 2010c). These species are widespread in the Mojave desert and control is considered impractical.



WEED LOCATIONS



LEGEND

- Project Site
- Current Short-term Impact Area

Weed Data 2017

- Halogeton
- London rocket
- Puncture vine
- Russian thistle
- Sahara mustard
- Silverleaf nightshade

CLA = Construction Logistics Area

N

0 100 200
Feet

Figure 3-2
2017 Annual Revegetation Monitoring Weed Results
Ivanpah Solar Electric Generating System
San Bernardino County, California

SECTION 4

Discussion

4.1 Summary

To meet the revegetation success criteria, a sampling site must meet both the percent perennial cover and species richness goals (CH2M, 2010b). Once both success criteria are met, then annual revegetation monitoring is complete for that location, and no further revegetation monitoring is required. In accordance with weed management requirements, monitoring for presence of noxious weed species will continue for a total of 10 years past the date of revegetation treatment (CH2M, 2010c; USFWS, 2011).

4.1.1 Revegetation Monitoring

The results of the perennial percent cover and species richness for the 13 disturbed locations as compared to the Revegetation Plan (CH2M, 2010b) success criteria are provided in Table 4-1. In 2017, the CE-18 location, 1 of the 13 locations, met both success criteria and the revegetation monitoring for this monitoring site is now complete. The CE-18 location in the western side of CLA East met success goals after only 2 years post-revegetation treatment. The 12 remaining sites that did not meet both success criteria, CE-07 through CE-17 and 33kV-6, appear to be on-track to meet the revegetation success criteria within 10 years. As compared to Table 2-3 (Revegetation Success Criteria at Years 2, 5, and 8) (also Table D-8 in Revegetation Plan [CH2M, 2010b]), the 11 CLA East revegetation monitoring sites exceeded the Year 2 projections by having any perennial percent cover and by meeting richness success criteria. The 33kV-6 site has met percent cover since 2014 (Year 2), but it is just short of meeting richness success criteria (five perennial species were observed and the success criteria is six). As compared to Table 2-3 (Revegetation Success Criteria at Years 2, 5, and 8), 33kV-6 site is exceeding cover goals and meeting Year 5 projected richness criteria.

Table 4-1. 2017 Monitoring Results Compared to Success Criteria

	Target Percent Cover (%)	2017 Observed Percent Cover (%)	Met Cover Success Criteria?	Target Species Richness	2017 Observed Species Richness[a]	Met Richness Success Criteria?	Met Both Success Criteria?
Ivanpah 2 and CLA							
33kV-6	11	29.9	Yes	6	5	No	No
CE-07	11	1.1	No	6	9	Yes	No
CE-08	11	2.4	No	6	9	Yes	No
CE-09	11	2.5	No	6	9	Yes	No
CE-10	11	9.7	No	6	10	Yes	No
CE-11	11	1.3	No	6	10	Yes	No
CE-12	11	2.5	No	6	10	Yes	No
CE-13	11	1.5	No	6	9	Yes	No
CE-14	11	4.5	No	6	9	Yes	No
CE-15	11	1.8	No	6	9	Yes	No
CE-16	11	0.7	No	6	10	Yes	No
CE-17	11	4.5	No	6	10	Yes	No
CE-18	**11**	**15.4**	**Yes**	**6**	**10**	**Yes**	**Yes**

[a] Perennial species richness at the CLA East revegetation monitoring sites was calculated at an average of three belt transects and one relevé plot.

Note: Success criteria are defined in Revegetation Plan (CH2M, 2010b).

As expected, perennial density, cover, richness, and diversity in disturbed sites was generally lower than their counterparts in undisturbed sites.

The disturbed sites had many of the same abundant species as the undisturbed sites. Perennial abundance was extrapolated from foliar cover data (which is recorded along the centerline of the belt transect), so it is not expected to be as comprehensive of a perennial species count as the richness data. At the CLA East revegetation monitoring sites (disturbed), only one or two perennial species abundances were recorded on 9 of the 12 monitoring sites. Although seemingly few perennials intercepted, this count exceeds Year 2 projections (Table 2-3), which anticipated zero percent cover. The number of perennials counted during point intercept at the CLA control sites (undisturbed), ranged from 3 to 6 perennial species, which is normal for a xeric creosote bush community.

The Year 2 projections for the western side of CLA East anticipated a minimum of 1,500 plants per acre (Table 2-3). Each 120 m^2 (1,292 ft^2) belt transect is a fraction of an acre (0.03 acres), and the plants per acre can be extrapolated from the density data (individual number of perennial plants recorded in belt transect; Table 3-2). Even the lowest density of plants recorded within a belt transect (CE-15, 45 plants), would extrapolate to meet the 1,500 plants target. The highest density belt transect (CE-14, 1,270 plants), has estimated over 42,000 individual plants in 1 acre. The Year 2 observations of perennial density at CLA East monitoring sites is far exceeding the target goals to meet revegetation success criteria in 10 years (CH2M, 2010b).

Richness (number of perennial species) varied significantly at individual monitoring sites in western side of CLA East, from 3 species (CE-07) to 10 species (CE-09, CE-11, and CE-14). Richness, as a success criteria, is averaged between three independent monitoring sites and a relevé plot. Averages were aided by the relevé plot richness, which was 15 species. The relevé plot is nearly four times as large as a belt transect, and it is expected that it would have higher perennial richness because of the larger area. The perennial species recorded in all sites were present in the 2015 seed mix (CH2M, 2017), and likely were germinated, in part, from that seed. As seen during Year 5 monitoring at the 33-kV sites, richness is greater on the disturbed control plot than it is on the undisturbed control plot, which is consistent with an establishing pioneer community. Both diversity and richness should eventually decrease to match the adjacent stable climax community.

Precipitation at ISEGS between November 2016 and February 2017 was 10 centimeters (3.8 inches) (Solar Partners, 2017; Solar Partners, 2018a). Most of the rain occurred in December and January, which typically promotes plant growth. The ISEGS rain gauge is located in CLA West, which is approximately 0.6 km (0.4 mile) northwest from CLA East.

During Year 2 monitoring of the western side of CLA East, there was significant annual plant growth observed. Even though this does not pertain to success criteria (CH2M, 2010b) and many of the species were weeds, it still follows expected natural progression as pioneer species colonize disturbed habitat. These plants help reduce erosion because the root establishment stabilizes soil. Erosion was observed in the western side of CLA East as new braided washes developed over what was a flat graded surface used for construction storage, parking, and buildings. Even though the revegetation contractor dug channels to match historical wash locations in 2015, the water flow in winter 2016/2017 did not always follow these depressions and was observed sheet flowing over the flat area. Eventually the sheet flow should establish braided channels, similar to surrounding natural contours.

The Revegetation Plan (CH2M, 2010b) indicates that annual revegetation monitoring data analysis should include observations of biological activity and erosion. In 2016, botanists observed signs of herbivory on all CLA sites, both inside and outside of the perimeter fenceErosion was only observed on the western side of CLA East, especially on eastern edges near the access road to Ivanpah 1.

4.1.2 Weed Management

The only weeds observed in 2017 on revegetation locations were at the western side of CLA East during Year 2 monitoring. Between 2016 and 2017, the total number of weeds dropped from 1,407 to 312, which shows that manual control is effective. Weed species grow and mature rapidly. Even with twice-monthly monitoring during the Year 2 growing season, biological monitors reported that approximately 40 percent of the individuals had already dispersed seed when they were observed. These locations were mapped and will be targeted during Year 3 (2018) weed monitoring. Year 3 (2018) weed monitoring on the western side of CLA East is required quarterly. The qualified botanist recommended increasing weed monitoring on the western side of CLA East to address the known seed bank through the adaptive management process. In Year 3 (2018), biological monitors will monitor weeds monthly during the primary growing season, March through September, and quarterly for the remainder of the year.

During weed monitoring of western side of CLA East (Year 2), qualified botanist observed establishment of BIO-13 noxious weed species that are allowed to colonize as pioneer species; red brome, red stem stork's bill, and Arabian schismus. Because these species are ubiquitous in the Mojave Desert, they are acceptable because they decrease erosion and slow disturbance for native species establishment.

Since 2015, no noxious weeds were observed on the five other revegetation locations (NGL, NGL tap station, WR, 115-kV, and 33-kV). As semiannual monitoring continues for 10 years post-revegetation, we expect that weeds will have little chance of establishing on these areas, since native plants are increasing percent cover each year. Semiannual monitoring of these locations will target spring and late summer plant establishment, and surveys will be conducted in April and September 2018.

Facility-wide weed monitoring, beyond the revegetation locations, is conducted in accordance with COC BIO-13 – Weed Management Plan (CH2M, 2010c) and is reported in the *Conditions of Certification BIO-13, Annual Biological Report January 1, 2017 – December 31, 2017* (Solar Partners, 2018b).

4.2 Long-term Monitoring Schedule

4.2.1 Revegetation

Table 4-2 provides a recommended long-term schedule for revegetation monitoring on the remaining sites.

Table 4-2. Revegetation Monitoring Schedule [a]

Site	End of Construction	Annual Monitoring Years 1 through 3			Biennual Monitoring Years 4 through 10[b]			
NGL-3	2013	2014	2015	2016	2018	2020	2022	2024
33kV-6	2012	2013	2014	2015	2017	2019	2021	2023
CE-07 through CE-17[c]	2015	2016	2017	2018	2020	2022	2024	2026

[a] This schedule does not account for dry years or remedial actions after 10 years if success criteria (CH2M, 2010b) are not met.

[b] Or until success criteria (CH2M, 2010b) are met

[c] Revegetation success criteria was met in Year 2 (2017) for CE-18 (CH2M, 2010b)

4.2.2 Weeds

Biological staff will continue monitoring the revegetation areas for weeds through 2025 (Table 4-3).

Table 4-3. Weed Monitoring Schedule

Site	End of Construction	Monthly Monitoring Years 1 and 2		Quarterly Monitoring Years 3 and 4		Semiannual Monitoring Years 5 through10					
NGL linear	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
NGL Tap Station	2012	2013	2014	2015	2016	2017	2018	2019	2020	2020	2022
WR	2012	2013	2014	2015	2016	2017	2018	2019	2020	2020	2022
115-kV	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
33-kV	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Western side of CLA East	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025

4.3 Remaining Revegetation

The only remaining short-term disturbance awaiting revegetation is the Interstate-15 Desert Tortoise Pen Area. This area was constructed in 2011 and is expected to be used until fall 2021. The ISEGS short-term disturbance area is 10.9 acres (4.4 hectares)[3], which is three sides of the pen at a 35-ft. (11-m) disturbance corridor width. The fourth side of the pen area is part of the Joint Point of Entry, which is maintained by the California Department of Transportation.

[3] The Interstate-15 Desert Tortoise Pen Area disturbance acreage was wrongly reported due to a miscalculation in the 2015 and 2016 BIO-14 Annual Compliance Reports (CH2M, 2016; CH2M, 2017) and the information is subsequently corrected in this report.

SECTION 5

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Appendix A
Baseline Site Photographs

Photograph A-1
Permanent photo station, Construction Logistics Area associated disturbed site 33kV-6, facing southeast

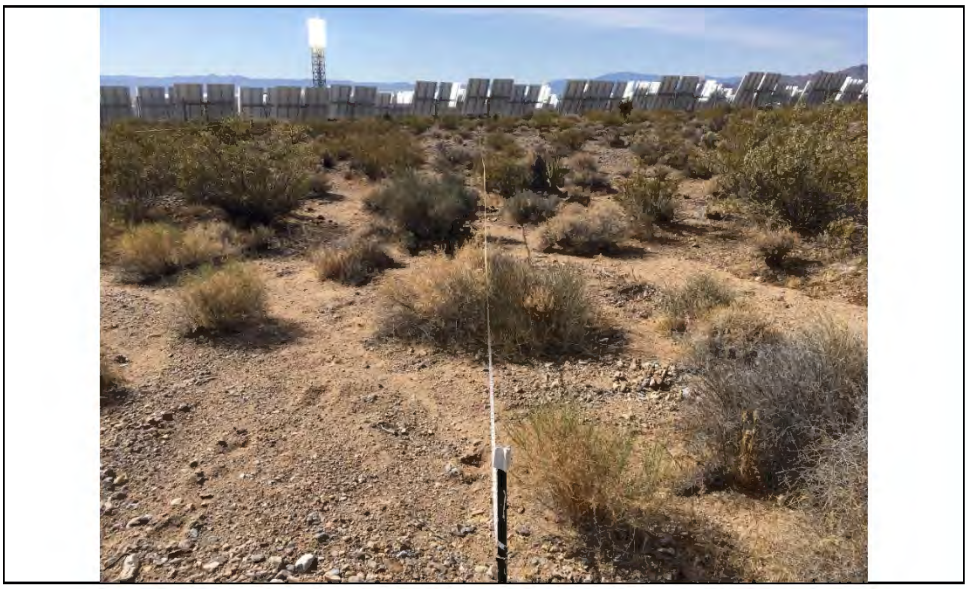
Photograph A-2
Permanent photo station, Construction Logistics Area associated disturbed site 33kV-6, facing northwest

Photograph A-3
Permanent photo station, Construction Logistics Area associated undisturbed site 33kV-6A, facing southeast

Photograph A-4
Permanent photo station, Construction Logistics Area associated undisturbed site 33kV-6A, facing northwest

Photograph A-5
Permanent photo station, Construction Logistics Area associated disturbed site CE-07, facing northwest

Photograph A-6
Permanent photo station, Construction Logistics Area associated disturbed site CE-07, facing southeast



Photograph A-7
Permanent photo station, Construction Logistics Area associated undisturbed site CE-07A, facing southeast

Photograph A-8
Permanent photo station, Construction Logistics Area associated undisturbed site CE-07A, facing northwest

Photograph A-9
Permanent photo station, Construction Logistics Area associated disturbed site CE-08, facing west

Photograph A-10
Permanent photo station, Construction Logistics Area associated disturbed site CE-08, facing east

Photograph A-11
Permanent photo station, Construction Logistics Area associated disturbed site CE-09, facing east

Photograph A-12
Permanent photo station, Construction Logistics Area associated disturbed site CE-09, facing west

Photograph A-13
Permanent photo station, Construction Logistics Area associated disturbed site CE-10, facing north

Photograph A-14
Permanent photo station, Construction Logistics Area associated disturbed site CE-10, facing south

Photograph A-15
Permanent photo station, Construction Logistics Area associated undisturbed site CE-10A, facing north

Photograph A-16
Permanent photo station, Construction Logistics Area associated undisturbed site CE-10A, facing south

Photograph A-17
Permanent photo station, Construction Logistics Area associated disturbed site CE-11, facing east

Photograph A-18
Permanent photo station, Construction Logistics Area associated disturbed site CE-11, facing west

Photograph A-19
Permanent photo station, Construction Logistics Area associated disturbed site CE-12, facing northeast

Photograph A-20
Permanent photo station, Construction Logistics Area associated disturbed site CE-12, facing southwest

Photograph A-21
Permanent photo station, Construction Logistics Area associated disturbed site CE-13, facing southwest

Photograph A-22
Permanent photo station, Construction Logistics Area associated disturbed site CE-13, facing northeast

Photograph A-23
Permanent photo station, Construction Logistics Area associated undisturbed site CE-13A, facing northeast

Photograph A-24
Permanent photo station, Construction Logistics Area associated undisturbed site CE-13A, facing southwest

Photograph A-25
Permanent photo station, Construction Logistics Area associated disturbed site CE-14, facing south

Photograph A-26
Permanent photo station, Construction Logistics Area associated disturbed site CE-14, facing north

Photograph A-27
Permanent photo station, Construction Logistics Area associated disturbed site CE-15, facing northwest

Photograph A-28
Permanent photo station, Construction Logistics Area associated disturbed site CE-15, facing southeast

Photograph A-29
Permanent photo station, Construction Logistics Area associated disturbed site CE-16, facing east

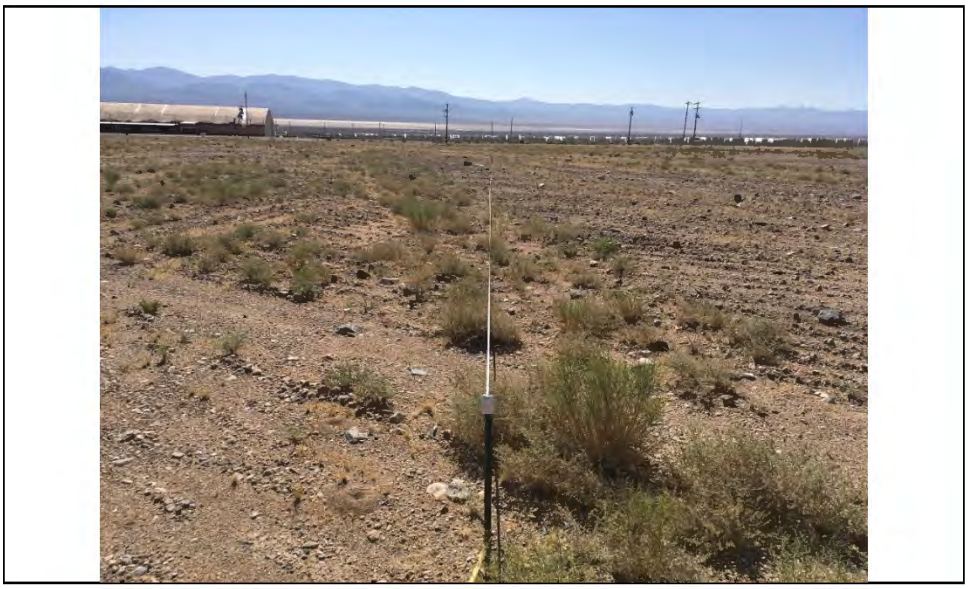
Photograph A-30
Permanent photo station, Construction Logistics Area associated disturbed site CE-16, facing west

Photograph A-31
Permanent photo station, Construction Logistics Area associated undisturbed site CE-16A, facing east

Photograph A-32
Permanent photo station, Construction Logistics Area associated undisturbed site CE-16A, facing west

Photograph A-33
Permanent photo station, Construction Logistics Area associated disturbed site CE-17, facing southwest

Photograph A-34
Permanent photo station, Construction Logistics Area associated disturbed site CE-17, facing northeast



Photograph A-35
Permanent photo station, Construction Logistics Area associated disturbed site CE-18, facing east

Photograph A-36
Permanent photo station, Construction Logistics Area associated disturbed site CE-18, facing west

Appendix J

Condition of Certification BIO-17

Desert Tortoise Compensatory Mitigation Fencing Annual Inspection, Repairs and Maintenance

energyservices
an NRG service

NRG Ivanpah Solar Thermal Power Plant
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2012 Fax: 702-815-2030

January 4, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) and BLM Right-of-Way Grant CACA-055666
Desert Tortoise Compensatory Mitigation – Fencing Annual Inspection, Repairs and Maintenance; Rehabilitated Routes, to fulfill California Energy Commission Condition of Certification, BIO-17

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certification BIO-17 of the Commission's approval of the Ivanpah Solar Electric Generating System, the project owner shall provide to the CPM and CDFG an annual report describing: the results of the annual inspection of fencing and rehabilitated routes; a summary of fence repairs and maintenance of reclaimed routes completed during the year; and recommendations and a cost estimate for repairs and maintenance activities needed for the upcoming year.

The construction of 50 miles of Desert Tortoise Exclusion Fencing along the northbound side of Interstate 15 (I-15) between Nipton Road and Yates Well Road (approximately 5 miles), and the tortoise exclusion fencing along the eastbound and westbound sides of Interstate 40 (I-40) between Goffs Road and US Route 95 (approximately 45 miles) were inspected quarterly on March 8-12, 2017, May 25-27, 2017, September 27-28, 2017 and November 30, 2017 to December 1, 2017. There are about five (5) breaches identified along the I-15 fence caused by an accident and rain events. Similarly, there are 39 large and 170 small breaches identified along the I-40 fences. These breaches were repaired during the quarterly inspections with a total of 52 lineal feet repaired on I-15 and 318 lineal feet repaired on I-40. A copy of the annual inspection report is attached.

energyservices
an NRG service

NRG Ivanpah Solar Thermal Power Plant
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2012 Fax: 702-815-2030

As reported in the 2016 annual compliance report, no further reporting is required for the Fifty-one BLM Routes with BLM's confirmation on February 26, 2015 that the requirements of this condition were satisfied.

Please feel free to contact me with any questions.

Thank you.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

2017 Annual Report

For

Biological Opinion

FWS-SB-13 80466-13 F0489

Solar Partners' Desert Tortoise Exclusion Fencing along Interstates 15 and 40, San Bernardino County, California (6843 (P), CACA048668, CAD090.01)

Project Description

This is an annual report for Biological Opinion FWS-SB-13 80466-13 F0489 and Grant CACA-055666 - Desert Tortoise Exclusion Fence: A Mitigation required habitat enhancement project in association with the ISEGS Project. The BO and grant requires that:

Once constructed, as stipulated in their authorizations for the ISEGS project, Solar Partners will be responsible for the fence inspections and repair work. Solar Partners shall ensure that the highway fence is inspected at least quarterly and after major rainfall events, which are defined as any rainfall that causes the ephemeral washes in the project area to flow and thereby potentially damage the fencing.

This report serves as documentation that all quarterly inspections and repairs of the tortoise exclusion fence were complete. All inspections were conducted on foot with all 50 miles walked by an Authorized Biologist. We defined a large breach as a breach an adult tortoise could potentially fit through and a small breach as one a small tortoise could potentially fit through. Most large breaches occurred at washes where water caused the damage. Most small breaches were caused by minor erosion, rodents, or by water at small wash crossings and were generally less than 1ft in length, with most less than 4-6 inches.

Below is a table of dates and the amount of feet fixed at large breaches for each inspection.

	I-15		I-40	
	Date	Ft fixed	Date	Ft fixed
Q1	March 11-12th	0	Mar 8-10th	164
Q2	May 25-26th	30	May 26-27th	4
Q3	Sept 28th	10	Sept 27-28th	133
Q4	Nov 30th	12	Nov 30- Dec 1st	17

Incidental Take

No incidental take occurred under this Biological Opinion in 2017 during maintenance activities. This includes both I-15 and I-40 project locations. No live tortoises were observed within the project limits in either portion of the project in 2017. No known tortoise mortality or injury occurred as a result of project activities. Tortoise scat was found along the I-40 portion of the fence during the Q4 inspection. The scat was from this last fall or summer and was on the correct side of the fence. It was approximately 2 miles west of Highway 95 on the south side of I-40.

Personnel and Experience

Two Authorized Biologists worked on the project in 2017: Bruce Weise and Dave Prival.

Appendix K

Condition of Certification BIO-18

Special-status Plants Post-Construction Annual Report

CONDITION OF CERTIFICATION BIO-18

Year 4 (2017) Special-status Plants BIO-18 Post-construction Monitoring Annual Report

Ivanpah Solar Electric Generating System

Prepared for

Solar Partners II, LLC; Solar Partners I, LLC;
and Solar Partners VIII, LLC

January 2018

ch2m:SM

2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

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Acronyms and Abbreviations

BIO-18	Condition of Certification BIO-18 Special-Status Plant Impact Avoidance and Minimization
BLM	Bureau of Land Management
CEC	California Energy Commission
CH2M	CH2M HILL Engineers, Inc.
CLA	Construction Logistics Area
Revegetation Plan	Closure, Revegetation, and Rehabilitation Plan for the Ivanpah Solar Electric Generating System. COCs BIO-14, BIO-18 & COMP-11.
COC	Condition of Certification
CRPR	California Rare Plant Rank
ESA	Environmentally Sensitive Area
GIS	geographic information system
GPS	global positioning system
ID	identification
ISEGS	Ivanpah Solar Electric Generating System
LYSF	last year's sterile fruits
MW	megawatt
NGL	Natural Gas Pipeline
No.	number
NRG	NRG Energy Services, LLC
NRPMA	Northern Rare Plant Mitigation Area
Plant ID	unique plant identification number
Remedial Action Plan	Ivanpah SEGS Special-status Plant Remedial Action Plan
Revised Protection Plan	Ivanpah SEGS Special-status Plant Protection and Monitoring Plan, Revision 1
RPTA	Rare Plant Transplantation Area
Seed Collection Plan	Seed Collection and Revegetation Proposed Plan, Revision 1
Solar Partners	Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC
SPT	solar power tower
SSPPA	Special-status Plant Protection Area

SECTION 1

Introduction

1.1 Project Description

Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (Solar Partners) are the owners of the Ivanpah Solar Electric Generating System (ISEGS), a nominal 370-megawatt (MW) solar energy project in southern California's Mojave Desert, near the Nevada border. The project was developed by BrightSource Energy, Inc. and is operated for Solar Partners by NRG Energy Services, LLC (NRG). The project is located on a 3,471-acre (1,405-hectare) site west of the Ivanpah Dry Lake, on land managed by the Bureau of Land Management (BLM). CH2M HILL Engineers Inc. (CH2M) provided environmental compliance support during construction and continues to support compliance during operations at the solar facility.

Ivanpah 1 (the southern unit) covers approximately 913.5 acres (370 hectares); Ivanpah 2 (the middle unit) covers approximately 1,077 acres (436 hectares); and Ivanpah 3 (the northern unit) is larger and covers approximately 1,235 acres (500 hectares). The remaining disturbance areas include common access roads, gas lines, generation tie-lines, and operations facilities. All three phases share an administration building, an operations and maintenance building, a substation located between Ivanpah 1 and 2, and paved roads to access project facilities. The project ties into the existing Kern River gas transmission line about 0.5-mile (0.8 kilometer) north of the Northern Rare Plant Mitigation Area (NRPMA) and into the Southern California Edison 230/115-kilovolt line that crosses between the Ivanpah 1 and 2 sites (Figure 1-1[1]) (CEC, 2010).

Each unit consists of solar arrays of heliostats (or mirrors) that focus solar energy on central solar power tower receivers near the center of each of the heliostat arrays. Ivanpah 1 (nominal 120 MW) has a heliostat array consisting of approximately 53,500 heliostats. Ivanpah 2 and 3 (nominal 125 MW each) have heliostat arrays consisting of approximately 60,000 heliostats. The heliostat array of each unit is arranged around a single centralized solar power tower (SPT) that is 459 feet (140 meters) in height, including a boiler and superheater panel with an upper steam drum and protective ceramic insulation panels (65.5 feet [20 meters]) on top. Each solar power plant has a power block in the approximate center of the heliostat array. The power block includes an SPT, a receiver boiler, a steam turbine generator set, an air-cooled condenser, and other auxiliary systems. The solar field and power generation equipment are started each morning after sunrise and are shut down in the evening when insolation drops below the level required to keep the turbine online (CEC, 2010).

1.2 Report Objective

The California Energy Commission (CEC) Commission Decision Condition of Certification (COC) BIO-18 Special-Status Plant Impact Avoidance and Minimization (BIO-18) requires project owner to protect special-status plants during construction and operations of ISEGS. Construction occurred between 2010 and 2013. Operations of the facility commenced in 2014.

The objective of this monitoring report is to present the results of the Year 4 (2017) post-construction special-status plant monitoring. This report complies with the annual reporting requirement of CEC Commission Decision COC BIO-18 (CEC, 2010), measures included in Section 8 of the ISEGS Special-status Plant Protection and Monitoring Plan, Revision 1 (Revised Protection Plan) (Solar Partners, 2010a), and as required by the BLM Right-of-Way Grant (BLM, 2010).

[1] Figures are located at the end of the respective section.

During Year 4 (2017) monitoring, the project met percent survivorship protection goals for the following five special-status plant species, and success criterion monitoring is now complete:

1. Mojave milkweed (*Asclepias nyctaginifolia*)
2. Desert pincushion (*Coryphantha chlorantha*)
3. Nine-awned pappus grass (*Enneapogon desvauxii*) [2]
4. Parish's club-cholla (*Grusonia parishii*)
5. Rusby's desert mallow (*Sphaeralcea rusbyi* var. *eremicola*)

The plans and procedures prepared and implemented to date (to avoid and minimize impacts to special-status plants and to comply with the requirements of BIO-18) are summarized in Section 2 of this report.

BIO-18 includes 11 Measures intended to avoid and minimize project impacts to special-status plants. The overarching goal is to maintain the special-status plant species as healthy reproductive populations that can be sustained in perpetuity. Protection goals require that the project owner implement all feasible measures to protect 75 percent of individuals as compared between pre-construction and post-construction metrics for individual species populations.

1.3 Past Monitoring Summary

During construction, BIO-18 as-built monitoring was performed from 2011 through 2013, and the results were provided in annual compliance reports (CH2M, 2012a; CH2M, 2013; CH2M, 2014). The *Condition of Certification (COC) BIO-18 Special-status Plants As-built Report for the Ivanpah Solar Electric Generating System (ISEGS)* was submitted to the CEC and BLM in 2015 (CH2M, 2015b). Post-construction monitoring occurred during Year 1 (2014), Year 2 (2015), and Year 3 (2016) and the results were provided in annual compliance reports (CH2M, 2015c; CH2M, 2016b; CH2M, 2017a). The BIO-18 75 percent special-status plant survivorship goal for the five species was met for the last 3 years: Year 1 (2014), Year 2 (2015), and Year 3 (2016) (CH2M, 2015c; CH2M, 2016b; CH2M, 2017b). This report documents only those procedures implemented during Year 4 (2017) including post-construction monitoring, annual health assessment monitoring, and survivorship analysis.

1.4 Special-status Plant Compliance Documents

ISEGS to complies with the following approved plans required by COC BIO-18:

- Revised Protection Plan (Solar Partners, 2010a)
- *Ivanpah SEGS Special-status Plant Remedial Action Plan* (Remedial Action Plan) (Solar Partners, 2010b)
- *Closure, Revegetation, and Rehabilitation Plan for the Ivanpah Solar Electric Generating System. COCs BIO-14, BIO-18 & COMP-11. Revision* 4. Includes the Gas Pipeline Revegetation and Monitoring Plan (BIO-18) (Revegetation Plan) (CH2M, 2010)
- *Seed Collection and Revegetation Proposed Plan, Revision 1* (Seed Collection Plan) (Solar Partners, 2010c)

Special-status plant protection measures, plant salvage, and transplantation procedures are described in the Revised Protection Plan and the Revegetation Plan. The Remedial Action Plan describes the special-status plant seed (and other propagules including live stem and root cuttings of plants]) that have been collected and transplanted in the onsite nursery for use as a source should protection measures fail and special-status plants need to be re-established. The Seed Collection Plan describes seed collection procedures for special-status plants and common species. The Revegetation Plan includes the Gas

[2] The 75 percent survivorship protection goal for nine-awned pappus grass was attained in 2011 (CH2M, 2012a).

Pipeline Revegetation and Monitoring Plan. The implementation of the Gas Pipeline Revegetation plan is described separately in detail in the BIO-18 Natural Gas Pipeline special-status plant revegetation annual compliance reports (CH2M, 2015a; CH2M, 2016a; CH2M, 2017b) and the as-built report (CH2M, 2015b).

1.5 Document Contents

This monitoring report includes the following:

- Section 2 includes a summary of the compliance measures required, undertaken, and in progress to comply with BIO-18 and avoid and minimize impacts to special-status plants.
- Section 3 contains a summary of the special-status plants that are the subject of this plan.
- Post-construction monitoring methods are described in Section 4.
- Results of monitoring are provided in Section 5.
- Figures 5-1 through 5-3 show the location of Special-status Plant Protection Areas (SSPPAs) identified in 2017 within the solar field and the mitigation areas.
- References used in developing this report are included in Section 6.
- The BIO-18 COC is included as Appendix A.
- Photographs from the 2017 compliance monitoring are included in Appendix B.
- Appendix C contains the initial 2010 protection plan figures.
- The template datasheets used to collect field data are provided in Appendix D.

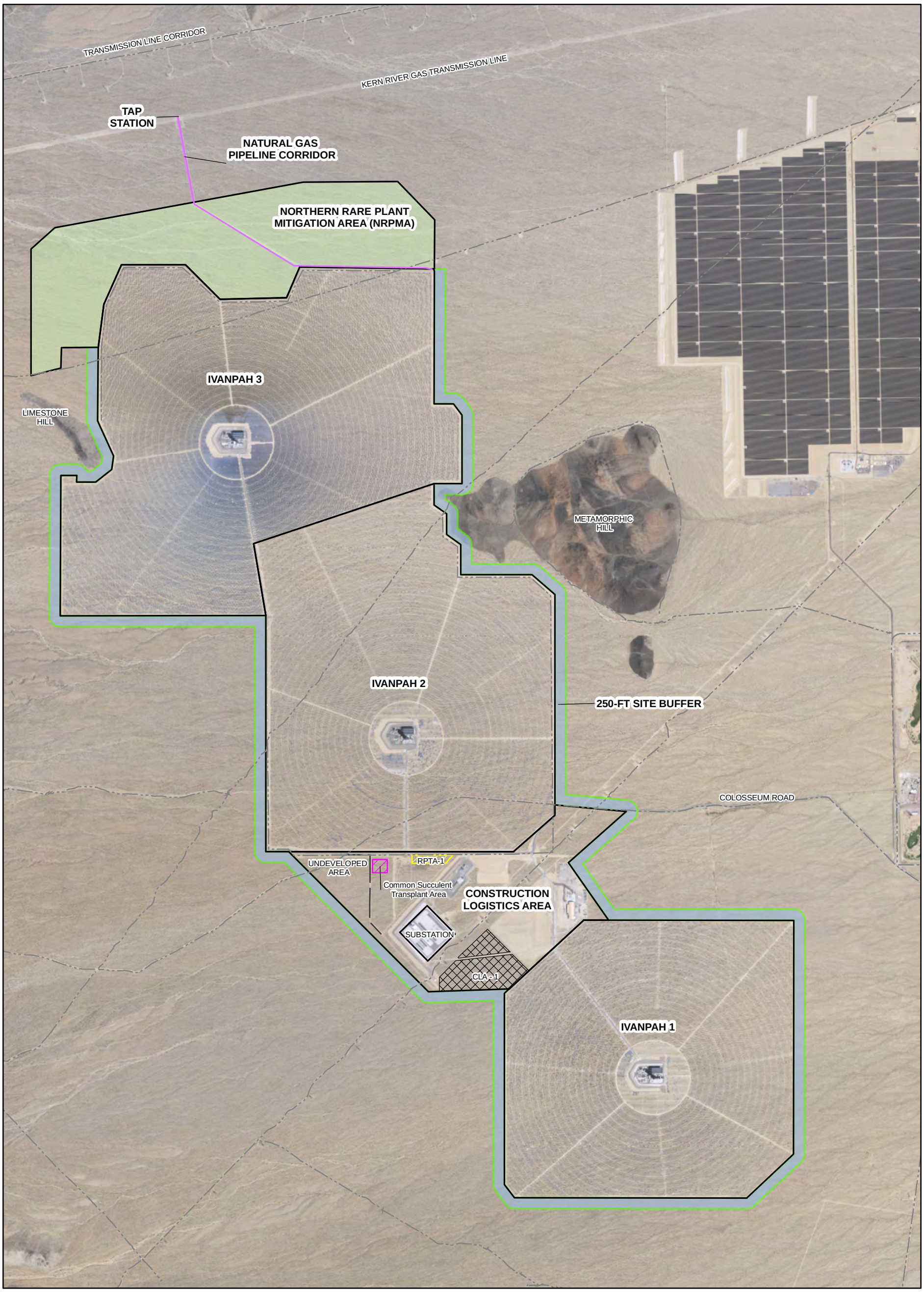

Figure 1-1
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Ivanpah Solar Electric Generating System
San Bernardino County, California

SECTION 2

BIO-18 Compliance Measures

This section includes a summary of the compliance measures required, undertaken, and that are in progress to comply with BIO-18. The text of BIO-18 is included in Appendix A of this report. Table 2-1 includes requirements of BIO-18 and compliance actions undertaken by BrightSource Energy, Inc. during construction from 2010 to 2013 and NRG during operations between 2013 and 2017. Appendix B provides photographs documenting the compliance actions and the SSPPAs. Locations of the SSPPAs, established in 2010 and 2011 as required by BIO-18, are provided in the Revised Protection Plan (Solar Partners, 2010a). For convenience, the 2010 Revised Protection Plan figures are provided in Appendix C.

Table 2-1. Summary of Condition of Certification BIO-18 Compliance Measures Completed and In Progress

No.	COC BIO-18 Measure	In Compliance?	Task Complete?
1	Onsite Plant Avoidance and Minimization Areas	Yes. SSPPAs were established (Figures 5-1 through 5-3 in Section 5 and Appendix C of this report).	Yes.
2	Protection Goals	Yes. Project is in compliance. SSPPAs have been created. The 75 percent protection goals set forth in Measure 2 were met for 4 years post-construction in 2017. Protection goal monitoring is now complete. Long-term persistence and trend monitoring will continue for 10 years (CH2M, 2010).	Ongoing. 75 percent protection goals were met in 2017. Per the Verification section, for the life of the project, record summaries need to be submitted for the Revised Protection Plan and Remedial Action Plan.
3	Identify and Establish SSPPAs	Yes. Project is in compliance. Surveys of the 250-foot (76-meter) buffer were performed in spring 2010 and fall 2011 and were updated with 2012, 2013, and 2014 finds. Localities were designated as ESAs and SSPPAs and are shown on Figures 5-1 through 5-3 (Appendix C).	Yes.
4	Protection of Adjacent Occurrences	Yes. Project is in compliance. Surveys of the 250-foot buffer were performed in spring 2010 and fall 2011, and localities have been designated as ESAs.	Ongoing. Additional checks during operation will be needed to confirm that no indirect impacts to special-status plant ESAs in the buffer have occurred.
5	Develop and Implement a Special-status Plant Protection and Monitoring Plan	Yes. Project is in compliance. The Revised Protection Plan (Solar Partners, 2010a) was submitted in 2010.	Yes.
6	Develop Special-status Plant Remedial Action Plan	Yes. Project is in compliance. The Remedial Action Plan (Solar Partners, 2010b) was submitted in 2010.	Yes.
7	Seed Collection	Yes. Project is in compliance. Special-status plant seed/propagules were collected in 2010, 2011, 2012, and 2013. Remaining seed/propagules have been placed in onsite cold storage for later use in revegetation of short-term disturbance areas or remedial measures, should they be needed.	Yes. Seed/propagules collection was performed. Additional seed can be collected in future years if remedial measures are needed.

Table 2-1. Summary of Condition of Certification BIO-18 Compliance Measures Completed and In Progress

No.	COC BIO-18 Measure	In Compliance?	Task Complete?
8	Gas Pipeline Revegetation and Monitoring	Yes. Project is in compliance. Success criteria (establishment of Rusby's desert mallow, desert pincushion, or Mojave milkweed) were met in 2016, and monitoring is now complete.	Ongoing. Success criteria were met in 2016, and monitoring is now complete. Per the Verification section, for 10 years post-construction, record summaries need to be submitted for the Gas Pipeline Revegetation and Monitoring Plan.
9	Surveys on Acquired and Public Lands	Yes. Project is in compliance. Focused surveys were performed in 2011 for Mojave milkweed and Rusby's desert mallow. The requirement to identify at least the same number of Mojave milkweed and Rusby's desert mallow localities outside of the SSPPAs was met in 2011. Results of the surveys were provided to the agencies (CH2M, 2012b).	Yes.
10	Security for Implementation of Plans	Yes. Funding has been provided.	Yes.
11	Acquire Offsite Occurrence of Mojave Milkweed or Adjacent Land	Yes. Security was provided. Mojave milkweed was identified on one privately owned, 37-acre parcel in the New York Mountains in the northern Lanfair Valley. The parcel has been purchased, and the easement is in place. The execution and fee transfer to the U.S. Government was recorded on April 20, 2017. The property will be managed by the National Park Service.	Yes. Security was provided, and the acquisition and easement have occurred. The execution and fee transfer to the U.S. Government was recorded on April 20, 2017. The property will be managed by the National Park Service.

Source: COC BIO-18 (Appendix A)

Notes:

ESA = Environmentally Sensitive Area

No. = number

2.1 Summary

The CEC included special-status plant avoidance, minimization, and protection goals in COC BIO-18 (Measures 1 through 11) (CEC, 2010). The steps and procedures completed or planned include the following:

- Removal of 476 acres of habitat supporting special-status plants from the project footprint, and establishment of three special-status plant mitigation areas
- Preparation of the Revised Protection Plan (Solar Partners, 2010a)
- Preparation of the Remedial Action Plan (Solar Partners, 2010b)
- Development of a Seed Collection Plan for special-status plants; Appendix B of the Remedial Action Plan describes seed and propagule collection procedures for common species, as well as special-status plants
- Preparation of the Closure, Revegetation, and Rehabilitation Plan (Revision 4) (CH2M, 2010); this plan includes the Gas Pipeline Revegetation and Monitoring Plan required by BIO-18 (CEC, 2010)
- Implementation of special-status plant protection goals of 75 percent, as described in Section 7 of the Revised Protection Plan (Solar Partners, 2010a)

- Identification and establishment of SSPPAs within the solar field and within the three mitigation areas; Revised Protection Plan Figures 5-1 through 5-3 (provided in Appendix C of this report) show the location of the SSPPAs that were established in 2010 and 2011
- Salvage and relocation of the special-status plant individuals listed in Table 5-1 in the Revised Protection Plan; Figures 5-1 through 5-3 of the Revised Protection Plan (provided in Appendix C of this report) show the location of plants that were salvaged
- Maintenance, including irrigation, of salvaged special-status plants within the Rare Plant Transplantation Area (RPTA-1)
- Designation of special-status plant localities within the 250-foot (76-meter) buffer as Environmentally Sensitive Areas (ESAs)
- Completion of focused surveys for Mojave milkweed and Rusby's desert mallow on public lands
- Provision of security for the implementation of plans
- Acquisition of offsite Mojave milkweed lands

2.2 BIO-18 Compliance

The project complies with all the BIO-18 Measures 1 through 11 (CEC, 2010 and Appendix A), and 8 of the Measures are complete. Table 2-1 lists the COC Measures and the current compliance status of each Measure. The eight completed Measures are 1, 3, 5, 6, 7, 9, 10, and 11. No additional work on these Measures is required.

The project complies with BIO-18 Measures 2, 4, and 8, but they are not considered complete (Table 2-1) because these Measures include long-term monitoring and reporting components. Measure 2 protection goals (75 percent survivorship for five plant species) was met in 2017, but long-term persistence and trend monitoring are to be conducted over a 10-year post-construction timeframe, as described in the Revised Protection Plan (Solar Partners, 2010a). Long-term persistence and trend monitoring (including characteristics such as health and vigor, reproduction, seed production, and recruitment) will be monitored over time, but have no fixed success criteria. In addition, BIO-18 Verification (CEC, 2010) requires annual reports for Measure 2 to continue for the life of the project, regardless of when the success criteria were met during the period. Measure 4, protection of adjacent occurrences, requires that plants adjacent to the facility are to be monitored during operations to verify persistence (Solar Partners, 2010a). Measure 8, gas pipeline revegetation and monitoring, requires establishment of special-status plants on Natural Gas Pipeline which success criteria was met in 2017 (CH2M, 2018). BIO-18 Verification (CEC, 2010) requires annual reports for Measure 8 to continue for 10 years post-construction regardless of when the success criteria were met during the period.

This report provides results of Year 4 (2017) monitoring, and these data represent the fourth year of post-construction monitoring, as described in Section 8 of the Revised Protection Plan (Solar Partners, 2010a). During construction, BIO-18 as-built monitoring was performed from 2011 through 2013, and the results were provided in annual compliance reports (CH2M, 2012a; CH2M, 2013; CH2M, 2014). Post-construction monitoring occurred during Year 1 (2014), Year 2 (2015), and Year 3 (2016) and the results were provided in annual compliance reports (CH2M, 2015c; CH2M, 2016b; CH2M, 2017a). Special-status plant impact avoidance and protection Measures that are listed in Table 2-1 are described in more detail in the *BIO-18 Special-status Plant As-built Report* (CH2M, 2015b).

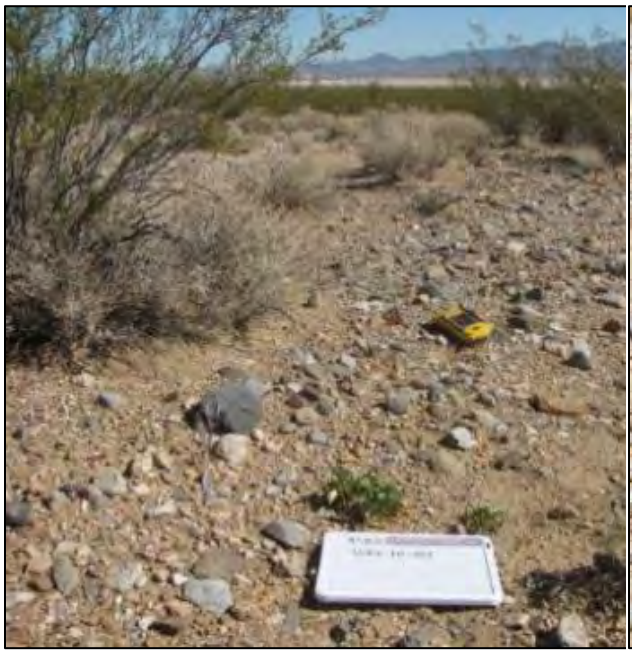
SECTION 3

Special-status Plant Descriptions

This section provides a brief description of the five special-status plants included in the Revised Protection Plan (Solar Partners, 2010a). More detailed information on the basic distributional and ecological information known for each of these special-status plants can be found in the *Special-status Plant Survey Report* (GANDA, 2008), the Revised Protection Plan (Solar Partners, 2010a), and the Remedial Action Plan (Solar Partners, 2010b). Photographs of the special-status plants are included in this section and in Appendix B. Photographs of nine-awned pappus grass obtained during the focused 2011 surveys for this species were included in the *2011 BIO-18 Annual Compliance Report* (CH2M, 2012a). Additional photographs are provided in the annual compliance reports (CH2M, 2013, 2014, 2015c, 2016b, 2017) and *BIO-18, Special-status Plant As-built Report* (CH2M, 2015b).

3.1 Mojave Milkweed (*Asclepias nyctaginifolia*)

Mojave milkweed is a perennial herb with stems and leaves that die back completely at the end of the growing season (Photographs 3-1 through 3-4). In California, it produces showy, cream-colored flowers from May to June and again in late summer to fall, if summer rainfall is adequate. The habitat of this species in California includes washes and dry slopes in Mojave Desert scrub and pinyon-juniper woodland, from about 2,870 to 5,577 feet (875 to 1,700 meters) in elevation (CNPS, 2017). The known distribution of Mojave milkweed in California is primarily in the eastern Mojave Desert (CNPS, 2017). At ISEGS and within Ivanpah Valley, this species has been observed as widespread and relatively common. Individuals of this species respond to precipitation and may not be visible every year, and even then, they may only be visibly present for only three weeks annually. Mojave milkweed is not federally or state-listed, nor is it considered a BLM-sensitive species, but it has a California Rare Plant Rank (CRPR) of 2B.1 and a Heritage Program Rank of G4G5/S2 (CNPS, 2017).



Photograph 3-1
o ave milkweed by white board and dry wash habitat

Photograph 3-2
o ave milkweed in flower

Photograph 3-3
o ave milkweed seeds silky hairs aid in seed dispersal

Photograph 3-4
o ave milkweed seed pods

3.2 Desert Pincushion (*Coryphantha chlorantha*)

Desert pincushion is a small, leafless, stem succulent, or cactus, that produces yellow-green to pale pink flowers (Photographs 3-5 and 3-6). At the ISEGS site, this species was observed in flower between April and July. The habitat of desert pincushion in California is described as Mojave Desert scrub, Joshua tree woodland, and pinyon-juniper woodland, on gravelly or rocky carbonate (limestone) substrates, from about 147 to 7,000 feet (45 to 2,134 meters) in elevation (GANDA 2008; CNPS, 2017). The known distribution of desert pincushion in California is restricted to the eastern Mojave Desert in Inyo and San Bernardino counties (CNPS, 2017). At ISEGS, desert pincushion is widely distributed with hundreds of individuals located during monitoring. Individuals commonly die after 2-3 years, however, additional recruitment is often observed nearby. Desert pincushion is not federally or state-listed, nor is it a BLM-sensitive species. Desert pincushion is a CRPR List 2B.1 species and has a Heritage Program Rank of G4/S3 (CNPS, 2017).

Photograph 3-5
esert pincushion in front of the white stake

Photograph 3-6
esert pincushion in full bloom

3.3 Nine-awned Pappus Grass (*Enneapogon desvau ii*)

Nine-awned pappus grass is a summer annual in California, meaning that it germinates and grows after summer rain (Photographs 3-9 and 3-10). It flowers in California from August to September. The habitat of nine-awned pappus grass in California is described as rocky calcareous (limestone) soils in pinyon-juniper woodland from 4,183 to 6,000 feet (1,275 to 1,825 meters) in elevation (CNPS, 2017). The ISEGS surveys and other collections show that this species also occurs in Mojave Desert scrub down to elevations of 2,900 feet (884 meters) (GANDA, 2008). The distribution of nine-awned pappus grass in California is primarily to the eastern Mojave Desert in San Bernardino County. Photographs of nine-awned pappus grass obtained during the focused 2011 surveys for this species were included in the *2011 Annual Compliance Report* (CH2M, 2012a).

Nine-awned pappus grass has a CRPR of 2B.2 and a Heritage Program Rank of G5/S3 (CNPS, 2017). It is not federally or state-listed, nor is it a BLM-sensitive species. As described in the Revised Protection Plan, this species germinates and grows from an existing seed bank in years with adequate summer rainfall. No special avoidance or salvage procedures were proposed other than seed collection from onsite localities in case species-specific remedial measures are needed (Solar Partners, 2010a). Several localities of nine-awned pappus grass were identified during focused surveys in 2011 (CH2M, 2012a). During years with adequately timed precipitation, nine-awned pappus grass was observed throughout the facility. Other years, for instance Year 4 (2017), no individuals were incidentally observed during monitoring.

Photograph 3-7
ine-awned pappus grass

Photograph 3-8
ine-awned pappus grass inflorescence

3.4 Parish s Club-cholla (*Grusonia parishii*)

Parish's club-cholla is a clonal stem succulent (cactus) that forms large, spreading mats of prostrate stems (Photographs 3-7 and 3-8). The flowers are yellow to red, and they appear from May to July in California. The habitat of this species in California is described as Sonoran Desert scrub, Mojave Desert scrub, and Joshua tree woodland, in sandy flats, from about 984 to 5,000 feet (300 to 1,524 meters) in elevation (CNPS, 2017). The distribution of Parish's club-cholla in California includes the Mojave and Colorado deserts in San Bernardino, Riverside, and Imperial counties. At ISEGS, the majority of the individuals were located in CLA and Ivanpah 1, with a few in the NRPMA. Parish's club-cholla is not federally or state-listed, nor is it a BLM-sensitive species. Parish's club-cholla has a CRPR of 2B.2 and a Heritage Program Rank of G3G4/S2 (CNPS, 2017).

Photograph 3-9
Clonal mat of Parish s club-cholla

Photograph 3-10
Parish s club-cholla in fruit

3.5 Rusby s Desert Mallow (*Sphaeralcea rusbyi* var. *eremicola*)

Rusby's desert mallow is a small (up to 18 inches), soft-woody subshrub with showy, dark apricot-colored flowers and drought deciduous leaves (Photographs 3-11 and 3-12). Information on how to identify Rusby's desert mallow and additional photographs of this species are provided in the *Rusby's Desert Mallo and Mojave Milk eed Surveys on Public Lands Report* (CH2M, 2012a). The palmately compound leaves distinguish this species from the much more common species, desert mallow (*Sphaeralcea ambigua*). The habitat of Rusby's desert mallow includes Mojave Desert scrub and Joshua tree woodland at elevations of 3,200 to 5,400 feet (975 to 1,645 meters) (CNPS, 2017). At ISEGS, an individual of this species was found at 2,925 feet (892 meters) elevation (Solar Partners, 2010a). More than ten individuals of this species have been located in Ivanpah 2 and 3 during as-built and post-construction monitoring.

Rusby's desert mallow is endemic to California, where it is restricted to the eastern Mojave Desert. Rusby's desert mallow is not federally or state-listed. It has a CRPR of 1B.2 and a Heritage Program Rank of G4T2/S2 (CNDDB, 2017; CNPS, 2017). Species with a CRPR of 1B are considered a sensitive species by BLM (BLM, 2009).

Photograph 3-11
Close view of usby s desert mallow flower

Photograph 3-12
usby s desert mallow these leaves are an important characteristic for identifying this species

SECTION 4

Monitoring Methods

This section describes the methods used to establish the protection areas, and assess plant survivorship and health and vigor during construction and operations. During construction, BIO-18 as-built monitoring was performed from 2011 through 2013, and the results were provided in annual compliance reports (CH2M, 2012a; CH2M, 2013; CH2M, 2014). At the time, the Revised Protection Plan was prepared (Table 8-1; Solar Partners, 2010a), it was assumed that each solar field would be constructed independently, but construction of the project was performed concurrently. The annual monitoring reports functioned as interim As-built reports. Final As-built conditions were documented in the BIO-18 As-built Report (CH2M, 2015b). Post-construction monitoring occurred during Year 1 (2014), Year 2 (2015), and Year 3 (2016) and the results were provided in annual compliance reports (CH2M, 2015c; CH2M, 2016b; CH2M, 2017a). Year 4 (2017) of post-construction monitoring was conducted in 2017 and is the subject of this report.

4.1 Special-status Plant Protection Areas

Pre-construction surveys were performed in spring 2010, as outlined in the Revised Protection Plan (Solar Partners, 2010a), to relocate, map, and stake in the field all special-status plant localities and individual plants that were to be avoided or salvaged. “Locality” is defined as a location where one or more special-status plant was identified. Data collected during these surveys, combined with the final engineering layout, were used to create the SSPPAs. The SSPPAs are defined as exclusionary fences in the solar field installed around special-status plants and associated habitat (BIO-18 refers to them as “halos”). BIO-18’s purpose of establishing SSPPAs is to facilitate achieving the 75 percent protection goal (outlined in Measure 2 and achieved through implementation of Measure 5) to develop a protection and monitoring plan (CH2M, 2010). Collectively, the three mitigation areas (that is, NRPMA, Construction Logistics Area [CLA] CLA-1 and CLA-2) and the SSPPAs are referred to as protection areas. Except for minor adjustments (for example, a few plants noted as present in 2010 were missing or dead by the time fencing was placed), exclusionary fencing was installed in 2010 and 2011 at all areas in the solar fields shown on Figures 5-1 through 5-3 of the Revised Protection Plan (Solar Partners, 2010a) (Appendix C of this report). Figures showing the location of SSPPAs, as adjusted for mortality, are provided in the As-built report (CH2M, 2015b).

4.2 Plant Protection Goals

The objective in establishing the protection areas was to facilitate achieving the 75 percent special-status plant protection goal required by BIO-18 Measure 2. The number of protection areas (including SSPPAs and mitigation areas) established in 2010 and the number of plants within them forms the pre-project baseline, as required by BIO-18. SSPPAs in solar fields were established for three species: Mojave milkweed, desert pincushion, and Rusby’s desert mallow. SSPPAs were not established for nine-awned pappus grass or Parish’s club cholla because of the ecology of these species. Nine-awned pappus grass is a summer annual, meaning that it germinates and grows after adequate summer rainfall and special protection procedures outside the three mitigation areas have not been established. Surveys for this species were performed in 2011, and the protection goal was attained for this species. See the *2011 BIO-18 Annual Compliance Report* (CH2M, 2012a) for more information. As described in the Revised Protection Plan, Parish’s club-cholla individuals not included in the mitigation areas were salvaged and replanted in the RPTA-1 and CLA-2, and those individuals are credited toward achieving the protection goal for this species (Solar Partners, 2010a). Table 4-1 lists the target number of localities and plants to

be protected to facilitate achieving the 75 percent protection goal. Results of the 2017 post-construction monitoring, as measured against these target protection goals, are presented in Section 5.

Table 4-1. Special-status Plant Localities and Individuals Proposed for Protection or Salvage, or Included in Mitigation Area

Special-status Plant Scientific Name [a]	Special-status Plant Common Name	Total No. of Localities to be Avoided [b]	Total No. of Plants to be Avoided [b]
Asclepias nyctaginifolia	Mojave milkweed	40	85
Coryphantha chlorantha	Desert pincushion	127	135
Enneapogon desvauxii [a]	Nine-awned pappus grass	76	668
Grusonia (Opuntia) parishii	Parish's club-cholla [c]	10	16
Sphaeralcea rusbyi var. *eremicola*	Rusby's desert mallow	3	3

Source: (Solar Partners, 2010a)

[a] Nine-awned pappus grass protection goals were met in 2011 (CH2M, 2012a).

[b] Minor adjustments (for example, plants missing or dead) were made to correct the total numbers of localities and plants to be avoided from those originally presented in the Revised Protection Plan (Solar Partners, 2010a).

[c] Persistence of Parish's club-cholla in salvaged and replanted in the RPTA-1 count towards the protection goals (Solar Partners, 2010a).

As required by BIO-18 Measure 2, the number of special-status plants identified post-construction is compared to the number of plants identified in the pre-project baseline. Percent survival (as a measure of plant protection) is the quantitative performance benchmark. Plant protection will be determined successful if the 75 percent protection goal is attained, as required by BIO-18. Long-term persistence and trend monitoring include site characteristics (such as health and vigor, reproduction, seed production, and recruitment) that will be monitored over time but have no fixed success criteria. In addition to determining if the protection goal is met, results of monitoring will be used to help determine management or remedial actions, and to document a trend of long-term persistence and reproduction onsite.

Little is known about the life history, longevity, recruitment, rate of variation across a site, and numerous other ecological variables for these special-status plants. The 75 percent protection target may be biologically unattainable, even in sites that are completely undisturbed. The practicability and attainability of these protection goals have never been demonstrated.

4.3 Special-status Plant Monitoring

As described in BIO-18 (CEC, 2010; Appendix A), special-status plant monitoring will be performed for 10 years following construction, or until success criteria are met, to determine whether the special-status plants that have been protected persist over time. The monitoring schedule from the Revised Protection Plan is provided in Table 4-2 (Solar Partners, 2010a).

During construction, BIO-18 as-built monitoring was performed from 2011 through 2013, and the results were provided in annual compliance reports (CH2M, 2012a; CH2M, 2013; CH2M, 2014). Post-construction monitoring occurred during Year 1 (2014), Year 2 (2015), and Year 3 (2016) and the results were provided in annual compliance reports (CH2M, 2015c; CH2M, 2016b; CH2M, 2017a). Results of Year 4 (2017) monitoring are the subject of this report. The final BIO-18 Special-status Plant As-built Report (CH2M, 2015b) documents the size and shape of the SSPPAs and the amount of area protected.

Table 4-2. Special-status Plant Mitigation Monitoring Schedule

	As-built Data Collection			**Success Criterion and Long-term Persistence Trend Monitoring**										
	Year			**Year**										
	1	**2**	**3**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Location	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
s ui t Monitoring														
Ivanpah 1 and CLA				X										
Ivanpah 2				X										
Ivanpah 3				X										
Success Criterion Monitoring[a]														
Percent survivorship				X										
ong ter ersistence ren Monitoring														
Health and vigor data				X										
Annual reporting				X										
Final evaluation of success criterion and reporting				X										

Source: Table 8-1 (Solar Partners, 2010a)

[a] The percent survivorship goal of BIO-18 is 75 percent.

[b] Health and vigor data are collected during the percent survivorship assessment, but trend data are not tied to the 75 percent survivorship success criterion (see Revised Protection Plan [Solar Partners, 2010a] for more details).

Note:

X denotes that collection or monitoring was performed in the given area or for the identified task.

4.3.1 During-construction Monitoring (2011 through 2013)

Every plant with protective exclusionary fencing (SSPPA) or in a mitigation area that was mapped previously was revisited from 2011 through 2013 to assess survivorship and plant health and vigor. Table 4-3 lists information collected in the global positioning system (GPS) unit and on hard-copy data sheets. Appendix D provides the template datasheet used to collect additional field data. Each locality and individual plant was assigned a unique plant identification number (Plant ID) so it could be tracked over time. An aluminum tag with the unique identification number was placed near the base of each plant. A heavy-duty, plastic stake was also installed near each plant. During construction, BIO-18 as-built monitoring was performed from 2011 through 2013, and the results were provided in annual compliance reports (CH2M, 2012a; CH2M, 2013; CH2M, 2014). A 75 percent survivorship rate was recorded in all three construction monitoring years.

Table 4-3. Special-status Plant Data Collected[a] in Protection Areas

Mo ave Milk eed	Desert Pincushion	Parish's Club-cholla	Rusby's Desert Mallo
Plant ID No.	Plant ID No.	Plant ID No.	Plant ID No.
New Plant	New Plant	New Plant	New Plant
Plant Absent	Plant Absent	Plant Absent	Plant Absent
Seedling Count	Plant Dead	Plant Dead	Plant Dead
Vigor Score	Vigor Score	Vigor Score	Vigor Score
Phenology	Phenology	New Growth	Phenology
Grazing Damage	Head No.	Percent Dead	Grazing Damage
Dig-down Depressions	Grazing Damage	Phenology	No. Stems
No. Flower Clusters	No. Flowers	No. Clumps	No. Flowers
No. Fruits	No. Fruits	No. Flowers	No. Fruits
Seeds Present	Pollinators Observed	No. Fruits	Seeds Present
Pollinators Observed	Size (Height/Width)	LYSF	Pollinators Observed
Size (Height/Width)		Pollinators Observed	Size (Height/Width)

[a] Ecological data was collected in accordance with Revised Protection Plan (Solar Partners, 2010a)

Notes:

ID = identification

LYSF = last year's sterile fruits

No. = number

4.3.2 Post-construction Monitoring (2014 through 2023)

Objectives of the post-construction monitoring are to collect survivorship data needed to determine if the 75 percent survivorship success criterion has been achieved, and to assess long-term persistence and trends of special-status plants' health and vigor. Year 4 (2017) monitoring followed the recommendations outlined in the Revised Protection Plan (Solar Partners, 2010a), with slight revisions to accommodate for new special-status plant recruits found outside of protection areas but still within the facility boundaries (see Section 4.3.2.4 for further details).

During construction, BIO-18 as-built monitoring was performed from 2011 through 2013, and the results were provided in annual compliance reports (CH2M, 2012a; CH2M, 2013; CH2M, 2014). The *Condition of*

Certification (COC) BIO-18 Special-status Plants As-built Report for the Ivanpah Solar Electric Generating System (ISEGS) was submitted to the CEC and BLM in 2015 (CH2M, 2015b). Post-construction monitoring occurred during Year 1 (2014), Year 2 (2015), and Year 3 (2016) and the results were provided in annual compliance reports (CH2M, 2015c; CH2M, 2016b; CH2M, 2017a). The BIO-18 75 percent special-status plant survivorship goal for the five species was met in for last 3 years: Year 1 (2014), Year 2 (2015), and Year 3 (2016) (CH2M, 2015c; CH2M, 2016b; CH2M, 2017b). Year 4 (2017) of the post-construction monitoring was performed in 2017 and is the subject of this report.

Field work was conducted by botanists familiar with the flora of the Mojave Desert and possessing several years of experience with the special-status plants at ISEGS. Botanists navigated to known special-status plant localities using existing GPS coordinates from the previous surveys to verify if they were still extant. Mobile devices with iOS or Android platforms were used to collect plant survivorship, persistence and trend data, and photographs for individual special-status plants at each locality. During fieldwork, special-status plant data was synced real-time to an ArcGIS Online platform. Ecological data recorded on health, vigor, size, reproduction, seed production, predation, pollination, and recruitment, as well as other data collected during the surveys, are summarized in Table 4-3. Photographs of each special-status plant were taken to document field conditions and the status of the special-status plant at the time. Data and photographs were synced to ArcGIS Online. Appendix D provides the template hard-copy datasheet used to collect additional field data. Data sheets were scanned and stored electronically in project files.

Due to differences between the plant species[3] surveyed during Year 4 (2017), individual species' health assessment data was tailored to the life history and ecology of each species. For instance, flowers for desert pincushion are recorded individually, but for Mojave milkweed, clusters of flowers are counted. For status of the plant, "dead – detached" is a category used for desert pincushion, but not used for the other plants. Desert pincushion are round cactus with shallow roots that can get knocked over, for instance, by wild burros (*E uus asinus*). Status on Mojave milkweed is frequently recorded as "absent," which does not necessarily indicate that the plant is dead. Mojave milkweed is a perennial herb, so stems and leaves die back each year, but the plant persists through deep roots. The plant may be not visible on a particular monitoring year without sufficient precipitation, but it may be visible in other years.

Vigor data, on the other hand, are collected in a similar manner for the survey species, on the following scale of 1 to 5:

- 1 indicates robust
- 2 indicates above average
- 3 indicates average
- 4 indicates below average
- 5 indicates weak or damaged

Monitoring methods for Mojave milkweed and desert pincushion percent survivorship were clearly defined in the Revised Protection Plan. The monitoring methods for nine-awned pappus grass, Parish's club-cholla, and Rusby's desert mallow are defined below for clarity.

4.3.2.1 Nine-awned Pappus Grass

Nine-awned pappus grass is a summer annual in California, meaning that it germinates and grows after adequate summer rainfall. Because of the ecology of this species, special protection procedures for nine-awned pappus grass outside the three mitigation areas were not established in the Revised Protection Plan. Surveys for this species were performed in 2011. Documenting persistence for 4 out of 10 years for this species is not necessary to meet the success criterion, and the protection goal for this

[3] Nine-awned pappus grass was not surveyed for during Year 4 (2017), because compliance was met for this species in 2011 (CH2M, 2012a).

species was attained in 2011. For more information, refer to the *2011 BIO-18 Annual Compliance Report* (CH2M, 2012a). During Year 4 (2017) monitoring, botanists did not incidentally see any nine-awned pappus grass, and as such, did not conduct any surveys for this species.

4.3.2.2 Parish s Club-cholla

Monitoring methods for the Parish's club-cholla are slightly different from the monitoring methods for the other species. Parish's club-cholla is well-adapted to vegetative propagation. For this reason, calculations of plant protection for this species include the plants salvaged from the construction footprint and replanted into the RPTA-1 and CLA-2. As outlined in the Revised Protection Plan (Solar Partners, 2010a), a total of 8 localities and 15 individuals (clonal mats) were also protected in place, predominantly in the mitigation areas, CLA-1 and NRPMA. No SSPPAs in the solar fields were established for this species. Percent survivorship calculations for Parish's club-cholla include those individuals located in the mitigation areas, as well as those individuals in the RPTA-1 and CLA-2.

4.3.2.3 Rusby s Desert Mallow

In the Revised Protection Plan, Rusby's desert mallow is identified as being short-lived (Table 4-3, Solar Partners, 2010a). One of the four original Rusby's desert mallow identified pre-construction continues to persist in RPTA-1 (Figure 1-1). Similar to methods for Parish's club cholla, percent survivorship calculations for Rusby's desert mallow include those individuals located in the protection areas, as well as the individual located in the RPTA-1.

4.3.2.4 New Special-Status Plant Recruits

In addition, botanists surveyed for new special-status plant recruits in the protection areas. For Mojave milkweed, for instance, new recruits are often located downstream in an ephemeral wash from the original plant. When a new individual was located, it was assigned a unique Plant ID. An aluminum tag with the Plant ID was placed near the base of each plant. A heavy-duty, plastic or wooden stake was also installed near each plant in a more visible location for survey identification. Botanists recorded survivorship and long-term persistence trend monitoring data on these individuals (Table 4-3).

Botanists also identified new recruits of individual special-status plants that were outside of SSPPAs and mitigation areas, but still within the facility boundaries. In Year 4 (2017), new recruits were located in the solar fields, in the CLA, and in the 250-foot (76-meter) facility buffer. No individual special-status plants were salvaged or transplanted during Year 4 (2017). For Mojave milkweed and desert pincushion, three to four stakes were placed around the perimeter of the plant to provide protection from operations tasks. For Rusby's desert mallow, a small, low, exclusionary fence was erected from t-posts and chicken-wire fence. These individuals were also assigned a Plant ID and GPS coordinates. A limited amount of ecological health assessment data was collected to document the baseline conditions, and the individual was photographed.

4.3.2.5 Control Sites - Environmentally Sensitive Areas

ESAs were established to protect special-status plants located in the 250-foot (76-meter) facility buffer (BIO-18, Measure 4). These individuals are monitored annually as a control population for comparison against those individuals in the SSPPAs and mitigation areas. For example, if monitoring determines that protected special-status plants are not producing leaves and are not flowering or fruiting, or if large numbers of them have died, comparisons with conditions in onsite or offsite locations could suggest reasons for these responses. If onsite or offsite control areas are responding similarly, then widespread environmental conditions could likely to be the cause, and onsite management changes may not be recommended. However, if substantial differences are found between survivorship or reproduction in the onsite protected localities compared to the onsite or offsite control areas, management changes to improve onsite protected special-status plant response could be considered.

Annual monitoring of ESAs during operations complies with BIO-18 Measure 4 – Protection of Adjacent Occurrences. Monitoring includes repairs or upkeep of the sensitive resource signs, as well as collecting special-status plant data on survivorship and ecology in accordance with Table 4-3. Appendix B provides the Protection Plan figures (5-1 through 5-3) that show the 2010 and 2011 locations of the special-status plants designated as ESAs.

4.3.2.6 Post-Fieldwork Comparison and Analysis

Once fieldwork was completed, the geographic information system (GIS) analyst and botanists went through a series of quality assurance and quality control checks against hard-copy datasheets. This included checking health assessment, location data, maps, and Microsoft Excel exported data tables against field maps, datasheets, and notes to confirm that the information collected was correct. Changes were made to the exported Excel tables as needed; the Excel data tables then were re-imported into GIS to create the final 2017 special-status plant monitoring database. Final maps were prepared by GIS based on the corrected Excel data tables.

As required by BIO-18 Measure 2, the number of special-status plant localities and individuals identified post-construction were compared to the number of plant localities and individuals identified during the pre-project baseline. “Locality” is defined as a location where one or more special-status plants were identified during pre-construction surveys. Percent survival (as a measure of plant protection) is the quantitative performance benchmark. Plant protection is determined successful if the 75 percent protection goal is attained as described in BIO-18. Long-term persistence and trend monitoring includes site characteristics (such as health and vigor, reproduction, seed production, and recruitment) that will be monitored over time but have no fixed success criteria. In addition to determining if the protection goal is met, results of monitoring will be used to help determine management or remedial actions and to document a trend of long-term persistence and reproduction onsite.

Little is known about the life history, longevity, recruitment, rate of variation across a site, and numerous other ecological variables for these special-status plants. The 75 percent protection target may be biologically unattainable, even in sites that are completely undisturbed. The practicability and attainability of these protection goals have never been demonstrated.

4.4 Schedule and Reporting

Special-status plant success criteria and long-term persistence trend monitoring are anticipated to be conducted for a period of 10 years from the date of operations. If the percent protection (plant survivorship) is 75 percent for 4 of the 10 monitoring years, the protection goals will be considered attained, and success criterion monitoring will be complete. Long-term persistence and trend monitoring will continue for 10 years from the date of operations, regardless of success criterion monitoring being completed earlier in the period. As required by BIO-18, Verification, record summaries of the annual monitoring will continue for the life of the project for the Revised Protection Plan, regardless of the success criterion being met earlier in the 10-year monitoring period (Solar Partners, 2010a). If the success criterion is not met in 10 years, remedial actions will be implemented in accordance with Remedial Action Plan (Solar Partners, 2010b) until success criteria are met. The monitoring and reporting schedule is provided in Table 4-2.

SECTION 5

Monitoring Results

5.1 Survey Results

This section provides the Year 4 (2017) post-construction special-status plant monitoring results. Special-status plants from the pre- and post-construction occurrences were evaluated for comparison and are also summarized in this section.

5.1.1 Dates and Staff

Annual assessment of special-status plant survivorship and long-term persistence and trend monitoring were conducted on March 20 to 27; April 2 to 9, 17 to 18, and 26; June 13 to 14; July 5; August 29; and September 12 and 25, 2017, by CH2M botanists Morgan King, Jason Brooks, and Onkar Singh.

5.1.2 Percent Survivorship

This section includes results of Year 4 (2017) post-construction special-status plant monitoring. Tables 5-1 and 5-2 list the number of avoided special-status plant localities and individuals identified in 2017, by species, for each project component, compared to the protection goals established in the Revised Protection Plan (Solar Partners, 2010a). The 75 percent protection goal for special-status plants was attained again in 2017 (Table 5-2). This is the fourth consecutive year that the project has met the 75 percent special-status plant survivorship protection goals and success criterion monitoring is now complete. Figures 5-1 through 5-3 show the location of the special-status plants in protection areas. The calculations of numbers of plants protected have excluded plants recorded as "Absent" (plants not present at the time of data collection) and "Dead." Figures 5-1 through 5-3 show the location of special-status plants visited during Year 4 (2017) monitoring, including those individuals that were "Absent" or "Dead" (denoted by having a strikethrough on the text).

Table 5-1. Special-Status Plants by Location, Year 4 (2017) Post-Construction Monitoring

Special-status Plant Common Name	No. of Localities Avoided in Solar Field	No. of Plants Avoided in Solar Field	No. of Localities Avoided in Mitigation Areas[a]	No. of Plants Avoided in Mitigation Areas[a]	Total No. of Localities Avoided Onsite	Total No. of Plants Avoided Onsite	Protection Goal Attained in 2017
Mojave milkweed	28	106	24	67	52	173	Yes
Desert pincushion	23	24	127	133	150	157	Yes
Parish's club-cholla	0	0	154	154	154	154	Yes
Rusby's desert mallow	1	1	2	2	3	3	Yes
Total	**52**	**131**	**307**	**356**	**359**	**487**	**Yes**

[a] The mitigation areas are referred to as the CLA-1, CLA-2, NRPMA, and RPTA-1 (Figure 1-1). Parish's club-cholla and Rusby's desert mallow individuals persist in RPTA-1 and are included in the survivorship success criterion.

Notes:

The Solar Field is composed of Ivanpah 1, 2, and 3 (Figure 1-1).

Table 5-2. Special-Status Plant Localities and Individuals Protected in 2017

Common Name (Scientific Name)	Site Element	Special Status Plant Localities[a,b] Total No. of Localities (from 2010 Protection Plan)	Special Status Plant Localities[a,b] Total No. of Localities Avoided in 2017	Special Status Plant Localities[a,b] Percent Survival of Localities Avoided in 2017 (%)	Special Status Plant Individuals[a] Total No. of Individuals (from 2010 Protection Plan)	Special Status Plant Individuals[a] Total No. of Plants Avoided in 2017	Special Status Plant Individuals[a] Percent Survival of Individuals Avoided in 2017 (%)	Protection Goal Attained
Mo ave milk eed (*sc epias n ctagini o ia*)[c]								
	CLA	2	0	0	2	0	0	
	Ivanpah 1	11	9	82	32	39	122	
	Ivanpah 2	3	3	100	5	5	100	
	Ivanpah 3[c]	25	16	64	36	62	172	
	Gas Line Corridor	0	0	0	0	0	0	
	CLA-1[c]	4	11	275	24	29	121	
	CLA-2	0	0	0	0	0	0	
	NRPMA[d]	8	13	163	14	38	271	
Total Proposed in 2010 Compared ith Total Avoided in 2017		**53**	**52**	**98**	**113**	**173**	**153**	
ota Re uire to ttain ercent rotection oa [a]								***es***
Rusby's desert mallo (*Sphaera cea rus i var ere ico a*)								
	CLA	0	0	0	0	0	0	
	Ivanpah 1	1	0	0	1	0	0	
	Ivanpah 2	1	0	0	1	0	0	
	Ivanpah 3	1	1	100	1	1	100	
	Gas Line Corridor	0	0	0	0	0	0	
	CLA-1	0	1	0	0	1	0	
	CLA-2	0	0	0	0	0	0	
	RPTA-1	0	1	0	0	1	0	
	NRPMA	1	0	0	1	0	0	
Total Proposed in 2010 Compared ith Total Avoided in 2017		**4**	**3**	**75**	**4**	**3**	**75**	

Table 5-2. Special-Status Plant Localities and Individuals Protected in 2017

Common Name (Scientific Name)	Site Element	Special Status Plant Localities[a,b] Total No. of Localities (from 2010 Protection Plan)	Special Status Plant Localities[a,b] Total No. of Localities Avoided in 2017	Special Status Plant Localities[a,b] Percent Survival of Localities Avoided in 2017 (%)	Special Status Plant Individuals[a] Total No. of Individuals (from 2010 Protection Plan)	Special Status Plant Individuals[a] Total No. of Plants Avoided in 2017	Special Status Plant Individuals[a] Percent Survival of Individuals Avoided in 2017 (%)	Protection Goal Attained
ota Re uire to ttain ercent rotection oa [a]								***es***
Desert pincushion	***Cor phantha ch orantha***							
	CLA	7	0	0	7	0	0	
	Ivanpah 1[e]	32	11	34	33	12	36	
	Ivanpah 2[e]	29	3	10	31	3	10	
	Ivanpah 3	30	9	30	31	9	29	
	Gas Line Corridor	1	0	0	1	0	0	
	CLA-1[d]	7	32	457	7	35	500	
	CLA-2[f]	0	0	0	0	0	0	
	NRPMA[d]	63	95	151	70	98	140	
Total Proposed in 2010 Compared ith Total Avoided in 2017		**169**	**150**	**89**	**180**	**157**	**87**	
ota Re uire to ttain ercent rotection oa [a h]								***es***
Parish's club cholla (	***rusonia puntia parishii*****)**							
	CLA	52	0	0	70	0	0	
	Ivanpah 1	55	0	0	65	0	0	
	Ivanpah 2	0	0	0	0	0	0	
	Ivanpah 3	0	0	0	0	0	0	
	Gas line Corridor	0	0	0	0	0	0	
	CLA-1[d]	7	17	243	13	17	131	
	CLA-2[d, g]	1	3	300	1	3	300	
	RPTA-1	0	131	0	0	131	0	
	NRPMA	0	3	0	0	3	0	
Total Proposed in 2010 Compared ith Total Avoided in 2017		**115**	**154**	**134**	**149**	**154**	**103**	

Table 5-2. Special-Status Plant Localities and Individuals Protected in 2017

Common Name (Scientific Name)	Site Element	Special Status Plant Localities[a,b] Total No. of Localities (from 2010 Protection Plan)	Special Status Plant Localities[a,b] Total No. of Localities Avoided in 2017	Special Status Plant Localities[a,b] Percent Survival of Localities Avoided in 2017 (%)	Special Status Plant Individuals[a] Total No. of Individuals (from 2010 Protection Plan)	Special Status Plant Individuals[a] Total No. of Plants Avoided in 2017	Special Status Plant Individuals[a] Percent Survival of Individuals Avoided in 2017 (%)	Protection Goal Attained
ota Re uire to ttain ercent rotection oa [a]								***es***
Avoidance and Salvage in Compliance ith Special-status Revised Protection Plan[a,e]								***es[g]***

[a] Plants are considered avoided if surrounded by exclusionary fencing ("halo") in the solar field or SSPPA, or if the plant is located within one of the three mitigation areas, or protected in the RPTA-1 or CLA-2. The target number of plants and localities proposed for avoidance or salvage are the goals listed in Table 4-1 and as shown on Figures 4-1 through 4-3 of the Revised Protection Plan. On an individual plant basis, the target salvage goals from the Revised Protection Plan are listed in this table instead of the actual number of plants salvaged. This is because many more desert pincushion, Mojave milkweed, and Parish's club-cholla were salvaged from the site compared with the number planned. These individuals were planted in the RPTA-1 and the Common Succulent Transplant Area. If one or more plants were salvaged from a locality with many individuals, the entire locality is not counted as salvaged.

[b] The number of fences in the field is not the same as the number of avoided localities. Some localities were split into two fenced areas because of the layout of the heliostat field spoke roads. In a few places, two localities were placed within a larger fence.

[c] Includes two localities of Mojave milkweed in addition to the number originally proposed that were salvaged (one in CLA-1 because of the generation tie line and one in Ivanpah 3).

[d] More plants were protected than required in the Revised Protection Plan. In locations where there were no 2010 avoidance percentage goals (for example, NRPMA), percentages are expressed as more than 100 percent in the Percent of Localities Protected and Individuals Avoided columns and included in the total avoidance calculations.

[e] During fencing of the SSPPAs, three desert pincushions in Ivanpah 2 and one desert pincushion in Ivanpah 1 planned for fencing were dead or had been misidentified. When this stem succulent cactus is very small (the size of a quarter or less), it is difficult to distinguish desert pincushion from a cactus species that is very similar in appearance; therefore, the numbers proposed in this table have been adjusted downward.

[f] A total of 16 desert pincushions were transplanted into CLA-2. These plants are included in the RPTA-1 tally; therefore, they are not included in the survivorship calculations presented in Tables 4-1 and 4-2.

[g] The Parish's club-cholla located in CLA-2 was initially salvaged instead of protected within the mitigation area as originally planned because of placement of the tortoise fence, but this locality grew back.

[h] The desert pincushion 75 percent success numbers are different in this table and the Revised Protection Plan (Table 5-1) (Solar Partners, 2010a) because of additional localities and individuals located in 2010 and 2011.

% = percent

Parish's club-cholla is well-adapted to vegetative propagation. For this reason, calculations of plant protection for this species include the plants salvaged from the construction footprint (in the CLA and Ivanpah 1) and replanted into the RPTA-1 and CLA-2. The salvaged and transplanted Parish's club-cholla plants in the RPTA-1 and CLA-2 are available for use as propagules and for replanting in short-term disturbance areas.

No surveys were conducted for nine-awned pappus grass in 2017 due to lack of establishment and this species is not included in the following results tables.

Table 5-3 provides a comparison of 2014 through 2017 post-construction monitoring results for each species. This summary shows the persistence of each species localities and individuals through time. The total avoided onsite is the sum of those protected in solar field, mitigation areas, RPTA-1, and CLA-2.

Table 5-3. Number of Localities and Plants Protected at ISEGS between 2014 and 2017

So ar ie

	No. of Localities				No. of Plants			
Special-status Plant Species	**2014**	**2015**	**2016**	**2017**	**2014**	**2015**	**2016**	**2017**
Mojave milkweed	28	28	28	28	70	63	113	106
Desert pincushion	52	54	39	23	57	57	39	24
Parish's club-cholla	0	0	0	0	0	0	0	0
Rusby's desert mallow	2	2	2	1	2	2	2	1
Total	**82**	**84**	**69**	**52**	**129**	**122**	**154**	**131**

Mitigation reas[a]

	No. of Localities				No. of Plants			
Special-status Plant Species	**2014**	**2015**	**2016**	**2017**	**2014**	**2015**	**2016**	**2017**
Mojave milkweed	21	19	22	24	43	39	66	67
Desert pincushion	115	124	149	127	123	130	156	133
Parish's club-cholla	15	15	15	154	21	21	23	154
Rusby's desert mallow	1	1	0	2	1	1	0	2
Total	**152**	**159**	**186**	**307**	**188**	**191**	**245**	**356**

ota voi e nsite So ar ie an Mitigation reas[a]

	No. of Localities				No. of Plants			
Special-status Plant Species	**2014**	**2015**	**2016**	**2017**	**2014**	**2015**	**2016**	**2017**
Mojave milkweed	49	47	50	52	113	102	179	173
Desert pincushion	167	178	188	150	180	187	195	157
Parish's club-cholla	15	15	15	154	21	21	23	154
Rusby's desert mallow	3	3	3	3	3	3	3	3
Total	**234**	**243**	**256**	**359**	**317**	**313**	**400**	**487**

[a] The mitigation areas are referred to as the CLA-1, CLA-2, NRPMA, and RPTA-1 (Figure 1-1). In 2017, Parish's club-cholla and Rusby's desert mallow individuals persisting in RPTA-1 and CLA-2 and are included in the locality and individual totals.

5.1.3 New Recruits Located Outside Protection Areas

Previously, during annual monitoring, special-status species found outside of the protection areas were salvaged, exceeding the Revised Protection Plan's salvage goals (Solar Partners, 2010a). To date, 442 Mojave milkweed, desert pincushion, Parish's club-cholla, and Rusby's desert mallow have been salvaged from the solar field or impacted areas and transplanted. During Year 3 (2016) and Year 4 (2017) monitoring, individuals were not salvaged; instead, they were protected in place in the solar field (Mojave milkweed [29 individuals], desert pincushion [2 individuals], and Rusby's desert mallow [7 individuals]) (Figures 5-1

through 5-3). For Rusby's desert mallow, botanists erected small, exclusionary fences with t-posts and chicken wire to protect those individuals within the solar field (see Appendix B for representative photographs).

5.1.4 Photographic Documentation

Representative photographs of each of the special-status species observed during Year 4 (2017) post-construction monitoring are provided in Appendix B.

5.2 Special-Status Plants

The 75 percent protection goal for special-status plants was attained again in 2017 (Tables 5-1 and 5-2). Figures 5-1 through 5-3 show the location of post-construction special-status plants recorded during the 2017 monitoring. Appendix C provides the location of SSPPAs proposed in the Revised Protection Plan (Solar Partners, 2010a). Tables 5-1 and 5-2 list the number of avoided special-status localities and individuals for 2017, by species, for each project component, compared to the protection goals established in the Revised Protection Plan. Success criterion goals were met for 4 years out of the 10-year monitoring period (Year 1 [2014], Year 2 [2015], Year 3 [2016], and Year 4 [2017]) and compliance with BIO-18 Measure 2 monitoring is now complete. Table 5-4 provides a summary of when each species has met the post-construction success criterion goals by year.

Table 5-4. Summary of Meeting Success Criterion per Year

Special-status Plant Species	Success Criterion Met?				
	Year 1 (2014)	Year 2 (2015)	Year 3 (2016)	Year 4 (2017)	Success Criterion Met for 4 Years?
Mojave milkweed	Yes	Yes	Yes	Yes	Yes
Desert pincushion	Yes	Yes	Yes	Yes	Yes
Nine-awned pappus grass [a]	Yes	Yes	Yes	Yes	Yes[a]
Parish's club-cholla	Yes	Yes	Yes	Yes	Yes
Rusby's desert mallow	Yes	Yes	Yes	Yes	Yes

[a] Nine-awned pappus grass protection goals were met in 2011 (CH2M, 2012a).

After accounting for mortality and absence, a total of 359 special-status plant localities (with 487 plants) were present, which meets the 75 percent protection goals (Tables 5-1 and 5-3). In 2017, the total number of avoided localities and plants (in solar fields and mitigation areas) increased compared to 2016, for an increase of 103 localities and 87 individuals (Table 5-3).

5.2.1 Mojave milkweed

2017 was a relatively stable survivorship year for Mojave milkweed growth and establishment as compared to 2016 results (Table 5-3). In both SSPPAs and mitigation areas, botanists found two more localities of Mojave milkweed and six fewer individuals (Table 5-3). Since post-construction monitoring began in Year 1 (2014), the total number of localities of Mojave milkweed have increased by 3, and 60 additional plants have been recorded throughout the protection areas. An unknown number of Mojave milkweed plants recorded as "absent" may be observed in future years if there is sufficient precipitation to result in regrowth aboveground. There were numerous herbivory observations where black-tailed jack rabbits (*Lepus californicus*) had eaten the aboveground portions of Mojave milkweed and dug down to eat the upper portion of roots. Since Mojave milkweed have deep roots, it is unlikely that herbivory will result in death of these individuals.

5.2.2 Desert Pincushion

The total number of desert pincushion plants protected in 2017 was 157, which is above the 135 plants necessary to meet the 75 percent protection goal (Table 5-2). As compared to 2016 results, desert pincushion decreased survivorship in both localities and individuals in 2017 (Table 5-3). Between 2016 and 2017, 15 individuals have died in solar fields and 23 individuals have died in the mitigation areas for a total of 38 dead. It is unknown if desert pincushion is a perennial. Locations of desert pincushion (dead and alive) in protection areas are provided on Figures 5-2a and 5-2b.

5.2.3 Nine-awned Pappus Grass

As described in Section 2 of this report, protection of nine-awned pappus grass is also required in BIO-18. Protection of this species in the solar field with exclusionary fences was not performed (Solar Partners, 2010a). This is because this species is a "summer annual," meaning it germinates and grows in response to summer or fall rainfall and does not persist in exactly the same location year-to-year. Fall surveys were performed for this species in 2011 in compliance with BIO-18, and results of these surveys are described in Appendix D of the *2011 BIO-18 Annual Compliance Report* (CH2M, 2012a). The 75 percent protection goal for nine-awned pappus grass was attained in 2011, and no additional measures are required for compliance with BIO-18.

5.2.4 Parish's Club-cholla

Survival of Parish's club-cholla in the protection areas, RPTA-1, and CLA-2 has been relatively constant over time. In 2017, there were total of 154 individuals avoided; 17 in CLA-1, 3 CLA-2, 3 in NRPMA, and 131 in RPTA-1 (Table 5-2). Between 2016 and 2017, one small clonal clump of Parish's club-cholla died in RPTA-1. No observations of herbivory were documented on Parish's club-cholla, as compared to 24 signs of herbivory documented on Mojave milkweed and desert pincushions. The ecology of this species, including tightly oriented spines and smaller stems (as compared to the round, beehive-shaped desert pincushion or the lush, vegetative leaves of the Mojave milkweed), may be better adapted to resist or block herbivory.

5.2.5 Rusby's Desert Mallow

In the protection areas, three out of the seven Rusby's desert mallow were present and alive during Year 4 (2017) monitoring (Figure 5-1). In 2017, a new recruit was located in a the CLA-1 mitigation area. The second Rusby's desert mallow was the individual found in 2016 in the SSPPA established for a desert pincushion in Ivanpah 3. The third Rusby's desert mallow was in RPTA-1 and is one of the original four identified pre-construction that continues to persist. Four Rusby's desert mallow individuals were absent in 2017; one in Ivanpah 1, one in Ivanpah 3, and two in NRPMA. The individual in Ivanpah 1 has not been seen since May 2015, and even when observed this individual was very small and cryptic. It is possible that this individual may still persist underground and be visible during a year with sufficient environmental conditions. The Rusby's desert mallow SSPPA in Ivanpah 3 was observed in poor condition in 2016 and was dead in 2017. Both individuals of Rusby's desert mallow in the NRPMA have not been observed since 2012 and 2015, respectively. Since both individuals were located on the edge of ephemeral washes, it appears that they were scoured away during rain events. Seven additional Rusby's desert mallow were located outside the protection areas but still within the facility boundaries (see Section 5.2.7 for further discussion), bringing the total number of Rusby's on site to 10.

5.2.6 Plant Salvage and Transplantation

As described in the Revised Protection Plan (Solar Partners, 2010a), SSPPAs within the solar field for Parish's club-cholla were not planned because of the ease with which this species was expected to be salvaged and transplanted. Experience with transplanting this species to date has verified this initial assumption. The

approximate location of plants specified for salvage is shown on Figures 5-1 through 5-3 of the Revised Protection Plan (Appendix C).

Substantial numbers of special-status plants were salvaged, exceeding the Revised Protection Plan salvage goals (Solar Partners, 2010a). To date, 442 Mojave milkweeds, desert pincushions, Parish's club-cholla and Rusby's desert mallows have been salvaged from the solar field or impacted areas and transplanted into RPTA-1. The one Rusby's desert mallow transplanted into RPTA-1 continues to persist since transplantation in 2010. For the first two seasons, plants were watered regularly when water demands were high. After that, supplemental watering was reduced to more closely match natural conditions.

In addition to the Mojave milkweed, desert pincushion, Parish's club-cholla, and Rusby's desert mallow plants salvaged and replanted in the RPTA-1, approximately 430 desert pincushions in excess of the special-status plant protection goals were salvaged from Ivanpah 1, 2, and 3, and other areas impacted during construction. These individuals have been replanted into the Common Succulent Transplant Area (Figure 1-1).

Special-status plants were re-established in the Natural Gas Pipeline (NGL) corridor north of Ivanpah 3 to comply with BIO-18, Measure 8 (CEC, 2010). The location of the NGL is shown on Figure 1-1. Some of the salvaged plants have been used in revegetation along the NGL corridor; other plants will be used in revegetation of the short-term disturbance areas, and the rest will be held in reserve, in case remedial measures are needed. The five Rusby's desert mallow transplanted on the NGL have not survived for unknown reasons, since the individuals were fenced. Special-status plant revegetation success criteria on the NGL was met in 2016 and monitoring is now complete (CH2M, 2017b).

5.2.7 Recruits Located Outside of the Protection Areas

With limited success observed during Year 1 (2014) and Year 2 (2015) on transplant survival and herbivory in transplant areas (NGL and RPTA-1), in Year 3 (2016), the qualified botanist recommended that the project leave individual special-status plants in place, where possible. This procedure is in alignment with BIO-18 Measure 5 goal to ensure healthy and reproductive populations of special-status plants that can be sustained in perpetuity. The procedure includes training operations staff to recognize that new stakes and small, exclusionary fences are protecting sensitive biological resources, and to avoid those locations.

During Year 4 (2017) monitoring, a total of 45 additional special-status species were observed persisting in the project facility outside of the protection areas; 29 Mojave milkweeds, 2 desert pincushions, 7 Parish's club-cholla, and 7 Rusby's desert mallows (Figures 5-1 through 5-3). These individuals were not used in calculating the 75 percent success criterion; however, these additional plants bring the total number of plants above the pre-construction baseline numbers. Because of the rarity of Rusby's desert mallow, these seven individuals were protected with a small, exclusionary fence (Appendix B – representative photos). The other 38 individuals were marked with several stakes around the perimeter in the solar field or undeveloped areas in the CLA.

5.2.8 Special-status Plant Buffer Environmentally Sensitive Areas

Surveys of the 250-foot (76-meter) buffer were performed in spring 2010 and fall 2011 as required and were updated with any new finds during construction (CH2M, 2012a). As required, special-status plant localities identified within the 250-foot (76-meter) buffer are denoted on project plans and figures as ESAs, and signs were installed next to them (Figures 5-1 through 5-3).

Annual checks and repairs of the signs adjacent to the plants were performed between 2011 through 2017 as part of the protection of adjacent occurrences of special-status plants. Additional maintenance and persistence checks during operations and repairs or upkeep of the sensitive resource signs will be conducted to comply with BIO-18 Measure 4.

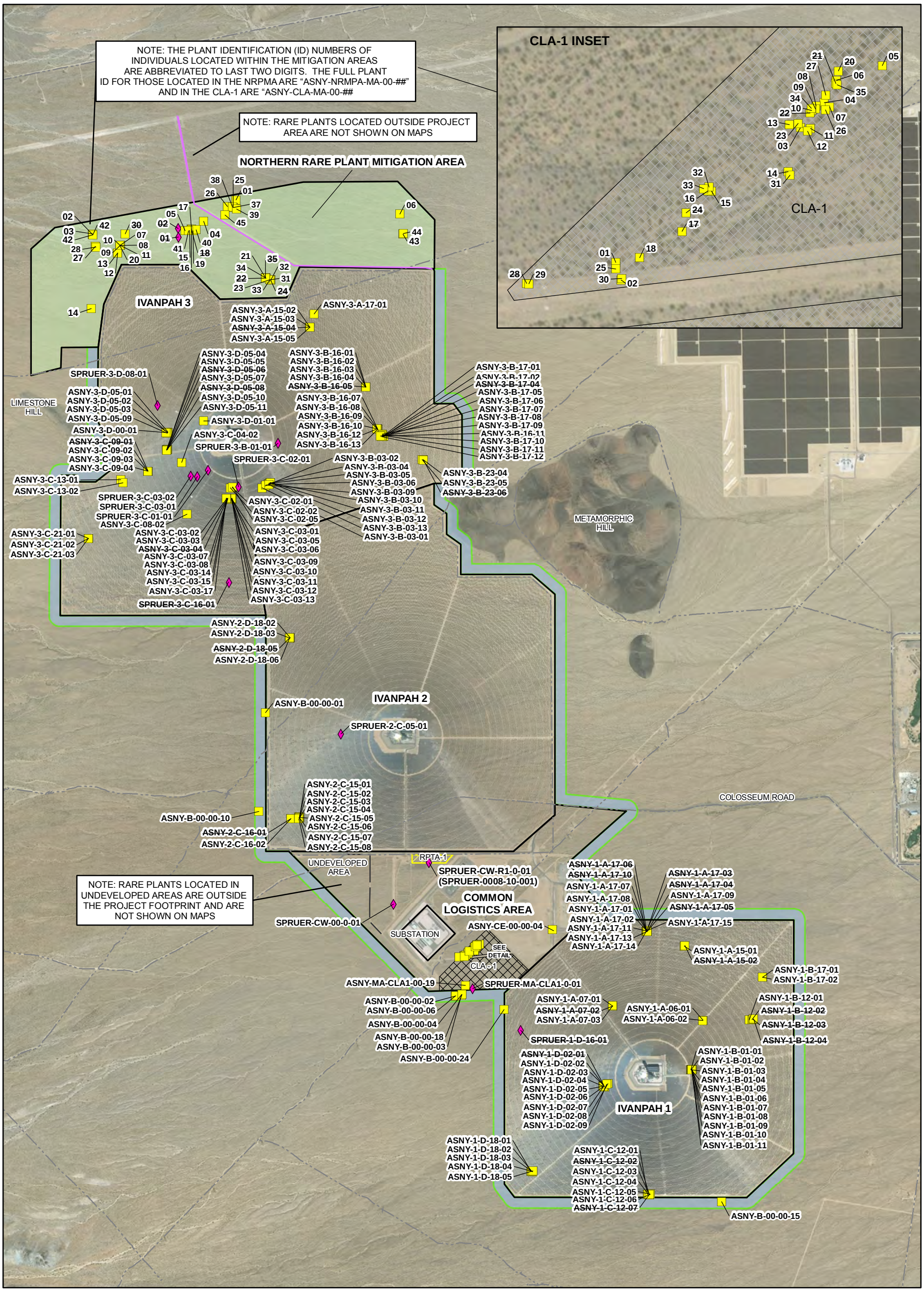
During Year 4 (2017) monitoring, botanists visited the ESAs as a control population for those individuals located in the protection areas. A total of 36 live individuals were observed during Year 4 (2017) monitoring of the 250-foot (76-meter) facility buffer, Mojave milkweed (20), desert pincushion (12), and Parish's club-cholla (4). There are two dead desert pincushions. During Year 4 (2017) monitoring, botanists found one desert pincushion and one Mojave milkweed additionally in the facility buffer. The new desert pincushion was signed and protected in accordance with BIO-18 Measure 4 requirements. The new Mojave milkweed was a new individual in an existing locality, so only a new metal tag was necessary to denote this new individual.

5.3 Additional Special-Status Plant Compliance Monitoring

5.3.1 Year 5 (2018) Post-Construction Monitoring

Monitoring of the protection areas and other elements of the Special-status Plant Protection Program will be conducted as described in the Revised Protection Plan (Solar Partners, 2010a). Monitoring data will be collected and assessed over the 10-year monitoring period to identify short- and long-term persistence trends. Short- and long-term protection goals, and the monitoring procedures for each special-status species, are described in Sections 7 and 8 of the Revised Protection Plan (Solar Partners, 2010a).

Success criterion monitoring was met during Year 4 (2017) monitoring for all species, and BIO-18's 75 percent protection goals were attained, and success criterion monitoring is now complete. Since the 75 percent protection goals were met, remedial measures as described in the Remedial Action Plan (Solar Partners', 2010b) are not necessary. In accordance with the Revised Protection Plan, Year 5 (2018) long-term persistence trend monitoring will continue for 10 years post construction, regardless of the success criterion being met earlier in the period. Annual monitoring reports following construction will be provided by January 31 of each calendar year within the 10-year monitoring timeframe. The Year 5 (2018) post-construction monitoring report will be submitted by January 31, 2019.



LEGEND

- Mojave milkweed (ASNY) *Asclepias nyctaginifolia*
- Rusby's Desert Mallow (SPRUER) *Sphaeralcea rusbyi var. eremicola*

ASNY - 0060 Plant Present

~~**ASNY - 0100**~~ Plant Missing or Dead

Note:
1) Rare plant localities within the 250-foot buffer are Environmental Sensitive Areas (ESAs).

2) Several plants shown are located outside SSPPAs in the solar field and are protected by small exclusionary fences or stakes. These individuals do not count towards success criteria.

- Trails and Roads
- Project Site
- 250-foot Site Buffer
- 50-foot Corridor of Gas Line
- Rare Plant Mitigation Area
- Mitigation Area
- Rare Plant Transplantation Area (RPTA-1)

Aerial Imagery courtesy of **ESRI Basemaps (NAIP 2016: April 20, 2016)**

N

0 1,000 2,000 Feet

Figure 5-1
Location of Mojave Milkweed and Rusby's Desert Mallow
Year 4 (2017)
Post-Construction Monitoring Report
Ivanpah Solar Electric Generating System
San Bernardino County, California

ch2m

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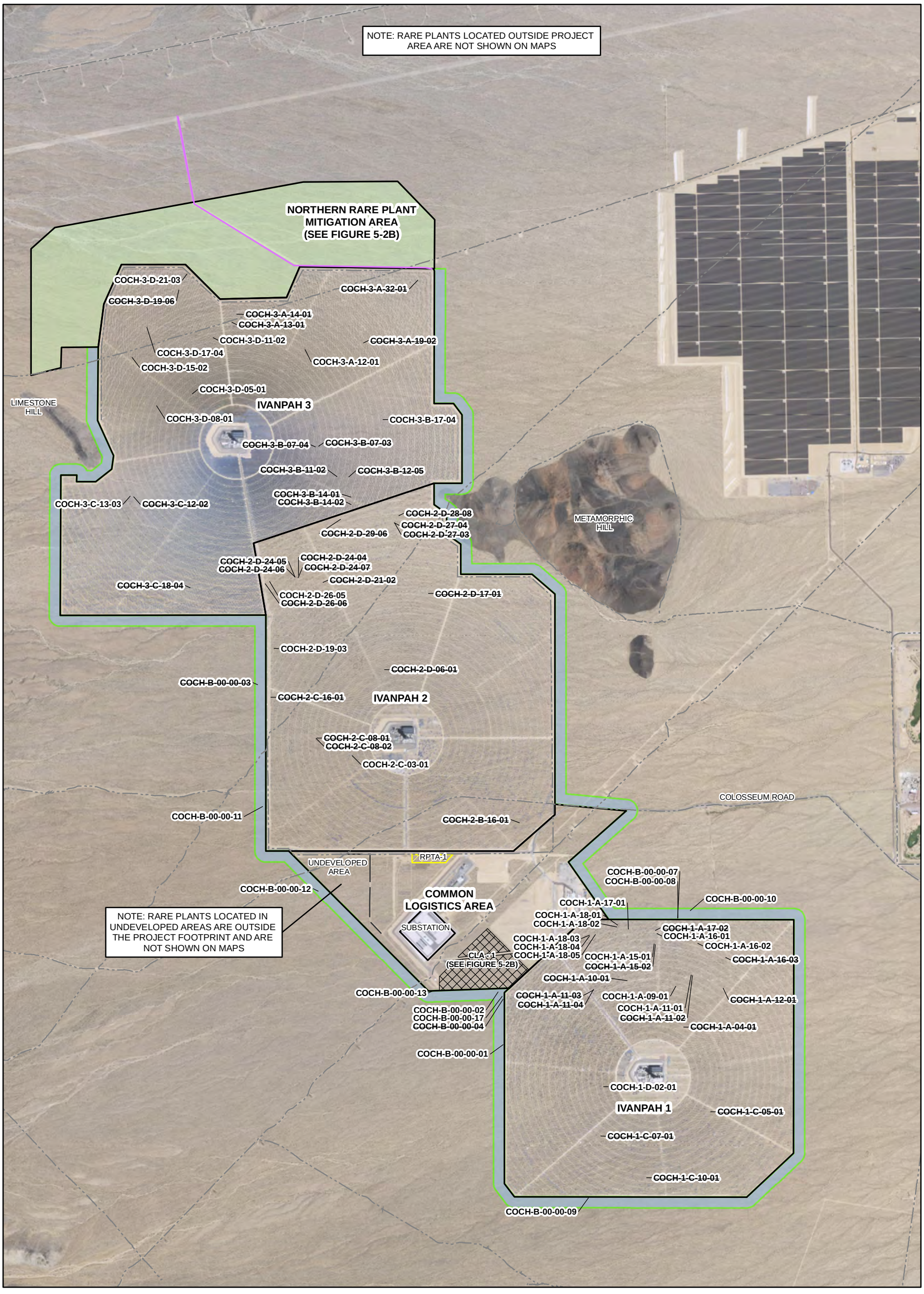


LEGEND

Desert pincushion
Coryphantha chlorantha (COCH)

COCH - 1210 Plant Present

~~**COCH - 1213**~~ Plant Missing or Dead

Note:
1) Rare plant localities within the 250-foot buffer are Environmental Sensitive Areas (ESAs).

2) Several plants shown are located outside SSPPAs in the solar field and are protected by small exclusionary fences or stakes. These individuals do not count towards success criteria.

- Trails and Roads
- Project Site
- 250-foot Site Buffer
- 50-foot Corridor of Gas Line
- Rare Plant Mitigation Area
- Mitigation Area
- Rare Plant Transplantation Area (RPTA-1)

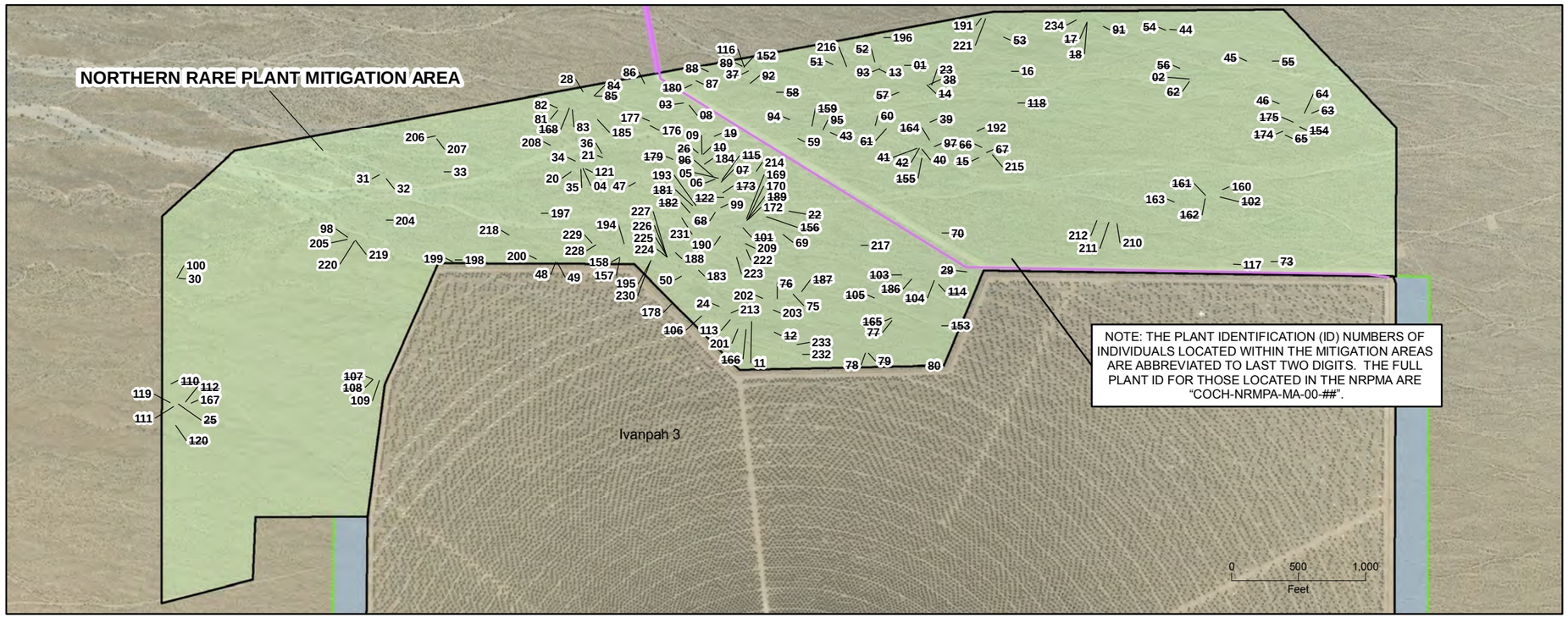
Aerial Imagery courtesy of
ESRI Basemaps (NAIP 2016):
April 20, 2016

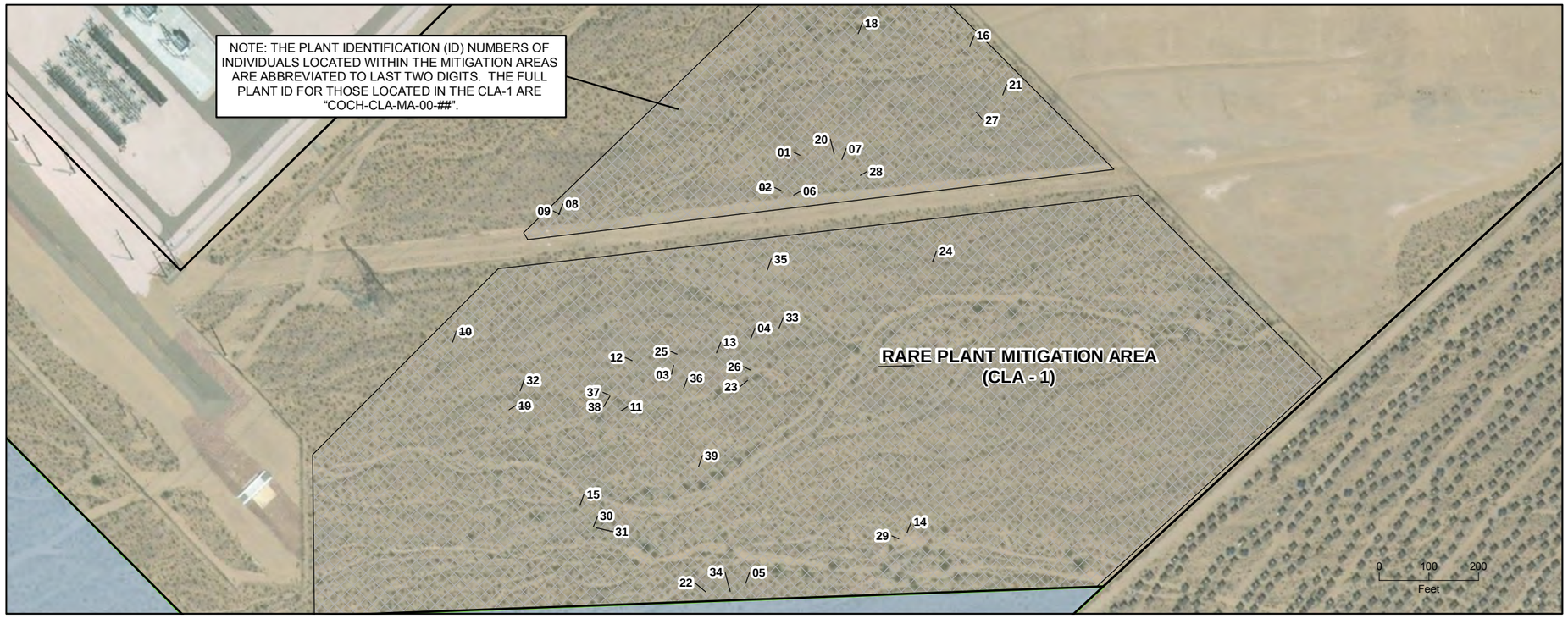
N

0 1,000 2,000
Feet

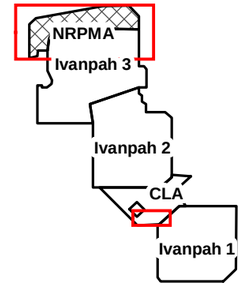
Figure -2a
Location o esert incus ion ear 2017 ost- onstruction Monitoring Re ort
Ivanpah Solar Electric Generating System
San Bernardino County, California

ch2m





VICINITY MAP



LEGEND

Desert pincushion
Coryphantha chlorantha (COCH)

- Mitigation Area
- Rare Plant Mitigation Area
- 250-foot Site Buffer
- 50-foot Corridor of Gas Line
- Project Site

COCH - 1210 Plant Present
~~COCH - 1213~~ Plant Missing or Dead

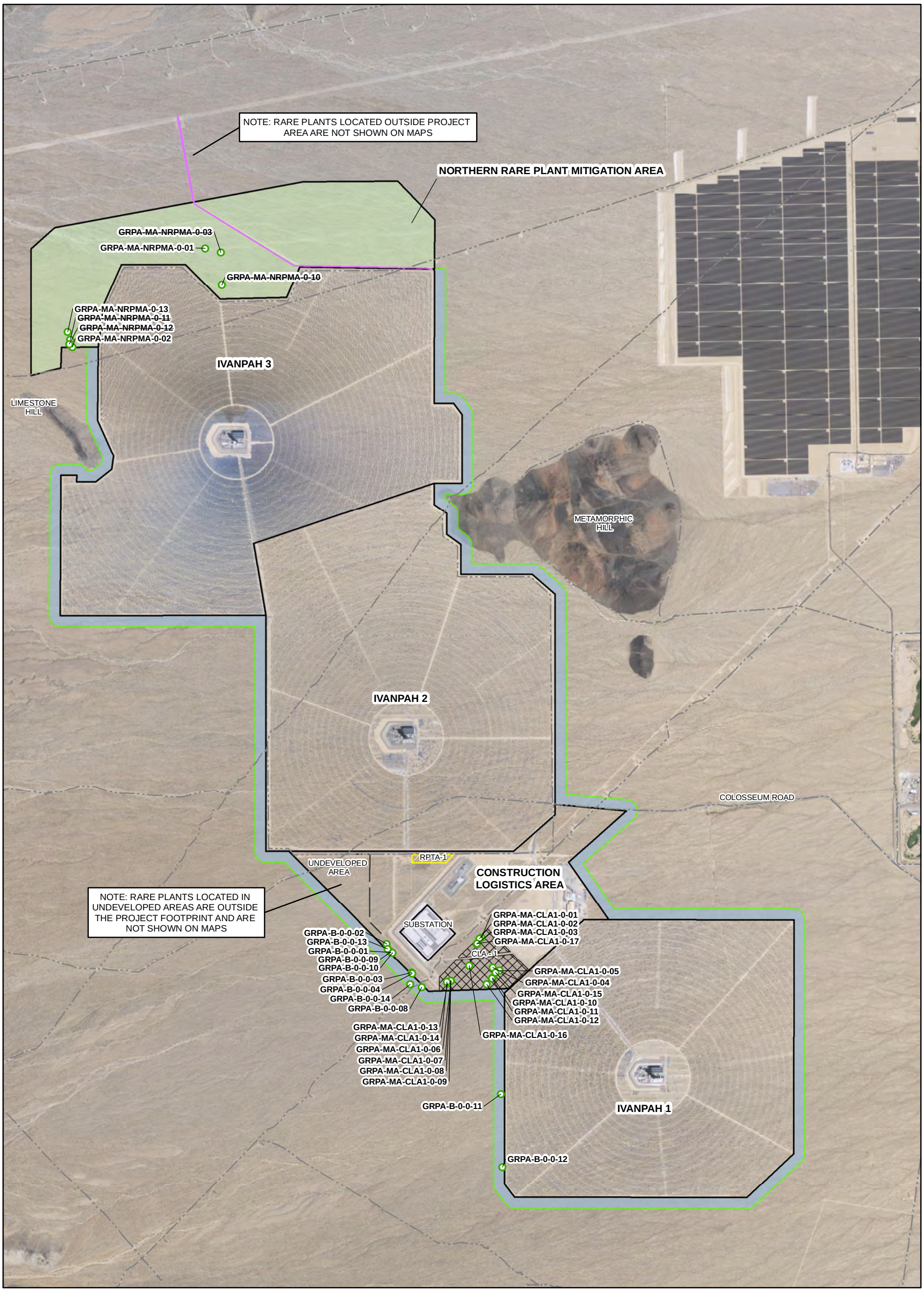
Note:
1) Rare plant localities within the 250-foot buffer are Environmental Sensitive Areas (ESAs).

Aerial Imagery courtesy of
ESRI Basemaps (NAIP 2016):
April 20, 2016

N

Figure -2
Location o esert incus ion
ear 2017 - Mitigation Areas
ost- onstruction Monitoring Re ort
Ivanpah Solar Electric Generating System
San Bernardino County, California

ch2m



LEGEND

Parish's club cholla
Grusonia (=Opuntia) parishii (GRPA)

GRPA - 00002 Plant Present

~~**GRPA - 00002**~~ Plant Missing or Dead

Trails and Roads
Project Site
250-foot Site Buffer
50-foot Corridor of Gas Line
Rare Plant Mitigation Area
Mitigation Area
Rare Plant Transplantation Area (RPTA-1)

Note:
1) Rare plant localities within the 250-foot buffer are Environmental Sensitive Areas (ESAs).
2) GRPA-2032 is in the 250-foot buffer.
GRPA-0015 is in the NRPMA.

N

0 1,000 2,000
Feet

Figure 5-3
Location of Parish's Club-cholla
Year 4 (2017)
Post-Construction Monitoring Report
Ivanpah Solar Electric Generating System

SECTION 6

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Appendix A
Condition of Certification BIO-18

SPECIAL-STATUS PLANT IMPACT AVOIDANCE AND MINIMIZATION

BIO-18 The project owner shall implement the following measures to avoid and minimize impacts to special-status plant species. Items 2, 3, 5, 6, 7, 10, and 11 are recommended exclusively by Energy Commission staff.

1. On-Site Plant Avoidance/Minimization Areas: To the extent feasible the project owner shall avoid and minimize disturbance to all special-status plant species within the project site. Impact avoidance (i.e., protection from project-related impacts of any kind through removal of acreage from the project footprint) and impact minimization efforts shall occur in all feasible locations. Impact avoidance shall focus on areas that support the highest density and diversity of special-status plant species and shall remove, at a minimum, the three areas totaling 476 acres and labeled "Rare Plant Mitigation Area" in Project Description Figure 13 from the Staff's FSA Addendum dated March 16, 2010 (Exhibit 315). The natural gas pipeline shall be aligned and narrowed to avoid special-status plant occurrences north of Ivanpah 3 as depicted in Project Description Figure 13. Impact minimization shall be conducted throughout the site. Impact minimization within the solar field shall consist of protecting small perimeters ("halos") around Mojave milkweed, desert pincushion, and Rusby's desert-mallow plants as indicated in the applicant's January 2010 draft Special-Status Plant Avoidance and Protection Plan (Exhibit 81, Appendix B).

2. Protection Goals : The project owner shall implement all feasible measures to protect 75 percent of the individuals of Mojave milkweed, Rusby's desert-mallow, desert pincushion, nine-awned pappus grass, and Parish's club-cholla within the project area (as mapped in Figure 5-3 of the applicant's final botanical survey report [CH2M Hill 2008x]). Each year during construction the measurement of percent protection achieved shall be calculated based on a comparison of numbers of individuals of each of these five species present in this area identified before construction compared to numbers remaining post –construction. These pre- and post-construction plant numbers shall be based on floristic surveys conducted by a qualified botanist.

3. Identify and Establish Special-Status Plant Protection Areas: The project owner shall identify Special-Status Plant Protection Areas for exclusion from the project footprint and avoidance of project-related impacts of any kind to facilitate achieving the 75 percent

protection goal. To accurately identify the boundaries of these areas, pre-construction floristic surveys shall be conducted by a qualified botanist at the appropriate time of year for special-status plant identification, including both spring and summer/fall blooming periods. Summer/fall surveys will be conducted after rains that are likely to cause plant germination and may be suspended in years where no such rains occur. The surveys shall encompass at a minimum the three areas totaling 476 acres and labeled "Rare Plant Mitigation Area" in Project Description Figure 13 and shall extend 150 feet on both sides of the proposed gas pipeline alignment and 250 feet out from the project fenceline. The locations of the Special-Status Plant Protection Areas shall be clearly depicted on all final maps and project drawings and descriptions for exclusion of all project activities.

4. Protection of Adjacent Occurrences: The project owner shall identify special-status plants occurrences within 250 feet of the project fenceline during the pre-construction plant surveys described above. A qualified botanist shall delineate the boundaries of these special status plant occurrences prior to the initiation of ground disturbing activities. These flagged special status plant occurrences shall be designated as Environmentally Sensitive Areas on plans and specifications, and shall be protected from accidental impacts during construction (e.g. vehicle traffic, temporary placement of soils or vegetation) and from the indirect impacts of project operation (e.g., herbicide spraying, changes in upstream hydrology, etc).

5. Develop and Implement a Special-Status Plant Protection and Monitoring Plan: The project owner shall develop and implement a Special-Status Plant Protection and Monitoring Plan for special-status plants occurring within the Special-Status Plant Protection Areas and on-site areas designated for impact minimization. The goal of the Special-Status Plant Protection and Monitoring Plan shall be to maintain the special-status plant species as healthy, reproductive populations that can be sustained in perpetuity. At a minimum, the Special-Status Plant Protection and Monitoring Plan shall:

   - establish baseline conditions and numbers of the plant occurrences in all protected areas (i.e., those to be excluded from the footprint and on-site areas to be protected) and success standards for protection of special-status plant occurrences;

   - provide information about microhabitat preferences and fecundity, essential pollinators, reproductive biology, and

propagation and culture requirements for each special-status species;

- describe measures (e.g., fencing, signage) to avoid direct construction and operation impacts to special-status plants within all protected areas;
- describe measures to avoid or minimize indirect construction and operations impacts to special-status plants within protected areas (e.g., runoff from mirror-washing, use of soil stabilizers/tackifiers, alterations of hydrology from drainage diversions, erosion/sedimentation from disturbed soils upslope, herbicide drift, the spread of non-native plants, etc);
- provide a monitoring schedule and plan for assessing the numbers and condition of special-status plants; and
- identify specific triggers for remedial action (e.g., numbers of plants dropping below a threshold).

6. Develop Special-Status Plant Remedial Action Plan: The project owner shall develop a detailed Special-Status Plant Remedial Action Plan to be implemented if special-status plants within the 476 acres of protected area and on-site minimization "halos" fail to meet success standards described in the Special-Status Plant Protection and Monitoring Plan. The Plant Remedial Action Plan shall include specifications for ex-situ/offsite conservation of seed and other propagules, and the seed bank and other symbionts contained in the topsoil where these plants occur. The remedial measures described in the Plant Remedial Action Plan shall not substitute for plant protection or other mitigation measures. The Special-Status Plant Remedial Action Plan shall include, at a minimum:
   - guidelines for pre-construction seed collection (and/or other propagules) for each species;
   - specifications for collecting, storing, and preserving the upper layer of soil containing seed and important soil organisms;
   - detailed replacement planting program with biologically meaningful quantitative and qualitative success criteria (see Pavlik 1996), monitoring specifications, and triggers for remedial action; and
   - ecological specifications for suitable planting sites.
7. Seed Collection: Implementation of the Special-Status Plant Remedial Action Plan would require a source of local source of seeds/propagules. In addition, seed collection would serve to

preserve germplasm in the event that all mitigation fails. The project owner shall develop and implement a Seed Collection Plan to collect and store seed for Mojave milkweed, Rusby's desert-mallow, desert pincushion, nine-awned pappus grass, and Parish's club-cholla. The source of these seeds shall be from plants proposed for removal within the project footprint. The project owner shall engage the services of a qualified contractor approved by the CPM to undertake seed collection and storage.

8. Gas Pipeline Revegetation and Monitoring: In the natural gas pipeline construction corridor where disturbed soils will be revegetated, the topsoil excavated shall be segregated, kept intact, and protected, under conditions shown to sustain seed bank viability. At a minimum, the top 2 cm of the soil shall be separately stored and preserved. Topsoil salvage, storing, and replacement shall be replaced in its original vertical orientation following pipeline installation ensuring the integrity of the top 2 cm in particular. The project owner shall prepare a Gas Pipeline Revegetation and Monitoring Plan targeted at re-establishment of Rusby's desertmallow, desert pincushion, Mojave milkweed, and potentially other special-status plant species. The Gas Pipeline Revegetation and Monitoring Plan shall identify success criteria for re-establishment and shall continue for a period of no less than 10 years until the defined success criteria are achieved. The Gas Pipeline Revegetation and Monitoring Plan shall include measures for seeding or other remedial actions. If no individuals of Rusby's desert-mallow, desert pincushion, or Mojave milkweed, are located during the first year of monitoring, the project owner shall conduct supplemental seeding or other remedial measures in the area disturbed by natural gas pipeline installation.

9. Surveys on Acquired and Public Lands: The project owner shall conduct floristic surveys for Rusby's desert-mallow and Mojave milkweed on all lands that will be acquired as part of the desert tortoise compensatory mitigation requirements (see Condition of Certification BIO-17). The goal of the surveys shall be to identify at least the same number of occurrences on off-site compensation or public lands as the number of occurrences in the project area excluding the occurrences in the Special-Status Plant Protection Areas in Project Description Figure 13. If this goal is not met by surveys on proposed acquisition lands, additional surveys shall be conducted within suitable habitat on public lands. To be counted toward fulfillment of the goal the occurrences must reflect new data not previously documented in other survey efforts. The survey requirements shall include the following:

- All surveys shall be conducted by a qualified botanist in accordance with BLM, CDFG, and CNPS plant survey guidelines;
- Surveys shall occur the first spring after construction begins and continue each year for a maximum of ten years until the same number of Mohave milkweed and Rusby's desert-mallow occurrences are identified on acquisition lands and/or public lands as located outside Special-Status Plant Protection Areas;
- For each year surveys are conducted yearly survey results shall be provided to the CPM, BLM's Authorized Officer and CDFG, and shall include CNDDB field survey forms for all special-status plant species encountered during the surveys; and
- All field survey forms shall be submitted to the CNDDB at the time of submittal to the CPM, BLM and CDFG.
- The project owner's qualified botanist shall submit a completion report documenting fulfillment of the target goals and which describe the number of new, previously undiscovered occurrences identified and mapped. Locations shall be reported with GPS coordinates compatible with inclusion in a GIS database.

10. Security for Implementation of Plans: The project owner shall provide security adequate to fund implementation of the Special-Status Plant Protection and Monitoring Plan, the Special-Status Plant Remedial Action Plan for the life of the project, as well as the Seed Collection Plan, and the Gas Pipeline Revegetation Monitoring Plan.

11. Acquire Off- Site Occurrence of Mojave Milkweed or Adjacent Land: The project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes at least 30 acres supporting a viable occurrence of Mojave milkweed (or suitable habitat adjacent to a known occurrence). The terms and conditions of this acquisition or easement shall be as described in Condition of Certification BIO-17 with the additional criteria that the Mojave milkweed mitigation lands: 1) provide habitat for the special-status plant species that is of similar or better quality (e.g., in terms of native plant composition) than that impacted; 2) contain OR abut a known occurrence of Mojave milkweed, ideally with populations that are stable, recovering, or likely to recover, that shares the same watershed as the land; and 3) be adequately sized and buffered to support self-sustaining special-status plant populations. These mitigation lands may be included with the desert tortoise mitigation lands ONLY if the above criteria are met. Estimated security for acquisition of compensation lands for Mojave milkweed is

$107,265. If the project owner elects to construct the project in two phases in accordance with Condition of Certification BIO-22, the project owner shall provide Security in the amount of $47,755 prior to initiating any ground-disturbing activities associated with Phase 1, and shall provide Security in the amount of $77,510 prior to initiating any ground-disturbing activities associated with Phase 2. If sufficient new Mojave milkweed occurrences are discovered on desert tortoise compensation lands (not public lands) in accordance with item 9 above prior to acquiring this land, the associated security shall be refunded to the project owner.

Verification: No less than 30 days following the publication of the Energy Commission Decision the project owner shall submit final maps and design drawings depicting the location of Special-Status Plant Protection Areas within and adjacent to the project site, and shall identify the species and numbers of plants within each of the Special-Status Plant Protection Areas.

No less than 30 days following the publication of the Energy Commission Decision the project owner shall submit draft versions of the Special-Status Plant Protection and Monitoring Plan, the Special-Status Plant Remedial Action Plan, the Seed Collection Plan, and the Gas Pipeline Revegetation Monitoring Plan for review by the CPM, BLM's Authorized Agent, and CDFG. The project owner shall also provide a cost estimate for implementation of these plans which is subject to approval by the CPM, BLM's authorized agent, and the CDFG. The final plans shall be submitted for approval by the CPM, in consultation with BLM's Authorized Agent, CDFG, and CNPS within 90 days of the publication of the Commission Decision. The final plans shall be incorporated into the BRMIMP. At this time, the project owner shall also provide security sufficient to fund the implementation of the plans.

Within 30 days of the start of construction, the project owner shall submit copies of the contract with the CPM-approved seed contractor and the check for seed collection and curation fees to the CPM.

The project owner shall identify special-status plants occurrences within 250 feet of the project fence line during the pre-construction plant surveys described above. A qualified botanist shall delineate the boundaries of these special status plant occurrences at least 30 days prior to the initiation of ground disturbing activities.

On January 31st of each year following construction the project owner's qualified botanist shall submit a report, including CNDDB field survey forms, describing the results of off-site plant surveys for Mojave milkweed and Rusby's desert-mallow to the BLM's authorized officer, the CPM, CDFG, and CNDDB. Submittal of survey reports shall continue for a maximum of 10 years until the same number of occurrences in the project area excluding the occurrences in the

Special-Status Plant Protection Areas. The project owner's qualified botanist shall submit a completion report documenting fulfillment of the target goals and which describe the number of new, previously undiscovered occurrences identified and mapped using GIS techniques for each species. Mapping results shall include GPS coordinates of the plants found.

The Designated Biologist shall maintain written and photographic records of the tasks described above, and summaries of these records shall be submitted along with the Monthly Compliance Reports to the CPM, BLM Authorized Agent, and CDFG. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report for a period not less than 10 years for the Gas Pipeline Revegetation Plan, and for the life of the project for the Special-Status Plant Protection and Monitoring Plan, and the Special-Status Plant Remedial Action Plan, including funding for the seed storage.

No less than 90 days prior to acquisition of the parcel(s) containing or adjacent to a known Mojave milkweed occurrence, the project owner, or a third-party approved by the CPM, in consultation with CDFG, shall submit a formal acquisition proposal to the CPM and CDFG describing the parcel(s) intended for purchase.

Draft agreements to delegate land acquisition to CDFG or an approved third party and agreements to manage compensation lands shall be submitted to Energy Commission staff for review and approval (in consultation with CDFG) prior to land acquisition. Such agreements shall be mutually approved and executed at least 60 days prior to start of any project-related ground disturbance activities. The project owner shall provide written verification to the CPM that the compensation lands have been acquired and recorded in favor of the approved recipients(s). Alternatively, before beginning project ground-disturbing activities, the project owner shall provide Security in accordance with this condition. Within 90 days after the lands purchase, as determined by the date on the title, the project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFG, for the compensation lands and associated funds.

Appendix B
Representative Photographs from 2017 Post-construction Monitoring

Photograph B-1
Fruiting Mojave Milkweed (ASNY-1-B-01-03) in a Special-status Plant Protection Area (SSPPA) in Ivanpah 1.

Photograph B-2
Flowering Mojave milkweed (ASNY-1-B-01-01) in Ivanpah 1 SSPPA.

Photograph B-3
Overview of Mojave Milkweed (ASNY-2-D-18-02) in Ivanpah 2 SSPPA. This plant is located to right of the blue and white stake.

Photograph B-4
Mojave milkweed (ASNY-3-B-16-09) in Ivanpah 3 SSPPA. This plant is located in desert wash habitat.

Photograph B-5
Overview of Mojave milkweed (ASNY-3-B-23-04) in Ivanpah 3 SSPPA.

Photograph B-6
Several Mojave milkweeds (ASNY-3-D-05-01) in Ivanpah 3 SSPPA.

Photograph B-7
Budding Mojave milkweed (ASNY-3-C-03-10) in Ivanpah 3 SSPPA.

Photograph B-8
Mojave milkweed (ASNY-B-00-00-02) in 250-foot site buffer. The buffer locality is signed as an Environmentally Sensitive Area (ESA).

Photograph B-9
Mojave milkweed (ASNY-MA-CLA1-00-02) in Construction Logistics Area 1 (CLA-1) Mitigation Area.

Photograph B-10
Mojave milkweed (ASNY-MA-CLA1-00-07) in the CLA-1 Mitigation Area.

Photograph B-11
Several Mojave milkweeds (ASNY-MA-CLA1-00-18) in the CLA-1 Mitigation Area.

Photograph B-12
Mojave milkweed (ASNY-MA-NRPMA-00-04) in the Northern Rare Plant Mitigation Area (NRPMA).

Photograph B-13
Overview of Mojave milkweed (ASNY-MA-NRPMA-00-25) in the NRPMA. The plant is located below the blue and white stake.

Photograph B-14
Herbivory on Mojave milkweed (ASNY-MA-NRPMA-00-19) in the NRPMA.

Photograph B-15
Mojave milkweed (ASNY-MA-NRPMA-00-40) in the NRPMA.

Photograph B-16
Desert pincushion (COCH-1-A-17-01) in Ivanpah 1 SSPPA. The plant has signs of herbivory.

Photograph B-17
Desert pincushion (COCH-1-A-18-03) in Ivanpah 1 SSPPA. This plant has signs of herbivory.

Photograph B-18
Desert pincushion (COCH-2-C-03-01) Ivanpah 2 SSPPA. The plant has signs of herbivory.

Photograph B-19
Desert pincushion (COCH-2-D-26-05) in Ivanpah 2 SSPPA.

Photograph B-20
A polycephalus desert pincushion (COCH-3-D-05-01) in Ivanpah 3 SSPPA. This plant has signs of herbivory.

Photograph B-21
A polycephalus desert pincushion (COCH-3-D-11-02) in Ivanpah 3 SSPPA. This plant has signs of herbivory.

Photograph B-22
Overview of desert pincushion (COCH-3-D-17-04) in Ivanpah 3 SSPPA. This polycephalus individual has five heads.

Photograph B-23
A polycephalus desert pincushion (COCH-B-00-00-01) in 250-foot site buffer. This individual has five heads.

Photograph B-24
Desert pincushion (COCH-B-00-00-12) in 250-foot site buffer. The buffer locality is signed as an ESA.

Photograph B-25
Overview of desert pincushion (COCH-MA-CLA1-00-09) in CLA-1 Mitigation Area.

Photograph B-26
Closeup of desert pincushion (COCH-MA-NRPMA-00-30) in CLA-1 Mitigation Area.

Photograph B-27
Overview of a polycephalous desert pincushion (COCH-MA-CLA1-00-12) in CLA-1 Mitigation Area. This plant has seven heads.

Photograph B-28
Desert pincushion (COCH-MA-NRPMA-00-206) in the NRPMA.

Photograph B-29
One inch diameter desert pincushion (COCH-MA-NRPMA-00-220) in the NRPMA. This plant was found in 2017.

Photograph B-30
Dead desert pincushion (COCH-MA-NRPMA-00-93) in the NRPMA. The base and spines of the plant are still visible near the metal nail.

Photograph B-31
Desert pincushion (COCH-MA-NRPMA-00-44) in the NRPMA.

Photograph B-32
Rusby's desert mallow (SPRUER-3-D-08-01). This plant was in a desert pincushion SSPPA in Ivanpah 3.

Photograph B-33
Rusby's desert mallow (SPRUER-MA-CLA1-0-01) in CLA-1 Mitigation Area.

Photograph B-34
Several Rusby's desert mallows were found in the solar field, outside of the SSPPA or Mitigation Area. These individuals were left in place and protected with a small fence. This Rusby's desert mallow (SPRUER-2-C-05-01) is in Ivanpah 2 solar field.

Photograph B-35
Close-up photo of buds and leaves of Rusby's desert mallow (SPRUER-3-B-01-01) in Ivanpah 3 solar field. This plant was left in place and protected with a small fence.

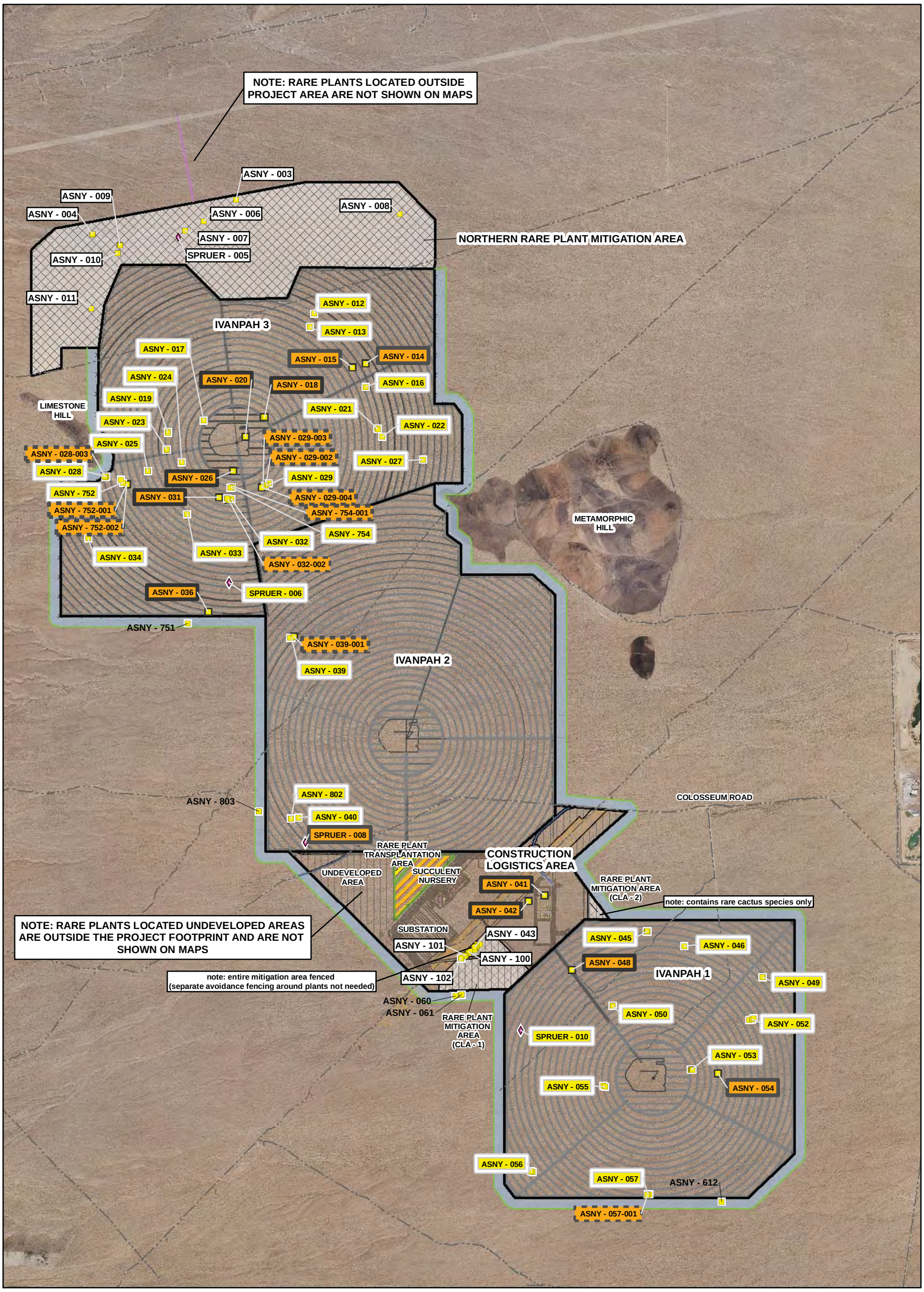
Photograph B-36
Parish's club-cholla (GRPA-B-0-0-01) in the 250-foot facility buffer.

Photograph B-37
Overview of Parish's club-cholla (GRPA-MA-CLA1-0-01) in the CLA-1 Mitigation Area.

Photograph B-38
Overview of Parish's club-cholla (GRPA-MA-CLA1-0-04) in the CLA-1 Mitigation Area.

Photograph B-39
Parish's club-cholla (GRPA-MA-NRPMA-0-01) in the NRPMA.

Appendix C
Revised Special-status Plant Protection Plan Figures 5-1 through 5-3 (Solar Partners, 2010a)



LEGEND

Mojave Milkweed
Asclepias nyctaginifolia (ASNY)

Rusby's desert mallow
Sphaeralcea rusbyi var. eremicola (SPRUER)

Rare Plant Locality ID:	Rare Plant Treatment:
ASNY- 006	Special-Status Plant Protection Area (SSPPA)
ASNY-018	Salvaged
ASNY-057-001	Plant salvaged from a fenced (avoided) locality
ASNY-003	Mitigation Area (Not fenced or salvaged)
ASNY-060	Not Fenced or Salvaged (Located outside of Project Impact Area)

- Trails and Roads
- 250-ft Site Buffer
- 50-foot Corridor of Gas Line
- Project Site
- Mitigation Area
- Rare Plant Transplantation Area
- Succulent Nursery
- Undeveloped Area

DRAFT

Notes:
1) Rare plant avoidance fencing, salvage and mitigation locations based on project design dated July 7, 2010.

2) Rare cactus localities are not shown on this map.

3) Rare plant localities within the 250-foot buffer are Environmental Sensitive Areas (ESAs).

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Figure 5-1
The Location of Mojave Milkweed and Rusby's Desert Mallow Localities to be Fenced, Salvaged or Included in Mitigation Area
Ivanpah Solar Electric Generating System

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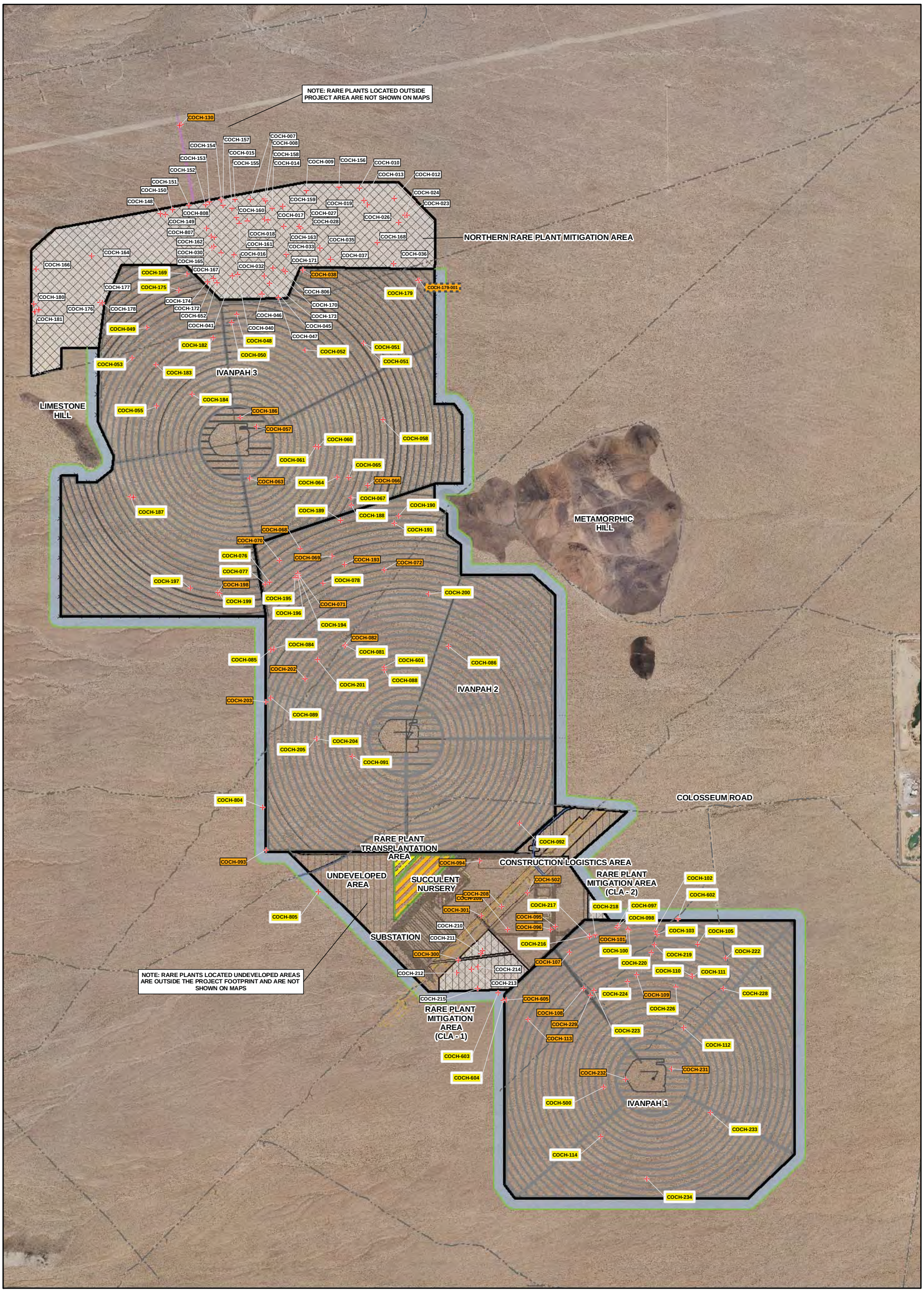

LEGEND

+ Desert pincushion
Coryphantha chlorantha (COCH)

Rare Plant Locality ID:	Rare Plant Treatment:
COCH-112	Special-Status Plant Protection Area (SSPPA)
COCH-186	Salvaged
COCH-179-001	Plant salvaged from a fenced (avoided) locality
COCH-161	Mitigation Area (Not fenced or salvaged)
COCH-603	Not Fenced or Salvaged (Located outside of Project Impact Area)

- Trails and Roads
- 250-ft Site Buffer
- 50-foot Corridor of Gas Line
- Project Site
- Mitigation Area
- Rare Plant Transplantation Area
- Succulent Nursery
- Undeveloped Area

DRAFT

Notes:
1) Rare plant avoidance fencing, salvage and mitigation locations based on project design dated July 7, 2010.

2) Rare plant localities within the 250-foot buffer are Environmental Sensitive Areas (ESAs).

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Figure 5-2
Location of Desert Pincushion Localities to be Fenced, Salvaged or Included in Mitigation Area
Ivanpah Solar Electric Generating System

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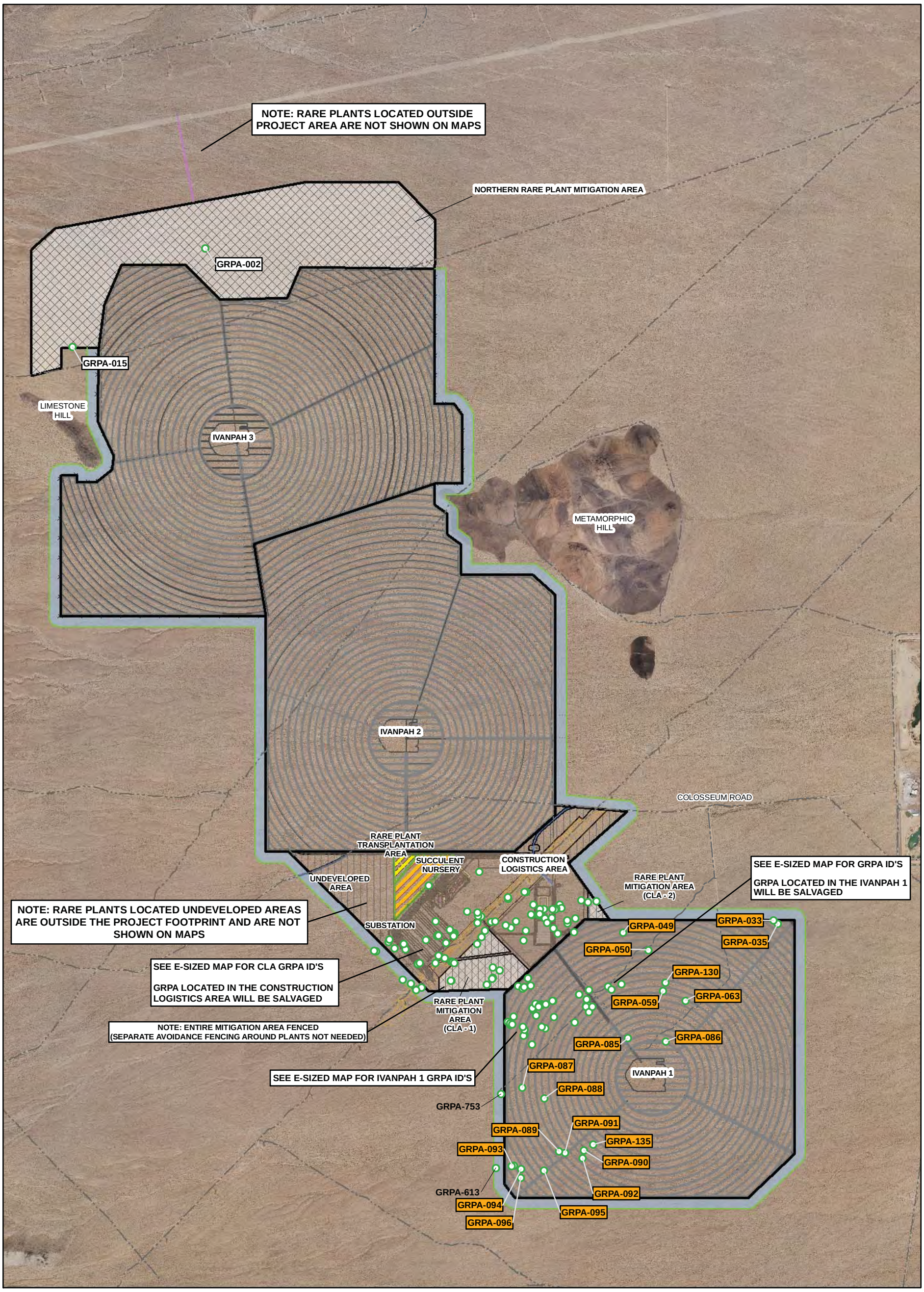

LEGEND

Parish's club cholla
Grusonia (=Opuntia) parishii (GRPA)

Rare Plant Locality ID:	Rare Plant Treatment:
GRPA- 000	Special-Status Plant Protection Area (SSPPA)
GRPA-123	Salvaged
GRPA-002	Mitigation Area (Not fenced or salvaged)
GRPA-154	Not Fenced or Salvaged (Located outside of Project Impact Area)

- Project Fence Line
- Trails and Roads
- 250-ft Site Buffer
- 50-foot Corridor of Gas Line
- Project Site
- Mitigation Area
- Rare Plant Transplantation Area
- Succulent Nursery
- Undeveloped Area

DRAFT

Notes:
1) Rare plant avoidance fencing, salvage and mitigation locations based on project design dated July 7, 2010.

2) All GRPA's located within the Construction Logistics Area will be salvaged.

3) Rare plant localities within the 250-foot buffer are Environmental Sensitive Areas (ESAs).

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Figure 5-3
Location of Parish's Club Cholla Localities to be Fenced, Salvaged or Included in Mitigation Area
Ivanpah Solar Electric Generating System

CH2MHILL

\\ZION\SACGIS\PROJ\352897_IVANPAH\MAPFILES\2010_IVANPAH\SURVEY_SPRING_2010\RARE_PLANT_REPORT\RARE_PLANT_AVOIDANCE_PROTECTION_PLAN\FIGURE5-3_GRPA_STATUS_11X17_V2.MXD SSCOPES 10/22/2010 09:03:48

Appendix D
Monitoring Datasheets

IVANPAH SEGS PROJECT
San Bernardino County, CA

SPECIAL-STATUS PLANT PROTECTION PROGRAM
Rare Plant Health Assessment

Asclepias nyctaginifolia

General Location: _____ **Date:** _____

Name(s) of Data Collector: _____

Plant Unique ID #		Health Assessment						Reproduction					Other	Maintenance			Comments / Photo Log
Identification Number	New Plant Y/N	Plant Absent Y/N/R	Seedling/ Sprout Count	Vigor Score 1-5	Phenol V/B/F FR/OF W/D	Grazing Damage 0-3	DigDown Depress None or #AL/#AN	# Fwr Clust.	# Fruits	Seeds N/IF/OG	Good Seed Source Y/N/F	Pollin-ators Observ. Y/N	Photo Y/N	ID Stake N/G I/R	ID Tag N/G I/R	Weed spp. Y/N	

NOTES:

revised April 29, 2013

IVANPAH SEGS PROJECT
San Bernardino County, CA

SPECIAL-STATUS PLANT PROTECTION PROGRAM
Rare Plant Health Assessment

Coryphantha chlorantha

General Location: _____ **Date:** _____

Name(s) of Data Collector: _____

Plant Unique ID #			Health Assessment						Reproduction			Other	Maintenance			Comments / Photo Log
Identification Number	New Plant Y/N	Plant Absent Y/N	Plant Dead Y/N	Plant Mortal. DP/DD	Vigor Score 1-5	Phenol V/B/FL FR/PF	Polyceph. # Heads (N=)	Grazing Damage 0-3	# Flws	# Fruits	Pollinators Observ. Y/N	Photo Y/N	ID Stake NGIR	ID Tag NGIR	Weed spp. Y/N	

NOTES:

revised April 29, 2013

IVANPAH SEGS PROJECT
San Bernardino County, CA

SPECIAL-STATUS PLANT PROTECTION PROGRAM
Rare Plant Health Assessment

Grusonia parishii

General Location: _____ **Date:** _____

Name(s) of Data Collector: _____

Plant Unique ID #		Health Assessment							Reproduction				Other	Maintenance			Comments / Photo Log
Identification Number	New Plant Y/N	Plant Absent Y/N	Plant Dead Y/N	Vigor Score 1-5	New Growth Y/N	% Dead 0-3	Phenol V/B FL/FR	# Clumps	# Flws	# Frts	# LYSF Y/N	Pollinators Observed Y/N	Photo Y/N	ID Stake N/G I/R	ID Tag N/G I/R	Weed spp. Y/N	

NOTES:

revised April 29, 2013

IVANPAH SEGS PROJECT
San Bernardino County, CA

SPECIAL-STATUS PLANT PROTECTION PROGRAM
Rare Plant Health Assessment

Sphaeralcea rusbyi var. eremicola

Date:

Plant Unique ID #		Health Assessment											Other	Maintenance			Comments / Photo Log
Identification Number	New Plant Y/N	Plant Absent Y/N	Plant Dead Y/N	Vigor Score 1-5	Phenol V/B/F FR/W/S	Grazing Damage 0-3	# Stems	# Flws	# Fruits	Seeds N/IF/OG	Good Seed Source Y/N/F	Pollin-ators Observ. Y/N	Photo Y/N	ID Stake N/G I/R	ID Tag N/G I/R	Weed spp. Y/N	

NOTES:

Appendix L

Condition of Certification BIO-18

Special-status Plants Post-Construction Natural Gas Pipeline Monitoring Report

CONDITION OF CERTIFICATION BIO-18

Year 4 (2017) Special-status Plants Post-Construction Natural Gas Pipeline Monitoring Report

Ivanpah Solar Electric Generating System

Prepared for
Solar Partners II, LLC; Solar Partners I, LLC;
and Solar Partners VIII, LLC

January 2018

ch2m
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

Contents

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Introduction 1

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Acronyms and Abbreviations

BIO-14	Condition of Certification Biology -14 Closure, Revegetation and Rehabilitation Plan
BIO-18	Condition of Certification Biology -18 Special-status Plant Impact and Avoidance and Minimization
BLM	U. S. Department of Agriculture, Bureau of Land Management
CEC	California Energy Commission
CH2M	CH2M Engineers, Inc.
COC	Condition of Certification
gen-tie	Electrical generation tie-in lines
ISEGS	Ivanpah Solar Electric Generating System
NGL	natural gas pipeline
NRG	NRG Energy Services, LLC
ROW	right-of-way
Solar Partners	Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC

Year 4 (2017) Special-status Plants Post-Construction Natural Gas Pipeline Monitoring Report

Introduction

Project Description

Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (Solar Partners) are the owners of the Ivanpah Solar Electric Generating System (ISEGS), a nominal 370-megawatt solar energy project in southern California's Mojave Desert, near the Nevada border. The project was developed by BrightSource Energy, Inc. and is operated for Solar Partners by NRG Energy Services, LLC. The project is located on a 3,471-acre (1,405-hectare) site, west of Ivanpah Dry Lake, on land managed by the Bureau of Land Management (BLM). CH2M HILL, Inc. (CH2M) has provided environmental compliance support during construction and operations of the solar facility.

Ivanpah 1 (the southern unit) covers approximately 913.5 acres (370 hectares); Ivanpah 2 (the middle unit) covers approximately 1,077 acres (436 hectares); and Ivanpah 3 (the northern unit) is larger and covers approximately 1,235 acres (500 hectares). The remaining disturbance areas include common access roads, gas lines, electrical generation tie (gen-tie) lines, and construction and operations facilities. All three generation facilities share an administration building, an operations and maintenance building, a substation located between Ivanpah 1 and 2, and paved roads to access each site. The project ties into the existing Kern River gas transmission line about 0.5-mile (0.8-kilometer) north of the Northern Rare Plant Mitigation Area and into the Southern California Edison 230/115-kilovolt line that crosses between the Ivanpah 1 and 2 sites. The Natural Gas Pipeline (NGL) and tap station are located in an 8.84-acre (3.58-hectare) linear right-of-way (ROW) located between the Kern River gas transmission line and the northeast corner of Ivanpah 3.

Report Objective

The objective of this report is to present the results of Year 4 (2017) post-construction special-status plant revegetation monitoring of the NGL corridor. This report complies with the annual reporting requirement of the California Energy Commission's Commission Decision (CEC, 2010) Condition of Certification BIO-18 Measure 8, Gas Pipeline Revegetation and Monitoring. This report also complies with measures included in Section 8 of the *ISEGS Special-status Plant Protection and Monitoring Plan* (*Protection Plan*) (Solar Partners, 2010) and with the *Closure, Revegetation, and Rehabilitation Plan for the Ivanpah Solar Electric Generating System* (*Revegetation Plan*) (CH2M, 2010), which includes the Gas Pipeline Revegetation and Monitoring Plan, as required by the BLM ROW Grant (BLM, 2010).

BIO-18 Measure 8 (CEC, 2010) includes a requirement to re-establish the following special-status plants within the disturbed NGL corridor:

- Rusby's desert mallow (*Sphaeralcea rusbyi* var. *eremicola*)
- Mojave milkweed (*Asclepias nyctaginifolia*)
- Desert pincushion (*Coryphantha chlorantha*)
- Nine-awned pappus grass (*Enneapogon desvauxii*)
- Parish's club-cholla (*Grusonia parishii*)

During Year 3 (2016) post-construction monitoring, success criteria were met through the establishment of target densities of Mojave milkweed, desert pincushion, nine-awned pappus grass, and Parish's club-cholla on the NGL. Density monitoring on the NGL is now complete. As required by BIO-18, Verification (CEC, 2010), record summaries of the post-construction special-status plant revegetation monitoring of the NGL will continue to be included in the Annual Compliance Reports for a period of not less than 10 years,

regardless of whether success criteria were met earlier in the 10-year period. During Year 4 (2017) monitoring, a qualified botanist conducted a limited field survey to confirm persistence of special-status plants to support the Annual Compliance Report. Annual monitoring summaries will be provided by January 31 of each calendar year within the 10-year monitoring timeframe.

Results

Post-Construction Monitoring

Background

Soil preparation, seed collection, hand-broadcast seeding, and planting was performed from 2012 through 2014. At the end of December 2013, substantial completion of construction was achieved. Year-1 post-construction monitoring was performed in 2014 (CH2M, 2015). Year 2 post-construction monitoring was performed in 2015 (CH2M, 2016). Year 3 post-construction monitoring was performed in 2016 (CH2M, 2017).

Progress criteria for special-status plant density and survivorship (CH2M, 2015) were met during Year 3 (2016; CH2M, 2017), and monitoring is now complete.

Year 4 (2017)

During Year 4 (2017) monitoring, botanist Morgan King of CH2M performed the annual assessment of special-status plants within the NGL disturbance area. Fieldwork was conducted on March 24 and August 8, 2017. Since success criteria were met in Year 3 (CH2M, 2017), no density or survivorship analyses were conducted.

Botanists confirmed the persistence of Mojave milkweed, desert pincushion, and Parish's club cholla on the NGL disturbance area. No individuals of Rusby's desert mallow were observed during Year 4 monitoring, consistent with Year 3 results (CH2M, 2017) and the cryptic life-cycle of the species. This plant usually goes to seed after its first year, and may not germinate again for many years. Also, no individuals of nine-awned pappus grass were observed during Year 4 because of a lack of summer precipitation. This species is a summer annual, meaning that it germinates and grows after summer rain; it is, therefore, not expected to occur every year.

Reporting Schedule

As required by BIO-18, Verification (CEC, 2010), record summaries of the NGL post-construction special-status plant revegetation monitoring will continue to be included in the Annual Compliance Reports for a period of not less than 10 years, regardless of the success criteria being met earlier in the 10-year monitoring period. The monitoring and reporting schedule for the NGL commences with the end of construction in 2013, with the first of the 10 year reports due by January 2014 and completed in January 2024.

Discussion

Revegetation monitoring shows that the BIO-18 Measure 8 Gas Pipeline Revegetation success criteria (CH2M, 2015) have been met by the establishment of target densities of Mojave milkweed, desert pincushion, nine-awned pappus grass, and Parish's club-cholla on the NGL. During the 10-year post-construction period, a botanist will conduct an annual field assessment on the NGL but will not conduct density or survivorship analyses.

References

California Energy Commission (CEC). 2010. Ivanpah Solar Electric Generating System. Commission Decision. September 22. Docket Number 07-AFC-5.

CH2M HILL Engineers, Inc. (CH2M). 2010. *Closure, Revegetation, and Rehabilitation Plan for the Ivanpah Solar Electric Generating System*. *COCs BIO-14, BIO-18 & COMP-11. Eastern Mojave Desert. San Bernardino County, California*. Revision 4. Includes the *Gas Pipeline Revegetation and Monitoring Plan (BIO-18)*. Prepared for Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC. September 29.

CH2M HILL Engineers, Inc. (CH2M). 2015. *Condition of Certification (COC) BIO-18 Year 1 (2014) Special-status Plants Post-Construction Natural Gas Line Monitoring Report for the Ivanpah Solar Electric Generating System (ISEGS)*. Prepared for Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC. January.

CH2M HILL Engineers, Inc. (CH2M). 2016. *Condition of Certification (COC) BIO-18 Year-2 (2015) Special-status Plants Post-Construction Natural Gas Line Monitoring Report for the Ivanpah Solar Electric Generating System (ISEGS)*. Prepared for Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC. January.

CH2M HILL Engineers, Inc. (CH2M). 2017. *Condition of Certification (COC) BIO-18 Year 3 (2016) Special-status Plants Postconstruction Natural Gas Pipeline Monitoring Report for the Ivanpah Solar Electric Generating System (ISEGS)*. Prepared for Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC. January.

Department of Interior, Bureau of Land Management (BLM). 2010. Right-of-Way Lease/Grant Serial Number CACA-49502 for the Construction Logistics Area and common shared facilities necessary for the construction, operation, and termination of the Ivanpah Solar Electric Generating System. Needles Field Office. October 7

Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (Solar Partners). 2010. *COC-BIO-18. Ivanpah SEGS Special-status Plant Protection and Monitoring Plan*. *Eastern Mojave Desert San Bernardino County, California*. Revision 1. Submitted to the California Energy Commission. With assistance from CH2M and GANDA. October.

Appendix M

Condition of Certification BIO-18

Mojave Milkweed Land Acquisition (Hudgen's Parcel) Annual Report

energyservices
an NRG service

NRG Ivanpah Solar Thermal Power Plant
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2012 Fax: 702-815-2030

January 9, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C)
Mojave Milkweed Land Acquisition (Hudgen's Parcel) Annual Report, to fulfill California Energy Commission Condition of Certification, BIO-17 and BIO-18

Dear Mr. Douglas and Mr. Ahrens,

Pursuant to the requirements of CEC Condition of Certification BIO-18, measure 11, the project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes at least 30 acres supporting a viable occurrence of Mojave milkweed (or suitable habitat adjacent to a known occurrence). The terms and conditions of this acquisition or easement shall be as described in Condition of Certification BIO-17 with the additional criteria that the Mojave milkweed mitigation lands: 1) provide habitat for the special-status plant species that is of similar or better quality (e.g., in terms of native plant composition) than that impacted; 2) contain or abut a known occurrence of Mojave milkweed, ideally with populations that are stable, recovering, or likely to recover, that shares the same watershed as the land; and 3) be adequately sized and buffered to support self-sustaining special-status plant populations.

On February 20, 2013, Solar Partners acquired a real property located in San Bernardino County, California, comprised of approximately 37 acres (the Hudgen's parcel) to mitigate the loss of Mojave milkweed (Asclepias nyctaginifolia) habitat. The parcel, within 21 miles southeast of ISEGS, also meets the requirement of Condition of Certification BIO-17, measure 2, selection criteria by being an in-holding within the National Park Service's (NPS) Mojave National Preserve and close to the project site. Solar Partners provided security for the acquisition and periodic inspections/surveys were performed to monitor and document the status of Mojave Milkweed and identify any unauthorized disturbance. Reports were provided in previous annual compliance reports.

energyservices
an NRG service

NRG Ivanpah Solar Thermal Power Plant
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2012 Fax: 702-815-2030

On April 20, 2017, ISEGS completed the execution and fee title transfer of the 37-acre Hudgen's Parcel to the U.S. Government. Copies of the recorded documents were provided to National Fish and Wildlife Foundation (NFWF), California Department of Fish and Wildlife (CDFW) and National Park Service (NPS). The CEC and BLM were also notified and provided copies of the recorded documents on April 24, 2017. The Hudgen's Parcel will be managed by NPS. The following documents are included in this report:

- Recorded Agreement Regarding Real Property Restrictions
- Recorded Donation Grant Deed
- Recipient Agreement

Solar Partners/ISEGS has fulfilled its Mojave milkweed mitigation obligation required by Conditions of Certification BIO-17 measure 2 and BIO-18 measure 11 with the above successful execution and fee title transfer of the Hudgen's Parcel and with the acceptance of NPS. Therefore, this report will serve as the final report for this requirement and no further reporting is required.

Please feel free to contact me with any questions.

Thank you.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Electronically Recorded in Official Records, County of San Bernardino
4/20/2017
11:08 AM
KE

BOB DUTTON
ASSESSOR - RECORDER - CLERK
42Z 1st Amer Title NCS - San Mateo

Doc #: 2017-0164026

Titles: 1 Pages: 7

Fees	33.00
Taxes	.00
Other	.00
PAID	33.00

First American Title Co.
Escrow #NCS-843791-SM

Recording Requested By, and
When Recorded Return To:

California Department of Fish and Wildlife
1416 Ninth Street
Sacramento, CA 95814
Attention: Armand Gonzales

AGREEMENT REGARDING REAL PROPERTY RESTRICTIONS

WHEREAS, This AGREEMENT REGARDING REAL PROPERTY RESTRICTIONS ("Agreement"), effective the last date signed below, is made by and between Solar Partners I, LLC, Solar Partners II, LLC, and Solar Partners VIII, LLC, each a Delaware limited liability company (collectively, "Solar Partners"), and the California Department of Fish and Wildlife ("CDFW"), an agency of the State of California.

RECITALS

WHEREAS, on February 20, 2013, Solar Partners acquired that certain real property located in San Bernardino County, California, comprised of approximately 37.00 acres (Exhibit "A", the "Property") pursuant to that certain Grant Deed recorded on February 20, 2013 as Document No. 2013-73338 ("Grant Deed") in the Official Records of San Bernardino County, California;

WHEREAS, Solar Partners acquired the Property as mitigation in accordance with the requirements of the California Energy Commission (the "CEC") Final Commission Decision for the Ivanpah Solar Electric Generating System Project ("ISEGS Project");

WHEREAS, Solar Partners and CDFW executed an Agreement Restricting Use of Real Property ("ARU") recorded in the Official Records of San Bernardino County as Document No. 2013-0292079 implementing the CEC mitigation and requiring that Solar Partners restrict the use of the Property to effectuate the permanent preservation of the Property, minimize permanent structures and alterations upon the lands unless necessary for public health and safety or for permanent preservation of natural resources, and manage the Property in perpetuity to maintain or enhance the existing population of the special status plant, the Mojave milkweed;

WHEREAS, this Agreement is intended to supersede the ARU, to effectuate the purposes of the ARU, and to provide the written approval of the CDFW for transfer of the Property to the USA.

WHEREAS, the Property is located within the boundaries of Mojave National Preserve;

WHEREAS, Solar Partners intends to transfer fee title to the Property to the United States of America ("USA") acting by and through the National Park Service ("NPS"), and the USA acting by and through the NPS intends to acquire fee title to the Property from Solar Partners and to administer the Property as part of the Mojave National Preserve.

NOW THEREFORE, in light of the Pertinent Facts above, and in consideration of the CDFW's consent to the conveyance of the Property to the United States, Solar Partner's agreement to convey the Property to the United States, the covenants and conditions hereinafter set forth and community goodwill, and without monetary consideration, Solar Partners and CDFW hereby agree that upon acquisition by the USA of the Property:

1. The ARU shall terminate and cease to burden the Property.

2. The Property shall be held and used consistent with the purposes of open space; conservation, management, restoration, education and scientific research; and appropriate and compatible administrative and public uses, all as may be consistent with protection of sensitive biological resources, wildlife habitat preservation, and preservation or enhancement of the capacity of the Property to support the Mojave milkweed population, recognizing that the fee owner(s) of the Property are not responsible for unforeseeable impacts beyond their control including without limitation drought, climate change, and fire.

3. Construction, operation, maintenance, removal, and replacement of structures and improvements are permitted as consistent with the purposes set forth above and accomplished in a manner that minimizes any adverse impacts on wildlife habitat and sensitive biological resources.

4. This Agreement, or any provision hereof, may be modified or amended only with the written consent of CDFW and the then current fee owner(s) of the Property or the portion thereof to be affected by such modification or amendment. No modification or amendment made in accordance with this Paragraph shall be effective until a proper instrument, in writing, has been executed and acknowledged by such parties and recorded in the Official Records.

5. This Agreement shall run in perpetuity and may only be terminated by an agreement signed by CDFW and the then current fee owner(s) of the Property. Notwithstanding the foregoing, upon inclusion of any portion of the Property within a federally-designated wilderness area, this Agreement shall terminate automatically and shall no longer encumber those portions of the Property that are included within a federally-designated wilderness area. This Agreement shall remain in effect with regard to any portions of the Property that are not made a part of a federally-designated wilderness area.

6. CDFW shall have the right to enforce this Agreement by any proceeding in law or equity; provided, that prior to commencing any formal action to enforce this Agreement, CDFW shall provide Solar Partners, or any future fee owner(s), with written notice describing the breach of this Agreement. CDFW and the then current fee owner(s) of the Property shall meet informally within the thirty (30) day period after CDFW gives notice of a breach of this Agreement, in a good-faith effort to resolve such compliance issue before seeking judicial remedies.

   This Agreement shall not be construed in any way as providing a right of reverter or any other right or power that allows for reversion of the Property to Solar Partners.

7. Nothing in this Agreement shall be construed as requiring the obligation of federal funds in advance of Congressional appropriation.

EXECUTION OF AGREEMENT

The signatories below hereby represent that they possess the authority to bind the respective parties to this Agreement:

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

By: _____ Date: 3-20-17
Name: Kevin Hunting
Title: Chief Deputy Director

SOLAR PARTNERS I, LLC,
SOLAR PARTNERS II, LLC,
SOLAR PARTNERS VIII, LLC,
each a Delaware limited liability company

By: _____ Date: March 7, 2017
Name: Randall Hickok
Title: Vice President

(Notarization pages follow)

Notarial Acknowledgment

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

On March 7, 2017, before me Sabrina Eller, Notary Public, personally appeared Randall Hickok who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of ARIZONA that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary Public

SABRINA L. ELLER
Notary Public - Arizona
Maricopa County
My Comm. Expires Dec 10, 2018

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)

County of Sacramento)

On April 5, 2017 before me Alejandra Lopez, Notary Public (insert name and title of the officer) personally appeared Kevin Hunting, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

ALEJANDRA LOPEZ
Commission # 2030812
Notary Public - California
Sacramento County
My Comm. Expires Jun 24, 2017

WITNESS my hand and official seal.

Signature _____ (Seal)

#34415146_v1

First American

First American Title Insurance Company
National Commercial Services
2755 Campus Dr. Suite 125
San Mateo, CA 94403
Phn - (650)356-1700
Fax - (714)361-3583

ILLEGIBLE NOTARY CERTIFICATION AND SEAL DECLARATION
(GOVERNMENT CODE 27341.7)

STATE OF CALIFORNIA)
) SS.
COUNTY OF Sacramento)

NAME OF NOTARY: Alejandra Lopez
PLACE OF NOTARY'S OATH/BOND: Sacramento County

COMMISSION I.D. NUMBER: 2030812

VENDOR I.D. NUMBER: NNA1

COMMISSION EXPIRATION DATE: June 24, 2017

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct. (CCP 2015.5)

PLACE OF EXECUTION OF THIS DECLARATION: San Mateo

DATE: April 20, 2017

BY: _____
RAMONA LOMBERA

FOR FIRST AMERICAN TITLE INSURANCE COMPANY

Exhibit A

Legal Description of Property

Real property in the unincorporated area of the County of San Bernardino, State of California, described as follows:

THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 14, TOWNSHIP 14 NORTH, RANGE 16 EAST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF;

EXCEPTING THEREFROM THE SOUTH 295.16 FEET OF THE WEST 295.16 FEET;

ALSO EXCEPTING THEREFROM THAT PORTION AS DESCRIBED IN DEED RECORDED APRIL 20, 1976 IN BOOK 8909, PAGE(S) 1032 OF OFFICIAL RECORDS.

APN: 0569-381-07-0-000

First American Title Co.
Escrow # NCS-843791-SM

Recording requested by and
After recording return to:

National Park Service
Pacific West Region
Land Resources Program Center
333 Bush Street, Suite 500
San Francisco, CA 94104

Electronically Recorded in Official Records, County of San Bernardino
4/20/2017
01:13 PM
KE

BOB DUTTON
ASSESSOR - RECORDER - CLERK
42Z 1st Amer Title NCS - San Mateo

Doc #: 2017-0164508

Titles: 1 Pages: 5

Fees	27.00
Taxes	.00
Other	.00
PAID	27.00

(Area above this line for recorder's use only.)

THE DOCUMENTARY TRANSFER TAX IS $0 (NONE)
(THIS TRANSFER EXEMPT PURSUANT TO REVENUE AND TAXATION CODE 11922)

AREA: Mojave National Preserve
APN: 0569-381-07-0-000
NPS TRACT 121-19

DONATION GRANT DEED

SOLAR PARTNERS I, LLC, SOLAR PARTNERS II, LLC, SOLAR PARTNERS VIII, LLC, each a Delaware limited liability company (individually and collectively, "Grantor"), for and in consideration of community goodwill, and without monetary consideration, the receipt and sufficiency of which is hereby acknowledged, hereby donates, grants and conveys to the UNITED STATES OF AMERICA and its assigns ("Grantee"), forever, the following described land lying in the County of San Bernardino and State of California, containing a total of 37 acres more or less, to-wit:

Described in Exhibit "A" attached hereto and made a part hereof

TOGETHER WITH all buildings and improvements thereon and all water rights appurtenant thereto and all and singular the tenements, hereditaments and appurtenances thereunto belonging, or in any wise appertaining and the reversion and reversions, remainder and remainders, rents, issues and profits thereof.

Grantor covenants and conveys to the United States of America the fee simple title to the above-described land subject to existing easements for public roads and highways, public utilities, railroads and pipelines and subject to other outstanding rights, if any, of record in third parties. This conveyance is subject to the covenants set forth in California Civil Code Section 1113, provided however, that Grantee acknowledges and has consented to the recording of the "Agreement Regarding Real Property Restrictions" between Grantor and the California Department of Fish and Wildlife, dated effective on April 20, 2017.

TO HAVE AND TO HOLD the above-described premises, together with all and singular the rights and appurtenances thereto in anywise belonging, unto the UNITED STATES OF AMERICA, and unto its assigns forever.

The acquiring federal agency is the Department of the Interior, National Park Service.

GRANTOR further remises, releases, and forever quitclaims to the UNITED STATES OF AMERICA and its assigns, all right, title, and interest which the Grantor may have in and to water rights, banks, beds, and waters of any stream or river bordering or traversing, or in any appropriative water rights appurtenant to, the said land hereby conveyed, and also all interest in and to any alleys, roads, streets, ways, strips, gores, or railroad rights-of-way abutting, adjoining, or appurtenant to said land, and in any means of ingress or egress appurtenant thereto.

IN WITNESS WHEREOF, the said Grantor has hereunto set hand and seal this 12th day of April, 2017.

GRANTOR:

SOLAR PARTNERS I, LLC,
SOLAR PARTNERS II, LLC,
SOLAR PARTNERS VIII, LLC,
each a Delaware limited liability company

By: John D. Karam Date: April 12, 2017
Name: John D. Karam
Title: Vice President

Exhibit A to Donation Grant Deed

LEGAL DESCRIPTION

Real Property in the unincorporated area of the County of San Bernardino, State of California, described as follows:

THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 14, TOWNSHIP 14 NORTH, RANGE 16 EAST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF;

EXCEPTING THEREFROM THE SOUTH 295.16 FEET OF THE WEST 295.16 FEET;

ALSO EXCEPTING THEREFROM THAT PORTION AS DESCRIBED IN DEED RECORDED APRIL 20, 1976 IN BOOK 8909, PAGE(S) 1032 OF OFFICIAL RECORDS.

APN: 0569-381-07-0-000
(NPS TRACT NUMBER 121-19)

ACKNOWLEDGEMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of Arizona)
County of Maricopa)

On April 12, 2017 before me, Karyn M. Sallis, personally appeared John D. Karam, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same his authorized capacity, and that by his signature on the instrument the person or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of Arizona that the foregoing paragraph is true and correct.

WITNESS, my hand and official seal.

Karyn M Sallis
(Signature of Notary Public)

SEAL:

KARYN M. SALLIS
Notary Public - Arizona
Maricopa County
My Comm. Expires Oct 30, 2020

When Recorded Mail To:

U.S. Department of the Interior
National Park Service
Pacific West Region
Land Resources Program Center
333 Bush St., Suite 500
San Francisco, CA 94104

Area: Mojave National Preserve
Tract: 121-19

CERTIFICATE OF ACCEPTANCE

This is to certify that the property described in the Donation Grant Deed from The Trust For Public Land, attached hereto and made a part hereof, is accepted on behalf of the United States of America.

Dated this 13th day of April, 2017.

Gregory R. Gress
Chief, Pacific Land Resources Program Center
Pacific West Region
National Park Service

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE,
NATIONAL FISH AND WILDLIFE FOUNDATION
and the
NATIONAL PARK SERVICE
RECIPIENT AGREEMENT

This Funding Recipient Agreement ("Recipient Agreement") is entered by and between the California Department of Fish and Wildlife ("CDFW"), National Fish and Wildlife Foundation ("Foundation"), and the National Park Service ("NPS" or "Recipient") (together "Parties" and individually "Party"), as of the date of the signature of the last Party to sign ("Effective Date").

RECITALS

WHEREAS, CDFW is responsible to provide for the protection and management for conservation purposes in perpetuity of the approximately 37-acre real property in San Bernardino County, California known as the Milkweed Parcel and generally shown on the map attached as Exhibit A-1 and legally described in Exhibit A-2 attached to this Recipient Agreement and incorporated herein by reference (the "Property"), pursuant to California Fish and Game Code Section 2069.

WHEREAS, CDFW approved transfer of the Property to the United States of America for administration by the NPS, subject to an Agreement Restricting Use of Real Property in the form attached as Exhibit B ("ARU"), which will be recorded as in the Official Records of San Bernardino County and will supersede and replace the ARU recorded on June 2, 2013, and which requires, among other things, that use of the Property "be consistent with protection of sensitive biological resources, wildlife habitat preservation, and preservation or enhancement of the capacity of the Property to support the Mojave milkweed population."

WHEREAS, the Property will be transferred to the United States of America, pursuant to the terms of the ARU described above.

WHEREAS, the Property is located within the boundaries of Mojave National Preserve ("Preserve"). The NPS manages the Property as part of the Preserve.

WHEREAS, in 1994 through the California Desert Protection Act, Congress established the Preserve and declared as its policy that appropriate public lands in the California desert must be included within the National Park System and the National Wilderness Preservation System to: preserve the unrivaled scenic, geologic and wildlife values of these lands; perpetuate their significant and diverse ecosystems; protect and preserve their historical and cultural values; provide opportunities for compatible outdoor public recreation, protect and interpret ecological and geological features and historic, paleontological and archeological sites, maintain wilderness resource values, and promote public understanding and appreciation; retain and enhance opportunities for scientific research in undisturbed ecosystems. (16 U.S.C. §§ 410aaa notes.)

WHEREAS, the Property Analysis Record ("Endowment Assessment") approved by the California Energy Commission and CDFW in 2013 calculated the amount of money ("Endowment Amount") necessary for perpetual long-term preservation of the Property's capacity to support the Mojave milkweed to be seventy-six thousand, three hundred and sixty-four dollars ($76,364).

WHEREAS, in 2014 CDFW caused to be deposited with the Foundation the Endowment Amount pursuant to the Master Mitigation Account Memorandum of Agreement ("Master Mitigation MOA") entered into between CDFW and the Foundation as of November 23, 2010 (as the same has been amended from time to time). The Master Mitigation MOA is attached to this Recipient Agreement as Exhibit C for informational purposes.

WHEREAS, the CDFW has approved NPS as the owner/manager of the Property and the recipient of funds provided by the Foundation from the Endowment Amount for Land Management Activities (as such term is defined below) on the Property in accordance with the terms of this Recipient Agreement.

NOW THEREFORE, in consideration of the mutual promises made herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

1. Purpose. The purpose of the Endowment Amount is to provide a source of funding for the NPS to administer, monitor, maintain, and preserve the Property to support the Mojave milkweed in accordance with the ARU. Land management activities are to be consistent with the Mojave Milkweed Land Management Plan dated February 2013 ("Land Management Plan"), and the ARU, and may include, but are not limited to, acquisition, installation, and maintenance of fencing, signage, or other actions which the NPS in its discretion determines are appropriate to preserve or enhance the capacity of the Property to support the Mojave milkweed ("Land Management Activities").

2. Funding for Land Management Activities. The Foundation hereby agrees to provide funds from the Endowment Amount to the NPS to pay for Land Management Activities, upon the terms and conditions set forth below. The NPS hereby agrees to utilize any funds received from the Endowment Amount exclusively to pay the costs of Land Management Activities on the Property. The Parties agree and acknowledge that the Endowment Assessment, the Land Management Plan, and the ARU, were approved by CDFW. The Foundation is expressly entitled to rely upon the validity of the CDFW approval and accuracy of the Land Management Plan, ARU, Endowment Assessment, and Endowment Payment Schedule (as that term is defined below), and any future amendments thereto without any independent verification. The Foundation shall not be liable in any respect to CDFW or the Recipient, or to any other party, for errors, omissions, inaccuracies, or other elements of the Land Management Plan, ARU, the Endowment Assessment, or the Endowment Payment Schedule, whether contained therein or omitted therefrom, or any future amendments thereto. The Land Management Plan, ARU, Endowment Assessment, and Endowment Payment Schedule may be

amended with the written approval of CDFW, and any approved amendments to the Land Management Plan, ARU, Endowment Assessment, and Endowment Payment Schedule shall upon receipt by the Foundation supersede and replace their original counterparts, and shall thereafter govern as the Land Management Plan, ARU, Endowment Assessment, and Endowment Payment Schedule under this Recipient Agreement.

3. Term. Unless terminated earlier pursuant to Section 12 below, this Recipient Agreement shall be effective from the earlier of (a) Effective Date or (b) the date the grant deed transferring the Property to NPS and the ARU are recorded, until the date (if any) that the NPS ceases to own and manage the Property.

4. General Financial Provisions. The Endowment Amount is invested and otherwise managed financially by the Foundation in accordance with the terms of the Master Mitigation MOA. The Recipient shall have no right or responsibility with respect to the investment or financial management of the Endowment Amount under this Recipient Agreement or otherwise. The Land Management Activities addressed under this Recipient Agreement shall be considered "Endowment Measures" for purposes of the Master Mitigation MOA unless specified otherwise by CDFW in a written notice delivered to the Foundation.

5. Payment.

   a. In consideration of the Land Management Activities to be performed by Recipient, the Foundation shall disburse to the Recipient from the Endowment Amount an "Annual Amount" (as such term is defined below) (each such payment, an "Endowment Payment") which Recipient shall use to pay the costs of Land Management Activities. Unless the Foundation is directed otherwise in writing by CDFW, each Endowment Payment will be made for the amount requested by the Recipient in a written payment request ("Payment Request") submitted to the Foundation in accordance with this Section 5 and Section 6 below; provided that such amount shall be adjusted on an annual basis by a measure of inflation over the period of time from calendar year 2016 until the calendar year each such payment is made. Each such Annual Amount may be paid in annual installments, not to exceed $2,432.00 annually. The measure of inflation shall be calculated using the United States Department of Labor's Bureau of Labor Statistics' Consumer Price Index, West Region (1982-84=100), or the successor of such index over the same period of time.

      The Foundation will disburse Endowment Payments in December for Payment Requests properly submitted to the Foundation in the period from the immediately prior July 1 through November 15.

   b. For all purposes herein, each "Annual Amount" shall equal such amount as the NPS may specify in its reasonable discretion as necessary and appropriate to pay for Land Management Activities; provided, however, that no single "Annual Amount" shall exceed the amount of two

thousand four hundred thirty-two dollars ($2,432.00) in 2016 dollars, as reflected in the Endowment Payment Schedule, which is attached hereto as Exhibit D and incorporated by this reference.

c. Notwithstanding the provisions of Section 5.b. above to the contrary, provided that NPS is otherwise capable of implementing the provisions of the ARU in a particular calendar year without receiving a disbursement of funds from the Endowment Amount , the NPS may elect, in its reasonable discretion not to submit a Payment Request for an Annual Amount in such calendar year, in which case no disbursement of an Annual Amount shall be made by the Foundation in such calendar year. Subsequently, in any following calendar year, the NPS may submit a Payment Request for any Annual Amount(s) not disbursed in the prior year(s) in which NPS elected to forego disbursement of the Annual Amount.

6. Payment Request Procedures.

a. Each Payment Request will comply with the requirements set forth in Section 5 above and this Section 6.

b. The Recipient must submit to the Foundation a written Payment Request between July 1 and November 15 in order to receive an Endowment Payment to fund Land Management Activities.

c. The Recipient shall submit all Payment Requests via email, fax, or mail to the Foundation. In the event an alternate method of submitting Payment Requests becomes available in the future, such as an online Payment Request system, the Foundation will notify the Recipient and provide appropriate instructions. All Payment Requests must include a written statement by the Recipient that (i) the Endowment Payment will be used exclusively for payment of expenses of Recipient for Land Management Activities and (ii) the Recipient reasonably expects the Land Management Activities specified to be actually necessary in that year.

d. CDFW Suspension or Reduction of Payments for Financial Reasons. From time to time the Foundation or its financial advisors may determine that the Endowment Amount has decreased to levels that threaten its continued existence as a source of perpetual funding for Land Management Activities, whether due to unexpected investment performance or otherwise. In such event the Foundation shall notify CDFW of such determination. Upon receipt of such notice, CDFW will consult with the Foundation and Recipient as to appropriate modifications to continued Endowment Payments and associated Land Management Activities in order to protect the long-term viability of the Endowment Amount. After such consultation, CDFW will promptly notify the Foundation and the Recipient of any measures, including but not necessarily limited to suspension or reduction of specified Land Management Activities and corresponding reduction or suspension of Endowment Payments, which must be implemented by the Foundation or the Recipient, as the case may be, to address the pertinent circumstances. The Foundation and the Recipient shall be entitled to rely on any such notice received from CDFW

and shall be obligated to follow the directions contained therein. Neither the Foundation nor the Recipient shall be liable in any manner to CDFW or any other person by virtue of following the direction of CDFW contained in any notice issued under this subsection.

7. Reporting. The NPS shall provide a written report ("Annual Report") for each calendar year this Recipient Agreement is in effect. Each Annual Report shall be submitted by the NPS by January 31 each year, or at least thirty (30) days prior to the effective date of termination of this Recipient Agreement, of the application of the Annual Amounts during the preceding calendar year to the Land Management Activities, summarizing monies spent and actions undertaken. The Foundation will provide the Annual Report and a corresponding summary of its contents to CDFW by March 15 of the year received by the Foundation, or within thirty (30) days of receipt in the event of termination of this Recipient Agreement.

8. CDFW's Rights under this Recipient Agreement. Except as otherwise provided herein, nothing in this Recipient Agreement shall modify, infringe, or violate CDFW's rights and responsibilities under the Master Mitigation MOA with the Foundation.

9. MOA Conflicts. Except as specifically provided herein, in the event a conflict arises between the terms of this Recipient Agreement and the Master Mitigation MOA, the Parties will meet and confer to resolve the issue to the mutual satisfaction of the Parties. In the event the parties cannot reach agreement, the terms of the Master Mitigation MOA shall control.

10. Amendments. This Recipient Agreement may be amended only upon a written amendment, signed by the Parties. Counterpart originals, facsimile copies, and/or portable document format (pdf) versions of signed amendments are acceptable and will be treated as binding originals, but this Recipient Agreement may not be amended via electronic mail.

11. Transfer and Assignment. The Recipient may not transfer or assign this Recipient Agreement, in whole or in part, to any other individual or legal entity without the prior written consent of CDFW, which consent may be withheld in CDFW's sole discretion. The Foundation may not assign this Recipient Agreement, in whole or in part, to any other individual or entity.

12. Termination. Any Party seeking to terminate this Recipient Agreement with or without cause shall provide written notice of its intent to terminate and shall offer to meet and confer with the other Parties within sixty (60) days of receipt of such notice. If the other Parties do not respond to the offer to meet and confer, this Recipient Agreement shall automatically terminate one hundred twenty (120) days after the date of the second of the two Parties' receipt of the notice of intent to terminate. If the other Parties respond to the notifying Party's request to meet and confer, the Parties shall meet and the notifying Party shall explain the reason for the notification of termination and discuss alternatives, if any, to terminating this Recipient Agreement. With respect to any termination that will terminate the Foundation's participation in the management of the Endowment Amount, the termination is not effective unless and until the Foundation has

transferred in an orderly fashion the custody, control or other power necessary for the investment, management, and administration of the Endowment Amount to an entity approved under the terms and conditions of the Master Mitigation MOA. With respect to any termination that will terminate the NPS's participation as the Recipient of funds from the Endowment Amount, the NPS shall have no obligation to return any funds that have already been disbursed, however, NPS shall use any such funds previously disbursed for Land Management Activities.

13. Notices. All notices, certificates, and other communications permitted hereunder shall be in writing and, except as provided otherwise in this Recipient Agreement, shall be deemed to have been duly given if personally delivered to the person designated to receive the same with proof of delivery or rejection of delivery (if on a business day during business hours) thereof (any notice or communications so delivered being deemed to have been received at the time delivered or rejected), or sent by Federal Express or other reputable express courier service (any notice or communication so delivered being deemed to have been received on delivery or rejection), or sent by mail, postage prepaid, certified or registered mail, return receipt requested (any notice or communication so delivered being deemed to have been received five (5) business days after the date deposited in the United States mail) addressed to the respective Parties as follows:

If to the Foundation:
Anne Butterfield
National Fish and Wildlife Foundation
Manager, Impact-Directed Environmental Accounts
90 New Montgomery Street, Suite 1010
San Francisco, CA 94105
(415) 243-3106

If to the NPS:
Todd J. Suess
Superintendent
Mojave National Preserve
Castle Mountains National Monument
2701 Barstow Rd.
Barstow, CA 92311
(760) 252-6103

If to the CDFW:
Armand Gonzales, Special Advisor
California Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95816
(916) 445-3379

Notice of change of address shall be effective only when given in accordance with this Section. Notwithstanding the preceding sentence, each Party agrees to notify the other promptly, and in any event no later than thirty (30) days after any change in other contact information. The Parties agree

and acknowledge that any change to their respective representatives as set forth in this Section 13 shall not constitute an amendment to this Recipient Agreement and may be effected through written notice to the other Party.

14. Federal Anti-Deficiency Act. Notwithstanding any provision to the contrary herein, nothing in this Recipient Agreement shall be construed as binding the United States of America to expend in any one fiscal year any sum in excess of appropriations made by Congress or administratively allocated for the purpose of compliance with the conditions for this Recipient Agreement for the fiscal year, or bind the United States under any contract or other obligation for the further expenditure of money in excess of such appropriations or allocations, and nothing in this Recipient Agreement may be considered as implying that Congress will at a later date appropriate funds sufficient to meet any deficiencies.

15. Additional Support. By entering into this Recipient Agreement, neither CDFW nor the Foundation assumes any obligation to provide funding or support (whether financial or otherwise) to the Recipient beyond Endowment Payments in accordance with this Recipient Agreement.

16. Severability. To assure further the carrying out of the purposes hereof, each and every one of the provisions of this Recipient Agreement are to be regarded and construed as independent of every other provision. In the event that the final determination of a court of competent jurisdiction shall adjudge that any of the terms, conditions, or provisions of this Recipient Agreement are invalid, such adjudication shall in no way affect the validity of the remaining provisions.

17. Governing Law. This Recipient Agreement shall be governed by, and construed in accordance with, the laws of the United States and the State of California, as applicable.

18. Responsibility for Conduct. Except as otherwise provided in this Recipient Agreement, each Party shall be responsible for the consequences of its own actions or inaction, willful misconduct, gross negligence, and/or breach of obligations in connection with this Recipient Agreement, and in connection with any work undertaken in accordance with this Recipient Agreement.

19. No Third-Party Rights. This Recipient Agreement shall not be the basis of any claims, rights, causes of action, challenges, or appeals by any person not a party to this Recipient Agreement.

20. Binding Agreement. This Recipient Agreement shall be binding upon and shall inure to the benefit of the Parties hereto and their respective successors and permitted assigns.

21. Entire Agreement. This Recipient Agreement constitutes the entire agreement of the Parties hereto with respect to the subject matter hereof and supersedes all prior agreements and undertakings, both written and oral, among the Parties with respect to the subject matter hereof.

22. Waiver Not Continuing. The failure of any Party to require in any one or more instances complete performance of any of the provisions of this Recipient Agreement shall not be construed as a waiver or relinquishment of such future performance, but obligation of the non-performing party with respect to such future performance shall continue in full force and effect.

23. Headings. The headings in this Recipient Agreement have been inserted for convenient reference only and shall not affect in any way the meaning or interpretation of this Recipient Agreement.

24. Interpretation. The following rules of construction and interpretation apply to this Recipient Agreement: (1) whenever necessary to give effect to any clause of this Recipient Agreement, the neuter, masculine, and feminine include each other and the singular includes the plural, and the plural includes the singular; (2) unless already specified, use of the term "including" will be interpreted to mean "including but not limited to;" (3) wherever in this Recipient Agreement the term "and/or" is used, it shall mean "one or the other, both, any one or more, or all;" and (4) the Parties acknowledge that each of the Parties hereto has been or has had the opportunity to be represented, to the extent desired, by legal counsel of its choice in respect to this Recipient Agreement and no rule of construction that ambiguities are to be resolved against the drafting Party will be employed in the interpretation of this Recipient Agreement.

25. Counterparts. This Recipient Agreement may be executed in one or more counterparts, each of which so executed and delivered shall be deemed an original, but all of which taken together shall constitute but one and the same instrument.

[Signatures on the next page]

IN WITNESS WHEREOF, the Parties have executed this Recipient Agreement as of the date of the signature of the last Party to sign below.

United States of America
National Park Service

Todd J. Suess — 3-7-17

Todd J. Suess
Superintendent

Date

National Fish and Wildlife Foundation

Timothy J. DiCintio — 3/17/2017

Timothy J. DiCintio
Senior Vice President, Impact-Directed Environmental Accounts

Date

California Department of Fish and Wildlife

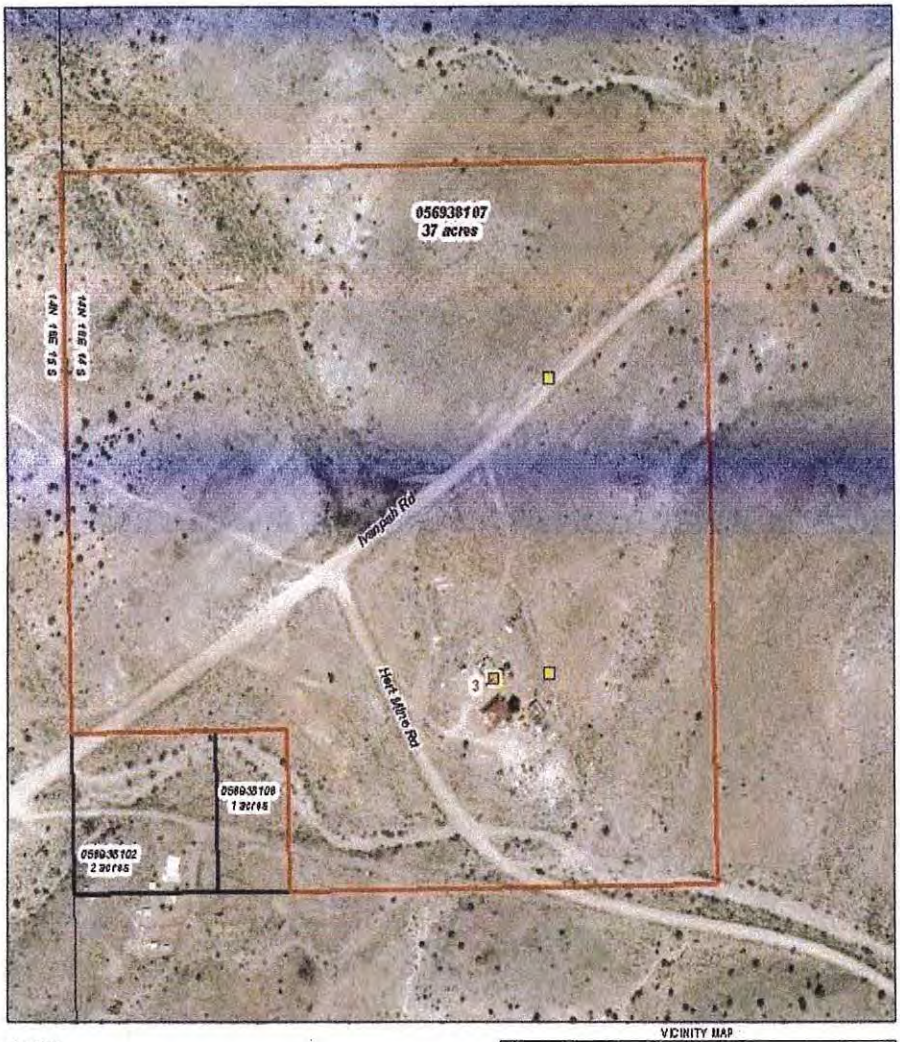
3.20.17

Kevin Hunting
Chief Deputy Director

Date

EXHIBIT A-1
MAP OF THE PROPERTY

SE



LEGEND

- Mojave Milkweed 2012 Survey Location

Database or Other Information Sources

CNDDB Element Occurrence (EO)

- Mojave milkweed
- Hudgens Parcel
- Private Land Parcel

VICINITY MAP

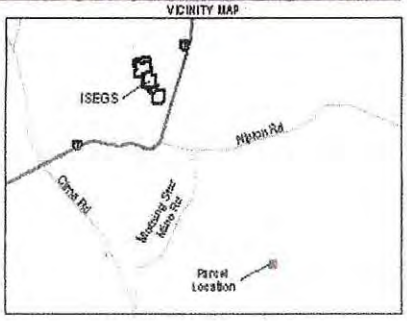


EXHIBIT A-2

DESCRIPTION OF THE PROPERTY

Real property in the unincorporated area of the County of San Bernardino, State of California, described as follows:

THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 14, TOWNSHIP 14 NORTH, RANGE 16 EAST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF;

EXCEPTING THEREFROM THE SOUTH 295.16 FEET OF THE WEST 295.16 FEET;

ALSO EXCEPTING THEREFROM THAT PORTION AS DESCRIBED IN DEED RECORDED APRIL 20, 1976 IN BOOK 8909, PAGE(S) 1032 OF OFFICIAL RECORDS.

APN: 0569-381-07-0-000

Appendix N

Condition of Certification BIO-19

Society for Conservation of Bighorn Sheep Annual Report

energyservices
an NRG service

NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 9, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C)
Big Horn Sheep Mitigation Plan Society For Conservation for the Conservation of Bighorn Sheep (SCBS) Annual Report, to fulfill California Energy Commission Conditions of Certification, BIO-19

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Section 3.3 of the Big Horn Sheep Mitigation Plan, of the Conditions of Certification BIO-19 of the Commission's approval of the Ivanpah Solar Electric Generating System (ISEGS), the SCBS will provide to the project owner an annual report no later than January 15th of each year, and the project owner will provide to the CEC and BLM the annual report no later than January 31st of each year.

ISEGS has received the Bighorn Sheep Mitigation Report from SCBS dated March 2015 and is attached with this report. ISEGS has requested an updated report from SCBS and will provide the updated report in next year's annual compliance report.

Please feel free to contact me with any questions.

Thank you.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Brightsource Bighorn Sheep Mitigation Report

Jennifer Hinojosa and Jeff Crouse

Society for the Conservation of Bighorn Sheep

P.O. Box 2064

Lucerne Valley, CA

92356

Background

The Society for the Conservation of Bighorn Sheep (SCBS) is a non-profit organization in California that was founded in 1964 and is dedicated to the conservation and management of desert bighorn sheep, with a mission statement "to help keep sheep on the mountain". The society works with state and federal agencies as well as private land owners to finance studies, install waterholes/drinker systems, improve/enhance habitat and helping to trans locate herds to their historic ranges. Through volunteerism, statistics reflect success of these endeavors, with Bighorn restored to approximately fifty percent of its former habitat, and a population increase of eighty percent.

Bighorn sheep, *Ovis canadensis nelsoni,* live through out the desert grazing on the different plants species found there. Both the males (rams) and females (ewes) have permanent horns that continue to grow throughout their lives, however the ram's horns are much larger, curving around to create the iconic look of the species and used to prove dominance over each other, often resulting in the ends of the horns breaking off. Ewe horns are much smaller and have a slight curl. Typically the desert bighorn are brownish in color with a large white rump. They stand two and a half to just over three feet tall at the shoulders, and five feet long. Ewes live longer than rams, some reaching twenty of years old.

Bighorn sheep travel in herds usually numbering less than twenty animals. Normally the rams form one herd unit separate from the ewes and young. The rams are known to wander the different mountain ranges, often times mating with various family herd units. These family units tend to stay closer to water, good forage, and typically do

not travel the miles the rams do. Ewes give birth to one lamb after a six month gestation period. Lambs are mobile within days after birth and weaned in five months.

Unfortunately for all wildlife through out the desert, human kinds influence has made the job of restoration more challenging. Pathways to water sources are not available as in historic times, industries such as mining and solar plants have moved into the desert taking away existing habitat, but most impactful are the freeways that cut through the mountain ranges that the bighorn call home, severing migration routes.

The map shows all the herd units of Bighorn Sheep outlined in white. The red lines are the different roads- freeways and highways in the area that sever herd movement.

The problem this creates is bighorn populations north of Interstate 15 (I 15) can not exchange biological information- breeding patterns disrupted. For example, it is feared that herd units north of I 15 will have a different genetic make up then those south of Interstate 40. If this happens the herd units are at risk, inter-breeding within family units will occur.

Under the guidance of Fish and Wildlife employees, contractors and retirees, SCBS has been installing wildlife drinkers systems through out the southern Californian desert since the beginning of the organization. Volunteers go out twice a year to visit individual systems to make sure they are working properly, have water, and perform maintenance if the problem is small enough. Certain systems can go dry in the hot summer months due to heavy use for the desert wildlife, a group of volunteers haul water during this time to ensure they do not go dry. There are over 50 drinker systems put in by SCBS and numerous springs. Wildlife cameras are installed a select few of these water sources.

Under Fish and Wildlife guidance a new approach has been started with the water system location choosing. Using a wildlife drinker designed by a board members of the society, systems are installed in a stair stepping approach; putting drinkers in locations to encourage family and ram herd units to new migration routes to connect severed herd units. This is working in the South Bristols and Marble mountain ranges.

When the two Interstates were created underpasses were installed to allow stream beds and wildlife to cross under. Camera data from a project along the I 40 showed that Bighorn sheep will come up to an underpass and turn away and will not use it. There was never a camera project conducted on the underpasses on the I 15 pass Baker, California.

Using the grant money from the Brightsource project, cameras were installed on the underpasses along the I 15 past the town of Baker on October 14, 2014. They were left out during the winter months when it is cooler and Bighorn live closer to the desert floor.

The Project

Goods-

In the initial write up of the grant, different wildlife cameras were being used by different people on the board of SCBS. Originally the grant was to fund seven wildlife cameras, PC800 HyperFire Professional Semi-Covert IR by Reconyx at $549.99 each before shipping and taxes. The camera coordinator of the society suggested a different camera right before purchase of the Reconyx models made by Bushnell. The Bushnell were cheaper, just as good if not better then the Reconyx, and the customer service was excellent. On May 3rd, 2013 the 8MP Trophy Cam HD max. camo night vision hybrid cameras were purchased for $310 each.

Another change came about with the decision on what computers to buy. By the time the grant money came in, it was clear that the Panasonic Toughbook was not right for the project and the Vostro 260 mini tower with monitor by Dell had to many problems upon reading consumer reviews. Two Sager notebook computers were purchased instead for roughly the same cost. These were purchased on April 16th, 2013.

On August 22nd, 2013 the SigmaPlot Version 12 Single User License was purchased for a reduce price of $606.55. This software is used by the project's scientific advisor.

On May 7th, 2014 six 32 GB SD cards were purchased through Amazon.com for $106.

On December 10th, 2014 Adobe Photoshop was purchased through Amazon.com for $97.19.

The rechargeable batteries were not purchased due to the fact that the Reconyx cameras were not used. Each of the Bushnell cameras use 12 AA batteries, but they last for most of a season and are purchased at Costco, their price is paid by the volunteers running the project. The SYSTAT 13 - Full Stand-alone Product over Electronic Download Gov't/Non-Profit Price was not purchased as the scientific advisor decided it was not needed for the scope of this project. The ArcGIS software has yet to purchased, and will be soon. Part of why a Panasonic Toughbook was to be purchased was to provide the project with a high end GPS unit. With the money saved from the various swaps and changes a high end GPS unit will be purchased for this project.

In the field

The cameras were field tested in controlled areas with known parameters to test distance of actuation, field of vision, clarity of image, durability of camera and life span of batteries.

On October 14th, 2014 the volunteers went into the field. Sites were chosen between the Halloran Spring Road off ramp to the Halloran Summit Road off ramp (site A) and the Cima road off ramp to the Mountain pass/Bailey road off ramp (site B). These areas were in the Silurian, Old Dad, Clark and Ivanpah mountains that all have desert bighorn sheep herds that are severed from each other. The Silurian and Clark mountains are on the north side of the I 15 while the other two are on the south side. Both sites received two camera each. It was decided not to install all six to test out the area, determine if the cameras might get stolen, etc... In both cases the power line road was used for traveling.

Site A is located in a Creosote Bush scrub community mostly dominated by *Larrea tridentata* and *Ambrosia dumosa* with the occasional *Cylindropuntia* species with transitioning into a Joshua tree woodland mostly dominated by *Larrea tridentata, Yucca brevifolia, Ambrosia dumosa,* and *Cylindropuntia* species. Site B is located in a Joshua tree woodland with similar plants transitioning up to a Blackbush scrub community mostly dominated by *Coleogyne ramosissima, Larrea tridentata, Prunus fasciculata,* and *Yucca brevifolia.* While installing the cameras is was noted the amount of wildflowers blooming, and the green up of the native plants.

Also while installing the cameras wildlife was seen including donkeys, cows, roadrunners and a jack rabbit. The donkeys and cows were only at Site B mostly crowded around a man made device over flowing with water (from the others like it in the field it was clear this was not it's normal function). It was not a drinker and appeared to be broken. There was no identification as to who owed it on the odd object and when presented to the board they were at a loss.

Cameras were installed on either side of the interstate. They were positioned to maximize the field of vision, and minimize exposure to thieves.

Collection

On March 5th, 2015 the volunteers went out and collected the cameras. The cameras were taken down and bought in to check for any damages. The plan is to re-install the cameras within the week.

The SD cards were removed from the cameras and downloaded to an external hard drive. 43.744 GB of data were collected, over 38,000 images were captured. Animals photographed include: roadrunners, cottontails, mice, coyotes, quails, foxes, bobcats, humans, songbirds, donkeys, jack rabbits, lizards, butterflies, chipmunks, kangaroo rats, badgers, snakes, and cows. It appears that predatory animals are using the underpasses more frequently then other animals.

These images will be entered into a database, that will then be imported into a GIS program that will help determine the effectiveness of the underpasses as a means for large ungulates to transverse between mountain ranges and whether the stair-stepping method of drinker placement will work in this area. The project's scientific advisor will review the data as the project moves along.

Once the cameras get placed back out into the study zone, they will stay out in the field for approximately six months. They will then be brought back in from the field at

the end to check on their condition, collect data, make repairs, then to be placed back out to the study area within a week.

Once all the data is collected we will be able to make recommendations to Fish and Wildlife on water source locations and use of the underpasses as viable routes of migration.

Appendix O

Condition of Certification BIO-20

Streambed Impact Minimization Measure
Change of Condition Report

energyservices
an NRG service

NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 8, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C)
Streambed Impact Minimization and Compensation Measures – Notifying Change of Conditions Report to fulfill California Energy Commission Conditions of Certification, BIO-20

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certification BIO-20 of the Commission's approval of the Ivanpah Solar Electric Generating System, a copy of the notifying change of conditions report shall be included in the annual reports.

The notifying change of conditions reports are attached. These reports are also included in the Annual Biological Report, Appendix E.

Thank you.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

TECHNICAL MEMORANDUM

Condition of Certification BIO-20 Change of Conditions Report for ISEGS, June 2017

PREPARED FOR:	Tim Sisk/NRG Energy Amanda Scheib/Designated Biologist
COPY TO:	CH2M Environmental Staff
PREPARED BY:	Morgan King/CH2M
DATE:	June 20, 2017
PROJECT NUMBER:	691217

Introduction

The California Energy Commission's *Ivanpah Solar Electric Generating System Commissions Decision* (2010) Condition of Certification (COC) BIO-20 states, in part, that Solar Partners' must identify:

> "…any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts… 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."

Potential changes of conditions include changes to assumptions resulting from new data provided during the operations phase of Ivanpah Solar Electric Generating (ISEGS) surveys. In spring 2017, environmental staff identified the presence of two new plant species, which is an apparent change in the biological conditions because they had not been previously identified from ISEGS.

New Plant Occurrences

Change of Conditions

The new plant species not previously observed onsite were wild horsenettle (*Solanum elaeagnifolium*) and Walker's suncup (*Chylismia [=Camissonia] walkeri* ssp. *tortilis*).

Description

Wild horsenettle is a perennial herbaceous plant in the nightshade (Solanaceae) family. It is a non-native species in California, which was introduced from elsewhere but naturalized in the wild. It occurs throughout California in elevations up to 4,000 feet above mean sea level. It occurs in disturbed habitats such as fields and roadsides mostly in sandy soils.

Wild horsenettle is an ISEGS target weed, which is defined as a species included in the California Department of Food and Agriculture (CDFA), California Invasive Plant Council (Cal-IPC), or Mojave Weed Management Area (MWMA) weed lists (CH2M, 2010; CDFA, 2017; Cal-IPC, 2017; MDRCD, 2017). Wild horsenettle is included in CDFA listing, and has B weed rating, which is defined as, "A pest of known economic or environmental detriment and, if present in California, it is of limited distribution… If found in the state, they are subject to state endorsed holding action and eradication only to provide for

containment, as when found in a nursery. At the discretion of the individual county agricultural commissioner they are subject to eradication, containment, suppression, control, or other holding action" (CDFA, 2017). Wild horsenettle is also identified as one of the 12 "problem weeds" in the MWMA (MDRCD, 2017). This species is not included on Cal-IPC lists.

Walker's suncup is an annual perennial herb in the primrose (Onagraceae) family. It is native to California and is not an ISEGS target weed. This plant occurs in desert mountains up to elevations of 5,800 feet above mean sea level, and is known from Clark Mountain vicinity west of ISEGS (Calflora, 2017).

Recommendations

No recommendations are necessary to accommodate this change in conditions. Biological staff will continue to monitor the project site for new plant species while complying with requirements BIO-18 special-status plants and BIO-13 noxious weeds (CEC, 2010).

References

Calflora. 2017. Information on California plants for education, research and conservation, with data contributed by public and private institutions and individuals, including the Consortium of California Herbaria. Berkeley, California: The Calflora Database. Accessed June 2017. http://www.calflora.org/

California Department of Food and Agriculture (CDFA). 2017. Noxious Weed List – Section 4500 Food and Agriculture Code (PDF). Accessed June 2017. http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia_hp.htm.

California Invasive Plant Council (Cal-IPC). 2017. California Invasive Plant Inventory Database.California Invasive Plant Council, Berkeley. Accessed June 2017. http://cal-ipc.org/paf/

California Energy Commission (CEC). 2010. Commission Decision. *Ivanpah Solar Electric Generating System Documents*. Docket Number 07-AFC-5. September 22. Accessed June 2017. http://www.energy.ca.gov/sitingcases/ivanpah/documents/index.html

CH2M HILL (CH2M). 2010. *Weed Management Plan for the Ivanpah Solar Electric Generating System (Revision 2)*. Sacramento, CA.

Mojave Desert Resource Conservation District (MDRCD). 2017. Mojave Weed Management Area – Long Range Plan. Accessed June 2017. http://www.mojavewma.org/index.html

TECHNICAL MEMORANDUM

Condition of Certification BIO-20 Change of Conditions Report for ISEGS, September 2017

PREPARED FOR:	Tim Sisk/NRG Energy Amanda Scheib/Designated Biologist
COPY TO:	CH2M Environmental Staff
PREPARED BY:	Morgan King/CH2M
DATE:	September 18, 2017
PROJECT NUMBER:	691217

Introduction

The California Energy Commission's *Ivanpah Solar Electric Generating System Commissions Decision* (2010) Condition of Certification (COC) BIO-20 states, in part, that Solar Partners' must identify:

> "…any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts… 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."

Potential changes of conditions include changes to assumptions resulting from new data provided during the operations phase of Ivanpah Solar Electric Generating (ISEGS) surveys. Environmental staff identified several noxious weed species previously observed at ISEGS that had changed agency status with either California Department of Food and Agriculture (CDFA), California Invasive Plant Council (Cal-IPC), or Mojave Weed Management Area (MWMA). In September 2017, environmental staff identified the presence of one new plant species, which is an apparent change in the biological conditions because it had not been previously identified from ISEGS.

Noxious Weed Status Changes

Change of Conditions

CDFA, Cal-IPC, or MWMA changed status of five noxious weed species, previously observed at ISEGS:

- Sahara mustard (*Brassica tournefortii*) – included on CDFA, Cal-IPC, and MWMA lists of California noxious weeds
- Cheat grass (*Bromus tectorum*) - included on CDFA and Cal-IPC lists of California noxious weeds
- Bermuda grass (*Cynodon dactylon*) - included on Cal-IPC list of California noxious weeds
- Sorghum (*Sorghum halepense*) - included on CDFA list of California noxious weeds
- Puncture vine (*Tribulus terrestris*) – included on CDFA, Cal-IPC, and MWMA lists of California noxious weeds

Description

Sahara Mustard

Sahara mustard is an annual plant in the mustard (Brassicaceae) family. It is an invasive non-native species in California, which was introduced from elsewhere but naturalized in the wild. It occurs mostly in the southern third of California in elevations up to 2,600 feet above mean sea level. It occurs in sandy desert and coastal scrubs, and is known to increase fire frequency and fuel load.

When the ISEGS Weed Management Plan was written in 2010, Sahara mustard was not included in the CDFA weed lists (CH2M, 2010). In September 2017, CDFA added Sahara mustard to the list of California noxious weeds, as C weed rating (CDFA, 2017). CDFA C rating is defined as, "A pest of known economic or environmental detriment and, if present in California, it is usually widespread" (CDFA, 2017). Sahara mustard was already an ISEGS noxious weed because it is included on the Cal-IPC and MWMA lists (Cal-IPC, 2017; MDRCD, 2017).

Sahara mustard was first recorded at ISEGS in 2008. Sahara mustard has been observed since 2008 and manually removed in accordance with BIO-13 weed management protocols. Occurrences of this species were reported in the BIO-13 Annual Monitoring Reports (Solar Partners, 2015; Solar Partners, 2016; Solar Partners, 2017).

Cheat Grass

Cheat grass is an annual in the grass (Poaceae) family. It is an invasive non-native species in California, which was introduced from elsewhere but naturalized in the wild. It occurs throughout California. It is a common turf cultivar that can outcompete native plants and it has become the dominant grass in the Great Basin Desert.

When the ISEGS Weed Management Plan was written in 2010, cheat grass was not included in the CDFA weed lists (CH2M, 2010). In February 2016, CDFA added cheat grass to the list of California noxious weeds, as rank C (CDFA, 2017). Cheat grass was already an ISEGS noxious weed because it is included on the Cal-IPC list (Cal-IPC, 2017).

Cheat grass occurs at ISEGS, but it no action is required because it is not feasible to control (CH2M 2010). Occurrences of this species are not included in the BIO-13 Annual Monitoring Report.

Bermuda Grass

Bermuda grass is a perennial in the grass (Poaceae) family. It is an invasive non-native species known throughout California, which was introduced from elsewhere but naturalized in the wild. This species is a common turf and garden cultivar that when escapes into the wild will outcompete native vegetation.

When the ISEGS Weed Management Plan was written in 2010, Bermuda grass was included in the CDFA weed lists as rank C (CH2M, 2010). In April 2015, CDFA delisted Bermuda grass and was subsequently removed from CDFA weed list (CDFA, 2017). Bermuda grass is still an ISEGS noxious weed because it is included on the Cal-IPC list (2017).

Bermuda grass was first observed at ISEGS in 2014, and has not been observed since. Occurrences of this species were reported in the 2014 BIO-13 Annual Monitoring Report (Solar Partners, 2015).

Sorghum

Sorghum (also known as johnsongrass) is a perennial in the grass (Poaceae) family. It is a non-native species in California, which was introduced from elsewhere but naturalized in the wild. It occurs mostly in west and central California in elevations up to 2,600 feet above mean sea level. It occurs in disturbed habitats such as roadsides and agricultural fields.

In 2015, Sorghum was added to the California Code of Regulations (CCR) § 4500 list of Noxious Weed Species, and included in the CDFA list of California noxious weeds, as C weed rating. CDFA C rating is defined as, "A pest of known economic or environmental detriment and, if present in California, it is usually widespread" (CDFA, 2017). When the ISEGS Weed Management Plan was written in 2010, Sorghum did not meet the criteria of a noxious weed (CH2M, 2010). Sorghum is not included on the Cal-IPC or MWMA weed lists (Cal-IPC, 2017; MDRCD, 2017).

Sorghum was observed at ISEGS in 2014 in the bales and waddles onsite for storm water control. This species has not been observed since. Occurrences of this species were reported in the 2014 BIO-13 Annual Monitoring Report (Solar Partners, 2015).

Puncture Vine

Puncture vine is a prostrate annual herb in the caltrop (Zygophyllaceae) family. It is an invasive plant in California that has naturalized in the wild. It occurs throughout California in disturbed locations.

In June 2017, Cal-IPC added puncture vine to its weed list, rank "limited", which is defined as "…species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score" (Cal-IPC, 2017). This species is also included in the CCR § 4500 list of Noxious Weed Species, CDFA, and MWMA lists (CDFA, 2017; MDRCD, 2017).

Puncture vine was first identified at ISEGS in August 2011. Puncture vine has been observed and manually removed each year since first identified in accordance with BIO-13 weed management protocols. Occurrences of this species were reported in the BIO-13 Annual Monitoring Reports (Solar Partners, 2015; Solar Partners, 2016; Solar Partners, 2017).

New Plant Occurrences

Change of Conditions

The new plant species not previously observed onsite was pigweed amaranth (*Amaranthus albus*).

Description

Pigweed amaranth (also known as tumbleweed) is an annual herbaceous plant in the amaranth (Amaranthaceae) family. It is a non-native species in California, which was introduced from elsewhere but naturalized in the wild. It is not included on CDFA, Cal-IPC, or MWMA lists (CDFA, 2017; Cal-IPC, 2017; MDRCD, 2017). It occurs throughout California in elevations up to 7,000 feet above mean sea level. It occurs in disturbed habitats such as fields and roadsides.

Five individuals of pigweed amaranth were observed adjacent to the Construction Logistic Area East revegetation area. Weeds have been regularly removed from this area since initial revegetation efforts were completed in late 2015. Although this species does not meet the ISEGS noxious weed definition, biological monitors removed the individuals in accordance with BIO-13 guidelines. Occurrences of this species are not included in the BIO-13 Annual Monitoring Report.

Recommendations

Recommend revising the ISEGS Weed Management Plan (Table 1 Observed and Potentially Occurring Noxious Weeds at ISEGS) to include those noxious weed species that have changed CDFA, Cal-IPC, or MWMA status since 2010.

References

California Department of Food and Agriculture (CDFA). 2017. Noxious Weed List – Section 4500 Food and Agriculture Code (PDF). Accessed September 2017. http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia_hp.htm.

California Invasive Plant Council (Cal-IPC). 2017. California Invasive Plant Inventory Database. California Invasive Plant Council, Berkeley. Accessed September 2017. http://cal-ipc.org/paf/

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CH2M HILL (CH2M). 2010. *Weed Management Plan for the Ivanpah Solar Electric Generating System (Revision 2)*. Sacramento, CA.

Mojave Desert Resource Conservation District (MDRCD). 2017. Mojave Weed Management Area – Long Range Plan. Accessed September 2017. http://www.mojavewma.org/index.html

Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (Solar Partners). 2017. *Ivanpah Solar Electric Generating System California Energy Commission (07-AFC-5C) Bureau of Land Management (CACA-48668, 49502, 49503, and 49504) Conditions of Certification BIO-13, Annual Weed Management Report January 1, 2016 – December 31, 2016.* Prepared by Designated Biologists. Submitted January 12, 2017.

Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (Solar Partners). 2016. *Ivanpah Solar Electric Generating System California Energy Commission (07-AFC-5C) Bureau of Land Management (CACA-48668, 49502, 49503, and 49504) Conditions of Certification BIO-13, Annual Biological Report January 1, 2015 – December 31, 2015.* Prepared by Designated Biologists. Submitted January 31, 2016.

Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (Solar Partners). 2015. *Ivanpah Solar Electric Generating System California Energy Commission (07-AFC-5C) Bureau of Land Management (CACA-48668, 49502, 49503, and 49504) Conditions of Certification BIO-13, Annual Biological Report January 1, 2014 – December 31, 2014.* Prepared by Designated Biologists. Submitted January 31, 2015.

Exhibit 5

Hazardous Materials
Conditions of Certification

Appendix P

Condition of Certification HAZ-1

List of Hazardous Materials Contained in ISEGS Facility

LIST OF HAZARDOUS MATERIALS CONTAINED AT ISEGS FACILITY

In accordance with the requirements of the Conditions of Certification HAZ-1 of the Commission's approval of the Ivanpah Solar Electric Generating System (ISEGS) (07-AFC-5C), the project owner shall provide to BLM's Authorized Officer and the CPM in the Annual Compliance Report a list of hazardous material contained at the facility.

In 2017, the 300 gallon totes for Sodium Carbonate, Nalco 73801 WR, and Sodium Hypochlorite were removed from the potable water skids at each power block. A new chemical was added in 2017, Propylene Glycol (Intercool P-300) was used as a heat transfer fluid for the Night Shutdown Vacuum Pump Skid.

Table 1 provides the updated list of Hazardous Materials contained and currently in use at the ISEGS facility.

Table 1 - List of Chemicals Contained at ISEGS Facility (2017)

In accordance with CEC Condition of Certification HAZ-1, the following is the list of hazardous materials contained in the facility.

Common Name	Chemical Name	Chemical Location	CAS Number	Largest Container	Estimated Average Daily Amount	Maximum Quantity	Units	Application
Ammonium Hydroxide	Ammonium Hydroxide	Power Block 1, 2, & 3 Injection Skids and West side parking lots (spares)	1336-21-6	300	330	1,800	gallons	Used for pH control on the condensate and feed water systems.
Mineral Oil	Mineral Oil	Power Block Transformers/Switchyards, Solar Field Transformers, Admin Building and HAB Transformers	8012-95-1	9,900	9,900	57,445	gallons	Insulating oil used for transformers
Lubricating oil	Turbinas EP 32 (Turbine Oil)	Power Block STG Lube Oil System, Boiler Feed Pump Turbine, Startup Boiler Feed Pump, Emergency Generators, Diesel fire pumps and Chemical Storage Areas	64742-54-7	5,800	20,000	28,408	gallons	Lubricate rotating equipment (e.g., steam turbine bearings)
Lead Acid Batteries	Lead	Power Block PSB/Battery Rooms, SRSG - UPS EEM Baterry Rooms, Admin. Bldg Battery Room, Emergency Generator Enclosures, Diesel Fire Pump Enclosures	7439-92-1	727	311,348	311,348	pounds	Back-up power / electrical
Lead Acid Batteries	Sulfuric Acid	Power Block PSB/Battery Rooms, SRSG - UPS EEM Baterry Rooms, Admin. Bldg Battery Room, Emergency Generator Enclosures, Diesel Fire Pump Enclosures	7664-93-9	145	52,849	52,849	pounds	Back-up power / electrical
Sodium Hypochlorite	Sodium Hypochlorite	Administration Building Potable Water Chemical Skid	7681-52-9	275	275	275	gallons	Potable water treatment and WSAC oxidizer
Polypropylene glycol	Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-	Contained as a mixture in the WSAC reservoir tank	25322-69-4	800	350	798	gallons	Propylene gylcol is in mixture with water in the WSAC system.
Polypropylene glycol	Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-	Satelitte Accumulation Storage Areas Units 1,2,3; Hazardous Waste Storage Areas	25322-69-4	55	30	385	gallons	Waste propylene gycol for disposal
Diesel Fuel No. 2	Diesel Fuel No. 2	Unit 1, Unit 2, Unit 3 and Admin. Building Emergency and Fire Pump Generators	68476-34-6	840	2,852	3,565	gallons	Fuel for Emergency Generators and Fire Pump engines
Methane	Methane	Piped in supply to Units 1, 2 & 3	74-82-8	Metered	3,346,329	1,575,000,000	cu. feet	Fuel for Auxiliary Boilers and Nighttime Preservation Boilers
Sulfur Hexafluoride	Sulfur Hexafluoride	Switchgear assemblies	2551-62-4	73	73	403	pounds	Used in switchyard/switchgear devices
Heptafluoropropane - HFC 227	1,1,1,2,3,3,3-Heptafluoropropane	Power Block PSB & Administration Building	431-89-0	475	475	8,485	pounds	Fire/explosion extinguishing, suppression and prevention agent
Intercool NFP-P (Intercool P-300)	Propylene Glycol	Power Block 1, 2, & 3 and Heliostat Assembly Building	57-55-6	55	165	1,045	gallons	Night shutdown vacuum pump skid. Used as heat transfer fluid
Acetylene	Acetylene	Heliostat Assembly Building	74-86-2	130	750	1,595	cu. feet	Used for welding/cutting metals
Air Compressed	Air	Heliostat Assembly Building	132259-10-0	218	218	872	cu. feet	used for remote tools
Argon Compressed	Argon Compressed	Heliostat Assembly Building	7440-37-1	336	436	9,525	cu. feet	Used for welding
Carbon Dioxide	Carbon Dioxide	Power Block Emergency Generator Enclosure	124-38-9	180	436	1,620	cu. feet	Fire suppression
Helium	Helium	Heliostat Assembly Building	7440-59-7	218	654	1,744	cu. feet	For leak detection

Common Name	Chemical Name	Chemical Location	CAS Number	Largest Container	Estimated Average Daily Amount	Maximum Quantity	Units	Application
Liquefied Petroleum Gas (lpg)	Propane	Heliostat Assembly Building & Administration Building	74-98-6	22	53	125	gallons	Used as fuel for equipment
Nitrogen	Nitrogen	Heliostat Assembly Building	7727-37-9	304	3,924	12,160	cu. feet	Used for purging gas systems
Oxygen	Oxygen	Heliostat Assembly Building	7782-44-7	251	1,800	5,620	cu. feet	Used for welding/cutting metals
Oily Debris - Hazardous Waste	Oily Debris	Satellite Accumulation Storage Areas Units 1,2,3; Hazardous Waste Storage Areas	70514-12-4	55	165	3,470	gallons	Waste - for disposal
Lubricating oils, used	Used lubricating oils	Satellite Accumulation Storage Are Units 1,2,3; Hazardous Waste Storage Area	70514-12-4	55	165	440	gallons	Waste - for disposal
Lead	Broken Mirrors - Primer Paint Lead Content	Heliostat Assembly Building	7439-92-1	40,000	690	21,700	pounds	Waste - for disposal
Soil Impacted with Hydraulic Oil	Soil Impacted with Hydraulic Oil	Power Block 3	64742-54-7	40,000	1,500	17,195	pounds	Waste - for disposal

Appendix Q

Condition of Certification HAZ-5

Operations Security Plan
Background Investigations for All Employees and Contractors

energyservices
an NRG service

NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2012 Fax: 702-815-2030

January 3, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 9236

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Operation Security Plan Project Owner Statement Pertaining to All Current Employee and Contractor Background Investigation to fulfill California Energy Commission Conditions of Certification, HAZ-5

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certification HAZ-5 of the Commission's approval of the Ivanpah Solar Electric Generating System, we are providing the following statement as a requirement in the Annual Compliance Report:

All current NRG employees undergo full background investigations as required in NRG hiring process. All contractors (vendors) who provide services to the project/facility go through pre-qualification process and NRG internal approval process, "Adapt-One". The certification statements are appended in the Operations Security Plan.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

energyservices
an NRG service

NRG Ivanpah Solar Electric Generating /system
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2012 Fax: 702-815-2030

January 3, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 9236

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Project Owner Statement Pertaining to Operations Security Plan Includes Hazardous Materials Transport Vendor Certifications for Security Plans and Employee Background Certifications to fulfill California Energy Commission Conditions of Certification, HAZ-5

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certification HAZ-5 of the Commission's approval of the Ivanpah Solar Electric Generating System, we are providing the following statement as a requirement in the Annual Compliance Report:

ISEGS Operations do not transport hazardous materials. Hazardous wastes generated on site are transported to the TDSF (Treatment Storage and Disposal Facility) by the approved vendor. The vendor certification and employee background certifications are appended in the Operations Security Plan.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Affidavit of Compliance for Project Owners

I, **William Dusenbury, General Manager**

(Name of Person signing Affidavit and Title)

do hereby certify that background investigations to ascertain accuracy of the identity and employment history of all employees of

NRG Energy Services

(Company Name)

for employment at

Ivanpah Solar Electric Generating System located at 100302 Yates Well Rd, Nipton, CA 92364

(Project Name and location)

have been conducted as required by the U.S. Bureau of Land Management Right-of-Way and California Energy Commission Decision for the above-named project.

Will D

(Signature of Officer or Agent)

Dated this 22ND day of JANUARY, 2018.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY BLM's AUTHORIZED OFFICER AND THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

Affidavit of Compliance for Contractors by Project Owners

I, **William Dusenbury, General Manager**

(Name of Person signing Affidavit and Title)

do hereby certify that all Contractors who are approved to work at Ivanpah Solar Electric Generating Station have gone through NRG energy internal approval process "Adapt-one"

for contract work at

Ivanpah Solar Electric Generating System located at 100302 Yates Well Rd, Nipton, CA 92364

(Project Name and location)

have been conducted as required by the U.S. Bureau of Land Management Right-of-Way and California Energy Commission Decision for the above-named project.

Will Dusenbury

(Signature of Officer or Agent)

Dated this 22ND day of JANUARY, 2018.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY BLM's AUTHORIZED OFFICER AND THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

Exhibit 6

Land Use and Recreation
Conditions of Certification

Appendix R

Conditions of Certification
LAND-3 & RECREATION-1

Solar/Ecological Interpretive
Center Annual Report

energyservices
an NRG service

NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 5, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) / Bureau of Land Management (CACA-055108) Summary of Estimated Public Use of Solar/Ecological Interpretive Center and Issues Associated with Operating and Maintenance Activities, to fulfill California Energy Commission Conditions of Certification, LAND-3 AND RECREATION-1

Dear Mr. Douglas and Mr. Ahrens,

Pursuant to the requirements of Conditions of Certification LAND-3 and RECREATION-1 of the Commission's approval of the Ivanpah Solar Electric Generating System (ISEGS), we are providing the following information as a requirement in the Annual Compliance Report:

As required by COC LAND-3 and REC-1 Verification, the project owner shall provide a summary of estimated public use of the Solar / Ecological Interpretive Center (SEIC) and summarize any issues associated with operating and maintenance activities in each Annual Compliance Report.

When the SEIC facility was inspected and accepted by BLM on May 13, 2015, ISEGS has transferred ownership of the facility to BLM, including operations and maintenance activities. ISEGS has no longer has jurisdiction of the facility; therefore, we are unable to provide information on annual estimated public use or issues related to operations and maintenance activities on this report, and in future reports.

In order for ISEGS for completely fulfill its mitigation obligation for the SEIC, ISEGS is required to provide a panel that will be posted into the information kiosk, and a replacement panel that will be provided to BLM for safekeeping. ISEGS completed the design and submitted to BLM for review and approval on December 19, 2016. It was originally anticipated that the information panel would be completed in 2017, but BLM has not completed the review and approval has not been received for the panel to be

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produced. ISEGS will continue to coordinate with BLM to facilitate the approval of the kiosk panel design, and once approved, we will proceed with the production.

Please feel free to contact me with any questions.

Thank you.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Exhibit 7

Soil & Water Conditions of Certification

Appendix S

Condition of Certification S&W-1

Storm Water BMP Monitoring and Maintenance Activities Report

Ivanpah Solar Electric Generating System
California Energy Commission (07-AFC-5C)
Bureau of Land Management
(CACA-48668, 49502, 49503, and 49504)
Conditions of Certification Soil & Water-01

January 1, 2017 – December 31, 2017
Reporting Period

January18, 2018

Prepared by: Designated Biologist on behalf of Solar Partners I, II, VIII LLC
100302 Yates Well Road
Nipton, CA 92364

In accordance with the requirements of the Conditions of Certification SOIL & WATER-01 of the Commission's approval of the Ivanpah Solar Electric Generating System (07-AFC-5C), the project owner shall provide in the annual compliance report, information on the results of storm water best management practices (BMP) monitoring and maintenance activities.

Table 1 outlines the repairs performed during 2017 to SWPPP BMP at ISEGS. The repairs typically followed rain events.

Table 1: Storm Water Pollution Prevention Plan BMP Repairs

Date	Description
3/30/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
4/11/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
4/12/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
4/13/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
4/17/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
4/18/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
4/24/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
4/25/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
5/9/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
5/10/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
5/11/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
5/15/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
5/16/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
5/17/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
6/5/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
6/6/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
6/7/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
6/22/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
7/25/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.
8/8/17	Remove debris, perform repairs, reset straw bales and wattles, and sand bags.

Appendix T

Condition of Certification S&W-2

Storm Water Pollution Prevention Plan Annual Report

2016-2017

ANNUAL REPORT

FOR STORM WATER DISCHARGES
ASSOCIATED WITH INDUSTRIAL ACTIVITIES

Reporting Period July 1, 2016 through June 30, 2017

Retain a copy of the completed Annual Report for your records.

Please remember that a Notice of Termination and new Notice of Intent are required whenever a facility operation is relocated or changes ownership.

If you have any questions, please contact your Regional Board Industrial Storm Water Permit Contact. The names, telephone numbers, and e-mail addresses of the Regional Board contacts, as well was the Regional Board office addresses, can be found at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/contact.shtml

General Information

A. Facility Information

WDID: 6B36I024279

Business Name: ISEGS

Physical Address: 100302 Yates Well Road

City: Nipton
State: CA
Zip: 92364

Contact Person: Timothy Higdon
Phone: 702-815-2016
Email: tim.higdon@nrg.com

Standard Industrial Classification (SIC) Codes: 4911-Electric Services

B. Facility Owner Information

Business Name: NRG EnergyServices LLC

Mailing Address: 100302 Yates Well Road

City: Nipton
State: CA
Zip: 92364

Contact Person: Timothy Higdon
Phone: 702-815-2016
Email: tim.higdon@nrg.com

C. Facility Billing Information

Business Name: Ivanpah Solar Electric Generating Station

Mailing Address: HCR1 Box 280

City: Nipton
State: CA
Zip: 92364

Contact Person: Timothy Higdon
Phone: 702-815-2016
Email:

Question Information

1. Has the Discharger conducted monthly visual observations (including authorized and unauthorized Non-Storm Water Discharges and Best Management Practices) in accordance with Section XI.A.1?

☒ Yes ☐ No

If No, see Attachment 1, Summary of Explanation.

2. Has the Discharger conducted sampling event visual observations at each discharge location where a sample was obtained in accordance with Section XI.A.2?

☒ Yes ☐ No

If No, see Attachment 1, Summary of Explanation.

3. Did you sample the required number of Qualifying Storm Events during the reporting year for all discharge locations, in accordance with Section XI.B?

☐ Yes ☒ No

If No, see Attachment 1, Summary of Explanation.

4. How many storm water discharge locations are at your facility?

4

5. Has the Discharger chosen to select Alternative Discharge Locations in accordance with Section XI.C.3?

☐ Yes ☒ No

6. Has the Discharger reduced the number of sampling locations within a drainage area in accordance with the Representative Sampling Reduction in Section XI.C.4?

☐ Yes ☒ No

7. Permitted facilities located within an impaired watershed must assess for potential pollutants that may be present in the facility's industrial storm water discharge. Using the table below, populated based on the facility's location, indicate the presence of the potential pollutant at the facility.

The facility is not located within an impaired HUC 10 watershed. You are not required to select any Industrial Pollutants. Skip Questions 8 and 9.

8. Has the Discharger included the above pollutants in the SWPPP pollutant source assessment and assessed the need for analytical monitoring for the pollutants?

☒ Yes ☐ No

If No, what date will the parameter(s) will be added to the SWPPP and Monitoring Implementation Plan?

9. Were all samples collected in accordance with Section XI.B.5?

☒ Yes ☐ No

If No, see Attachment 1, Summary of Explanation.

10. Has any contained storm water been discharged from the facility this reporting year?

☒ Yes ☐ No

If Yes, see Attachment 1, Summary of Explanation.

11. Has the Discharger conducted one (1) annual evaluation during the reporting year as required in Section XV?

☒ Yes ☐ No

If Yes, what date was the annual evaluation conducted? 06/26/2017

If No, see Attachment 1, Summary of Explanation.

12. Has the Discharger maintained records on-site for the reporting year in accordance with XXI.J.3?

☒ Yes ☐ No

If No, see Attachment 1, Summary of Explanation.

If your facility is subject to Effluent Limitation Guidelines in Attachment F of the Industrial General Permit, include your specific requirements as an attachment to the Annual Report (attach as file type: Supporting Documentation).

ANNUAL REPORT CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under the direction or supervision in accordance with a system designed to assure that qualified personnel propoerly gether and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: William Dusenbury

Title: Plant Manager Date: 07/05/2017

2016-2017

Annual Report for WDID 6B36I024279

Summary of Explanations

Explanation Question	Explanation Text
Question 3	ISEGS had only4 qualifying storm events for the reporting period. The events on 12/22/16 and 1/20/17 were sampled. The events on 8/27/16 occured at 1am and sampling could not be accomplished safely due to lightning. A QSE also occured on 10/24/16, however sampling could not be performed due to lightning throughout the entire day.
Question 10	Containment berms were check for contaminants and drained on 12/27/16.

Summary of Attachments

Attachment Type	Attachment Title	Description	Date Uploaded	Part Number	Attachment Hash

2016-2017

Annual Report for WDID 6B36I024279

List of Identified Pollutants within the Impaired Watershed

Parameter	Pollutant	Present at Facility?

Dusenbury, William R.

From: do_not_reply@waterboards.ca.gov
Sent: Monday, July 03, 2017 10:43 AM
To: Dusenbury, William R.
Subject: SMARTS eAuthorization Form

Organization ID: 623259
NRG EnergyServices LLC
100302 Yates Well Road
Nipton CA 92364

Your eAuthorization Form was received by the State Water Board. You are now authorized to certify and submit

applications and reports electronically using the Storm Water Multiple Application Reporting and Tracking System (SMARTS).

If you have any questions, please contact SMARTS Help Center : 1-866-563-3107.

Appendix U

Condition of Certification S&W-4

Annual Groundwater Consumption Record

2017 IVAPAH SOLAR ELECTRIC GENERATING SYSTEM WATER CONSUMPTION

(Compliance with SOIL&WATER-4)

MONTH	Well #1				Well #2				CONSUMPTION DISTRIBUTION								2017 TOTAL BY MONTH
	Permit #2010110649 (WP 6877)				Permit #2010110649 (WP 6877)												
	Pump A Common				Pump B Common				UNIT 1		UNIT 2		UNIT 3		COMMON AREA		
	FIT1010				FIT2010												
	Start (Meter Reading)	Finish (Meter Reading)	(gallons)	(acre feet)	Start (Meter Reading)	Finish (Meter Reading)	(gallons)	(acre feet)	(gallons)	(acre feet)	(gallons)	(acre feet)	(gallons)	(acre feet)	(gallons)	(acre feet)	(acre feet)
Jan-2017	0	391,909	391,909	1.2027	0	358,126	358,126	1.0990	202,660	0.6219	282,159	0.8659	122,202	0.3750	143,014	0.4389	2.3018
Feb-2017	391,909	878,233	486,324	1.4925	358,126	736,152	378,026	1.1601	256,902	0.7884	280,143	0.8597	214,039	0.6569	113,266	0.3476	2.6526
Mar-2017	878,233	1,448,741	570,508	1.7508	736,152	1,309,564	573,412	1.7597	349,278	1.0719	479,623	1.4719	263,787	0.8095	51,231	0.1572	3.5106
Apr-2017	1,448,741	3,002,751	1,554,010	4.7691	1,309,564	2,661,564	1,352,000	4.1491	443,157	1.3600	484,128	1.4857	430,149	1.3201	1,548,576	4.7524	8.9182
May-2017	3,002,751	4,277,681	1,274,930	3.9126	2,661,564	3,967,474	1,305,910	4.0077	636,542	1.9535	894,083	2.7438	656,640	2.0152	393,575	1.2078	7.9203
Jun-2017	4,277,681	5,658,431	1,380,750	4.2374	3,967,474	5,700,744	1,733,270	5.3192	741,892	2.2768	877,496	2.6929	986,745	3.0282	507,887	1.5586	9.5566
Jul-2017	5,658,431	7,172,081	1,513,650	4.6452	5,700,744	7,392,554	1,691,810	5.1920	732,520	2.2480	1,249,990	3.8361	996,549	3.0583	226,402	0.6948	9.8372
Aug-2017	7,172,081	8,444,231	1,272,150	3.9041	7,392,554	8,848,412	1,455,858	4.4679	562,626	1.7266	1,107,944	3.4002	809,251	2.4835	248,187	0.7617	8.3719
Sep-2017	8,444,231	9,558,451	1,114,220	3.4194	8,848,412	10,123,534	1,275,122	3.9132	397,332	1.2194	571,992	1.7554	579,026	1.7770	840,992	2.5809	7.3326
Oct-2017	9,558,451	10,232,440	673,989	2.0684	10,123,534	10,647,675	524,141	1.6085	324,399	0.9955	529,398	1.6247	228,970	0.7027	115,363	0.3540	3.6769
Nov-2017	10,232,440	11,003,384	770,944	2.3659	10,647,675	10,994,359	346,684	1.0639	258,565	0.7935	408,173	1.2526	237,482	0.7288	213,408	0.6549	3.4299
Dec-2017	11,003,384	11,571,934	568,550	1.7448	10,994,359	11,556,528	562,169	1.7252	310,542	0.9530	499,760	1.5337	203,525	0.6246	116,892	0.3587	3.4700
TOTAL			**11,571,934**	**35.5130**			**11,556,528**	**35.4657**	**5,216,414**	**16.0086**	**7,664,888**	**23.5227**	**5,728,365**	**17.5797**	**4,518,795**	**13.8677**	**70.9786**
YTD (gallons)	**23,128,462**								**23,128,462**								
YTD (acre feet)	**70.98**								**70.98**								
ANNUAL LIMIT (acre feet)	**100.00**								**100.00**								
REMAINING CAPACITY (acre feet)	**29.02**								**29.02**								

Appendix V

Condition of Certification S&W-5

Annual Summary of Heliostats Failed, Cause of Failure, Cleanup and Mitigation Performed

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NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 8, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Annual Summary Heliostats Failed, Cause of the Failure, Cleanup and Mitigation Performed, to fulfill California Energy Commission Conditions of Certification, SOIL&WATER-5

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Condition of Certification SOIL&WATER-5 of the Commission's approval of the Ivanpah Solar Electric Generating System (ISEGS), the project owner shall prepare an annual summary of the number of heliostats failed, cause of the failure, and cleanup and mitigation performed for each failed heliostat.

Ivanpah Solar Electric Generating System (ISEGS) has a total of 173,655 heliostats as designed through Ivanpah 1, 2, and 3. High wind gusts in excess of 50mph are predominantly the main cause of failure of heliostats and heliostat assemblies with a very small percentage of heliostat failures due to lightning strike. The Ivanpah Control Room monitors wind speeds daily and advises everyone working in the solar field to clear the area when wind speeds is 25mph and greater to avoid potential injuries. ISEGS recorded a maximum 97mph wind speed in October 2017 and 94mph wind speed in November 2017. The following are the main two types of heliostat failures cause by high winds:

- Broken Heliostats - Either one of both of the heliostats or mirrors are broken.
- Heliostat Assembly Failures - The heliostat assembly has come off the pylon resulting in broken heliostats.

The table below shows the number of days the ISEGS Distributed Control System recorded wind speeds in excess of 50-mph for each month in 2017.

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Month	No. of Days Wind Speed Exceeded 50mph	Maximum Recorded Wind Speeds
Jan	5	70 mph
Feb	2	55 mph
March	2	66 mph
April	1	60 mph
May	2	54 mph
Jun	2	54 mph
Jul	1	61 mph
Aug	2	79 mph
Sep	7	70 mph
Oct	3	97 mph
Nov	7	94 mph
Dec	5	88 mph

Ivanpah has engaged a trained contractor to perform broken heliostat replacement and clean-up on a regular basis at Ivanpah 1, Ivanpah 2, and Ivanpah 3 solar fields. The broken heliostats collected from each solar field are transferred into a central broken heliostat waste bin accumulation area located within the Heliostat Assembly Building area. The broken heliostat waste bins are covered with lock, signage, and waste label. Once the broken heliostat waste accumulation bins are full or approaching the 90-day storage limit, they are removed from the site and transported by a facility-contracted licensed waste hauler to an approved facility; currently U.S. Ecology in Beatty, Nevada. Efforts continue to be made to locate a recycler able to accommodate the mirrors; however none have been found to date.

Through 2017, 3.22% of the heliostats within the three solar array fields have broken with approximately 2% of the total heliostat breaks within Ivanpah 1, Ivanpah 2, and Ivanpah 3 solar fields are associated with the heliostat assembly failures. Heliostat only replacements continued throughout 2017, and heliostat assembly replacements commenced during the third quarter of 2017. Of the 5,600 heliostats broken to date, there were 725 heliostats that were replaced in 2017, and numerous heliostat assemblies have been repaired or replaced during the 2017 reporting period. This effort will continue in 2018 including regular maintenance of azimuth drive bolts that will be tightened or replaced to reduce potential heliostat assembly failures in the future. A summary of failed heliostats is shown by location on the table below.

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2017 Heliostat Annual Summary Report

	Ivanpah 1	Ivanpah 2	Ivanpah 3	Total
No. of Heliostats (As Designed)	53,555	60,050	60,050	**173,655**
No. Broken Heliostats (Through 2017)	2,672	935	1,993	**5,600**
Broken Heliostat Percentage	4.99%	1.56%	3.32%	**3.22%**
Replacement of Failed Heliostats (2017)	372	168	185	**725**
Percentage of Failed Heliostats Replaced	14%	18%	9%	**13%**
No. of Broken Heliostats to be Replaced	2,300	767	1,808	**4,875**

A summary of the above listed components is tracked to potentially assist in predicting component failures in future operating years.

Please feel free to contact me if you have questions.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Exhibit 8

Traffic and Transportation Conditions of Certification

Appendix W

Condition of Certification TRANS-3

Heliostat Positioning Plan Update

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NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

December 11, 2017

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C)
2017 Update to Ivanpah Solar Electric Generating System Heliostat Positioning Plan (TRANS-3)

Dear Mr. Douglas and Mr. Ahrens,

Pursuant to the requirements of CEC Condition of Certification, TRANS-3 and Section 6 of the Heliostat Positioning Plan (HPP), the 2017 update to the HPP is being submitted, on behalf of Solar Partners I, II, and VIII, LLCs, for your review.

Please feel free to contact me with any questions or concerns.

Thank you.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

2017 Update Report to Ivanpah Solar Electric Generating System Heliostat Positioning Plan

Background:

This report is provided specific to the annual HPP update as required by Section 6 of the monitoring plan per TRANS-3. As required by TRANS-3, the Heliostat Positioning Plan (HPP) Section 6.0 provides for a monitoring plan that a) obtains field measurements in response to legitimate complaints; b) verifies that the HPP would avoid the potential for human health and safety hazards including temporary or permanent blindness at locations of observers; and c) provides requirements and procedures to document, investigate and resolve legitimate complaints regarding glare. Furthermore, TRANS-3 requires that the monitoring plan should be coordinated with the FAA, U.S. Department of the Navy, CalTrans, CHP, and Clark County Department of Aviation in relation to the proposed Southern Nevada Supplemental Airport. The HPP is to be updated on an annual basis for the first 5 years, and at 2-year intervals thereafter for the life of the project.

Previously, Sandia National Laboratories (Sandia) obtained ground-based measurements of glare on April 24, 2014. The established threshold level for glare is the "potential after image" as described in Section 2.1.1 and 2.2 and Figure 2-1 of the approved HPP. Ground-based measurements have not shown levels above this threshold. As a result, a report was submitted on December 8, 2014 that recommended removing the requirement for ground-based cameras to monitor for glare from the facility.

Aerial measurements obtained of glare from the facility during the April 24, 2015 monitoring did show two measurements in excess of the established threshold. The ISEGS facility implemented new flux/standby dispersal algorithms in response to these measurements on July 17, 2014. Subsequently, measurements were obtained of glare from the facility on July 22, 2014. None of the measurements obtained were above the threshold established in the approved HPP. However, as reported by Sandia, glare was bright enough that reports from aerial observers may still be expected.

In 2016, Sandia, in cooperation and with the support of the ISEGS facility, was awarded a multi-year grant to investigate potential opportunities to decrease glare through revised heliostat positioning algorithms. These efforts commenced in 2016 and concluded in September 2017 (see details below). Sandia will prepare a report that describes the outcome of its review.

Pilot Reports and HPP Modifications in 2017:

There were no formal pilot or airline reports due to glint or glare concerns at Ivanpah in 2017.

There were no HPP modifications made in 2017.

While ISEGS is constantly exploring potential enhancements to the operational algorithms, the approved HPP is working as intended. The facility will continue to remain in compliance with the requirements of the approved HPP.

Activities 2017:

The ISEGS facility continues to investigate refinements to the positioning algorithms to reduce the potential for reports from aerial observers, in collaboration with the CEC, the BLM, the other agencies named in TRANS-3 as well as Dr. Clifford Ho and Sandia. Sandia, in cooperation and with the support of the ISEGS facility, was awarded a multi-year grant to develop, as possible, revised positioning algorithms to decrease glare from the facility. These efforts commenced in 2016. ISEGS and Sandia met monthly until September of 2017 to discuss potential improvements to the HPP.

The efforts by Sandia have included enhancements to a suite of software used for the analysis of glare, flux and optical modeling. The first of the tools that was enhanced is the Solar Glare Hazard Analysis Tool (SGHAT), a model that determines when and where solar glare can occur throughout the year from a user-specified array and observation points. This tool, in combination with SolTrace, a model that displays data as flux maps and SolarPILOT, a comprehensive power tower optical-modeling tool, was used to analyze different heliostat aiming strategies in 2017. To date, no changes to the HPP have been recommended by Sandia in 2017. Sandia will prepare a report that summarizes its grant and the outcome of its review.

Amansec, Manolito

From: Sisk, Tim
Sent: Tuesday, December 12, 2017 8:29 AM
To: Douglas, Joseph@Energy (Joseph.Douglas@energy.ca.gov) (Joseph.Douglas@energy.ca.gov); mahrens@blm.gov
Cc: karen.mcdonald@faa.gov; 'robert.p.alenander@faa.gov'; 'brian.armstrong@faa.gov'; 'davis.kessler@faa.gov'; 'terr.hansen@usmc.mil'; 'jamal.elsaleh@dot.ca.gov'; 'moe.bhuyian@dot.ca.gov'; 'imaher@chp.ca.gov'; 'tarnold@co.clark.nv.us'; 'jmartin@co.clark.nv.us'; Dusenbury, William R.; Amansec, Manolito; Sisk, Tim
Subject: ISEGS - TRANS-3 HPP 2017 Update
Attachments: Ivanpah HPP Update 12-11-2017_Final_signed.pdf

Mr. Douglas and Mr. Ahrens,

In compliance with 07-AFC-5 TRANS-3 Heliostat Positioning Plan (HPP), please find Ivanpah Solar Electric Generating System (ISEGS) 2017 update attached.

Regards,
Timothy R. Sisk
Manager, Environmental Business
NRG Energy, West Region
5790 Fleet Street, Suite 200
Carlsbad, CA 92008
760-710-2129 (o)
860-334-8081 (c)

Exhibit 9

Transmission Line Safety & Nuisance Conditions of Certification

Appendix X

Condition of Certification TLSN-3

Summary of Inspection Results and Fire Prevention Activities along the Right-of-Way

Ivanpah Solar Electric Generating System
California Energy Commission (07-AFC-5C)
Bureau of Land Management
(CACA-48668, 49502, 49503, and 49504)
Conditions of Certification TLSN-3

Summary of Inspections
January 1, 2017 – December 31, 2017
Reporting Period

January 4, 2018

Prepared by: Designated Biologist on behalf of Solar Partners I, II, VIII LLC

100302 Yates Well Road
Nipton, CA 92364

Introduction

This report is submitted in accordance with condition of certification (COC) TLSN-3 of the California Energy Commission (CEC) Ivanpah Solar Electric Generating System (ISEGS) Commission Decision, which states "During the first 5 years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the rights-of-way and provide such summaries in the Annual Compliance Report provided to BLM's Authorized Officer and the CPM."

Summary

Infestations of weeds are a known fuel source for fires. Biological monitors conducted bi-monthly weed surveys per COC BIO-13 from February through November on perimeter fence lines, which includes the generation tie line. Data was collected when noxious weeds were located and the plants were collected for reporting and disposal.

Exhibit 10

Visual Resources
Conditions of Certification

Appendix Y

Condition of Certification VIS-1

Surface Treatment of Project Structures and Buildings Status Report

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NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 5, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C) Surface Treatment of Project Structures and Buildings Status Report to fulfill California Energy Commission Conditions of Certification, VIS-01

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of Conditions of Certification VIS-01 of the Commission's approval of the Ivanpah Solar Electric Generating System, we are providing the following status report as a requirement in the Annual Compliance Report:

The permanent structures Administration Building and the Units 1, 2, & 3 Plant Services Buildings (PSB'S) are in good condition. No structural repairs or modifications were performed during the reporting period to Units 1, 2 or 3. The Heliostat Assembly Building (HAB) sustained wind related damages on March 30, 2017 to the material seams and required repairs.

Maintenance for the Administration Building and Units 1, 2, & 3 (PSB'S) included bi-monthly HVAC service, quarterly and annual fire system inspections, and some minor door repairs. HAB maintenance and repairs have consisted of bi-monthly HVAC service, quarterly and annual fire system inspections, patching of torn tent seams, insulation replacement due to wind/rain damage, and strapping of tent panels to secure to frame structure during wind events.

Scheduled maintenance for structures and buildings for 2018 include bi-monthly HVAC service, quarterly and annual fire system inspections, and minor repairs as necessary. Continued repairs or replacement of panels and insulation on the HAB will likely be a continued maintenance process in 2018 and beyond.

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NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

Please feel free to contact me with any questions.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

Appendix Z

Condition of Certification VIS-2

Golf Course Landscape Screening Maintenance Activities Report

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NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

January 8, 2018

Mr. Joseph Douglas
Compliance Project Manager
California Energy Commission, Siting, Transportation and Environmental Protection Division
1516 9th Street
Sacramento, CA 95814

Mr. Michael Ahrens
Authorized Officer
Bureau of Land Management, Needles Field Office
1303 U.S. Hwy 95 S.
Needles, CA 92363

RE: Ivanpah Solar Electric Generating System (07-AFC-5C)
Golf Course Landscape Screening Maintenance Report, to fulfill California Energy Commission Conditions of Certification, VIS-2

Dear Mr. Douglas and Mr. Ahrens,

In accordance with the requirements of the Conditions of Certification VIS-2 of the Commission's approval of the Ivanpah Solar Electric Generating System, the project owner shall report landscape maintenance activities, including replacement of dead or dying vegetation, for the previous year of operation in each annual compliance report.

As indicated in the previous reports, Primm Valley Golf Club (PVGC) has assumed responsibility for the maintenance and irrigation of the plants that were previously installed/provided at their property pursuant to the CSA. In this regard, ISEGS deemed that its responsibility under the requirement of Condition of Certification VIS-2 has been fully satisfied as acknowledged by PVGC with their letter dated September 16, 2015. Therefore, we are unable to provide information on the landscape maintenance activities, including replacement of dead or dying vegetation in this report, and will not be providing such information in future reports since PVGC will not provide this information to ISEGS; as they assumed full responsibility of the golf course landscape screening required under CEC Condition of Certification VIS-2.

Please feel free to contact me with any questions.

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NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, HCR1, Box 280 Nipton, CA 92364
Ph: 702-815-2021 Fax: 702-815-2030

Thank you.

William Dusenbury

General Manager,
NRG Ivanpah Solar Electric Generating System
100302 Yates Well Road, Nipton, CA – 92364

CC: Tim Sisk, NRG
Document Control Specialist – NRG.

September 16, 2015

Solar Partners II, I & VIII, LLC
c/o Doug Davis
Ivanpah Solar Thermal Power Plant
100302 Yates Well Road, HCR1, Box 280
Nipton, CA 92364

Dear Solar Partners :

At our request, the Solar Partners Ivanpah Solar Thermal Power Plant project ("Ivanpah") prepared and implemented a perimeter landscape screening plan to reduce the visibility of the Ivanpah project as seen from our golf course. This plan and its purposes are described by the California Energy Commission ("CEC") in its Condition VIS-2 for Ivanpah. The purpose of the VIS-2 plan was to provide screening of the power project while retaining as much of the scenic portion of the overall views of Ivanpah Valley and Clark Mountains as feasible.

To implement CEC Condition VIS-2, Ivanpah entered into a Consulting Services Agreement with Par-3 Landscape and Maintenance, Inc., dated August 20, 2013 (the "CSA"). The CSA called for the installation of Modell Pines trees and hybrid Mexican Fan Palms. The trees were installed under the CSA, and the work completed in October of 2013.

As a result of our most recent meetings, Ivanpah has agreed to pay the replacement costs for twenty-two (22) trees: ten (10) Modell Pines trees and twelve (12) hybrid Mexican Fan Palms. The trees will be installed by PVGC, and Ivanpah will reimburse PVGC for the costs of installation.

As a result of these actions, PVGC believes that Ivanpah has fully satisfied the spirit and the letter of CEC Condition VIS-2, and we are satisfied with the result of Ivanpah's cooperative efforts. Accordingly, from this date forward, PVGC will assume responsibility for maintenance and irrigation of these new plantings as well as the other plantings made on our property pursuant to the CSA. No further action by ISEGS with respect to these plantings is required.

Sincerely,

Kam Brian
Chief Operating Officer
Par 4 Golf Management, Inc.

Exhibit 11

Waste Management
Conditions of Certification

Appendix AA

Condition of Certification WASTE-6

Operations Waste Management Plan
Annual Report

Ivanpah Solar Electric Generating System (07-AFC-5C)

Operations Waste Management Plan Annual Report (WASTE-6)

January 5, 2018

OPERATIONS WASTE MANAGEMENT PLAN ANNUAL REPORT

In accordance with the requirements of the Conditions of Certification WASTE-6 of the Commission's approval of the Ivanpah Solar Electric Generating System (07-AFC-5C), the project owner shall also document in each Annual Compliance Report the following information:

- Actual volume of wastes generated, and the waste management methods used during the year.
- Provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan.
- Update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

Wastes at ISEGS are managed according to the Ivanpah Solar Electric Generating System, Environmental Procedures, and Operations Waste Management Plan. Wastes are classified according to California Code of Regulations (CCR) Title 22, Division 4.5, and Chapter 11. Patriot Environmental Services (Patriot) is the ISEGS designated waste transporter of hazardous waste, and U.S. Ecology, 12 miles south of Beatty Nevada is the primary destination facility, with the exception of non-hazardous wastewater which is transported to Patriot Waste Water in Orange County, CA. Hazardous waste manifests are maintained in the Environmental Specialist's office and electronically on a NRG centralized server. These manifests are also provided to Department of Toxic Substances Control within two weeks of waste shipment. The Plan divides wastes into two streams. However for efficiency of disposal, both streams are mixed for transportation. *Tables 1 and 2* provide a comparison of the projected and actual waste streams from Operations and Maintenance respectively. *Table 3* lists the manifested wastes shipped from ISEGS during 2017.

Table 1: Waste Stream Summary - Operations Phase

Waste	Frequency	Projected Amount	Actual Amount	Notes
Oily water and oil-water separator sludge	Continuously	1,000 gal/year	1,970 gal	The majority of oily water came from rinsing down concrete from three lube oil releases, the remainder came from rinsing containers and miscellaneous equipment.
Waste oil	Continuously	750 gal/year	0	Waste oil
Oily Debris	Continuously	2 tons/year	24,220 lb / 10.98 tons	Used rags and absorbents account for 7,025 lbs while hydrocarbon impacted soil accounts for 17,195 lbs (99%), of which only 750lbs are from what we consider routine pick up of contaminated soil from minor leaks.
Universal wastes (fluorescent light tubes, batteries, mercury-containing devices, electronic wastes, aerosol cans)	Continuously	500 lb/year	480 lb	Should remain well under 500 lb/yr. Primarily alkaline batteries with some lithium batteries, aerosols, fluorescent tubes, and electronic wastes.
Empty containers <55 gallons	Continuously	200 lb/year	0	No empty containers were shipped in 2017.
Empty containers > 5 gallons	Continuously	200 lb/year	200 lb	Empty tote last contained HCl
Municipal refuse and garbage	Continuously	50 CY/year	1,250 CY	Working on recycling program with vendor
Broken Mirrors with Lead Paint	Continuously	Unknown due to unanticipated breakage	260,180 lbs	Mirrors are divided into two categories those with RCRA levels of lead contamination and those with California only levels.

Table 2: Waste Stream Summary – Maintenance Activities

Waste	Frequency	Projected Amount	Actual Amount	Notes
Uncontaminated scrap metal, including equipment, machinery, piping	Infrequently	20 CY/year	0	Minor amounts of scrap metal were shipped but the weight has not been reported.
Uncontaminated soil and asphalt	Infrequently	10 CY/year	0	No shipment in 2017
Waste paint and paint-related debris	Infrequently	25 lb/year	0	Used aerosol cans which would normally be shipped as universal waste had to be shipped
Waste maintenance chemicals (oils, greases, paints, etc.)	Infrequently	500 lb/year	85 lbs	Waste maintenance chemicals are captured in the waste oil and oily debris identified above as they are accumulated together. This waste comprised of aerosols.
Waste/spent corrosives	Infrequently	50 gal/year	1,337 gal	Material was hypochlorite solids, Soda Ash, and NALCO 73801WR cleaned out from containment.
Water treatment resins	Infrequently	0 gal/year	0	Water treatment resins are recharged (recycled) and reused.
Lead-acid batteries	Infrequently	8 batteries/year	125 lbs	2 containers of batteries were shipped for recycle.
Decontamination wastewater (e.g., tank and sump emptying and cleaning)	Infrequently	2,000 gal/year	12,300 gal	From pumping out non-hazardous process water from boiler feed pump skids.

In 2017, majority of waste streams were simplified and categorized into two (2) major waste streams: miscellaneous Non-RCRA Hazardous Waste Solid and miscellaneous Non-RCRA Hazardous Waste Liquid. Miscellaneous Non-RCRA Hazardous Waste Solid includes rags, PPE, absorbent pads and soil and debris impacted with lubricating oil while miscellaneous Non-RCRA Hazardous Waste liquid includes lube oil, oily water, glycol water, and rinseate water impacted with lubricating oil.

There were three accidental releases from Main Boiler Feed Pumps and one release from a mobile crane. Two of the Main Boiler Feed Pump oil releases were contained within secondary containment. These events are unanticipated and not likely to repeat due to re-engineering and replacement of equipment that failed and led to these releases.

Ivanpah no longer uses NALCO 73801WR, Sodium Hypochlorite and Soda Ash at the three power blocks' potable water skid(s) which will significantly decrease the volume of hazardous corrosive liquid wastes generated on an annual basis.

After 4 years of operation, the following list is the projected most common waste stream from both Operations and Maintenance;

- Universal Waste Fluorescent Tubes, Used for Recycling
- Non-RCRA Hazardous Waste Solid, (Oily Debris, Absorbents, and Rags)
- Non-RCRA Hazardous Waste Liquid, (Oily water, Waste Oil, Waste Lubricants, Glycol Water, Rinseate)
- UN3090 Lithium Battery, 9, II
- Batteries, Dry sealed n.o.s. (Alkaline Batteries, Universal Waste)
- Batteries Wet filled with acid, Electric Storage 8, III
- Hazardous Waste Solid, n.o.s. (Broken Glass, Lead Paint), 9, III

Ivanpah remains a Large Quantity Hazardous Waste Generator in 2017 due to the quantity of lead-containing mirrors being shipped for disposal.

ISEGS continues to refine procedures and maintenance activities and schedules, which affect the type and frequency of waste generation. For example, procedures have been put in place to reduce, or potentially eliminate the disposal of propylene glycol. Municipal wastes are being shipped offsite by Republic Services, and a contract to provide documented recycling services still in process.

Table 3 - 2017 HAZARDOUS WASTE and UNIVERSAL WASTE SHIPMENTS

Date Shipped	Profile #	Manifest #	Material	Waste Classification	Container		Total Quantity	Unit Wt. / Vol	Total Weight	Unit	Federal Waste Code	State Waste Code	Haz Waste Report Management Method Code	Manifest Signed By	Shipper / Transporter	US EPA ID No.	Receiving Facility	US EPA ID No.
					No.	*Type*												
1/11/2017	070242098-1	015770392 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	20	Cu. Yard	18,460	Pounds	D008	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
1/12/2017	070242831	15770394 JJK	Absorbent Pads and Debris Impacted with Hydraulic oil	Non-RCRA Hazardous Waste Solid	6	DM	500	Pounds	500	Pounds	N/A	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
1/12/2017	070242831	15770394 JJK	Absorbent Pads and Debris Impacted with Hydraulic oil	Non-RCRA Hazardous Waste Solid	1	DM	100	Pounds	100	Pounds	N/A	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
1/12/2017	070131570-31643	15770394 JJK	Oily Water Impacted with Hydraulic Oil	Non-RCRA Hazardous Waste Liquid	2	DM	110	Pounds	110	Pounds	N/A	223	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
1/12/2017	070245733	15770394 JJK	UN1950, Waste Aerosols, 2.1	RCRA Hazardous Waste Solid, n.o.s.	1	DM	85	Pounds	85	Pounds	D001	331	H141	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
1/16/2017	070242098-1	015770399 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	20	Cu. Yard	11,180	Pounds	D008	181	H132	Laura Sterk	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
1/17/2017	070242098-1	015770402 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	20	Cu. Yard	19,700	Pounds	D008	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
2/3/2017	070246968-0	15770428 JJK	Non-RCRA Broken Glass - Broken Glass Contaminated with Low Levels of Lead	Non-RCRA Hazardous Waste Solid	1	CM	20	Cu. Yard	16,060	Pounds	N/A	181	H132	Sean Northcliffe	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
2/9/2017	070242098-1	015770426 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	20	Cu. Yard	19,720	Pounds	D008	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
4/21/2017	070131570-31643	015820398 JJK	Lube Oil, Water , Propylene Glycol	Non-RCRA Hazardous Waste Liquid	3	DM	600	Gallons	600	Gallons	N/A	223	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
4/21/2017	070131570-31643	015820398 JJK	Lube Oil, Water , Propylene Glycol	Non-RCRA Hazardous Waste Liquid	10	TP	3,000	Gallons	3,000	Gallons	N/A	223	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
4/21/2017	070242831-0	015820398 JJK	Misc. Non-RCRA Solids	Non-RCRA Hazardous Waste Solid	13	DM	2,200	Pounds	2,200	Pounds	N/A	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
4/21/2017	070242831-0	015820398 JJK	Misc. Non-RCRA Solids	Non-RCRA Hazardous Waste Solid	1	CF	750	Pounds	750	Pounds	N/A	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
4/21/2017	-	-	Lead Acid Batteries	Universal Waste (for Recycling)	3	Boxes	125	Pounds	125	Pounds	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Nevada Battery Supply	N/A
4/21/2017	-	-	Computer Monitor	Universal Waste (for Recycling)	2	Each	80	Pounds	80	Pounds	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Blind Center	N/A
4/26/2017	070242098-1	015770018 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	18	Cu. Yard	15,260	Pounds	D008	181	H132	Jim Clark	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
5/23/2017	070127425-1474	015770032 JJK	Empty Tote Last Contained HCl	Non-RCRA Hazardous Waste Solid	2	TP	200	Pounds	200	Pounds	N/A	352	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
5/23/2017	070131570-20206	015770032 JJK	Oily Water and Boom	Non-RCRA Hazardous Waste Liquid	2	DF	150	Gallons	150	Gallons	N/A	223	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
5/23/2017	070137710-32006	015770032 JJK	UN3266, Waste Corrosive Liquid, 8, PG III (Soda Ash)	RCRA Hazardous Waste Liquid, n.o.s.	3	TP	1,100	Gallons	1,100	Gallons	D002	135	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
5/23/2017	070137710-32005	015770032 JJK	UN3267, Waste Corrosive Liquid, Basic, Organic, N.O.S., 8, PG III (NALCO 73801WR)	RCRA Hazardous Waste Liquid, n.o.s.	2	TP	85	Gallons	85	Gallons	D002	135	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
5/23/2017	070131570-31643	015770033 JJK	Misc. Non-RCRA Hazardous Waste Liquid	Non-RCRA Hazardous Waste Liquid	11	DM	550	Gallons	550	Gallons	N/A	223/343	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
5/23/2017	070131570-31643	015770033 JJK	Misc. Non-RCRA Hazardous Waste Liquid	Non-RCRA Hazardous Waste Liquid	2	TP	600	Gallons	600	Gallons	N/A	223/343	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
5/23/2017	070242831-0	015770033 JJK	Soil and Debris Impacted with Lubricating Oil	Non-RCRA Hazardous Waste Solid	7	DM	600	Pounds	600	Pounds	N/A	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
5/23/2017	070253844	015770034 JJK	UN1158, Waste Corrosive Liquid, Toxic, 8, PG III (Thioglycolic Acid / Ammonium Thioglycolate Solution)	RCRA Hazardous Waste Liquid, n.o.s.	1	DF	10	Gallons	10	Gallons	D001	135	H141	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
5/23/2017	070131570	015770034 JJK	UN2922, Waste Corrosive Liquid, Toxic, 8, PG III (Ferrozine Lab Pack)	RCRA Hazardous Waste Liquid, n.o.s.	1	DF	2	Gallons	2	Gallons	D002	135	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
5/23/2017	070137710-32005	015770034 JJK	UN3267, Waste Corrosive Liquid, Basic, Organic, N.O.S., 8, PG III (NALCO 73801WR)	RCRA Hazardous Waste Liquid, n.o.s.	1	DF	50	Gallons	50	Gallons	D002	135	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
6/5/2017	POC 16-0050	Non-Hazardous Waste Tracking #101700147	Processed Water	Non-Hazardous Waste Liquid	1	TT	5,200	Gallons	5,200	Gallons	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Patriot Wastewater Facility - Orange Facility	N/A
6/7/2017	POC 16-0050	Non-Hazardous Waste Tracking #101700147	Processed Water	Non-Hazardous Waste Liquid	1	TT	4,600	Gallons	4,600	Gallons	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Patriot Wastewater Facility - Orange Facility	N/A
6/7/2017	POC 16-0050	Non-Hazardous Waste Tracking #101700147	Processed Water	Non-Hazardous Waste Liquid	1	TT	2,500	Gallons	2,500	Gallons	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Patriot Wastewater Facility - Orange Facility	N/A
6/26/2017	070242098-1	015770043 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	18	Cu. Yard	15,940	Pounds	D008	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
6/27/2017	070242098-1	015770042 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	18	Cu. Yard	11,020	Pounds	D008	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
6/30/2017	070242098-1	015770046 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	18	Cu. Yard	16,200	Pounds	D008	181	H132	Don Moyer	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000

Date Shipped	Profile #	Manifest #	Material	Waste Classification	Container		Total Quantity	Unit Wt. / Vol	Total Weight	Unit	Federal Waste Code	State Waste Code	Haz Waste Report Management Method Code	Manifest Signed By	Shipper / Transporter	US EPA ID No.	Receiving Facility	US EPA ID No.
					No.	*Type*												
7/24/2017	070242831-0	015770057 JJK	Soil and Debris Impacted with Lubricating Oil	Non-RCRA Hazardous Waste Solid	11	DM	2,475	Pounds	2,475	Pounds	N/A	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
7/24/2017	070137710-32006	015770057 JJK	UN3266, Waste Corrosive Liquid, 8, PG III (Soda Ash)	RCRA Hazardous Waste Liquid, n.o.s.	1	DF	50	Gallons	50	Gallons	D002	135	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
7/24/2017	070131570-31643	015770057 JJK	Oily Water	Non-RCRA Hazardous Waste Liquid	10	DM	500	Gallons	500	Gallons	N/A	223	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
7/24/2017	070137710-32005	015770057 JJK	UN3267, Waste Corrosive Liquid, Basic, Organic, N.O.S., 8, PG III (NALCO 73801WR)	RCRA Hazardous Waste Liquid, n.o.s.	1	DF	50	Gallons	50	Gallons	D002	135	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
7/26/2017	070256237	015770059 JJK	Soil and Debris Impacted with Turbine Oil	Non-RCRA Hazardous Waste Solid	1	CM	20	Cu. Yard	14,120	Pounds	N/A	352	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
8/1/2017	070242098-1	015770060 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	18	Cu. Yard	16,760	Pounds	D008	181	H132	Jim Clark	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
8/1/2017	070242098-1	015770061 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	18	Cu. Yard	9,420	Pounds	D008	181	H132	Jim Clark	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
8/14/2017	070242098-1	015770067 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	18	Cu. Yard	20,260	Pounds	D008	181	H132	Frank Scofield	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
8/15/2017	070242098-1	015770066 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	18	Cu. Yard	17,780	Pounds	D008	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
9/7/2017	070242831	015770073 JJK	Debris Impacted with Lubricating Oil	Non-RCRA Hazardous Waste Solid	9	DM	2,250	Pounds	2,250	Pounds	N/A	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
9/7/2017	070131570-31643	015770073 JJK	Oily Water	Non-RCRA Hazardous Waste Liquid	21	DM	1,050	Gallons	1,050	Gallons	N/A	223	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
9/7/2017	-	-	Electronic Waste	Universal Waste (for Recycling)	1	CF	250	Pounds	250	Pounds	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Lighting Resources, LLC	N/A
9/7/2017	-	-	Batteries, Dry, Sealed, n.o.s. (Alkaline Batteries)	Universal Waste (for Recycling)	1	DF	15	Pounds	15	Pounds	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Lighting Resources, LLC	N/A
9/7/2017	-	-	Used Lithium Batteries	Universal Waste (for Recycling)	1	DF	5	Pounds	5	Pounds	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Lighting Resources, LLC	N/A
9/7/2017	-	-	Batteries, Dry, Sealed, n.o.s. (Nickel Cadmium Dry Batteries)	Universal Waste (for Recycling)	1	DF	5	Pounds	5	Pounds	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Lighting Resources, LLC	N/A
9/7/2017	-	-	Fluorescent Tubes	Universal Waste (for Recycling)	1	CF	75	Pounds	75	Pounds	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Lighting Resources, LLC	N/A
9/7/2017	-	-	UN2794 Batteries, Wet Filled with Acid, 8, III (Used Lead Acid Batteries for Recycling) ERG #154	Universal Waste (for Recycling)	1	DF	50	Pounds	50	Pounds	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Lighting Resources, LLC	N/A
10/13/2017	070242098-1	015770074 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	18	Cu. Yard	21,700	Pounds	D008	181	H132	Royce Cook	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
10/23/2017		Non-Hazardous Waste Tracking #101600294	Insulation	Non-Hazardous, Non-Regulated Trash Debris	1	CM	20	Cu. Yard	800	Pounds	N/A	N/A	N/A	Tim Higdon	Patriot Environmental Services	CAD053866794	Apex Landfill	N/A
10/23/2017	070242098-1	015770072 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	18	Cu. Yard	19,060	Pounds	D008	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
10/31/2017	070246968-0	015770077 JJK	Broken Glass Contaminated with Low Levels of Lead	Non-RCRA Hazardous Waste Solid	1	CM	20	Pounds	12,320	Pounds	N/A	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
11/2/2017	070242098-1	015770076 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	20	Cu. Yard	18,640	Pounds	D008	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
11/21/2017	070242831	015770079 JJK	Debris Impacted with Lubricating Oil	Non-RCRA Hazardous Waste Solid	7	DM	1,225	Pounds	1,225	Pounds	N/A	181	H132	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
11/21/2017	070131570-31643	015770079 JJK	Oily Water	Non-RCRA Hazardous Waste Liquid	4	DM	200	Gallons	200	Gallons	N/A	223	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
11/21/2017	070131570-31643	015770081 JJK	Oily Water	Non-RCRA Hazardous Waste Liquid	1	TP	220	Gallons	220	Gallons	N/A	223	H039	Tim Higdon	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
12/8/2017	070242098-1	015770087 JJK	NA3077, Broken Glass, Lead Paint, 9, III	RCRA Hazardous Waste Solid, n.o.s.	1	CM	20	Cu. Yard	9,080	Pounds	D008	181	H132	Kevin Itter	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000
12/8/2017	070246968-0	15770085 JJK	Non-RCRA Broken Glass - Broken Glass Contaminated with Low Levels of Lead	Non-RCRA Hazardous Waste Solid	1	CM	20	Cu. Yard	10,280	Pounds	N/A	181	H132	Kevin Itter	Patriot Environmental Services	CAD053866794	US Ecology, Inc.	NVT330010000