DOCKETED

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Project Title:	Abengoa Mojave Compliance
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Description:	N/A
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ABENGOA SOLAR
Mojave Solar LLC
42134 Harper Lake Road Phone: 636.519.3680 Ext. 80710
Hinkley, California 92347

SUBMITTED ELECTRONICALLY

Subject:	**09-AFC-5C**
Condition:	**COMPLIANCE - 6**
Description:	**Monthly Compliance Report for October 2014**
Date:	**October 14, 2014**
Distribution:	**Dale Rundquist, CEC; Carol Hammel-Smith, US DOE; Wendy Campbell, DFW; Ray Bransfield, FWS**

Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street
Sacramento, California 95814

Dear Mr. Rundquist,

The attached Monthly Compliance Report for October 2014 is submitted for your review as part of ongoing reporting required by the California Energy Commission's Conditions of Certification for the Mojave Solar Project. This monthly report will be added to the archival site on Box.com.

Sincerely,
William "Bill" Grisolia
Compliance Management
(303) 885-2036 Cell

Attachment: Monthly Compliance Report

Mojave Solar Project
Monthly Compliance Report

October 2014 Reporting Period

Prepared for:

Mojave Solar LLC
42134 Harper Lake Road
Hinkley, California 92347

Introduction

During construction of the Mojave Solar Project, monthly compliance reports are provided to the California Energy Commission (CEC) as required by Condition of Certification COMPLIANCE-6 of the Commission Decision, docket number 09-AFC-5C. This is the Monthly Compliance Report (MCR) for October 2014.

Construction activities included work on steam turbine generators (STG) and condensers, miscellaneous foundations in the Power Blocks (PB), PB minor auxiliary structure, motor control room in Water Treatment Plant (WTP), STG bore piping, balance of plant (BOP) bore piping, turbine auxiliary piping, electrical trench construction for the fire protection system and trenching for the grounding connections in the power block.

Construction installation included solar field and power block lighting, CCTV, cable tray repair, heat tracing cable, air compressor conduits system, miscellaneous pipe welding for PB (and insulation), ullage/overflow systems and piping insulation in the racks and expansion vessels, electrical equipment panels connections (and testing), completion of fire protection systems, solar field and PB grounding, steam generator HTF recirculation and BOP equipment insulation.

Additional construction-related activities included completion of flushing the turbine lube oil system, WTP rack touch ups, various instrumentation and control tests, testing of the solar field instrumentation, tracking the sun with the collectors in de-focus and focus mode, steam blow start-up activity, washing mirrors, and production of Reverse Osmosis primary water and mirror wash water in the WTP.

The following table provides a summary of all areas covered in this report.

Mojave Solar Project Monthly Compliance Reporting	
Condition of Certification (COC) Topics	Appendix
Air Quality	See Appendix A
Biological Resources	See Appendix B
Cultural Resources	See Appendix C
Paleontological Resources	See Appendix D
Waste Management	See Appendix F
Worker Safety	See Appendix E
Soil and Water	See Appendix F
General Conditions	See Appendix F
Civil	See Appendix F
Structural	See Appendix F
Mechanical	See Appendix F
Electrical	See Appendix F
Transmission System Engineering	See Appendix F
Compliance Forecast	See Appendix G
Compliance Matrix	See Appendix H

MOJAVE SOLAR LLC

42134 Harper Lake Rd
Hinkley, CA 92347

Subject:	09-AFC-5C
Condition Number:	COMPLIANCE-6
Description:	Monthly Compliance Report – October, 2014
Submittal Number:	COMPLIANCE6-01-00

11/12/2014

Dale Rundquist, CPM
(09-AFC-5C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
drundqui@energy.state.ca.us

Dear Mr. Rundquist,

As required by the California Energy Commission ("CEC") Condition of Certification COMPLIANCE-6, the following is an update including Mojave Solar LLC ("MSLLC") submittals to and approvals by the CEC as well as a listing of any MSLLC filings submitted to, or permits issued by, other governmental agencies during the month of October, 2014.

Submittals\Approvals

AQ-SC7

On 10/10/2014, AQSC7-00-00 for the Operations Dust Control Plan was approved by the CEC.

BIO-15

On 10/10/2014, BIO15-05-02 Compensation Mitigation LOC Release Request and BIO-15 Completion was submitted to describe the method used to calculate various amounts of money for land enhancement and endowment.

Other Permits\Filings

There were no other permits issued to or filings made by MSLLC for the month of October.
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Please contact me with any question.

Sincerely,
William F. Grisolia
ABENGOA SOLAR LLC
42134 Harper Lake Rd
Hinkley, CA 92347
(303) 885-2036

Appendix A
Air Quality Resources

Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California

October 2014 Reporting Period

CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA
95833-2937
Tel: 916.920.0300
Fax: 916.920.8463

November 6, 2014

Dale Rundquist, CPM
California Energy Commission
Siting, Transmission & Environment Protection (STEP) Division
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
drundqui@energy.state.ca.us

RE: AQ-SC3, AQ-SC4, AQ-SC5, and WORKER SAFETY-8 Monitoring and Mitigation Activities at Mojave Solar Project (09-AFC-5C) for October 1 through October 31, 2014

Dear Mr. Rundquist:

This letter is to update you on the air quality construction monitoring occurring at the Mojave Solar Project (MSP) site during October 2014. Compliance with the WORKER SAFETY-8 condition was also monitored. Construction activities occurred October 1 through 31, 2014. Compliance monitoring was performed by Jose Manuel Bravo Romero of Abengoa; who is the full-time onsite Air Quality Construction Mitigation Manager (AQCMM). I, Christopher Waller of CH2M HILL, am the designated AQCMM delegate and visited the site on October 23, 2014, to ensure compliance with record keeping and conditional requirements.

Overview

Construction activities in October included steam turbine generator (STG) insulation installation, fire protection system installation, water treatment plant (WTP) electrical equipment installation, balance of plant (BOP) piping assemply, heat trace installation, power block grounding, miscellaneous foundation cosntruction, and excavation for work on a water production well. Construction was monitored for compliance with Conditions of Certification (COCs) AQ-SC3, AQ-SC4, AQ-SC5, and WORKER SAFETY-8. New equipment brought onsite during October was issued a tag in accordance with AQ-SC5a, and evaluated for compliance with AQ-SC5b through AQ-SC5d. A summary of the compliance with the Air Quality Construction Mitigation Plan (AQCMP) is provided in the following sections. Daily, weekly, and monthly observation logs and other site inspection forms are maintained onsite and available upon request.

Compliance Assessment

AQ-SC3 – Fugitive Dust Control

All of the AQ-SC3 COCs were in effect during October 2014. The following section summarizes each COC and describes the level of compliance.

- AQ-SC3a: Soil stabilizers on main access roads and delivery areas

  Soil stabilizers have been applied to finished access roads and delivery areas. Main roads in Beta have been paved.

- AQ-SC3b: Watering of disturbed areas

  Watering of actively disturbed areas was performed for all construction activities with the potential to create airborne dust plumes. When necessary, watering was intensified as directed by the onsite AQCMM and construction managers.

- AQ-SC3c: Speed limits

  The required speed limits have been enforced onsite.

- AQ-SC3d: Speed limit signage

  Speed limit signage has been posted and is clearly visible at all site entrances.

- AQ-SC3e: Tire inspection and washing prior to exiting to paved roadway

  Although tire washing stations have not been installed, all construction vehicles are inspected for dirt and other debris prior to exiting to paved public roadways.

- AQ-SC3f: Tire washing station

  As stated above, no tire washing stations have been installed. However, tires of construction vehicles are inspected for dirt and other debris prior to exiting to paved public roadways.

- AQ-SC3g: Unpaved exit treatment

  Rumble plates are installed at all site exits.

- AQ-SC3h: Construction vehicles use approved entrances only

  When traveling between sites, construction vehicles use approved entrances only.

- AQ-SC3i: Run-off onto public roadways

  Earthmoving activities have resulted in run-off being directed away from paved public roadways. In addition, fiber rolls have been placed where the potential for run-off onto public roadways exist. Watering has not resulted in run-off onto public roadways.

- AQ-SC3j: Sweeping of paved roads within construction site

  Sweeping of paved roads within the site is performed as necessary.

- AQ-SC3k: Sweeping of public paved roadways with access to the MSP site

  Sweeping of Harper Lake Road and Lockhart Road is performed as necessary.

- AQ-SC3l: Stabilization of storage piles

  Significant earthmoving activities were performed during October 2014, included excavation to perform work on a water production well near the Beta entrance. Areas disturbed during this excavation were sufficiently watered during all construction activities. Storage piles generated as a result of excavation activities will be used as backfill. Additional storage piles exist to the east of the Alpha evaporation pond. These

storage piles are watered frequently, and will be re-distributed at a later date. All other soil piles are temporary excavation spoils or grading excesses that are re-distributed prior to exceeding the 10-day limit for cover or treatment.

- AQ-SC3m: Stabilization of transported solid bulk material

  Transported solid bulk materials are sufficiently watered, and at least one foot of freeboard is provided during transportation.

- AQ-SC3n: Wind control techniques

  Wind fencing has been installed in Alpha East, Alpha West, and Beta along the eastern and western borders of each area.

AQ-SC4 – Dust Plumes & WORKER SAFETY-8 – Site Worker Fugitive Dust Protection

The following construction activities were performed during the October 1 to October 31, 2014 reporting period:

- STG insulation installation.
- Turbine and turbine auxiliary piping installation.
- Instrument and controls installation.
- Miscellaneous foundation construction.
- Production well maintenance.
- Power block insullation installation.
- Power block grounding.
- BOP piping assembly.
- Condenser installation.
- WTP electrical equipment installation.
- Miscellaneous foundation construction.
- Cable tray and cable tray insullation installation.
- Heat trace installation.
- Fire protection system installation.

There were no high wind events (wind gusts of at least 25 mph) during October 2014. Therefore, there were no work stoppages due to inclement weather during the reporting period.

Soil stabilization has been implemented on finished haul roads and delivery areas. In addition, main roads in Beta and Harper Lake Road south of Lockhart Road have been paved. Unfinished areas and haul roads without soil stabilizers are watered daily to mitigate against the formation of fugitive dust. A truck washing station has not been installed. However, rumble plates are installed at all site entrances/exits, and the tires of construction vehicles are inspected for dirt and other debris and swept clean as needed prior to exiting the site onto paved roadways.

AQ-SC5 – Diesel-Fueled Engine Control

Attachment 1 to this letter contains a list of equipment operated onsite during October 2014. The list contains equipment information including manufacturer, model, California Air Resources Board (CARB) Equipment Identification Number (EIN), engine model year, engine horsepower, and U.S. Environmental Protection Agency (USEPA) certified tier level.

The following list summarizes each COC for AQ-SC5 and describes the level of compliance.

- AQ-SC5a: Equipment Tags

  A visible air quality tag with a unique number (AQ #) was issued and adhered to all equipment that arrived onsite between October 1 and October 31, 2014.

- AQ-SC5b: USEPA Engine Tier Requirement

  All construction equipment that arrived onsite between October 1 and October 31, 2014 had Tier 3 or higher engines.

- AQ-SC5c: Retrofit Control Termination

  No equipment with retrofit control technology was brought onsite.

- AQ-SC5d: Maintenance Records

  Maintenance records for all vehicles are available upon request.

- AQ-SC5e: "All diesel heavy construction equipment shall not idle for more than five minutes."

  Idle time was monitored by the activity managers and AQCMM. This condition was met during this reporting period.

- AQ-SC5f: Electric motors

  The use of construction equipment with electric motors was not feasible for current construction activities.

Please feel free to call (714) 435-6268 for questions, clarifications, or additional information.

Sincerely,

CH2M HILL

Christopher Waller
Staff Environmental Engineer
AQCMM Delegate
christopher.waller@ch2m.com

c: Jose Manuel Bravo Romero / Abengoa, AQCMM
Christopher Waller / CH2M HILL, AQCMM Delegate

Attachment 1
Construction Equipment Mojave Solar Project

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
CATERPILLAR	950G	GH6Y78	2005	183	2	Rubber-Tired Loader	2011		GFE Received
DEERE	200D	KF4B33	2011	159	3	Excavator	2011		
CATERPILLAR	CS683E	TX8P94	2005	173	2	Roller	2011		GFE Received
CATERPILLAR	834B	VF5F83	2010	440	3	Rubber-Tired Dozer	2011		
CATERPILLAR	325DL	JB4V37	2006	168	2	Excavator	1/3/2012		GFE Received
DEERE	410J	BB3T68	2011	97	4	Tractor/Loader/Backhoe	1/5/2012		
SKYTRAK	8042	HY9R57	2008	110	3	Forklift	1/23/2012		
CATERPILLAR	651B	JA9X63	2006	540	3	Scraper	3/9/2012		
CATERPILLAR	651B	TR7R75	2006	540	3	Scraper	3/9/2012		
CASE	580_SM	BJ8N36	2007	95	2	Tractor/Loader/Backhoe	4/23/2012		GFE Received
DEERE	310J	DA4B63	2007	75.1	2	Tractor/Loader/Backhoe	4/23/2012		GFE Received
CATERPILLAR	631C	JW5C94	2010	452	3	Scraper	4/23/2012		
CATERPILLAR	140H	HM5E53	2005	165	2	Grader	6/19/2012		GFE Received
DEERE	328	AA9M73	2007	82	2	Skid Steer Loader	8/10/2012		GFE Received
SKYTRAK	8042	KP9P46	2007	110	3	Forklift	8/17/2012		
P&H	453-130	BY3X34	2008	139	3	Crane	9/5/2012		
CATERPILLAR	414E	WJ4X56	2006	92	2	Tractor/Loader/Backhoe	9/5/2012		GFE Received
A&L	210LJ	HK4M87	2011	84	4	Tractor/Loader/Backhoe	10/5/2012		
DEERE	310J	SS4K74	2011	84	4	Tractor/Loader/Backhoe	10/5/2012		
TEREX	RT230-1	TB3E79	2006	130	2	Crane	10/5/2012		GFE Received
GROVE	RT518	XE8V88	2008	142	3	Crane	10/5/2012		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
TEREX	RT 780	KT4X64	2005	275	2	Crane	10/05/12		GFE Received
TEREX	RT665	NB5R93	2007	215	3	Crane	10/25/2012		
DEERE	310SJ	SP4F87	2011	100	4	Tractor/Loader/Backhoe	10/25/2012		
CATERPILLAR	450E	UB3H55	2008	136	3	Tractor/Loader/Backhoe	10/25/2012		
DIECI	45.17 Icarus	EP4W64	2013	195	4	Rough Terrain Forklift	11/1/2012		
DEERE	210LJ	JW3M53	2011	74	4	Tractor/Loader/Backhoe	11/14/2012		
JLG	G10-55A	WR3G83	2011	130	3	Forklift	11/14/2012		
SKY TRACK	10054	HB6Y56	2012	100	4	Rough Terrain Forklift	11/19/2012		
TEREX	RT780	HR3X86	2006	275	3	Crane	11/19/2012		
GROVE	RT650E	YH5P85	2007	165	3	Crane	11/19/2012		
GENIE	GTH-1056	BJ6A33	2012	139	4	Forklift	11/30/2012		
DEERE	410J	LX6M39	2011	99	4	Tractor/Loader/Backhoe	11/30/2012		
HYSTER	H120FT	NM9Y89	2011	74	4	Forklift	11/30/2012		
JLG	G9-43A	PW7E85	2011	99	4	Forklift	11/30/2012		
GENIE	1056	WG4N88	2010	139	3	Forklift	11/30/2012		
GRADALL	534D9	LG6P89	2011	99	3	Forklift	12/10/2012		
SKY TRAK	10054	YW7Y65	2008	110	3	Forklift	12/10/2012		
CATERPILLAR	315D	BX7C54	2011	115	3	Excavator	12/19/2012		
CATERPILLAR	430E	CT9E46	2011	110	3	Backhoe	12/19/2012		
CATERPILLAR	966H	CU4A75	2008	261	3	Loader	12/19/2012		
JLG	10054	AW6L59	2011	110	3	Forklift	12/27/2012		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
NEW HOLLAND	B95	DS7V79	2007	95	3	Backhoe	12/27/2012		
TEREX	GTH1056	PP3H77	2011	116	3	Forklift	12/27/2012		
SKYJACK	8042	CE4F84	2008	110	3	Forklift	1/3/2013		
CATERPILLAR	321D	CK7S75	2011	147	3	Excavator	1/3/2013		
TEREX	RT 780	VA3N64	2005	275	3	Crane	1/3/2013		
CATERPILLAR	140M2	XA6E55	2012	264	3	Graders	1/3/2013		
SKYTRAK	8042	HE9X93	2008	110	3	Forklift	1/7/2013		
CATERPILLAR	420F	AE5W73	2012	99.9	3	Backhoe	1/9/2013		
HAMM	3307	GC6S79	2012	74	3	Roller	1/11/2013		
BOMAG	BW177DH	TJ4G76	2010	110	3	Roller	1/11/2013		
CATERPILLAR	420F	AX9E77	2012	99.9	3	Backhoe	1/15/2013		
BOBCAT	S160	KY3G93	2003	56	3	Skid steer	1/15/2013		
KOBELCO	SK70SR	TK3Y36	2005	55	3	Excavator	1/15/2013		
SKYTRAK	10054	WS4M75	2012	100	3	Forklift	1/16/2013		
INGERSOLL - RAND	SD40	WM7E75	2000	80	3	Roller	1/18/2013		
VOLVO	SD100D	AH4W67	2008	130	3	Roller	1/23/2013		
DEERE	210LJ	UC9P95	2011	99.9	3	Backhoe	1/23/2013		
KOMATSU	WA380-6	US8T79	2006	191	3	Loader	1/23/2013		
DEERE	710J	XF3R63	2008	123	3	Backhoe	1/23/2013		
KOMATSU	Fd100t-8	KP8W75	2009	173	3	Forklift	1/23/2013		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
HYUNDAI	160D-7E	NG7L33	2011	160	3	Forklift	2/2/2013		
DEERE	410J	TF9M89	2007	98	3	Backhoe	2/2/2013		
SKY_TRAK	6036	WK4S78	2006	75	3	Forklift	2/2/2013		
CASE	850L_LGP	MB4W34	2011	99	3	Dozer	2/2/2013		
JLG	G10-55A	LK4C88	2010	101	3	Forklift	2/2/2013		
CATERPILLAR	430F	TP8K57	2012	115.2	3	Backhoe	2/2/2013		
DEERE	210LE	YW3W53	2006	78	3	Backhoe	2/5/2013		
DEERE	135D	YF8D78	2008	97	3	Excavator	2/5/2013		
SKYJACK	VR-843D	UK9H48	2008	110	3	Forklift	2/5/2013		
TEREX	PT100	TT7L43	2010	99.9	3	Loader	2/8/2013		
DEERE	310J	MU8F49	2011	93	3	Backhoe	2/8/2013		
CATERPILLAR	420F	PJ4S33	2012	99.9	3	Backhoe	2/8/2013		
CATERPILLAR	420F	SH5P56	2012	99.9	3	Backhoe	2/11/2013		
OTHER	TJ-5000	MR6P63	2011	220	3	Trucks	2/11/2013		
JLG	G10-55A	KS9K64	2012	250	3	Forklift	2/11/2013		
JLG	G10-55A	Ty9H64	2012	150	3	Aerial Lift	2/11/2013		
HYSTER	H120FT	NM9Y89	2011	74	3	Forklift	2/11/2013		
JLG	660SJ	PC5J79	2012	49	3	Aerial Lift	2/11/2013		
CATERPILLAR	TL943	VT9L56	2011	99	3	Forklift	2/11/2013		
GENIE	Z45/25J	DK3J49	2012	49	3	Aerial Lift	2/19/2013		
TEREX	RT780	VT7C39	2008	275	3	Cranes	2/19/2013		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
JLG	400S	UV6D76	2006	49	3	Aerial Lift	2/19/2013		
CATERPILLAR	226B3	NS7R98	2011	61	3	Skid-steer-loaders	2/19/2013		
DEERE	135D	YF8D78	2008	97	3	Excavator	2/19/2013		
JLG	G6-42A	TJ4R94	2011	99	3	Forklift	2/19/2013		
GENIE	GTH-5519	JD8F98	2011	67	3	Forklift	3/16/2013		
JLG	10054	CW3C83	2012	85	3	Forklift	3/16/2013		
SKY-TRAK	10054	VA9U73	2008	110	3	Forklift	3/16/2013		
OTHER	XRM1254	EP7D46	2006	122	2	Aerial Lift	3/16/2013		GFE Received
TEREX	RT780	LP9U53	2007	275	3	Cranes	3/16/2013		
HITACHI	ZX300LC	PF9G47	2005	200	2	Excavator	3/16/2013		GFE Received
VOLVO	BL60	BK6U58	2012	83	3	Backhoes	3/18/2013		
JLG	G10-55A	NJ3A43	2013	130	3	Forklift	3/18/2013		
HYSTER	H360HD2	BF6N74	2012	155	3	Forklift	3/18/2013		
GRADALL	544D	MN3Y45	2005	200	2	Forklift	3/19/2013		GFE Received
CASE	580SM/2	SH8S69	2007	95	2	Backhoes	3/22/2013		Onsite but not In use
CARELIFT	ZB20044-44	KV9A38	2011	160	3	Forklift	3/25/2013		
VOLVO	ECR88	RL9G83	2012	57	3	Excavator	3/28/2013		
JLG	G10-55A-CAB	WU9J47	2011	130	3	Forklift	3/28/2013		
CASE	580-SN	RT9H99	2011	97	3	Backhoes	3/29/2013		
JLG	G10-55A	WW6W44	2011	130	3	Forklift	3/29/2013		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
CATERPILLAR	TL1255	SU4H58	2011	138	3	Forklift	3/29/2013		
HYSTER	H210	KH9A63	2004	195	2	Forklift	3/29/2013		GFE Received
JLG	G6-42A	JT4R94	2011	99	3	Forklift	3/16/2013		
JLG	G10-55A	UB3R85	2007	140	3	Forklift	3/26/2013		
GENIE	TH1056C	HX5Y45	2005	125	2	Forklift	3/29/2013		GFE Received
VOLVO	ERC145DL	RB7E53	2012	114	3	Excavator	4/2/2013		
INGERSOLL-RAND	SD45D/F	ES5C78	2006	80	2	Roller	4/2/2013		GFE Received
VOLVO	SD43D/F	TY8A44	2007	80	2	Paver	4/2/2013		GFE Received
CATERPILLAR	D8T	WJ8T88	2006	310	3	Tractors/Loaders/Backhoes	4/2/2013		
SKY-TRAK	10054	KB9Y73	2012	110	3	Forklift	4/2/2013		
DEERE	200D	AB7M73	2011	159	3	Excavator	4/2/2013		
LIEBHERR	LTM_1220-5.1	AD6Y38	2008	496	3	Crane	4/3/2013		
CATERPILLAR	345DL	EC8J65	2008	410	3	Excavator	4/3/2013		
VOLVO	L90G	UM9N34	2012	161	3	Tractors/Loaders/Backhoes	4/3/2013		
VOLVO	L90G	KR7W43	2012	161	3	Tractors/Loaders/Backhoes	4/3/2013		
VOLVO	SD-100D	VU9S58	2008	130	3	Roller	4/4/2013		
DEERE	JD450JLT	KM3W94	2010	77	3	Other	4/4/2013		
GRADALL	G6-42P	VH3R63	2005	99	2	Other	4/4/2013		GFE Received

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
GRADALL	G6-42A	AR6S85	2006	99.9	2	Forklift	4/4/2013		GFE Received
KOMATSU	PC400LC-7EO	TA7R86	2006	353	3	Backhoe	4/4/2013		
INGERSOLL-RAND	SD116DX	HT4J67	2007	160	3	Roller	4/4/2013		
OTHER	TJ-5000	VG9N57	2012	220	3	Truck	4/5/2013		
TEREX	RT-780	TH9R77	2005	275	2	Other	4/9/2013		GFE Received
MANITOWOC	16000	WC8X98	2010	500	3	Crane	4/11/2013		
TEREX	RT-230	SP8M78	2012	130	3	Crane	4/11/2013		
CATERPILLAR	328D	ME3U69	2010	204	3	Excavator	4/12/2013		
SANY-HEAVY-IND	SRC840_RT	VE4C37	2012	408	3	Crane	4/12/2013		
GENIE	Z45/25J-DSL-4WD	NK9E56	2006	48	2	Aerial Lift	4/17/2013		GFE Received
GENIE	GTH-1056	BG9E85	2012	139	3	Forklift	4/17/2013		
JLG	10054	JR6U95	2008	110	3	Forklift	4/17/2013		
DEERE	318D	LW3B46	2011	76.1	3	Tractors/Loaders/Backhoes	4/17/2013		
SKY-TRAK	SJ46AJ	MY4T53	2012	49	3	Aerial Lift	4/17/2013		
SKY_TRAK	10K_RCHLFT	KV5C43	2007	110	3	Forklifts	5/1/2013		
VOLVO	ECR305CL	VT9L86	2010	205	3	Excavator	5/2/2013		
DEERE	210LJ	UC3K76	2008	99	3	Backhoes	5/2/2013		
TEREX	RT345	JS3S84	2011	160	3	Cranes	5/6/2013		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
MASSEY-FERGUSON	6255	GA8S84	2003	93	1	Tractor	5/8/2013	5/16/2013	Offsite
GRADALL	544D	EU9X67	2000	130	1	Forklifts	5/9/2013	5/10/2013	Offsite
BOBCAT	T190	WS8X94	2010	66	3	Loaders	5/13/2013		
CATERPILLAR	966H	WM3B35	2007	261	3	Loaders	5/17/2013		
SKY_TRAK	10K_RCHLFT	RA7A36	2007	110	3	Forklifts	5/20/2013		
CATERPILLAR	297C	BT6X94	2007	94	2	Loaders	5/30/2013	6/5/2013	Offsite
CATERPILLAR	TH460B	EH3K78	2005	100	1	Lifts	6/4/2013	6/6/2013	Offsite
SKY_TRAK	10054	CS5E84	2012	100	3	Forklifts	6/5/2013		
JCB	527-55	TJ8X64	2012	75	3	Forklifts	6/5/2013		
LJG	G10-55A	BJ5B48	2012	130	3	Forklifts	6/6/2013		
GEHL	DL11L-55	US9P64	2008	115	3	Forklifts	6/6/2013		
JLG	800S	CY3K64	2007	65	2	Lifts	6/7/2013	6/17/2013	Offsite
DEERE	326D	CX5A73	2011	75	3	Loaders	6/7/2013		
LINK-BELT	RTC 8075	FN9D69	2009	225	3	Cranes	6/7/2013		
JLG	120AJP_125ART	JE6P64	2011	74	3	Lifts	6/7/2013		
SNORKEL	T65RTCU	EG4G76	2008	65	3	Lifts	6/7/2013		
GENIE	Z-80/60J-W/GEN	AX5A64	2010	73	3	Lifts	6/10/2013		
JLG	800AJ	CY4A37	2011	50	3	Lifts	6/10/2013		
DEERE	310SJ	MC7U99	2010	93	3	Backhoes	6/14/2013		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
DEERE	544K	SR5B39	2010	167	3	Backhoes	6/14/2013		
DEERE	310SJ	CE6E43	2007	93	2	Backhoes	6/14/2013	6/18/2013	Offsite
CASE	821F	PB4E64	2011	169	3	Backhoes	6/14/2013		
GROVE	RT765E-2	LV6V74	2013	240	3	Cranes	6/17/2013		
DEERE	310SG	NA3P73	2006	93	2	Backhoes	6/18/2013	6/19/2013	Offsite
TEREX	RT_780	UA6T98	2006	275	3	Cranes	6/19/2013		
CATERPILLAR	D8T	JB5X88	2004	310	2	Tractors	7/1/2013	7/8/2013	Offsite
KOMATSU	PC308USL_3	WG8P59	2005	189	2	Excavators	7/1/2013	7/9/2013	Offsite
CATERPILLAR	D8T	XF9M63	2006	310	3	Tractors	7/2/2013		
GENIE	Z-13570	YK7C77	2010	74	3	Lifts	7/8/2013		
TEREX	RT555	WS6S45	2005	185	2	Cranes	7/8/2013	7/18/2013	Offsite
SKY JACK	SJ66T	BP6P88	2012	64	3	Lifts	7/11/2013		
JLG	800AJ	CS9L37	2008	62	3	Lifts	7/16/2013		
DEERE	210KEP	BY5Y84	2012	70	3	Backhoes	8/5/2013		
HITACHI	225	AF8C99	2011	159	3	Excavators	8/5/2013		
CATERPILLAR	325DL	AN8W58	2008	204	3	Excavators	8/5/2013		
SKY-TRAK	10054	MM7D49	2007	110	3	Forklifts	9/4/2013		
TEREX	RT780	LD9M99	2007	275	3	Cranes	9/4/2013		
CATERPILLAR	450E	XH8D54	2007	157	3	Backhoes	9/4/2013		
DEERE	210LE	PA4G55	2006	78	2	Backhoes	9/10/2013	9/17/2013	
DEERE	624K	XP9L79	2008	146	3	Loaders	9/10/213		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
SKY-TRAK	10054	XK6T97	2004	110	2	Lifts	9/13/2013	10/11/2013	GFE could not be obtained. Equipment was removed from site.
SNORKEL	TB-85J	RL5M33	2007	64	2	Lifts	9/13/2013	9/17/2013	
SANY-HEAVY-IND	SRC865-RT	TS5P46	2010	250	3	Cranes	9/13/2013		
JLG	800AJ-80ART-BO	DV7H57	2011	56	3	Lifts	9/17/2013		
JLG	SKYTRK-10K-RCH	SA4S95	2007	110	3	Forklifts	9/17/2013		
LIEBHERR	LR1200SX	AH8E76	2007	362	3	Cranes	9/17/2013		
GENIE	GTH-5519	NA4U95	2012	67	3	Forklifts	9/17/2013		
SKY-TRAK	1054-10,000-RCH	EU8D48	2006	82	2	Forklifts	9/19/2013	10/11/2013	GFE could not be obtained. Equipment was removed from site.
VOLVO	SD45	HE8X95	2011	99	3	Rollers	9/19/2013		
LIEBHERR	LR1200SX	SY5B57	2006	362	3	Cranes	9/19/2013		
DEERE	310SJ	WX9R94	2011	75	3	Backhoes	9/20/2013		
SKY-TRAK	10054	GL9X33	2010	110	3	Forklifts	9/20/2013		
GEHL	DL1240	DV3U39	2013	115	3	Forklifts	9/20/2013		
GRADALL	534D9	WM5W94	2011	110	3	Forklifts	9/23/2013		
SKY-TRAK	8042	EU5S37	2012	71	3	Forklifts	9/23/2013		
JLG	G12-55A	SW6X98	2011	130	3	Forklifts	9/24/2013		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
VOLVO	MCT135C	MS7Y68	2011	91	3	Loaders	9/26/2013		
JLG	SKYTRK-10K-RCH	AJ66D98	2007	110	3	Forklifts	9/27/2013		
GENIE	Z-80/60	PJ3W77	2008	74	3	Lifts	9/27/2013		
GENIE	GHT-1056	TR6F45	2013	121	3	Forklifts	9/27/2013		
CASE	580N	SX5S95	2011	84	3	Backhoes	10/2/2013		
GROVE	RT880E	BN6H96	2013	275	3	Cranes	10/2/2013		
JLG	G6-42A	XR9V66	2011	69	3	Forklifts	10/2/2013		
CATERPILLAR	TL1255C	DX9N76	2013	141	3	Forklifts	10/4/2013		
JLG	800AJ	MY6J77	2012	62	3	Lifts	10/4/2013		
JLG	G-1055A	LU4S88	2008	125	3	Forklifts	10/7/2013		
JLG	600S	DA7J87	2012	49	3	Lifts	10/7/2013		
Other	XRM1254	NV8S66	2005	122	2	Lifts	10/7/2013	10/17/2013	Offsite
TEREX	RT780	CJ4V77	2012	260	3	Cranes	10/7/2013		
LIEBHERR	LR1200	RA6Y75	2006	362	3	Cranes	10/9/2013		
SKY-TRAK	1054-10,000-RCH	MC9W76	2007	110	3	Forklifts	10/10/2013		
LIEBHERR	LR1200SX	NU9L79	2007	362	3	Cranes	10/10/2013		
CATERPILLAR	430E	FE4P69	2008	95	3	Backhoes	10/16/2013		
SKY-TRAK	8042-CAB	SG3T73	2011	110	3	Forklifts	10/16/2013		
DEERE	310K	WG6W88	2013	56	3	Backhoes	10/16/2013		
JLG	6042	FA7K37	2013	85	3	Forklifts	10/18/2013		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
JLG	G5-19A	AB8T34	2006	100	3	Forklifts	10/18/2013		
GENIE	GTH-1056	PL9W36	2013	121	3	Forklifts	10/22/2013		
TOYOTA	50-4FDK160	WK4X75	2011	168	3	Forklifts	10/22/2013		
CASE	580N	TX5K58	2011	84	3	Backhoes	10/23/2013		
LINK-BELT	225MSR	KG3E74	2011	163	3	Excavators	10/25/2013		
GENIE	S65	TH8R79	2012	49	3	Lifts	11/4/2013		
JLG	10054	KL5S59	2012	100	3	Forklifts	11/7/2013		
BOMAG	BW120AD_4	VU8F45	2006	34	2	Rollers	11/8/2013	11/15/2013	Offsite
GROVE	TM9120	VC3C38	1993	460	0	Cranes	11/12/2013	11/14/2013	Offsite
CASE	580N	TX5K58	2011	84	3	Backhoes	11/12/2013		
SKY-TRAK	10054	HL8E83	2012	110	3	Forklifts	11/25/2013		
JCB	3CX14-4EC	TP4C93	2011	68	3	Backhoes	11/25/2013		
HYSTER	H360HD	CU5C99	2007	155	3	Forklifts	11/25/2013		
DEERE	310J_EP	TP5F67	2013	70	3	Backhoes	11/26/2013		
JLG	G6-42A	DL9T78	2011	69	3	Forklifts	11/27/2013		
TREX	RT345XL	JS3S84	2011	160	3	Cranes	11/27/2013		
JLG	G10-55A	TY9H64	2012	130	3	Aerial Lifts	12/12/2013		
JLG	G10-55A	UC3F55	2012	174	3	Forklifts	12/12/2013		
JCB	550-170	PW7E59	2012	99	3	Forklifts	12/16/2013		
JLG	800AJ	VD8B84	2013	61.6	3	Aerial Lifts	12/16/2013		
GEHL	DL1155	XB7G76	2013	115	3	Forklifts	12/16/2013		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
TEREX	RT450	MT8A46	2011	275	3	Cranes	12/16/2013		
SKY-TRAK	10054	BD7B67	2008	110	3	Forklifts	12/20/2013		
JLG	600AJ	WV7C48	2007	65	3	Aerial Lifts	12/23/2013		
GENIE	Z-80	BE5Y85	2010	74	3	Aerial Lifts	12/23/2013		
OTTOWA	TJ-1000	SH9Y35	2010	220	3	Trucks	1/3/2014		
Other	TJ-5000	PV5L96	2007	280	3	Tractors	1/7/2014		
Other	TJ-5000	BY5E66	2007	280	3	Tractors	1/8/2014		
TRAK	8042	UN8Y65	2012	100	3	Forklifts	1/13/2014		
TRAK	10054	HF8X98	2006	110	2	Forklifts	1/18/2014	1/28/2014	Offsite
GEHL	DL 1155	UT5Y35	2012	115	3	Forklifts	1/20/2014		
SKY-TRAK	10054L	DV4V97	2012	100	3	Forklifts	2/3/2014		
JLG	800S	CY3K64	2007	65	2	Lifts	2/5/2014	2/12/2014	Offsite
SKY-TRAK	10054	MX6V88	2013	100	3	Lifts	2/5/2014		
CATERPILLAR	TL 1055C	DT8W55	2012	125	3	Forklifts	2/10/2014		
JLG	10K	PJ9M37	2007	110	3	Forklifts	2/12/2014		
TEREX	RT_780_80TON	MR9U89	2005	275	2	Cranes	2/14/2014	2/19/2014	Offsite
GENIE	GTH_5519	BD9T36	2012	67	3	Forklifts	2/18/2014		
TEREX	TX5519	TU3D58	2006	62	2	Forklifts	2/18/2014	2/25/2014	Offsite
DEERE	210K	AE9V73	2013	56	3	Backhoes	3/10/2014		
JLG	10054	RC6M93	2012	75	3	Forklifts	3/12/2014		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
DEERE	310K	NL6C48	2013	130	3	Backhoes	3/12/2014		
CASE	580N	SX5S95	2011	84	3	Backhoes	3/18/2014		
OTHER	TJ-5000	VT5V79	2007	280	3	Tractors	3/20/2014		
JLG	C6-42A	TX8D67	2012	100	3	Forklifts	3/20/2014		
OTHER	XRM1254	EK9A69	2008	99	3	Lifts	3/21/2014		
SKY-TRAK	10054	GM7C76	2013	100	3	Forklifts	3/25/2014		
JLG	800AJ	JF5J83	2002	64.5	0	Lifts	3/25/2014	3/28/2014	Offsite
JLG	G6-42A	UH3U65	2011	99	3	Forklifts	3/27/2014		
JCB	930	XN9J99	2011	84	3	Forklifts	3/27/2014		
SKY-TRAK	10054	PY8P48	2012	74	3	Forklifts	5/7/2014		
JLG	6042	JT4H67	2014	85	3	Forklifts	5/7/2014		
SKY-TRAK	10054	XL9A84	2007	110	3	Forklifts	5/8/2014		
GENIE	GTH-1056	YE9N46	2011	114	3	Forklifts	5/9/2014		
JLG	1200SJP	WK5B84	2012	74	3	Boom	5/16/2014		
SKY-TRAK	8042	CH6F45	2013	75	3	Forklifts	6/6/2014		
JCB	930	FR8A79	2012	134	3	Forklifts	7/15/2014		
JLG	1250AJP	KU3R59	2011	82	3	Lifts	7/16/2014		
JLG	Z-135/70	TS4F37	2008	74	3	Lifts	7/16/2014		
Genie	280-60	BE5Y85	2010	74	3	Lifts	7/16/2014		
JCB	510-56	BE8P43	2014	75	3	Forklifts	7/16/2014		
SKY-TRAK	10054	TW6E87	2012	100	3	Forklifts	7/17/2014		

Construction Equipment for Mojave Solar Project – October 2014 Equipment Inventory									
Manufacturer	**Model**	**EIN**	**Engine Year**	**Horse Power**	**Engine Tier**	**Vehicle Type**	**Date Arrived**	**Date Left Site**	**Comments**
Genie	S45	BP5H59	2012	49	3	Lifts	7/18/2014		
JLG	1250AJP	CJ9K73	2011	75	3	Lifts	8/1/2014		
JLG	800AJ	CW6P85	2007	65	3	Lifts	8/1/2014		
SKY-TRAK	10054	PP9P73	2012	75	4	Forklifts	8/1/2014		
JLG	1250AJP	KU3R59	2011	82	3	Lifts	8/1/2014		
CASE	580N	VG9E35	2011	84	3	Tractors	10/1/2014		
Genie	S-125	MR3T54	2007	74	3	Booms	10/14/2014	10/15/2014	Offsite

Appendix B
Biological Resources

Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California

October 2014 Reporting Period

Biological Resources
Monthly Monitoring Report
Conditions of Certification
BIO-2, BIO-3, BIO-4, BIO-5, BIO-7, BIO-11, BIO-14, BIO-18, BIO-19

October 2014 Reporting Period

Prepared for:

Mojave Solar LLC

13911 Park Avenue, Suite 206
Victorville, California 92392

Prepared by:

CH2MHILL®

2485 Natomas Park Drive
Sacramento, California 95833

November 2014

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1 Introduction

Per the California Energy Commission's (CEC) Abengoa Mojave Solar Project Commission Decision, CEC-800-2010-008-CMF, Docket Number 09-AFC-5C, this monthly compliance report (MCR) summarizes compliance with biological resource protection requirements during construction activities from October 1 through October 31, 2014, on the Mojave Solar Project (MSP) in San Bernardino County, California (see Figure 1, figures are at the end of this report).

This report does not repeat information provided in previous MCRs and assumes environmental compliance was met unless otherwise noted.

As provided in the CEC Final Decision, the following biological conditions of certification pertaining to monitoring activity covered by this MCR include, but are not limited to:

- BIO-2 Designated Biologist Duties
- BIO-3 Biological Monitor Selection, Qualifications and Duties
- BIO-4 Designated Biologist and Biological Monitor Authority
- BIO-5 Worker Environmental Awareness Program (WEAP)
- BIO-6 Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) Development and Compliance
- BIO-7 Impact Avoidance and Minimization Measures
- BIO-11 Desert Tortoise (*Gopherus agassizii*) Exclusion Fencing, Clearance Surveys, and Translocation Plan
- BIO-14 American Badger (*Taxidea taxus*) and Desert Kit Fox (*Vulpes macrotis*) Impact Avoidance and Minimization Measures
- BIO-18 Common Raven (*Corvus corax)* Monitoring, Management, and Control
- BIO-19 Evaporation Pond Monitoring and Adaptive Management Plan

This MCR is also being provided to California Department of Fish and Wildlife (CDFW) and United States Fish and Wildlife Service (USFWS).

1.1 Status of Biological Staff

Attachment 1 provides a summary table of the biological staff submitted for approval on this project and the status of their agency approvals. Two CEC-approved biological monitors, Mark Bratton and Ed Morgan, are pending USFWS approval as desert tortoise Authorized Biologists.

2 Ongoing Construction Monitoring

This section summarizes biological monitoring activities conducted by CH2M HILL throughout October 2014.

Please refer to sections "Desert Tortoise," "Invasive Weed Species," "Kit Fox and Other Mammals," "Nesting Birds," "Raven Monitoring, Management, and Control," "Wildlife

Injury and Mortalities," and "Observed Species" for specific information about wildlife and plants found by biological monitors in October. Temporary implementation of the avian monitoring at the evaporation ponds continued through October and is discussed in the "Evaporation Pond Monitoring" Section.

The MSP requires that all onsite staff receive the WEAP training (via DVD) and a brochure prior to start of work. A total of 171 new staff went through WEAP training in October 2014. Attachment 2 provides an ongoing summary table of the project's WEAP attendance and the hard copy sign-in training logs for October 2014.

On a typical construction day, the biological monitor or designated biologist:

- Monitors Harper Dry Lake Road at least every 3 hours during the desert tortoise active period (September through October). Due to desert tortoise observations on Harper Lake Road, biological staff monitored the road more often than every 3 hours during the morning and afternoons and when temperatures are optimal for tortoise movement;
- Monitors active construction areas, parking lots, laydown yards, and any areas of potential threat to vegetation, soils, or wildlife;
- Monitors the evaporation ponds several times a day;
- Inspects desert tortoise exclusion fences and tortoise guards as required;
- Inspects potential entrapment areas (e.g., trenches, vaults, basins, buildings);
- Monitors for formation of potential standing water;
- Inspects kit fox exclusion buffers and downloads photos from motion-sensor cameras at shelter sites;
- Conducts raven observations and bi-weekly point-count surveys;
- Conducts point counts at evaporation ponds and adjacent wetlands;
- Investigates reports of hazardous waste spills;
- Inspects pipes greater than 3 inches in diameter that are less than 8 inches above the ground surface; and
- Performs other special biological-resources-related activities, as required.

2.1 Construction Activities

In October, construction activities occurred in all project sectors, with the highest concentration in the Alpha and Beta power block areas. Steam system tests were conducted in the Beta power block. Water within the Alpha and Beta cooling tower basins was circulated during the month and Beta basin was drained in preparation for cascading water. Both Alpha and Beta cooling towers cascaded water during October. MSP discharged water into a single evaporation pond in Alpha and both basins in Beta in October.

In both Alpha and Beta, ground disturbance included various foundations and trenching. Collector commissioning continued, and heat transfer fluid (HTF) was circulated through

the solar fields and power blocks during defocus, and tracking / focus testing of collectors. Construction within the power blocks also included insulation installation and fire protection system.

Additionally, systematic trash removal by sector continued during the month and maintenance of desert tortoise guards and exclusion fences occurred on an as-needed basis. The construction schedule includes day and night shifts during the regular work week and limited shifts on weekends.

2.1.1 Desert Tortoise Exclusion Fence Repairs

In October, biological staff made comprehensive weekly inspections of the perimeter desert tortoise exclusion fence in the course of conducting other required activities, which is more frequent than the monthly fence inspections required by BIO-11 and the Biological Opinion. Three breaches in the tortoise fence were noted in October, two in Alpha West and one in Beta West. In Alpha West, Southern California Edison needed access to its right-of-way along Harper Lake Road, which resulted in impacts to MSP's desert tortoise exclusion fence. Although the fence was replaced at the end of their work each day, the fix was not to MSP's fence specifications and several additional repairs were made by AEPC. The second Alpha West fence breach was found at the end of the diversion channel along the north boundary. The fence breach in Beta West occurred when Southern California Edison construction equipment collided with MSP's tortoise fence on Lockhart Road. All breaks were temporarily repaired upon discovery and then permanently repaired within two days.

2.2 Rain Events

There were no rain events in October.

2.3 Hazardous Material Spills

Eleven hazardous material spills were reported to biological staff in October, for diesel, HTF, and gasoline. Abeinsa (AEPC) provided immediate spill reports to the biological staff per BIO-7 requirements in October.

Biological staff checked each spill and confirmed that the cleanup was sufficient to remove or reduce the risk to wildlife.

2.4 Non-compliance Notifications and Reports

Biological staff did not issue any NCRs or non-compliance notifications in October.

Two NCRs, NCR-5 regarding trash and NCR-7 regarding unauthorized road use, are pending formal acceptance of CEC for the implementation of MSP-proposed resolutions.

2.4.1 NCR-5: Trash Resolution

Despite improvements to trash disposal, AEPC subcontractors were still out of compliance on trash management in October. Food-related trash is still providing subsidies to wildlife and project-related trash has blown onto the BLM-managed Harper Dry Lake Area of

Critical Environmental Concern (ACEC). Biological staff have notified MSP personnel of the ongoing trash issues.

NCR-5 is pending formal acceptance of CEC for the implementation of MSP proposed resolutions.

2.4.2 NCR-7: Unauthorized Road Use Resolution

On May 16, the CEC accepted the resolution requiring MSP to staff additional security guards at locations where unauthorized road use was occurring, provided that they are sent daily and weekly summary notifications of any unauthorized road use. On August 5, during a CEC site visit, Staff Biologist Ann Crisp agreed to decrease reporting for NCR-7 to the MCR (if no violations are observed) and resume daily reporting if any infractions occur.

On October 1, during a lapse in security coverage, biological staff observed four vehicles driving south on Harper Lake Road turn onto Santa Fe Road. Biological staff were able to take photographs of the license plates. Two of the vehicles were subsequently identified onsite and the individuals had their badges deactivated. The other two vehicles have not been observed onsite since that day. Perhaps they were laid-off on October 1.

Increased comments and questions by MSP personnel about access and use of the Harper Lake ACEC prompted the Designated Biologists to request additional signage and barricades to be placed east of the entrance of Beta East on Lockhart Road.

2.5 Compliance Concerns

Biological staff managed several other biological compliance issues. They are described below:

2.5.1 Offsite Parking

Temporary and long-term offsite parking has decreased but was still observed by biological staff in October. MSP staff were observed temporarily parking offsite along Lockhart Road to load and unload shipments, stage construction vehicles, or speak on the phone. Both biological and AEPC staff engaged the operators of the vehicles and instructed them to conduct construction business within the desert tortoise guards or to inspect underneath the vehicle for desert tortoise prior to moving. In cases of long-term storage, when the operator was not present, biological staff placed a written warning on the vehicle and deferred to AEPC who flagged the vehicle with a notice of the violation.

2.5.2 Standing Water

Standing water issues continued in October. The issues were primarily located within Alpha and Beta power blocks. The power block standing water issues were caused by leaking valves, broken tanks and increased testing of fire suppression systems. Upon daily notification from biological staff, construction personnel swept water around to disperse it, or filled low spots with gravel, so that wildlife are restricted access to the standing water.

2.6 Desert Tortoise

In October, no construction activities required desert tortoise clearance surveys. No tortoises were observed within the boundaries of MSP.

Similar to observations in September, numerous sightings of desert tortoises were made in the project vicinity in October. One desert tortoise was observed at the intersection of Harper Lake and Lockhart roads on October 13 walking within the fence along the road (Figure 2, Desert tortoise 10/13). A USFWS Authorized Biologist moved the individual off of the road and into the vegetation west of Harper Lake Road at temperatures below the 95 degree Fahrenheit threshold. The tortoise was an adult male (see Photograph 1) with median carapace length 230 mm and no identifying marks on the carapace. The individual appeared healthy with no signs of disease or trauma. The individual did not void its bladder during the encounter. Biological staff monitored the tortoise for three days from sunup to sundown as it moved around the south boundary of the project and along Harper Lake and Lockhart roads. On October 15, the desert tortoise began walking south from the southern boundary of Beta West in a direction away from the project and biological staff ceased monitoring the individual (Figure 2, Desert tortoise 10/15).

Photograph1. Adult male desert tortoise observed October 13 to15, 2014.

2.7 Invasive Weeds

Two target invasive weeds were observed in October: London rocket (*Sisymbrium irio*) and tamarisk (*Tamarix ramosissima*). Both species are included in the California Invasive Plant Council (Cal-IPC) "high" or "moderate" dispersal or establishment rating and in the project's *Tamarisk Eradication, Monitoring and Reporting Program* (Tamarisk Plan).

London rocket is an annual species and only the old stalks from spring 2014 were observed.

Two individual tamarisks were observed growing onsite. Both individuals were observed in the southwest corner of Alpha West. The two plants had re-sprouted from roots that AEPC

had previously attempted to dig out. The individuals and as much of the roots as possible were dug up with an excavator on October 9.

Two other weed species, Russian thistle (*Salsola tragus*) and fivehook bassia (*Bassia hyssopifolia*), were also observed onsite. Both of these species have only one of the Cal-IPC dispersal or establishment rating as "high" or "moderate." According to the BIO-16 Tamarisk Plan, and guidance provided by CEC staff biologist Ann Crisp via email on May 28, 2014, these two species are considered "exotic;" and exotic species must infest less than 5 percent of MSP for BIO-16 to meet its success criteria goals. In addition to having exotic species in less than 5 percent of the area at MSP, the overall site expectation from the Tamarisk Plan is that the site will be devoid of vegetation during operations. Therefore, all target noxious weeds and other exotic plant species will ultimately need to be removed.

AEPC is no longer applying Roundup, but are manually removing weeds within the site boundaries in preparation for the start of facility operations.

2.8 Kit Fox and Other Mammals

Per agency guidance given to the Designated Biologists in fall 2013, biological staff are allowed to start passive hazing desert kit fox shelter sites after September 30, the end of whelping season. In preparation for passive hazing shelter sites in Alpha West solar field, biological staff reconstructed seven offsite shelter sites seven days prior to initiation of passive hazing and monitored on a daily basis for activity starting on September 24. On October 2, biological staff erected one-way doors on DKF Sites #5 and 7[1] within the Alpha West solar field exclusion buffer (Figure 2). After seven consecutive days of inactivity and no breaches into the shelter sites, AEPC used equipment to excavate and close the shelter sites on October 9 and 10.

On October 9, biological staff carefully monitored laborers and equipment used to disassemble the large debris piles within DKF Site #11 on Lockhart Road (Figure 2). On October 23, the exclusion buffer was removed as there were no structures remaining for kit foxes to inhabit.

Also on October 9, biological staff did a thorough inventory of the kit fox use under the conex boxes within the DKF Site #8 exclusion buffer (Figure 2). Upon intensive inspection of all the conex boxes within the buffer by biological staff using spot lights, four had no sign of kit fox activity. These conex boxes were carefully removed from the yard by construction personnel under biological supervision. The remaining conex boxes are highly active and the foxes have significantly remodeled and excavated burrows underneath.

As of the end of October, there are two remaining active kit fox shelter sites within two exclusion buffers, DKF Site #8 and #9 (Figure 2). DKF Site # 8 is located in a construction laydown area near the north boundary of Alpha West. DKF Site # 9 is located near the diversion channel in a relatively unused area on the southeast corner of the Alpha East solar field.

Biological staff inspected the integrity of the two remaining exclusion buffers and downloaded the photos from the motion-sensor cameras. Cameras recorded consistent

[1] Shelter sites 3, 4, 6, 12 and 13 had been compromised by storms in September and were no longer useable.

activity by at least three kit foxes in October. MSP personnel reported numerous observations of kit foxes to biological staff, as well as direction observations made by biological staff (Figure 2).

Biological staff monitored all activities within the exclusion buffers throughout October. Prior to working within the buffer areas, construction crews signed a protocol verifying their understanding of correct procedure within an exclusion buffer. Additionally, all construction crews were verbally briefed before entering the buffer.

2.9 Nesting Birds

No nesting bird behavior was observed throughout the site in October.

2.10 Raven Monitoring, Management, and Control

Common raven monitoring activities continued on the MSP site per BIO-18 and as outlined in the *Common Raven Monitoring, Management and Control Plan*. The October Monthly Common Raven Monitoring Results report provides information on monitoring activities, survey methods, maps, incidental raven observations, point count survey results, and datasheets (Attachment 3).

2.11 Wildlife Injuries and Mortalities

2.11.1 Migratory Bird Treaty Act Protected Species

In October, biological staff had four encounters with MBTA-protected species at MSP.

On October 4, a Western Grebe (*Aechmophorus occidentalis*) was found dead near the intersection of Harper Lake Road and Lockhart Road (Figure 2). The grebe likely died as a result of a collision with overhead transmission lines. The grebe had small lacerations on one leg and leading edge of one wing but those injuries were not likely to be life threatening. At this location an overhead power transmission line crosses the intersection from southwest to northeast. The grebe was found approximately 10 meters west of the overhead transmission line near the MSP fence. The carcass of the grebe was placed in MSP's onsite freezer for collection by the USFWS' Office of Law Enforcement.

On October 12, biological staff found a second Western Grebe injured in Alpha East near the evaporation ponds (Figure 2). The individual was lethargic and did not act normally, but showed no external signs of trauma. The biologist brought the individual to the ACEC wetland where it drank deeply but remained lethargic and lilted to the side when the biologist took their hand away from support. Upon direction from the Designated Biologist, biological staff transported the individual to Big Bear Alpine Zoo rehabilitation facility.

On October 15, a third Western Grebe was found on the ground in Alpha West by construction personnel who immediately notified biological staff (Figure 2). The individual was inspected by a qualified avian biologist and was determined to be in good health (flapping wings, biting, etc.). Since the position of the rear legs makes it difficult for this species to take off from land, it is presumed it came down and was unable to take flight. Upon direction from the Designated Biologist (after leaving voicemails with Ann Crisp and

Andrea Martine), the individual was released into the Harper Lake ACEC. The individual drank, swam around and promptly flew off.

On October 28, a Ruddy Duck (*Oxyura jamaicensis*) was found by construction workers in the office parking lot of Alpha West (Figure 2). Biological staff captured the bird noting that it was lethargic and bleeding from a deep puncture in its chest. Upon direction from the Designated Biologist, biological staff was instructed to transport the individual to Big Bear Alpine Zoo rehabilitation facility. However, the Ruddy Duck died in transport and was placed in MSP's onsite freezer for collection by the USFWS' Office of Law Enforcement.

On July 3, MSP was issued an interim 6-month USFWS Migratory Bird Special Purpose Utility Salvage Permit – Solar (SPUT permit) that authorizes project staff to collect, transport, and possess carcasses of species protected by the MBTA. This SPUT permit expires January 3, 2015.

2.11.2 Special-status Species

No additional special-status species were found injured or dead in October. At the time of this MCR, CDFW did not yet have the necropsy results for either of the kit foxes killed on June 28 or August 18. When the designated biologist receives the results from the necropsy, they will be reported in the MCR.

2.11.3 Other Species Mortalities

Two road-killed black-tailed jack rabbits (*Lepus californicus*) were found on Harper Lake Road. The remains were buried offsite by the biological staff.

An injured rock pigeon (*Columbia livia*) was found the Alpha power block in October. According to previous agency guidance regarding species that are not protected under MBTA, biological staff released it into the ACEC.

2.12 Observed Species

A list of wildlife species observed in October is included in Attachment 4. In addition to desert tortoise and desert kit fox, several special-status species were observed at MSP:

- Bobcat (*Lynx rufus*), California Fish and Game Code Section 4155
- Brewer's Sparrow (*Spizella breweri*), USFWS Bird of Conservation Concern
- Horned Lark (*Eremophila alpestris*), CDFW Watch List
- Loggerhead shrike *(Lanius ludovicianus*), CDFW Species of Concern
- Northern Harrier (*Circus cyaneus*), CDFW Species of Concern
- Peregrine falcon (*Falco peregrinus anatum*), Federally and State Delisted, CDFW Fully Protected, USFWS Bird of Conservation Concern
- Yellow-headed blackbird (*Xanthocephalus xanthocephalus*), CDFW Species of Concern

Three California invasive wildlife species were also observed at MSP: House sparrow (*Passer domesticus*), Brown-headed Cowbird (*Molothrus ater*), and European starling (*Sturnus vulgaris*). House sparrows have taken up residence in the power blocks and have been observed foraging in the parking lots and solar fields on trash and weeds, using the cascading water in the cooling tower to bathe, and foraging on moths around the generator lights provided for night-time work.

A coyote has been observed frequenting MSP on a daily basis and foraging on moths that are attracted to the generator lights.

3 Operations Monitoring

3.1 Evaporation Pond Monitoring

During the transition between construction and operations phases of the project, CEC's CPM, Dale Rundquist, gave conditional approval for MSP to discharge water into the evaporation ponds without an approved *Evaporation Pond Management and Monitoring Plan* (Evaporation Pond Plan) in place. Conditions of this approval were that biological staff must implement draft monitoring protocols provided to CEC on July 21, which include biweekly avian point counts at evaporation ponds. The Evaporation Pond Plan had not been approved by CEC when this MCR was written.

Two sets of evaporation pond point counts were conducted by qualified avian biologist, Russell Kokx, on October 11 and 25 at approved point count locations (Figure 3). During the morning of October 11, point counts were conducted at the evaporation ponds and the ACEC. On October 25, point counts were conducted at the evaporation ponds and ACEC in the evening. Table 1 provides a summary of the species observed during the point counts. Attachment 5 includes the point count datasheets from both surveys.

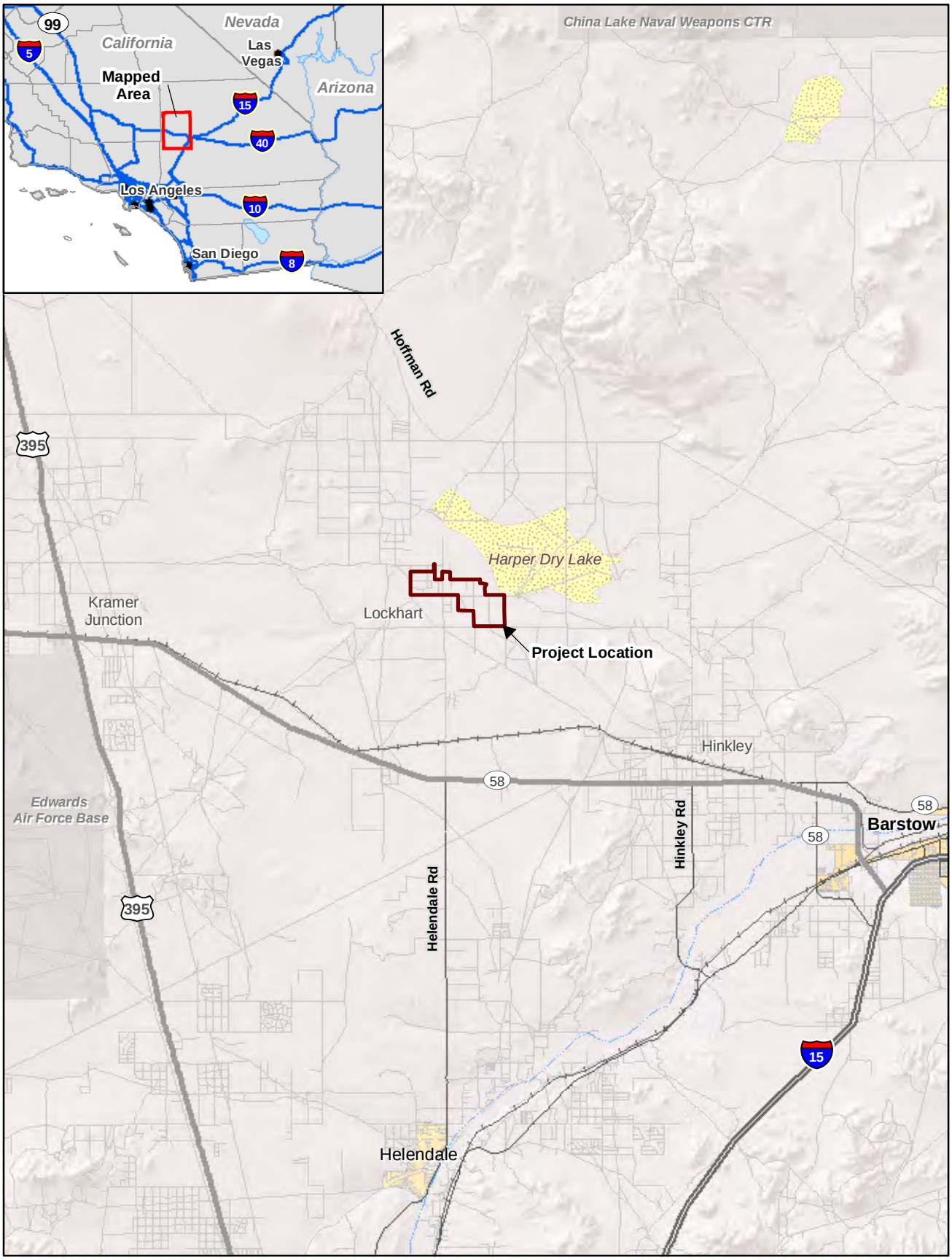
Incidentally, biological staff observed a marked decrease in the use of the evaporation ponds by birds towards the end of October, which likely corresponds to fall migration.

Table 1
Summary of Evaporation Point Count Observations

Date: Start Time	Station	Species Observed (number of) *	Location Description	Activity Observed
First Point Count Survey				
10/11/2014: 07:29	#1	WEGR (1), EAGR (3), RUDU (4)	Alpha East	Swimming
10/11/2014: 07:36	#2	Same individuals as #1 plus EAGR (1)	Alpha East	Swimming
10/11/2014: 07:44	#3	No species observed	Alpha East	-
10/11/2014: 07:53	#4	Same individuals as #2	Alpha East	Swimming
10/11/2014: 08:00	#5	Same individuals as #4	Alpha East	Swimming

Table 1 Summary of Evaporation Point Count Observations				
Date: Start Time	**Station**	**Species Observed (number of) ***	**Location Description**	**Activity Observed**
10/11/2014: 08:06	#6	No species observed	Alpha East	
10/11/2014: 08:32	#7	KILL (3), GRYE (5), BRBL (2)	Beta West	Wading, Feeding, Drinking
10/11/2014: 08:39	#8	KILL (4), HOLA (6), SAPH (1)	Beta West	Walking, Feeding
10/11/2014: 08:48	#9	RBGU(2), CORA (1)	Beta West	Flythrough
10/11/2014: 09:10	#10	CORA (1)	Beta West	Flythrough
10/11/2014: 09:16	#11	RWBL (2)	Beta West	Feeding
10/11/2014: 09:25	#12	CORA (4)	Beta West	Flythrough
10/11/2014: 09:56	#13	WEME (1), LEGO (1), AMPI (1)	Harper Lake ACEC	Perched, Flying
10/11/2014: 10:06	#14	WCSP (4), SAVS (2), HOLA (2)	Harper Lake ACEC	Perched, Flying
10/11/2014: 10:20	#15	AMCO(62), RNDU (4), YRWA (1), HOLA (6), SAPH (1), MAWR (2), WCSP (2), HOFI (4)	Harper Lake ACEC	Swimming, Perched, Flying
Second Point Count Survey				
10/25/2014: 15:00	#1	WEGR (1), RUDU (6)	Alpha East	Swimming
10/25/2014: 15:07	#2	No species observed	Alpha East	-
10/25/2014: 15:14	#3	No species observed	Alpha East	-
10/25/2014: 15:22	#4	Same individuals as #1 plus TUVU (1), CORA (2)	Alpha East	Swimming, Flying,
10/25/2014: 15:28	#5	No species observed	Alpha East	-
10/25/2014: 15:35	#6	No species observed	Alpha East	-
10/25/2014: 15:50	#7	GRYE (1), CORA (1)	Beta West	Walking, Flying

Table 1 Summary of Evaporation Point Count Observations				
Date: Start Time	**Station**	**Species Observed (number of) ***	**Location Description**	**Activity Observed**
10/25/2014: 15:58	#8	KILL (1)	Beta West	Walking, Wading
10/25/2014: 16:05	#9	CORA (1), KILL (1)	Beta West	Drinking, Wading
10/25/2014: 16:14	#10	No species observed	Beta West	-
10/25/2014: 16:21	#11	No species observed	Beta West	-
10/25/2014: 16:29	#12	No species observed	Beta West	-
10/25/2014: 16:50	#13	No species observed	Harper Lake ACEC	-
10/25/2014: 17:02	#14	No species observed	Harper Lake ACEC	-
10/25/2014: 17:15	#15	AMCO (42), WEME (1), UNDU (1), Domestic Goose (1).	Harper Lake ACEC	Swimming, Feeding, Perched
* Four letter codes of avian species are defined in Attachment 4 observed species list.				



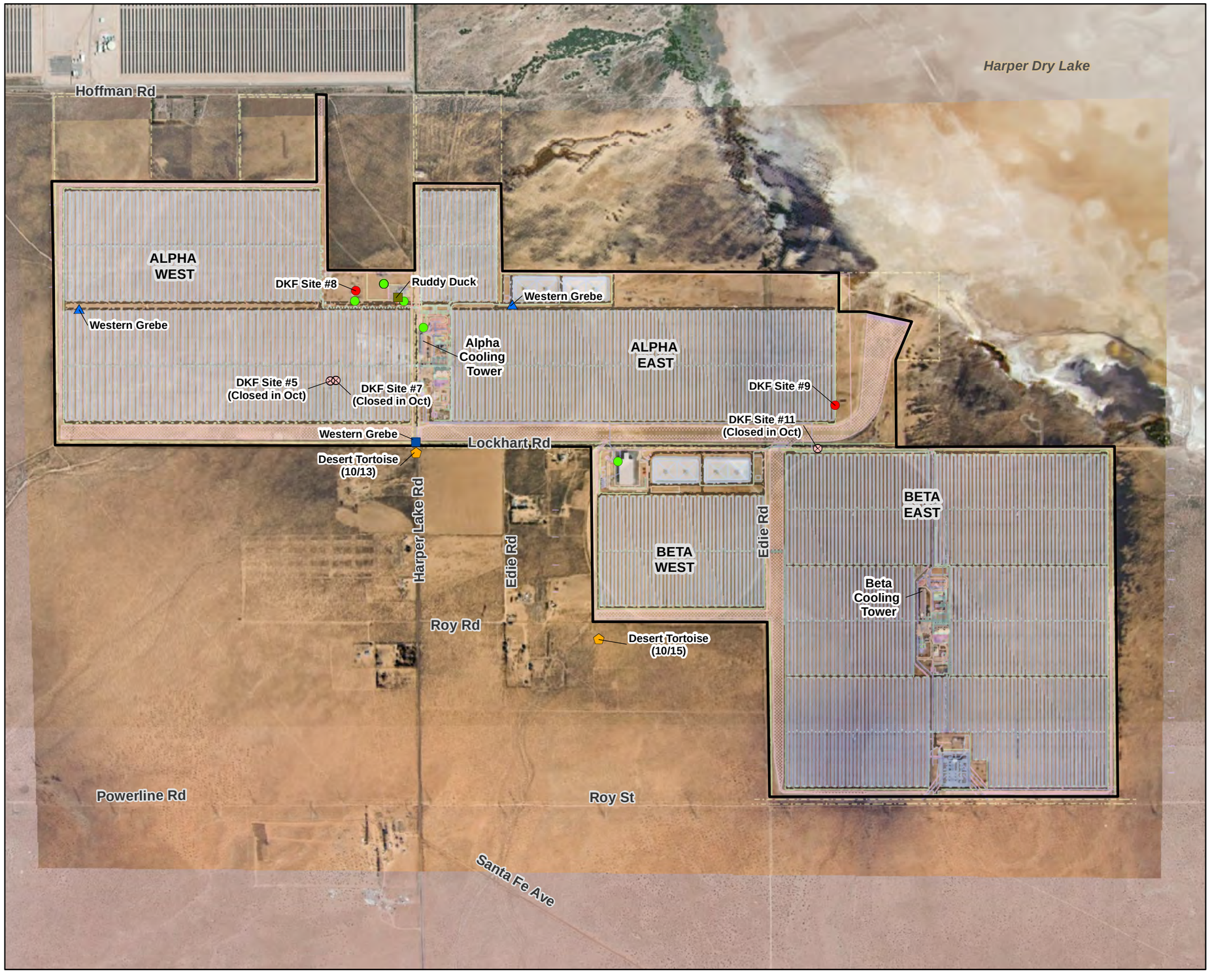
LEGEND

Project Boundary

N

0 2.5 5
Miles

FIGURE 1
Regional Map
Abengoa Mojave Solar Project
San Bernardino County, California



VICINITY MAP

LEGEND

Special Status Species
- Desert Tortoise

Desert Kit Fox
- Incidental Observation
- Shelter Site
- Shelter Site (Closed in Oct)

Wildlife Injury
- Western Grebe

Wildlife Mortality
- Ruddy Duck
- Western Grebe

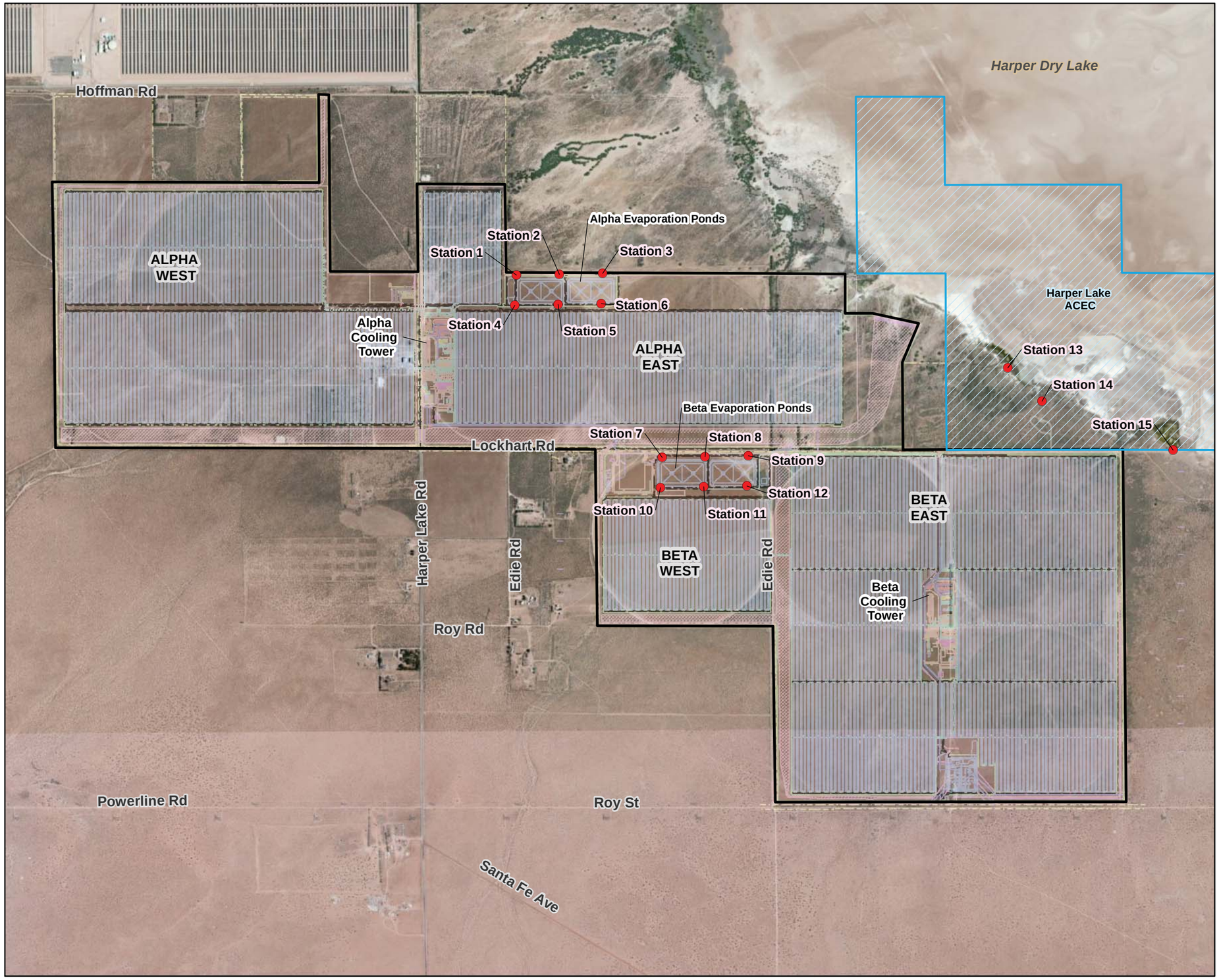
Project Boundary

N

0 750 1,500
Feet

FIGURE 2
Biological Resources, October 2014
Abengoa Mojave Solar Project
San Bernardino County, California

CH2MHILL



LEGEND

Project Boundary

Permanent Survey Point

Evaporation Pond Station

BLM Area of Critical Environmental Concern (ACEC)

Harper Lake ACEC

N

0 750 1,500

Feet

FIGURE 3
Evaporation Ponds, Survey Points and Associated Features
Abengoa Mojave Solar Project
San Bernardino County, California

CH2MHILL

Attachment 1
Agency Approval Status of Biological Staff

Agency Approval Status of Biological Monitor and Designated Biologist
Abengoa Mojave Solar Project

Biologist	CEC				CDFW				USFWS	
	BM		DB		BM		DB		AB	
	Submitted	Approved	Submitted	Approved	Submitted	Approved	Submitted	Approved	Submitted	Approved
Brent Finley	5/6/2013	5/9/13	—	—	—	—	—	—	5/14/2013; **Retracted 2/7/14**	NA
Tim Hamaker	5/9/2013	5/9/13	—	—	—		—	—	—	—
Josh Holloway	—	—	5/10/2013	5/13/13 (Alt-DB)	—	—	—	—	5/14/2013	5/20/13
Morgan King	—	—	5/2/2013	5/9/13 (DB)	—	—	—	—	9/4/2013	9/17/13
Linda Sands	5/9/2013	5/9/13	5/2/2013	Denied as Alt-DB 5/9/13	—	—	—	—	5/14/2013; **Retracted 2/7/14**	NA
Bruce Weise			5/10/2013	5/13/13 (Alt-DB)	—	—	—	—	5/14/2013	5/20/13
Amy Trexler	6/21/2013	7/30/13	—	—	—	—	—	—	6/26/2013; **Retracted 2/7/14**	NA
Catherine Wangen	6/21/2013	7/30/13	—	—	—	—	—	—	6/26/2013; **Retracted 2/7/14**	NA
Cindy Newman	6/21/2013	7/30/13	—	—	—	—	—	—	—	—
Susan Carlton	6/21/2013	7/30/13	—	—	—	—	—	—	6/26/2013; **Retracted 2/7/14**	NA
Ursula Rogers (Carliss)	6/21/2013	7/8/13	—	—	—	—	—	—	6/26/2013; **Retracted 2/7/14**	NA
Eric Somers	7/30/2013	8/6/13	—	—	—	—	—	—	8/19/2013; ; **Retracted 2/7/14**	NA
Joey Verge	7/30/2013	8/6/2013	—	—	—	—	—	—	3/11/2011	4/4/11

Agency Approval Status of Biological Monitor and Designated Biologist
Abengoa Mojave Solar Project

Biologist	CEC				CDFW				USFWS	
	BM		DB		BM		DB		AB	
	Submitted	Approved	Submitted	Approved	Submitted	Approved	Submitted	Approved	Submitted	Approved
William Clark	8/29/2013	9/4/2013	—	—	—	—	—	—	8/29/2013	9/17/13
Josh Utter	8/29/2013	9/4/2013	—	—	—	—	—	—	—	—
Michael Garvey	8/29/2013	9/4/2013	—	—	—	—	—	—	8/29/2013	9/17/13
Erich Green	3/11/2011	3/11/2011	—	—	—	—	—	—	3/11/2011	4/4/11
Ed Morgan	2/20/2014	3/7/14	—	—	—	—	—	—	2/20/2014	Pending
Mark Bratton	2/20/2014	3/7/14	—	—	—	—	—	—	2/20/2014	Pending
John Brooks Hart	3/11/2011	3/11/2011	3/11/2011 (Alt-DB)	Submitted	—	—	—	—	3/11/2011	3/11/2011
Jason Brooks	7/31/2014	8/27/14	—	—	—	—	—	—	—	—
Robert Hernandez	7/31/2014	8/20/14	—	—	—	—	—	—	—	—
Russell Kokx	7/31/2014	8/20/14	—	—	—	—	—	—	—	—
Chris McDaniel	7/31/2014	8/20/14	—	—	—	—	—	—	—	—
Onkar Singh	7/31/2014	8/20/14	—	—	—	—	—	—	—	—

Legend:
CEC= California Energy Commission
CDFW=California Department Fish and Wildlife
USFWS= United States Fish & Wildlife Service
BM= Biological Monitor
AB=Authorized Biologist
Alt-DB = Alternate Designated Biologist
DB=Designated Biologist

Attachment 2
WEAP Summary and Training Logs

WEAP Summary Table through October 31, 2014 Mojave Solar Project	
Month Training Conducted	**Monthly Total of WEAP Attendees***
Mar-11	50
Apr-11	9
May-11	18
Jun-11	2
Jul-11	27
Aug-11	63
Sep-11	82
Oct-11	75
Nov-11	41
Dec-11	68
Jan-12	52
Feb-12	112
Mar-12	116
Apr-12	158
May-12	208
Jun-12	167
Jul-12	156
Aug-12	271
Sep-12	276
Oct-12	268
Nov-12	93
Dec-12	137
Jan-13	183
Feb-13	195
Mar-13	255
Apr-13	295
May-13	408
Jun-13	341
Jul-13	244
Aug-13	187
Sep-13	206

WEAP Summary Table through October 31, 2014 Mojave Solar Project	
Month Training Conducted	**Monthly Total of WEAP Attendees***
Oct-13	387
Nov-13	213
Dec-13	454
Jan-14	642
Feb-14	866
Mar-14	560
Apr-14	376
May-14	428
Jun-14	230
Jul-14	170
Aug-14	121
Sep-14	142
Oct-14	171
Total	9,523
* Attendance is based on training sign-in sheets	

10/1/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Peter Vallejo	Clisstown	[signature]
2.	Allan Farmer	Lance Security	Allan Farmer
3.	Joel Gann	Wood Group	[signature]
4.	Angel Hernandez	Boilermaker / Abakus	[signature]
5.	[illegible]	Boilermakers / Abakus	[signature]
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Biological Trainer: ______________ Signature: ______________ Date: __/__/__

Cultural Trainer: ______________ Signature: ______________ Date: __/__/__

Paleo Trainer: ______________ Signature: ______________ Date: __/__/__

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	CARMEN REDONDO GARCIA	ENGINEER / AECOM	
2.	STEVEN BIVENS	SECURITY / LANTZ	Steve Bivens
3.	Merrill Henderson	Lantz / Security	Merrill Henderson
4.	Brandon Douglas	Engineer / EPS	Brandon Douglas
5.	Daniel Duenas	Boilermaker	
6.	Jovany Lomeli	Labor	
7.	EDWARD PUCCETTI	INSPCT. BUREAU VERITAS	
8.	JOSE O. SANDOVAL	LABORER	JOSE O SANDOVAL
9.	SCOTT VICIC	INSPECTOR TQS	
10.	Julio Candillo	LABORER / ABACUS	
11.	VILLA, ANTHONY	PIPEFITTER	
12.	RJ Calhoun	BIGGE	
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10/2/14

10/3/14

Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

10/3/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Robert Castner	PF / Abacus	
2.	Jeff MANGum	PF W / Abacus	
3.	DON. Velasco	F W. abacus	
4.	[redacted]	[redacted]	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	~~[illegible]~~ JOE FIELD	ELECTRIC POWER SYSTEMS	
2.	MATTHEW SCHUEMAN	ABACUS	
3.	John Stroup	ABACUS	
4.	Jesus A. Salgado	Abacos	
5.	J. Alberto Aria Salgado	Abacos	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

10/4/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Abel Valencia	Abacus	
2.	Crista Varela	ABACUS	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

10/7/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Marshall Scogin	FE GE	Marshall Scogin
2.	Nate Wizdatsky	CONTROL AIR	NATE WAZDATSKEY
3.	CHRIS THOMPSON	CONTROL A/C	[illegible]
4.	Henry Chavez	Boilermaker Abacus	[illegible]
5.	Kevin Belk	BM Abecus	Kevin Belk
6.	Dorian Durazo	Bm Abacus	Dorian Durazo
7.	David Derich	BMT	[illegible]
8.	EVER CASTILLO	BM	Ever Castillo
9.	Joe Abeyta	Bm	Joe A
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Biological Trainer: ______________ Signature: ______________ Date: __/__/__

Cultural Trainer: ______________ Signature: ______________ Date: __/__/__

Paleo Trainer: ______________ Signature: ______________ Date: __/__/__

10/10/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Thomas Connors	SSCI	Thomas Connors
2.	GIL ARCE	P.E. / SSCI	
3.	Jim Gammie	SSCI	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

10/13/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Jason Bizzell	Abengoa - Chairman	
Re-Train 2.	Francisco Torres	ABACUS	
3.	Steven Loya	Abengoa	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

10/14/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

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No.	Employee Name	Title/Company	Signature
1.	Reginald Williams	Millwright/ [illegible]	[signature]
2.	TOMMY L HUTTON JR	CONTROLS ENG / GE	[signature]
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Biological Trainer: ____________ Signature: ______________ Date: __/__/__

Cultural Trainer: ____________ Signature: ______________ Date: __/__/__

Paleo Trainer: ____________ Signature: ______________ Date: __/__/__

10/15/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
R-trans 1.	Duane Trammell	Layne / PM	Duane Trammell
R-trans 2.	Aurelio Rios	ABACUS OE.	Aurelio Rios
3.	JAVIER GIL	LEF INGENIEROS	
4.	Adrian Rodriguez	SPX cooling	Adrian Rodriguez
5.	Humberto Gonzalez	SYNEICX	Humberto Gonzalez
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

12/17/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Mike PERRY	Special Service CO	
2.	Andrew Bernard	Special Services	
3.	Steven Williams	Insulator	
4.	David Soldivar	INSULATOR	
5.	JOHN WATKINS	INSULATOR	
6.	DANIEL Corona	INSULATOR	
7.	DAVID ONTIVEROS	INSULATOR	
8.	Luis Corona	Insulator	
9.	Adan Eustaquio	Insulator	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

10/18/17

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	ALBERTO GARCIA	SSC	
2.	CREW LEADER	SSC	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

10/20/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Hakan Wickberg	HVAC Tech. AMS	
2.	~~George~~ David Frenze	MGR. MECH ENG.	David W. Frenze
3.	CARLOS CORDERO	LAYNE	
4.	MICHAEL BEAMER	LAYNE	
5.	Carlos Alvarez	ABACUS	Carlos Alvarez
6.	Juan Alvarez	Abacus	Juan C. Alvarez
7.	Juan Miguel Molina Gil	Abeinsa EPC	
8.	BRIAN KURTZ	ABACUS	
9.	KARL TURNMAN	ABACUS	Karl Turnman
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

10/21/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	ALVARO MORA	SIMOSA IT	
2.	GONZALO GOMEZ	SIMOSA IT	
3.	CESAR TASCON	SIMOSA IT	
4.	JAVIER RUELLES	SIMOSA IT	
5.	Nicholis Gray	Applus RTD	
6.	David Boller	Applus RTD	
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Biological Trainer: _____ Signature: _____ Date: ___/___/___

Cultural Trainer: _____ Signature: _____ Date: ___/___/___

Paleo Trainer: _____ Signature: _____ Date: ___/___/___

10/22/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Bradford Davison	Tri City Electrical	
2.	Joseph R. Salazar	Tri City Electric	
3.	Elden S. Schimmel	Tri City Electric	
4.	Joseph D. Journell	Tri-city Electric	
5.	Stacey Rouse	Tri-city Elec.	
6.	Juventino Herrera	Tri City Elec	
7.	Mike Barlow	Summit Five	
8.	Guillermo Chaverin	Tri City Electric	
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Biological Trainer: Stacey Davis Signature: _____ Date 10/22/14

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature _____ Date: __/__/__

10/23/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Ryan Bierwerth	PM / Summit	
2.	DEAN HOWARD	PM / SUMMIT	
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Biological Trainer: _____ Signature: _____ Date: ___/___/___

Cultural Trainer: _____ Signature: _____ Date: ___/___/___

Paleo Trainer: _____ Signature: _____ Date: ___/___/___

10/24/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Thomas Peralta	ABACUS	
2.	MIGUEL DELGADO	LEFINGENIEROS	
3.	MARTIN AGUILAR	ABACUS	
4.	Jose Luis Flores	ABACUS	
5.	Eugenio Trujillo	ABACUS	
6.	Antonio Reyes	ABACUS	
7.	ELISEO DURAN	ABACUS	
8.	Carlos Vasquez	Abacus	
9.	Henry Espinales	Abacus	
10.	AUGUSTO SALDIVAR	ABACUS	
11.	TIRSO LUNA JR.	ABACUS	
12.	HASSAN POURSHAHIDI	ABACUS	
13.	JOSE HERRERA	ABACUS	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

10/27/14

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	TAMIKA NIXON	LANTZ	
2.	Christian Coleman	Lantz	
3.	Roger Rivera	Insulator/ABACUS	
4.	James D White	Insulator abacus	
5.	Jaime Gregory	INSULATOR/abacus	
6.	Regina Butler	Insulator/Abacus	
7.	Eliseo Dura	Insulator	
8.	Samuel Olivo	ABACUS	
9.	Ben Jaime	ABACUS	
10.	Roger Rivera	ABACUS	
11.	Jaime Gregory	ABACUS	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

10/28/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Francisco Jimenez	Field SI/Safety	
2.	Adrian Torrez	field Superintendent	
3.	Raul Rodriguez	CARPENTER	
4.	Cesar Dominguez	Carpenter	
5.	Guillermo Cisneros	Carpenter	Guillermo Cisneros
6.	Vicente Lopez	CARPINTER	
7.	Fernando Hernandez	Carpenter	
8.	Michael Marcilla	Security	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

10/30/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

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No.	Employee Name	Title/Company	Signature
1.	Jonathan Clark	Pipefitter/ABACUS	
2.	ERIC EPPERSON	SAFETY MGR/BRAND	
3.	Oscar Gonzalez	AZ BRAND SCAFF	
4.	JOSE M MARTINEZ	CARPENTER/BRAND	
5.	Ernesto Longoria	A5 / BRAND	Ernesto Longoria
6.	JOHN Wallace	INSULATOR/ABACUS	
7.	DEAN DUNBAR	Steam fitter	
8.	Jules Paige	Teamster	Jules Paige
9.	JIM TOOMEY	OPERATOR	
10.	TIRSO LUNA JR	ABACAS	
11.	JOSE M. GERMAN MUÑOZ	ROVIMATICA S.L	
12.	Javier Tristancho Sanz	A-SNT	
13.	Mike Gielb	ABACUS	
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27.	JIM TOOMEY		
28.	TIRSO LUNA JR	A	
29.	HASSAN BOUSHEL		
30.	MARTIN AGUILAR	ISAAC ASTUDILLO	

Biological Trainer: " Signature: " Date 10/30/14

Cultural Trainer: " Signature " Date " / " / "

Paleo Trainer: " Signature " Date " / " / "

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

10/30/14

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	LUIS E ROSAS	INSULATOR ABACUS	
2.	Marshall Gallegos	Insulator Abacus	
3.	Enrique Valencia	Insulator ABACUS	
4.	SIMON NUNG	INSULATOR ABACUS	
5.	STEVEN CHEATWOOD	INSULATOR ABACUS	
6.	FRANCISCO J. MEZA	INSULATOR ABACUS	
7.	Benito L Rodriguez	Insulator ABACUS	
8.	Francisco J Gonzalez	insulator ABACUS	
9.	SAUL LUNA	Insulator ABACUS	
10.	Roni Rocha	Insulator ABacus	
11.	Miguel Anteaga	INSULATOR ABACUS	
12.	Juan C Villanueva	Insulator ABACUS	
13.	Jose J Lobo	INSULATOR ABACUS	
14.	David L Williams	Insulator ABACUS	
15.	Ben Martin	Fitter ABACUS	
16.	Jacob Irwin	Scaffolder Apprentice Abacus	
17.	Angel Gonzalez	Insolator Abacus	
18.	RAFAEL LOBO	Insulator ABACUS	
19.	MARTIN AGUILAR	INSULATOR ABACUS	
20.	HASSAN Pourshahidi	Insulator ABACUS	
21.	Jaime del Hierro	Insulator ABACUS	
22.	Carlos Del Hierro	Insulator ABACUS	
23.	Eliseo Hernandez	Insolator ABACOS	
24.	Erik Larra	Insolator ABACOS	
25.	JUAN M MORA	INSULATOR ABACOS	
26.	HILARIO RAMOS	INSULATOR ABACUS	
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Biological Trainer: ISAIAH ADAMS Signature: [signature] Date 10/30/14

Cultural Trainer: " Signature: " Date: / /

Paleo Trainer: " Signature: " Date: / /

10/31/14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Mario Moreno	Insulator Abacus	
2.	Miguel Moreno	Insulator Abacus	
3.	Mike Galvez	Insulator Abacus	
4.	Martin Buccafusca	Insulator Abacus	
5.	Ronald Molinares	Insulator Abacus	
6.	William Gamboa	Insulator Abacus	
7.	Joel Ayala Jr	Insulator/Abacus	
8.	Rodolfo Gomez	Insulator/Abacus	
9.	Oscar Quiñones	Insulator/Abacus	
10.	Brian Gomez	HDR / Bigge	
11.	Josue Estrada	A-4 / Brand	
12.	Andres Corrales Orozco	A-4 / Brand	
13.	Hector Hugo Juarez	A-3 / Brand	
14.	Angel Juarez	A-5 - Brand	
15.	Derrick Lopez	A-3 - Brand	
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Biological Trainer: _____ Signature: _____ Date: __/__/__

Cultural Trainer: _____ Signature: _____ Date: __/__/__

Paleo Trainer: _____ Signature: _____ Date: __/__/__

Attachment 3
Monthly Common Raven Monitoring Results

Monthly Common Raven Monitoring Results for Abengoa Mojave Solar Project San Bernardino County, California

Monthly Compliance Report for October 2014

Prepared by:

2485 Natomas Park Drive
Sacramento, California 95833

November 2014

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1.0 Introduction

The Abengoa Mojave Solar Project (MSP) is required to provide a monthly report on common ravens (*Corvus corax*) to the California Energy Commission (CEC), United States Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (CDFW). The CEC Final Decision includes Condition of Certification BIO-18 stating that the project owner shall implement control measures to manage its construction site and related facilities in a manner to control raven populations and to mitigate cumulative and indirect impacts to desert tortoise associated with regional increase in raven numbers. In accordance with BIO-18, the CEC approved the *Common Raven Monitoring, Management, and Control Plan* (Raven Plan) on March 26, 2012. Refer to BIO-18 and the Raven Plan for monitoring and survey protocol description.

2.0 Construction Monitoring Activities

The following section summarizes biological monitoring activities conducted by CH2M HILL throughout October 2014.

On a typical weekday, one biological monitor or designated biologist:

- Monitors Harper Dry Lake Road at least every 3 hours during the desert tortoise active period (September through October). Due to desert tortoise observations on Harper Lake Road, biological staff monitored the road more often than every 3 hours during the morning and afternoons and when temperatures are optimal for tortoise movement;
- Monitors active construction areas, parking lots, laydown yards, and any areas of potential threat to vegetation, soils, or wildlife;
- Monitors the evaporation ponds several times a day;
- Inspects desert tortoise exclusion fences and tortoise guards as required;
- Inspects potential entrapment areas (e.g., trenches, vaults, basins);
- Monitors for formation of potential standing water;
- Inspects kit fox exclusion buffers and downloads photos from motion-sensor cameras at shelter sites;
- Conducts raven observations and bi-weekly point-count surveys;
- Conducts point counts at evaporation ponds and adjacent wetlands;
- Investigates reports of hazardous waste spills;
- Inspects pipes greater than 3 inches in diameter that are less than 8 inches above the ground surface; and
- Performs other special biological-resources-related activities, as required.

3.0 Methods

The designated biologist ensures that the biological monitors are trained to implement the Raven Plan in both raven monitoring and management measures. Biological staff also conduct 10-minute stationary point count surveys at seven locations around the site (Supplement 1). The purpose of the point counts is to record raven observations including date, time, location, number of individuals, age, behavior, distance from the station location, and any other pertinent notes (e.g., nesting behavior). This information is recorded on a hard copy datasheet. Point count surveys are conducted with a minimum of one week in between.

Point count surveys were positioned to monitor project-specific activities and features that have potential to attract or subsidize ravens. The Raven Plan defines six "conditions of concern" as:

1. Availability of water from evaporation ponds;
2. Potential creation of new perching/roosting/nesting sites for ravens;
3. Temporary water ponding potential from dust suppression associated with construction, operation, and maintenance;
4. Raven food sources from soil disturbance (rodents, insects, etc.) and road kill associated with construction activity;
5. Human food and waste management; and
6. Landscaping that could provide foraging, perching, and available water opportunities.

During daily monitoring activities, biological staff records incidental observations of ravens interacting with MSP. This includes any raven observation within site boundaries, flying overhead, or adjacent to the site. These observations are recorded in field notebooks and include date, general site location, global positioning system (GPS) location, number of individuals, and activity. The GPS information is also presented on a map.

The incidental observations are also used to identify potential problem areas. Problem areas are those requiring management actions. If a problem area is identified, the surveys will be increased to a weekly basis until the issue is resolved. Habitual perching sites will be identified and actions taken to discourage use. If hazing techniques are employed to discourage raven use, biologists will record information on date, time, location, habitat, number of individuals, and response to hazing. Potential or active raven nests will be documented and removed according to Raven Plan specifications. Biological staff will report on whether control measures are working and provide further recommendations in the biological monthly compliance report.

4.0 Results

Incidental Observations

In October, ravens were observed foraging on food waste in the power block and solar fields, as well as drinking and bathing in construction-related supplemental water sources. Ravens were observed in October drinking from pooled water that blows off the cascading cooling towers on a regular basis. Construction staff was notified of these issues and

biological staff continues to monitor the situation. On October 14, a raven was observed flying away from the offices in Alpha power block with a medium sized bird in its mouth. Inspection of the ground near where the raven was seen revealed a pile of feathers and it was determined that the carcass being carried off by the raven was an American Coot (*Fulica americana*). The condition of the coot prior to predation was unknown; however, given the location of the incident it seems likely that the coot had collided with an overhead power line and been either incapacitated or killed prior to being encountered by the raven. In addition, ravens were observed predating on house sparrows onsite.

During biological monitoring, 88 ravens were incidentally observed during 47 separate observations (Table 1). Because ravens are indistinguishable from one another, multiple sightings of individual birds are likely to occur. Therefore, the number of observations does not reflect the number of individual birds onsite. Common ravens were observed throughout the site (Supplement 2). The most commonly observed raven behaviors were flying overhead or perched on project structures. Many ravens were observed around Lockhart Road and Alpha power block, as well as the Alpha West solar fields and the Beta evaporation ponds. Ravens were observed perched on fences and various transmission line poles, but were not using a habitual perch location.

Table 1
October 2014 Incidental Raven Observations

Date	Location	Number Observed	Activity
10/1/14	Beta West	1	Flying
10/2/14	Beta East	1	Flying
10/2/14	Alpha East	1	Flying
10/2/14	Beta West	2	Perched
10/3/14	Beta West	1	Drinking
10/4/14	Alpha West	1	Flying
10/5/14	Alpha West	2	Perched
10/5/14	Alpha East	2	Perched
10/6/14	Alpha East	1	Flying
10/7/14	Beta West	1	Drinking
10/7/14	Beta West	2	Flying
10/7/14	Alpha West	2	Flying
10/7/14	Beta West	1	Standing
10/8/14	Beta East	2	Perched
10/9/14	Beta West	2	Flying
10/9/14	Alpha West	1	Perched

Table 1 October 2014 Incidental Raven Observations			
Date	**Location**	**Number Observed**	**Activity**
10/10/14	Alpha East	1	Flying
10/11/14	Beta West	1	Perched
10/11/14	Beta East	4	Perched
10/13/14	Alpha West	1	Flying
10/15/14	Alpha East	1	Flying
10/16/14	Beta West	1	Flying
10/17/14	Alpha West	1	Flying
10/18/14	Alpha West	1	Flying
10/19/14	Beta West	2	Perched
10/20/14	Alpha West	1	Flying
10/20/14	Beta West	1	Perched
10/20/14	Beta East	2	Flying
10/20/14	Alpha East	1	Flying
10/20/14	Beta West	1	Drinking
10/20/14	Beta West	3	Flying
10/21/14	Beta East	1	Perched
10/21/14	Beta East	2	Perched
10/21/14	Alpha East	1	Flying
10/21/14	Alpha East	1	Drinking
10/21/14	Beta West	1	Perched
10/22/14	Beta East	1	Flying
10/23/14	Alpha West	23	Flying
10/24/14	Alpha West	1	Flying
10/24/14	Alpha West	1	Perched
10/24/14	Beta West	1	Flying
10/25/14	Alpha East	2	Flying
10/26/14	Alpha West	1	Perched
10/26/14	Beta West	2	Flying

Table 1 October 2014 Incidental Raven Observations			
Date	**Location**	**Number Observed**	**Activity**
10/26/14	Alpha East	1	Flying
10/27/14	Beta West	2	Drinking
10/28/14	Alpha East	2	Flying
Total Observations		88	

Point Count Surveys

In October, two biweekly point count surveys were conducted in accordance with the Raven Plan protocol. Point count surveys were conducted on October 11 and October 25, 2014. On October 11, six ravens were observed at station 6, and six ravens were observed at station 7. On October 25, two ravens were observed at station 2, one raven was observed at station 4, two ravens were observed at station 5, two ravens were observed at station 6, and one raven was observed at station 7. Point count observations did not document any nesting behavior or problem areas. The Common Raven Fixed Point Observation Data Sheets are provided in Supplement 3. Table 2 provides a summary of point count observations.

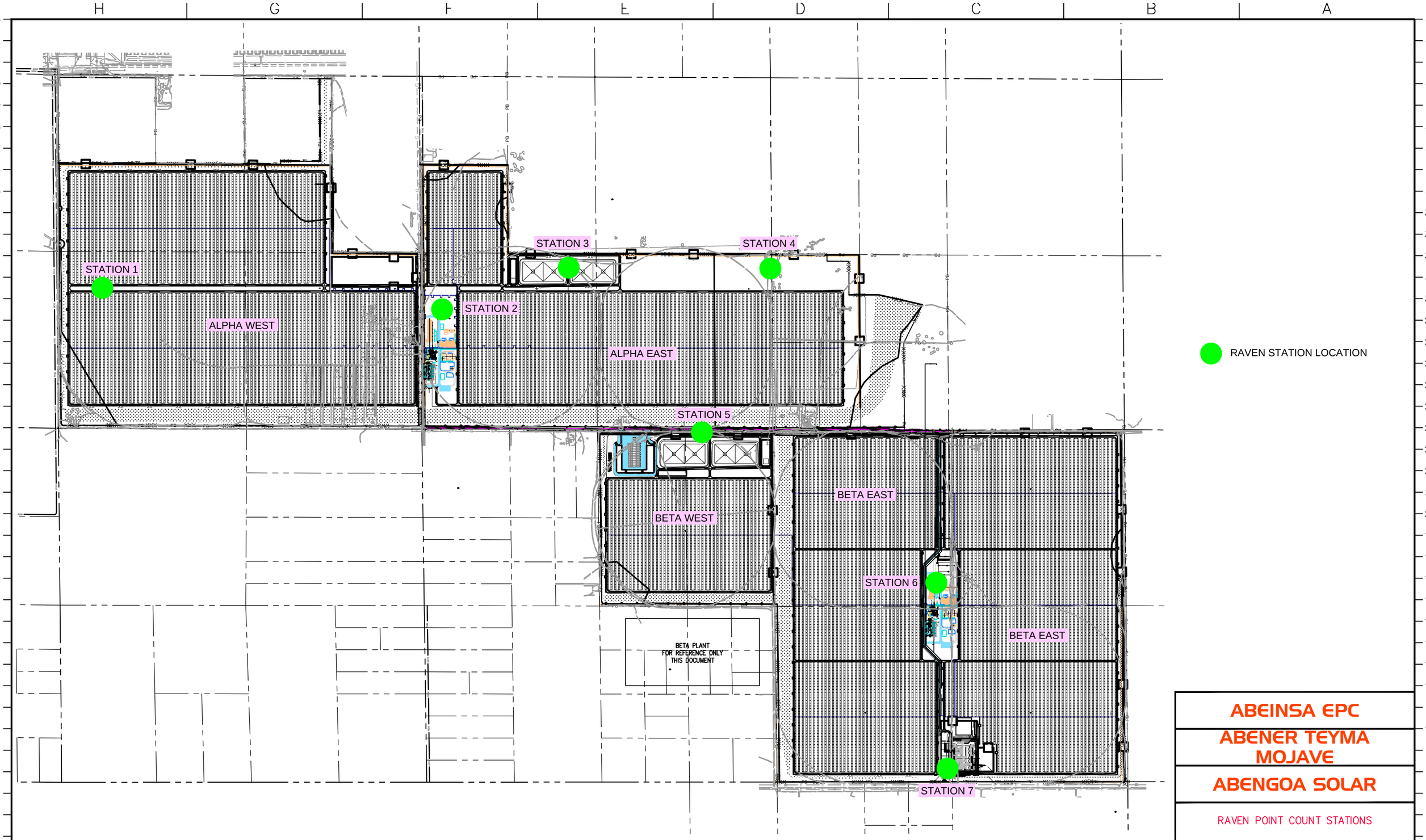
Table 2 Summary of Common Raven Point Count Observations				
Date: Time	**Station**	**Number of Ravens Observed**	**Location Description**	**Activity Observed**
10/11/14: 14:27	6	4	Alpha East	Flying, Perched
10/11/14: 14:43	7	6	Beta East	Flying
Total Observed 10/11/14		**10**		
10/25/2014: 10:44	2	2	Alpha East	Perched
10/25/2014: 11:31	4	1	Alpha East	Flying
10/25/2014: 11:49	5	2	Beta West	Perched
10/25/2014: 12:17	6	2	Beta East	Flying, Perched
10/25/2014: 12:32	7	1	Beta East	Flying
Total Observed 10/25/2014		**8**		

Nest Monitoring

According to the Raven Plan, biweekly breeding raven nest surveys were not required in October. These surveys will commence again in March 2015.

Monthly Common Raven Monitoring Results
October 2014

Supplement 1—Common Raven Point Count Stations



1/25/13	For Monitoring
ISSUE DATE	PURPOSE OF ISSUE

PE STAMP

Plot Date/Time/User: 25-Jan-13/9:55 AM/TEGUR

ABEINSA EPC

ABENER TEYMA MOJAVE

ABENGOA SOLAR

RAVEN POINT COUNT STATIONS

MOJAVE SOLAR, LLC — HINKLEY, CALIFORNIA

	BY	DATE	APP'D.	DATE	JOB NO.	REVISION
DRAWN	GU	1/25/13				
CHECKED						
SCALE	AS INDICATED					

DRAWING NUMBER
0001

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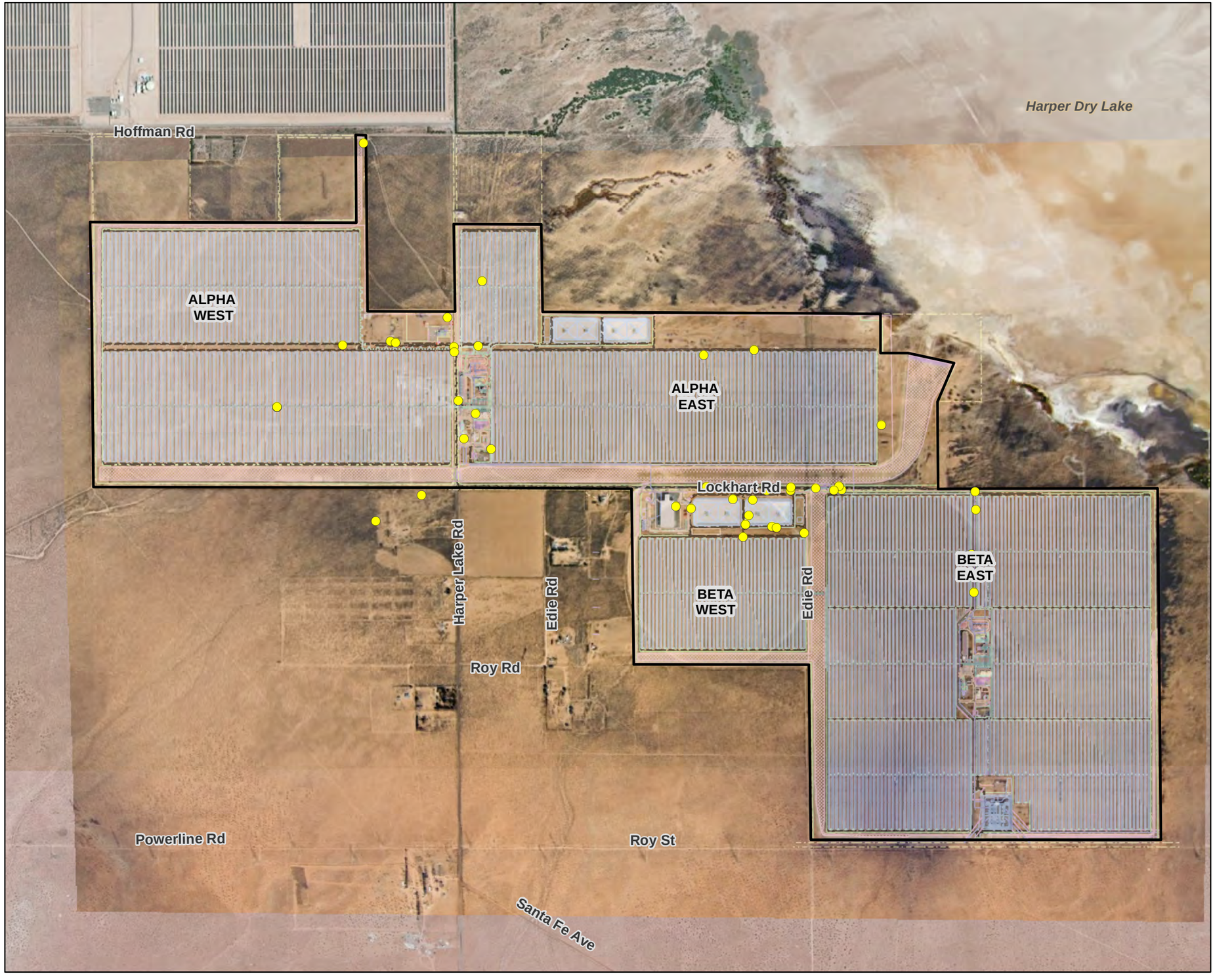
Monthly Common Raven Monitoring Results
October 2014

Supplement 2—Incidental Common Raven Observations



VICINITY MAP

LEGEND

Common Raven

- Incidental Observations

Project Boundary

N

0 750 1,500

Feet

Supplement 2
Incidental Common Raven Observations, October 2014
Abengoa Mojave Solar Project
San Bernardino County, California

CH2MHILL

Monthly Common Raven Monitoring Results
October 2014

Supplement 3—Point Count Data Sheets

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-11-14 Observer (init.) RK Start Time 1243 End Time 1253 Obs Pt. 1

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): (Calm) N NE E SE S SW W NW Variable **Speed**: Low 0 High 05 (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp:** 83 (°F) **Cloud Cover**: 1 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1					WA PE FL OT							
2					WA PE FL OT							
3					WA PE FL OT							
4					WA PE FL OT							
5					WA PE FL OT							
6					WA PE FL OT							
7					WA PE FL OT							
8					WA PE FL OT							
9					WA PE FL OT							
10					WA PE FL OT							
11					WA PE FL OT							
12					WA PE FL OT							

NO Observations

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-11-14 Observer (init.) RK Start Time 1258 End Time 1308 Obs Pt. 2

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): (Calm) N NE E SE S SW W NW Variable **Speed**: Low 0 High 0 (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp**: 83 (°F) **Cloud Cover**: 1 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1					WA PE FL OT							
2					WA PE FL OT							
3					WA PE FL OT							
4					WA PE FL OT		NO					
5					WA PE FL OT							
6					WA PE FL OT		Observations					
7					WA PE FL OT							
8					WA PE FL OT							
9					WA PE FL OT							
10					WA PE FL OT							
11					WA PE FL OT							
12					WA PE FL OT							

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-11-14 Observer (init.) RK Start Time 1315 End Time 1325 Obs Pt. 3

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): (Calm) N NE E SE S SW W NW Variable **Speed**: Low 0 High 0 (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp**: 83 (°F) **Cloud Cover**: 1 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)		Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1					WA	PE							
					FL	OT							
2					WA	PE							
					FL	OT							
3					WA	PE							
					FL	OT							
4					WA	PE							
					FL	OT							
5					WA	PE							
					FL	OT							
6					WA	PE							
					FL	OT							
7					WA	PE							
					FL	OT							
8					WA	PE							
					FL	OT							
9					WA	PE							
					FL	OT							
10					WA	PE							
					FL	OT							
11					WA	PE							
					FL	OT							
12					WA	PE							
					FL	OT							

NO Observations

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-11-14 Observer (init.) RK Start Time 1332 End Time 1342 Obs Pt. 4

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): (Calm) N NE E SE S SW W NW Variable **Speed**: Low 6 High 0 (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp:** 83 (°F) **Cloud Cover:** 1 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)		Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1					WA	PE							
					FL	OT							
2					WA	PE							
					FL	OT							
3					WA	PE							
					FL	OT							
4					WA	PE							
					FL	OT							
5					WA	PE							
					FL	OT							
6					WA	PE							
					FL	OT							
7					WA	PE							
					FL	OT							
8					WA	PE							
					FL	OT							
9					WA	PE							
					FL	OT							
10					WA	PE							
					FL	OT							
11					WA	PE							
					FL	OT							
12					WA	PE							
					FL	OT							

NO observations

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-11-14 Observer (init.) RK Start Time 1408 End Time 1418 Obs Pt. 5

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): Calm (N) NE E SE S SW W NW Variable **Speed**: Low 3 High 6 (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp:** 83 (°F) **Cloud Cover:** 1 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)		Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1					WA	PE							
					FL	OT							
2					WA	PE							
					FL	OT							
3					WA	PE							
					FL	OT							
4					WA	PE							
					FL	OT							
5					WA	PE							
					FL	OT							
6					WA	PE							
					FL	OT							
7					WA	PE							
					FL	OT							
8					WA	PE							
					FL	OT							
9					WA	PE							
					FL	OT							
10					WA	PE							
					FL	OT							
11					WA	PE							
					FL	OT							
12					WA	PE							
					FL	OT							

NO Observations

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-11-14 Observer (init.) RK Start Time 1427 End Time 1437 Obs Pt. 6

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): Calm (N) NE E SE S SW W NW Variable Speed: Low 3 High 6 (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other Temp: ~~83~~ 87 (°F) Cloud Cover: 1 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1	1330	-	-	3	WA PE (FL) OT	N	300	200	Mirror field		✓	3 CORA flew N over Beta East
2	1336			1	WA (PE) FL OT	(E)	200	200	Power block		✓	1 CORA Perched on power block
3					WA PE FL OT							
4					WA PE FL OT							
5					WA PE FL OT							
6					WA PE FL OT							
7					WA PE FL OT							
8					WA PE FL OT							
9					WA PE FL OT							
10					WA PE FL OT							
11					WA PE FL OT							
12					WA PE FL OT							

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-11-14 Observer (init.) RK Start Time 1443 End Time 1455 Obs Pt. 7

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): (Calm) N NE E SE S SW W NW Variable **Speed**: Low — High — (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp**: 88 (°F) **Cloud Cover**: 1 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)		Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1	1443	-	-	4	WA	PE	W	275	125	SCE Sub		✓	4 CORA flying over Sub station (SCE)
					(FL)	OT							
2	1446	-	-	2	WA	PE	V	100	75	Beta Mirror field	✓	✓	2 CORA Joined the 4 CORA
					(FL)	OT							
3					WA	PE							
					FL	OT							
4					WA	PE							
					FL	OT							
5					WA	PE							
					FL	OT							
6					WA	PE							
					FL	OT							
7					WA	PE							
					FL	OT							
8					WA	PE							
					FL	OT							
9					WA	PE							
					FL	OT							
10					WA	PE							
					FL	OT							
11					WA	PE							
					FL	OT							
12					WA	PE							
					FL	OT							

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-25-14 Observer (init.) RK Start Time 1027 End Time 1037 Obs Pt. 1

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of (

Wind Direction from (circle one): (Calm) N NE E SE S SW W NW Variable **Speed**: Low — High — (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp:** 70 (°F) **Cloud Cover:** 2 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1					WA PE FL OT							
2					WA PE FL OT							
3					WA PE FL OT							
4					WA PE FL OT							
5					WA PE FL OT							
6					WA PE FL OT							
7					WA PE FL OT							
8					WA PE FL OT							
9					WA PE FL OT							
10					WA PE FL OT							
11					WA PE FL OT							
12					WA PE FL OT							

No observations

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-25-14 Observer (init.) RK Start Time 1044 End Time 1055 Obs Pt. 2

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): Calm (N) NE E SE S SW W NW Variable Speed: Low 4 High 6 (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other Temp: 70 (°F) Cloud Cover: 2 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1	1044	-	-	2	WA (PE) FL OT	N/A	75	75		NO	✓	Perched on Alpha cooling tower
2					WA PE FL OT							
3					WA PE FL OT							
4					WA PE FL OT							
5					WA PE FL OT							
6					WA PE FL OT							
7					WA PE FL OT							
8					WA PE FL OT							
9					WA PE FL OT							
10					WA PE FL OT							
11					WA PE FL OT							
12					WA PE FL OT							

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-25-14 Observer (init.) RK Start Time 1104 End Time 1114 Obs Pt. 3

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): Calm (N) NE E SE S SW W NW Variable **Speed**: Low 4 High 6 (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp:** 70 (°F) **Cloud Cover:** 2 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1					WA PE FL OT							
2					WA PE FL OT							
3					WA PE FL OT							
4					WA PE FL OT							
5					WA PE FL OT							
6					WA PE FL OT							
7					WA PE FL OT							
8					WA PE FL OT							
9					WA PE FL OT							
10					WA PE FL OT							
11					WA PE FL OT							
12					WA PE FL OT							

No observations

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-25-14 Observer (init.) RK Start Time 1123 End Time 1133 Obs Pt. 4

Page 1 of 1

Visibility: (Clear) or Min _____ Max _____ (m)

Wind Direction from (circle one): Calm (N) NE E SE S SW W NW Variable **Speed**: Low 4 High 6 (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp**: 71 (°F) **Cloud Cover**: 2 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)		Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1	1131	–	–	1	WA	PE	NW	100	75		N/A	✓	Flying N of Alpha East
					(FL)	OT							
2					WA	PE							
					FL	OT							
3					WA	PE							
					FL	OT							
4					WA	PE							
					FL	OT							
5					WA	PE							
					FL	OT							
6					WA	PE							
					FL	OT							
7					WA	PE							
					FL	OT							
8					WA	PE							
					FL	OT							
9					WA	PE							
					FL	OT							
10					WA	PE							
					FL	OT							
11					WA	PE							
					FL	OT							
12					WA	PE							
					FL	OT							

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-25-14 Observer (init.) RK Start Time 1148 End Time 1158 Obs Pt. 5

Visibility (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): Calm (N) NE E SE S SW W NW Variable **Speed**: Low 4 High 8 (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp**: 73 (°F) **Cloud Cover**: 5 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1	1049	-	-	2	WA (PE) FL OT	N/A	100	50	Wood Pole	N/A	✓	Beta West evaporation Ponds
2					WA PE FL OT							
3					WA PE FL OT							
4					WA PE FL OT							
5					WA PE FL OT							
6					WA PE FL OT							
7					WA PE FL OT							
8					WA PE FL OT							
9					WA PE FL OT							
10					WA PE FL OT							
11					WA PE FL OT							
12					WA PE FL OT							

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES
(1) 1049	Birds were perched on wood poles 150 ft. apart.

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-25-14 Observer (init.) RK Start Time 1210 End Time 1220 Obs Pt. 6

Page 1 of 1

Visibility: (Clear) or Min _____ Max _____ (m)

Wind Direction from (circle one): (Calm) N NE E SE S SW W NW Variable **Speed**: Low ___ High ___ (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other **Temp**: 75 (°F) **Cloud Cover**: 10 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1	1217	-	-	2	WA PE / (FL) OT	W	90	75	cooling tower	N/A	Y	Flew from power block to Beta cooling tower & perched.
2					WA PE / FL OT							
3					WA PE / FL OT							
4					WA PE / FL OT							
5					WA PE / FL OT							
6					WA PE / FL OT							
7					WA PE / FL OT							
8					WA PE / FL OT							
9					WA PE / FL OT							
10					WA PE / FL OT							
11					WA PE / FL OT							
12					WA PE / FL OT							

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES
(1) 1217	one of the ravens was wet & likely bathed in cooling tower

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 10-25-14 Observer (init.) RK Start Time 1227 End Time 1237 Obs Pt. 7

Visibility: (Clear) or Min _____ Max _____ (m) Page 1 of 1

Wind Direction from (circle one): (Calm) N NE E SE S SW W NW Variable Speed: Low — High — (km/h)

Precipitation (circle one): (none) light rain rain snow sleet hail fog other Temp: 76 (°F) Cloud Cover: 10 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)		Flight Dir (to)	Horizontal Distance (m) 1st	Horizontal Distance (m) closest	Habitat Type/ Perch Structure	Aud?	Vis?	Notes
1	1232	-	-	1	WA	PE	SE	75	20		N/A	✓	Flew SE of Beta East mirror field
					(FL)	OT							
2					WA	PE							
					FL	OT							
3					WA	PE							
					FL	OT							
4					WA	PE							
					FL	OT							
5					WA	PE							
					FL	OT							
6					WA	PE							
					FL	OT							
7					WA	PE							
					FL	OT							
8					WA	PE							
					FL	OT							
9					WA	PE							
					FL	OT							
10					WA	PE							
					FL	OT							
11					WA	PE							
					FL	OT							
12					WA	PE							
					FL	OT							

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. # (Time)	ADDITIONAL NOTES

Attachment 4
Observed Wildlife Species List

Observed Wildlife Species List October 2014 Mojave Solar Project			
Common Name	**Scientific Name[a]**	**Special-status State/Federal[b]**	**Invasive Wildlife**
Reptiles			
Desert Tortoise	*Gopherus agassizii*	ST/FT	—
Long-nosed Leopard Lizard	*Gambelia sila*	__/__	—
Mojave Green Rattlesnake	*Crotalus scutulatus*	__/__	—
Side-blotched Lizard	*Uta stansburiana*	__/__	—
Birds (4-letter code)			
American Coot (AMCO)	*Fulica americana*	__/__	—
American Kestrel (AMKE)	*Falco sparverius*	__/__	—
American Pipit (AMPI)	*Anthus rubescens*	__/__	—
American Widgeon (AMWI)	*Anas americana*	__/__	—
Barn Swallow (BARS)	*Hirundo rustica*	__/__	—
Bewicks Wren (BEWR)	*Thryomanes bewickii*	__/__	—
Black Phoebe (BLPH)	*Sayornis nigricans*	__/__	—
Blue Winged Teal (BWTE)	*Anas discors*	__/__	—
Bonaparte's Gull (BOGU)	*Chroicocephalus philadelphia*	__/__	—
Brewer's Blackbird (BRBL)	*Euphagus cyanocephalus*	__/__	—
Brewer's Sparrow (BRSP)	*Spizella breweri*	__/BCC	—
Brown Headed Cowbird (BHCO)	*Molothrus ater*	__/__	Cal Code 14:671
Bufflehead (BUFF)	*Bucephala albeola*	__/__	—
California quail (CAQU)	*Callipepla californica*	__/__	—
Chipping Sparrow (CHSP)	*Spizella passerina*	__/__	—
Common Raven (CORA)	*Corvus corax*	__/__	—
Domestic Duck	*Anas* sp.	__/__	—
Domestic Goose	*Anser* sp.	__/__	—
Eared Grebe (EAGR)	*Podiceps nigricollis*	__/__	—
European Starling (EUST)	*Sturnus vulgaris*	__/__	Cal Code 14:671
Gadwall (GADW)	*Anas strepera*	__/__	—
Gambles Quail (GAQU)	*Callipepla gambelii*	__/__	—

Observed Wildlife Species List October 2014 Mojave Solar Project			
Common Name	**Scientific Name[a]**	**Special-status State/Federal[b]**	**Invasive Wildlife**
Graylag Goose (Domestic)	*Anser anser*	__/__	—
Great Egret (GREG)	*Ardea alba*	__/__	—
Greater Roadrunner (GRRO)	*Geococcyx californianus*	__/__	—
Greater Yellowlegs (GRYE)	*Tringa melanoleuca*	__/__	—
Green-Winged Teal (GWTE)	*Anas carolinensis*	__/__	—
Horned Lark (HOLA)	*Eremophila alpestris*	WL/__	—
House Finch (HOFI)	*Carpodacus mexicanus*	__/__	—
House Sparrow (HOSP)	*Passer domesticus*	__/__	Cal Code 14:671
Killdeer (KILL)	*Charadrius vociferus*	__/__	—
Least Sandpiper (LESA)	*Calidris minutilla*	__/__	—
Lesser Goldfinch (LEGO)	*Spinus psaltria*	__/__	—
Lesser Scaup (LESC)	*Aythya affinis*	__/__	—
Loggerhead Shrike (LOSH)	*Lanius ludovicianus*	CSC/BCC	—
Long Billed Dowitcher (LBDO)	*Limnodromus scolopaceus*	__/__	—
Mallard (MALL)	*Anas platyrhynchos*	__/__	—
Marsh Wren (MAWR)	*Cistothorus palustris*	__/__	—
Mourning Dove (MODO)	*Zenaida macroura*	__/__	—
Northern Flicker (NOFL)	*Colaptes auratus*	__/__	—
Northern Harrier (NOHA)	*Circus cyaneus*	CSC/__	—
Northern Shoveler (NSHO)	*Anas clypeata*	__/__	—
Orange-crowned Warbler (OCWA)	*Oreothypis celata*	__/__	—
Pectoral Sandpiper (PESA)	*Calidris melanotos*	__/__	—
Peregrine Falcon (PEFA)	*Falco peregrinus anatum*	FP/BCC	—
Red-winged Blackbird (RWBL)	*Agelaius phoeniceus*	__/__	—
Ring-billed Gull (RBGU)	*Larus delawarensis*	__/__	—
		__/__	—
Rock Pigeon (ROPI)	*Columba livia*	__/__	—

Observed Wildlife Species List October 2014 Mojave Solar Project			
Common Name	**Scientific Name[a]**	**Special-status State/Federal[b]**	**Invasive Wildlife**
Ruddy Duck (RUDU)	*Oxyura jamaicensis*	__/__	—
Sagebrush Sparrow (SABS)	*Artemisiospiza nevadensis*	__/__	—
Savannah Sparrow (SAVS)	*Passerculus sandwichensis*	__/__	—
Say's Phoebe (SAPH)	*Sayornis saya*	__/__	—
Snow Goose (SNGO)	*Chen caerulescens*	__/__	—
Song Sparrow (SOSP)	*Melispiza melodia*	__/__	—
Turkey Vulture (TUVU)	*Cathartes aura*	__/__	—
Unidentified Duck (UNDU)	Unknown	__/__	—
Western Bluebird (WEBL)	*Sialia mexicana*	__/__	—
Western Grebe (WEGR)	*Aechmophorus occidentalis*	__/__	—
Western Meadowlark (WEME)	*Sturnella neglecta*	__/__	—
Western Sandpiper (WESA)	*Calidris mauri*	__/__	—
White-Crowned Sparrow (WCSP)	*Zonotrichia leucophrys*	__/__	—
Yellow-headed blackbird (YHBL)	*Xanthocephalus*	CSC/__	—
Yellow-rumped Warbler (YRWA)	*Setophaga coronata*	__/__	—
Mammals			
Black-tailed Jackrabbit	*Lepus californicus*	__/__	—
Bobcat	*Lynx rufus*	CCR/__	—
Desert Kit Fox	*Vulpes macrotis*	CCR/__	—
White-tailed Antelope Squirrel	*Ammospermophilus leucurus*	__/__	—

Observed Wildlife Species List October 2014
Mojave Solar Project

Common Name	Scientific Name[a]	Special-status State/Federal[b]	Invasive Wildlife

[a] Source of scientific names is CDFW Natural Diversity Database. September 2014. Special Animals List. Periodic publication. 52 pp

[b] Source of special-status species status is CDFW Natural Diversity Database. September 2014. Special Animals List. Periodic publication. 52 pp

Status Codes:

Federal:

FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range

FT = Federally listed, threatened: species likely to become endangered within the foreseeable future

BCC = USFWS Bird of Conservation Concern

State:

SE = State listed as Endangered

ST = State listed as Threatened

CSC = California Species of Special Concern Species of concern to CDFW because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

CCR = protected by the California Code of Regulations

FP = Fully Protected

WL = Watch List

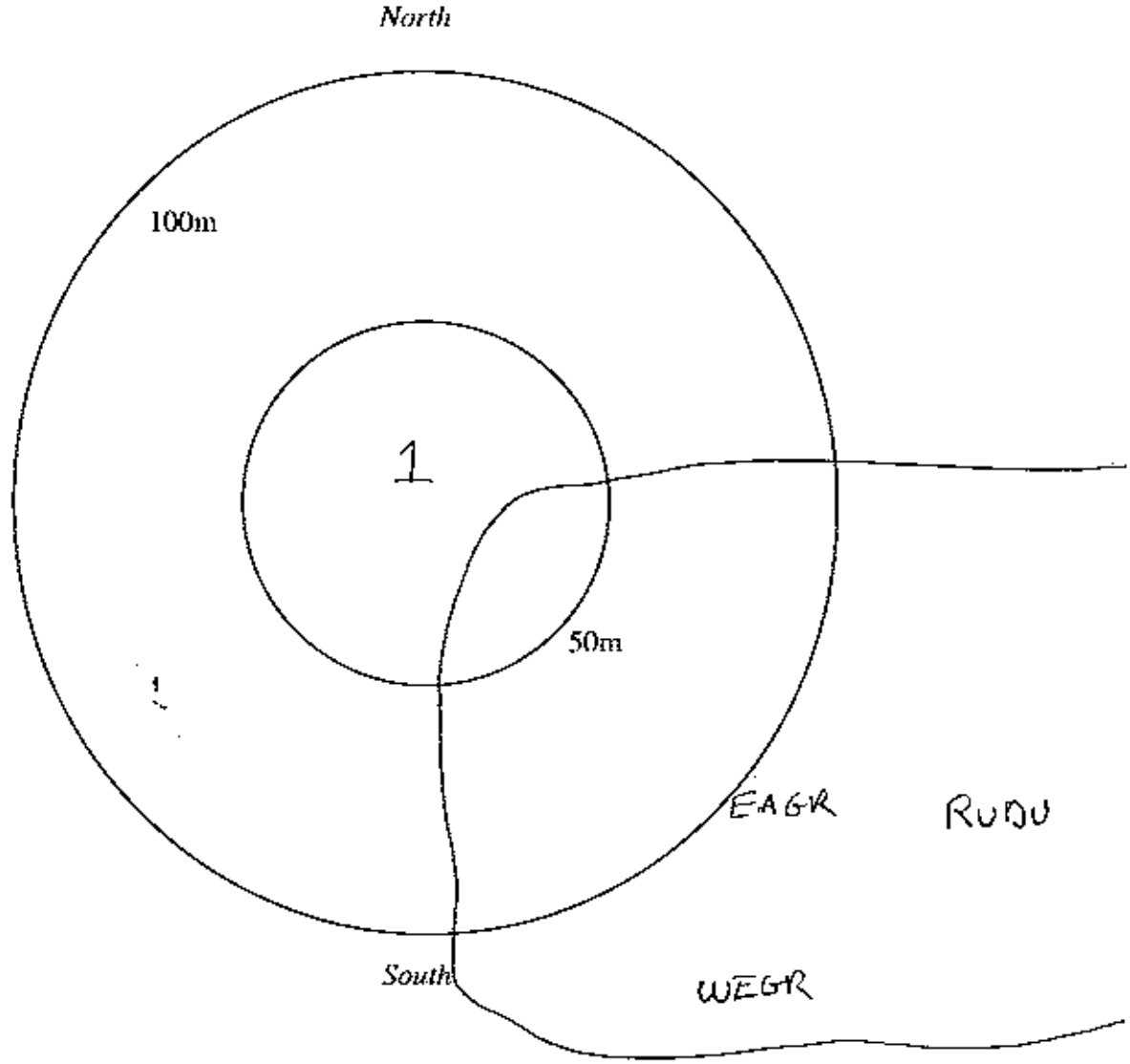
Attachment 5
Evaporation Pond Survey Monitoring Results

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 1 Observer Initials: RK Sky: 0% Temp: (F) 49

Estimated Average Wind Speed: (MPH) 0 Wind Direction: Ø

Date (month/day/ year): 10/11/14 Start Time 07:29 End Time 07:34



Notes Bottom of basin is full 2.4 ft

Species	# individuals	Flythrough	Flyover	Behaviors observed
WEGR	1			Swimming
EA GR	3			Swimming
RUDU	4			Swimming

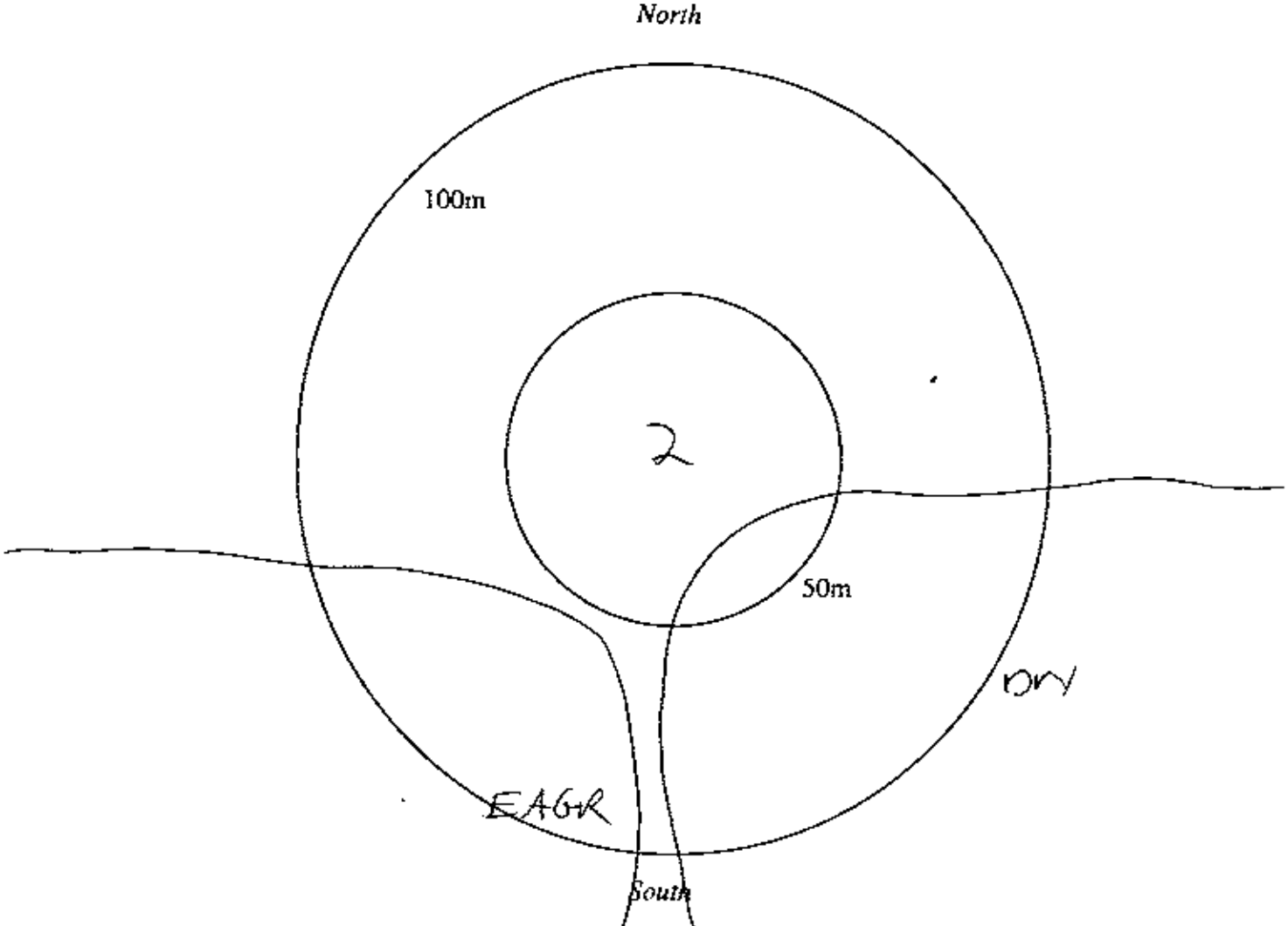
Western Grebe
Eared Grebe
Ruddy Duck

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 2 Observer Initials: RK Sky: 0 % Temp: (F) 49

Estimated Average Wind Speed: (MPH) 0 Wind Direction: Ø

Date (month/day/ year): 10/11/14 Start Time 07:36 End Time 07:41



Notes East basin is DRY
Same species as Pt. 1 Plus 1 additional
Eared Grebe

PT 2

Species	# individuals	Flythrough	Flyover	Behaviors observed
EAGR	1			Swimming

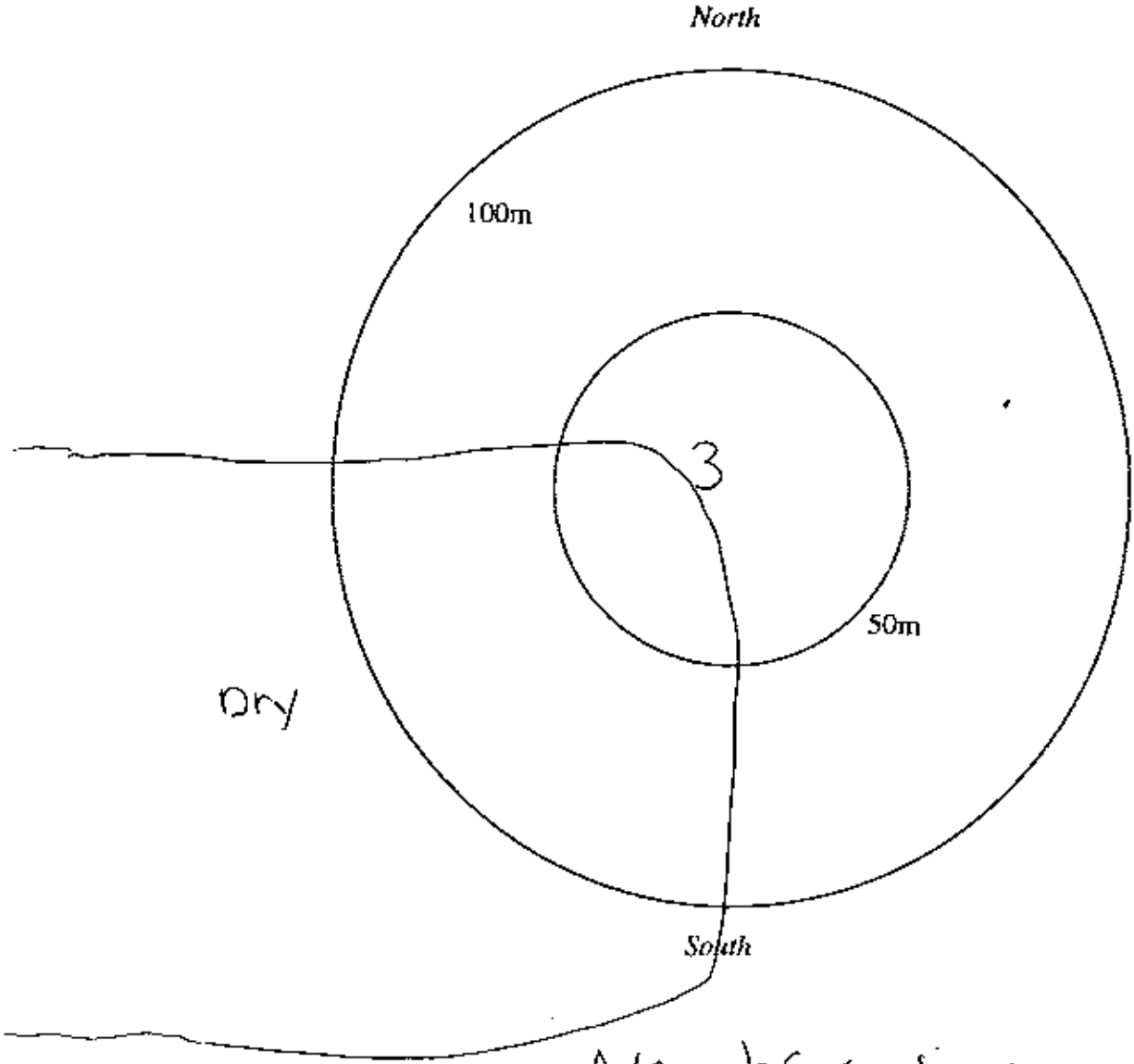
Eared Grebe

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 3 Observer Initials: RK Sky: 0% Temp: (F) 50

Estimated Average Wind Speed: (MPH) 0 Wind Direction: 0

Date (month/day/ year): 10/11/14 Start Time 07:44 End Time 07:49



Notes No observations

PT.3

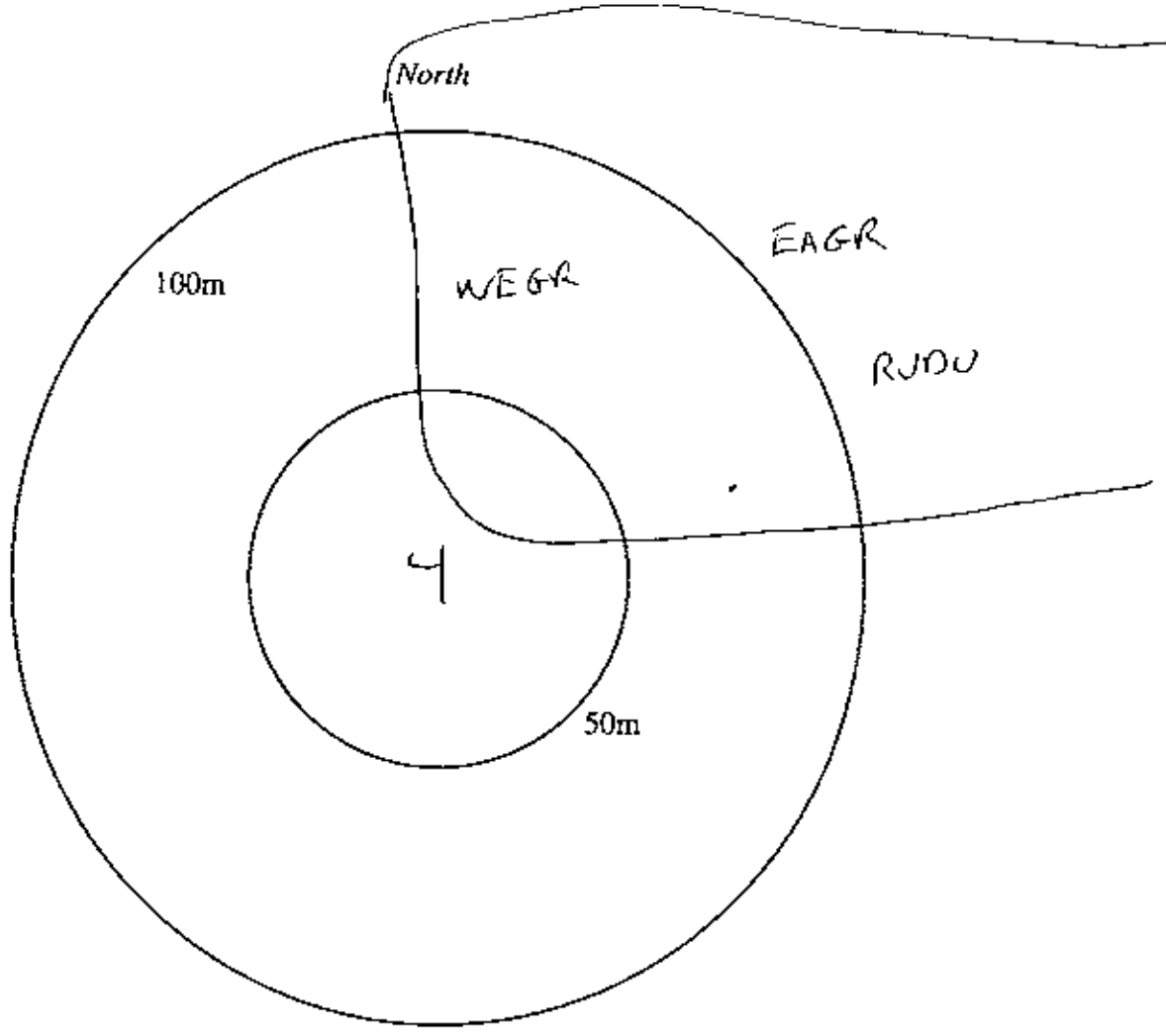
Species	# individuals	Flythrough	Flyover	Behaviors observed
	No observations			

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 4 Observer Initials: RK Sky: 0 % Temp: (F) 50

Estimated Average Wind Speed: (MPH) 0 Wind Direction: 0

Date (month/day/ year): 10 / 11 / 14 Start Time 07 : 53 End Time 07 : 58



Notes Bottom of basin full 2.4ft
* Same species as Pt. 1 + 1 Eared Grebe

Pt: 4

Species	# individuals	Flythrough	Flyover	Behaviors observed
WE GR	1			swimming
EAGR	~~3~~ 4			Swimming
RuDU	4			Swimming

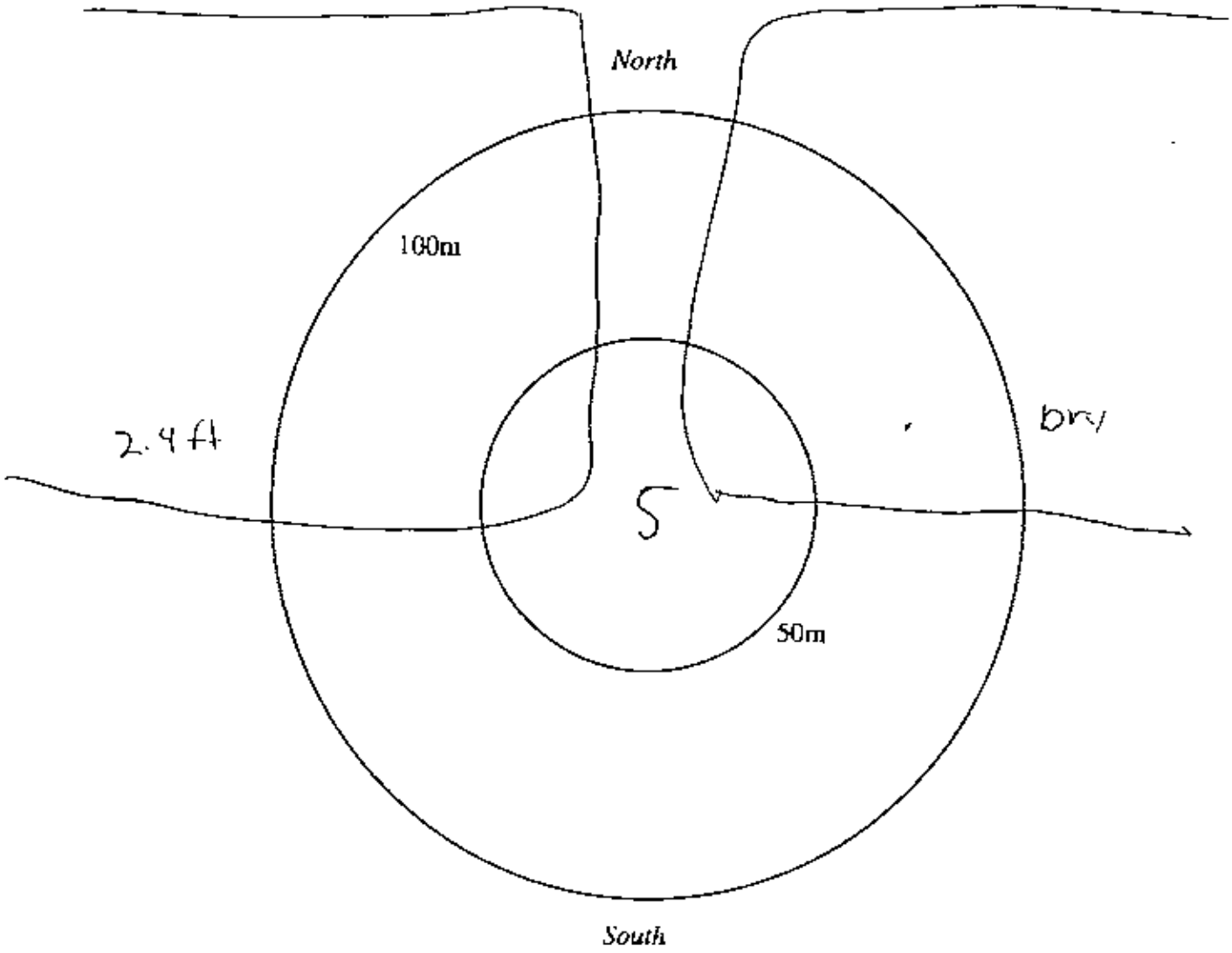
Western Grebe
Eared Grebe
Ruddy Duck

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 5 Observer Initials: RK Sky: 0% Temp: (F) 50

Estimated Average Wind Speed: (MPH) 0 Wind Direction: Ø

Date (month/day/ year): 10 / 11 / 14 Start Time 08:00 End Time 08:05



Notes Same species as 4

PT 5

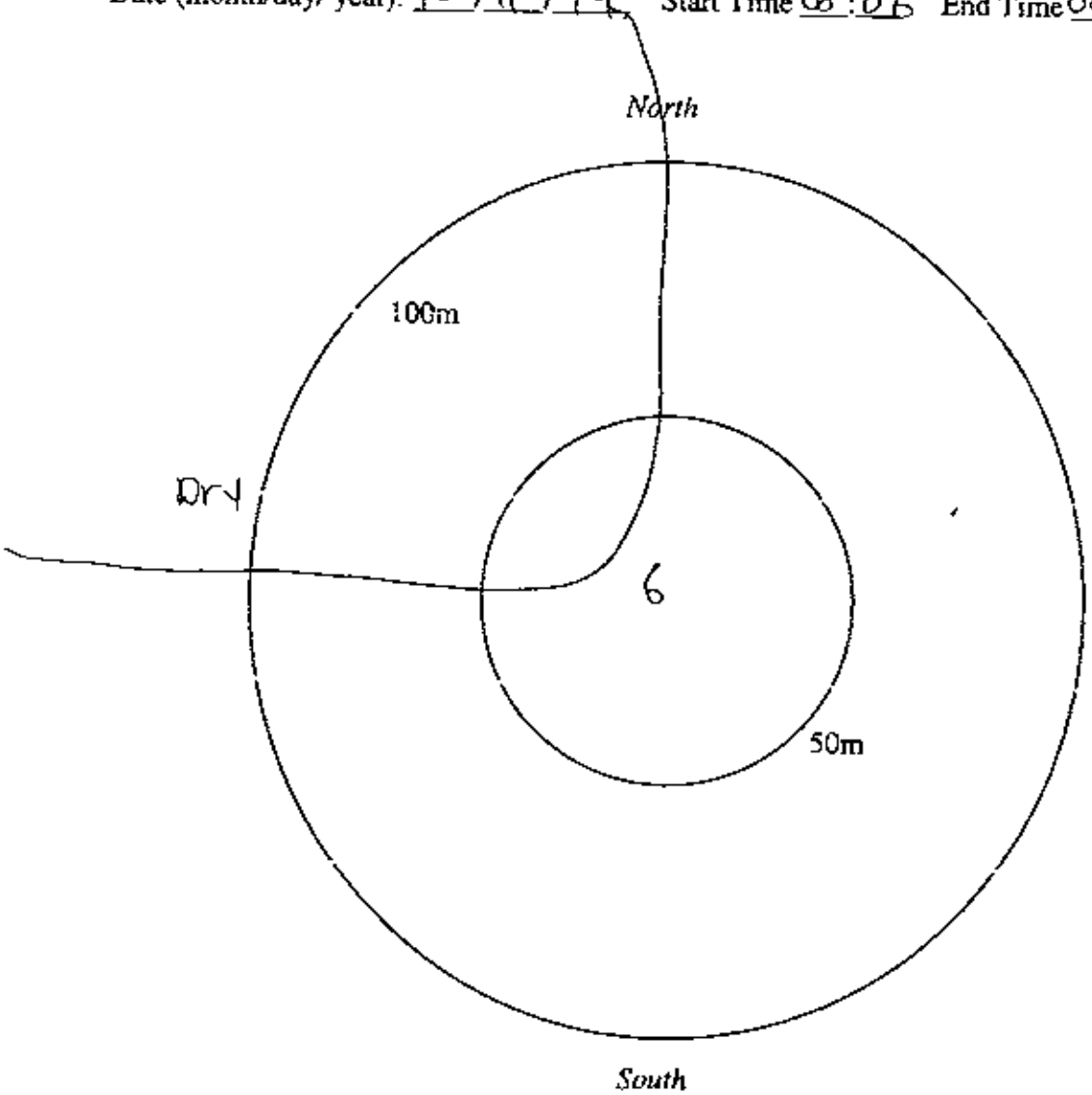
Species	# individuals	Flythrough	Flyover	Behaviors observed
Same species	as	Pt 4 no	new observ	ations

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 6 Observer Initials: RK Sky: 0% Temp: (F) 50

Estimated Average Wind Speed: (MPH) 0 Wind Direction: Ø

Date (month/day/ year): 10/11/14 Start Time 08:06 End Time 08:11



Notes No observations

PTG

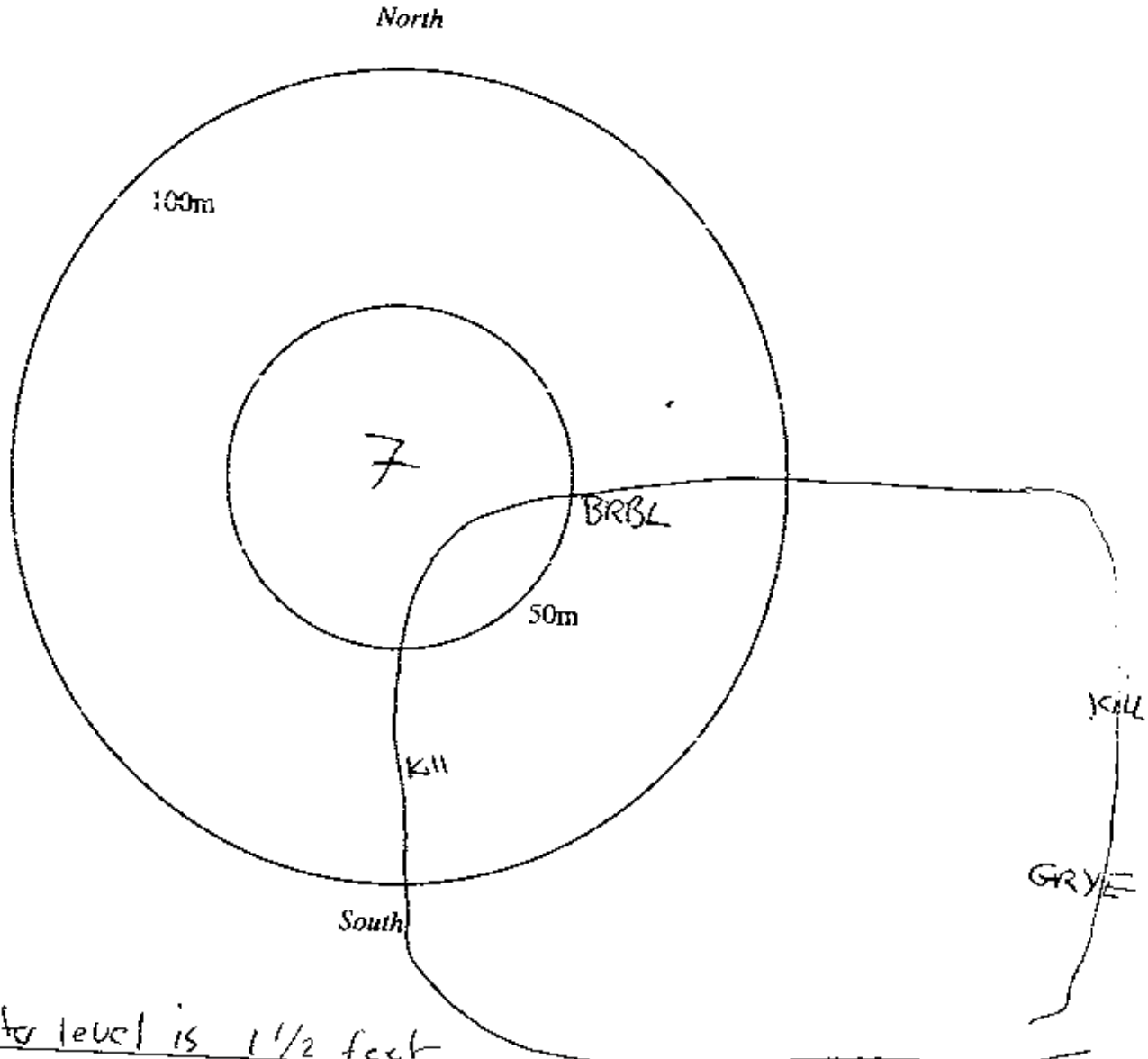
Species	# individuals	Flythrough	Flyover	Behaviors observed
NO observations				

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 7 Observer Initials: RK Sky: 0% Temp: (F) 51

Estimated Average Wind Speed: (MPH) 0 Wind Direction: Ø

Date (month/day/ year): 10/11/14 Start Time 08:32 End Time 08:37



Notes water level is 1 1/2 feet

PT7

Species	# individuals	Flythrough	Flyover	Behaviors observed
KILL	3			walking, feeding
GR YE	5			wading/feeding
BR BL	2			drinking

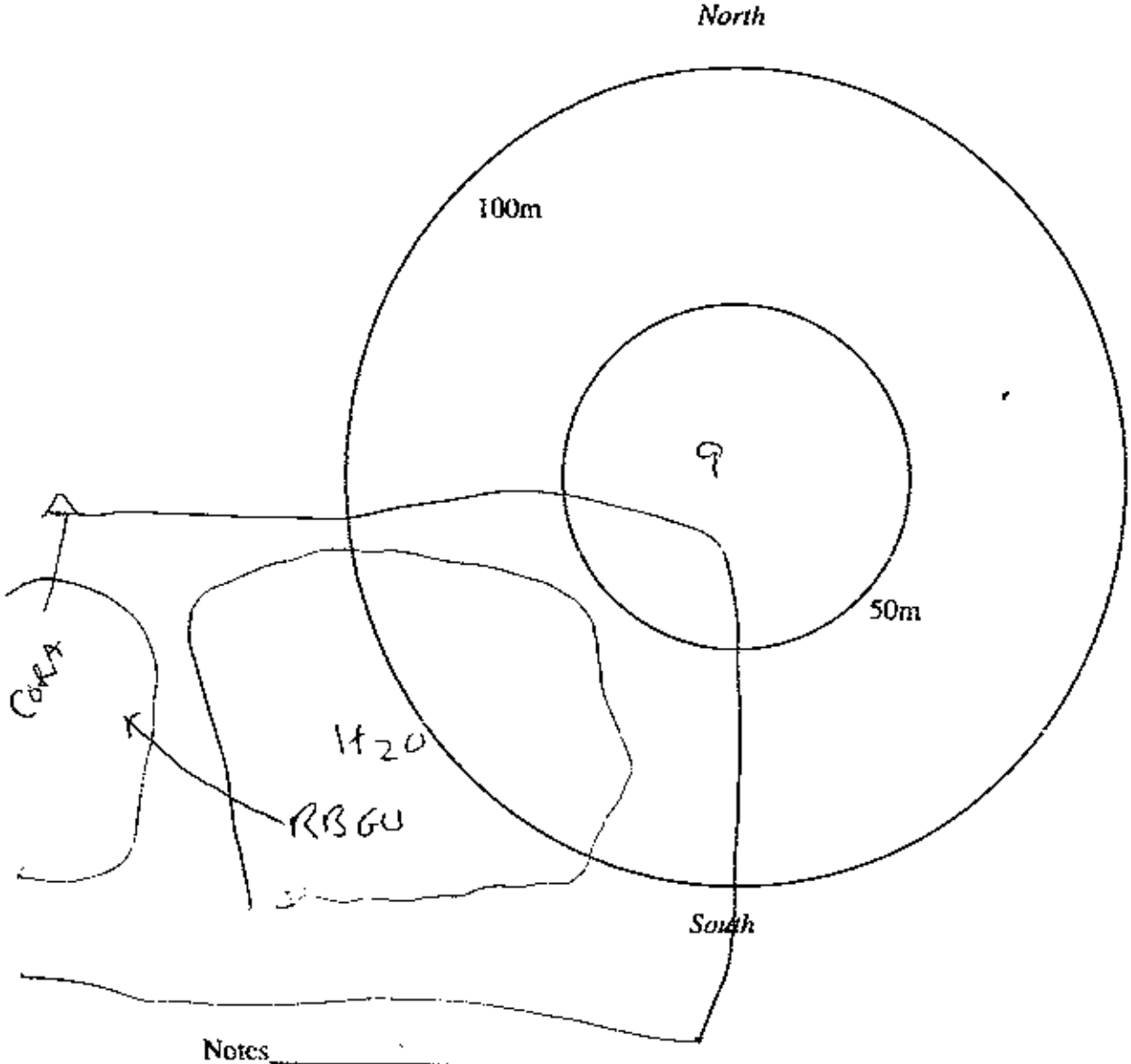
Killdeer
Greater yellowlegs
Brewer's Blackbird

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 9 Observer Initials: RL Sky: 0% Temp: (F) 57

Estimated Average Wind Speed: (MPH) 2-4 Wind Direction: S

Date (month/day/ year): 10/11/14 Start Time 08:48 End Time 08:53



Notes

Species	# individuals	Flythrough	Flyover	Behaviors observed
RBGU	2	✓		
CORA	1	✓		

Ring-billed Gull

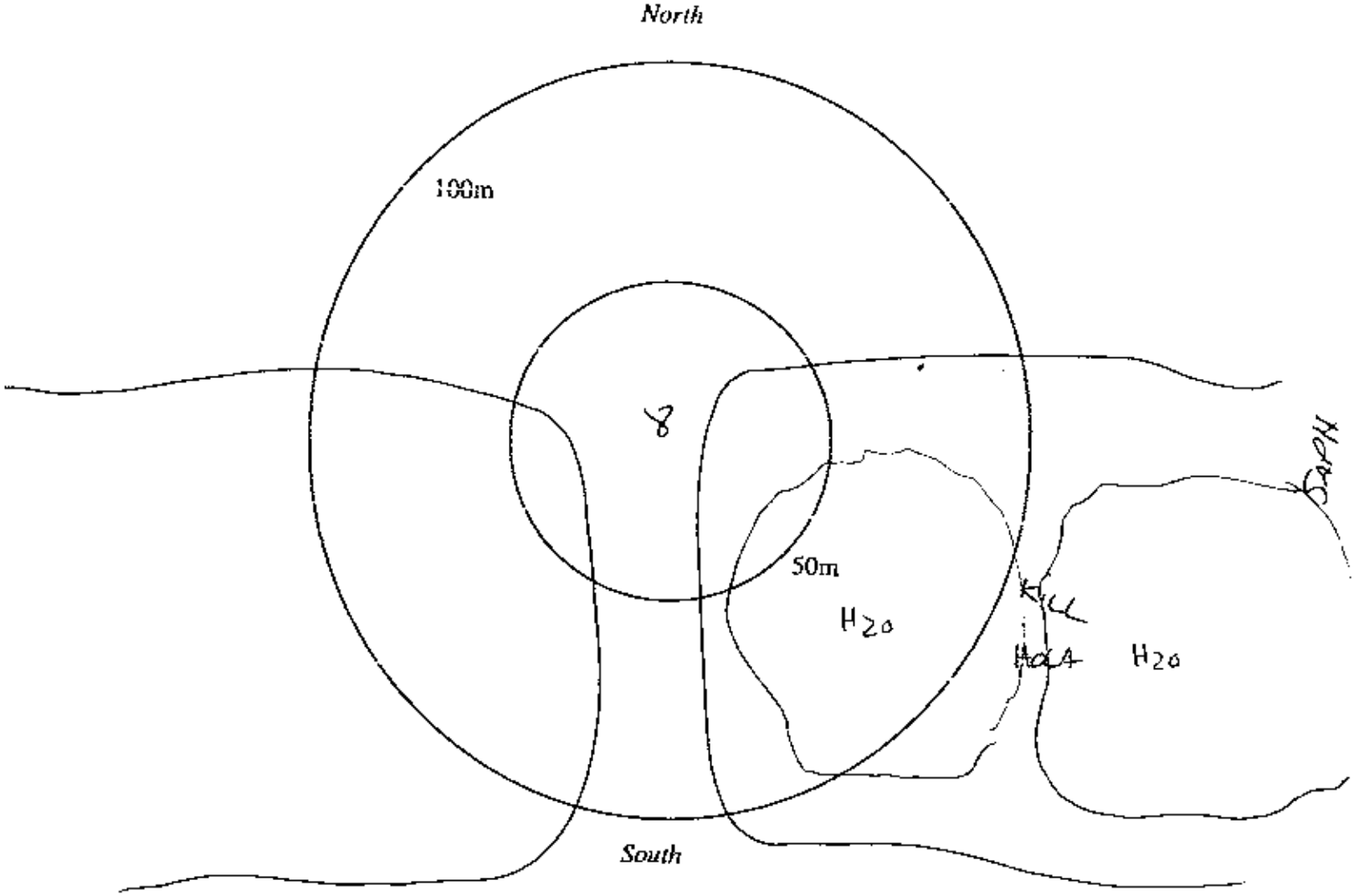
Common Raven

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 8 Observer Initials: RK Sky: 0 % Temp: (F) 51

Estimated Average Wind Speed: (MPH) 0 Wind Direction: 0

Date (month/day/ year): 10/11/14 Start Time 08:39 End Time 08:44



Notes water level 1½ ft west basin species is the same east = 4 KILL 6 HOLA 1 SAPH

Species	# individuals	Flythrough	Flyover	Behaviors observed
KILL	4			walking / feeding
HOLA	6			walking / feeding
SAPH	1			Perched fence

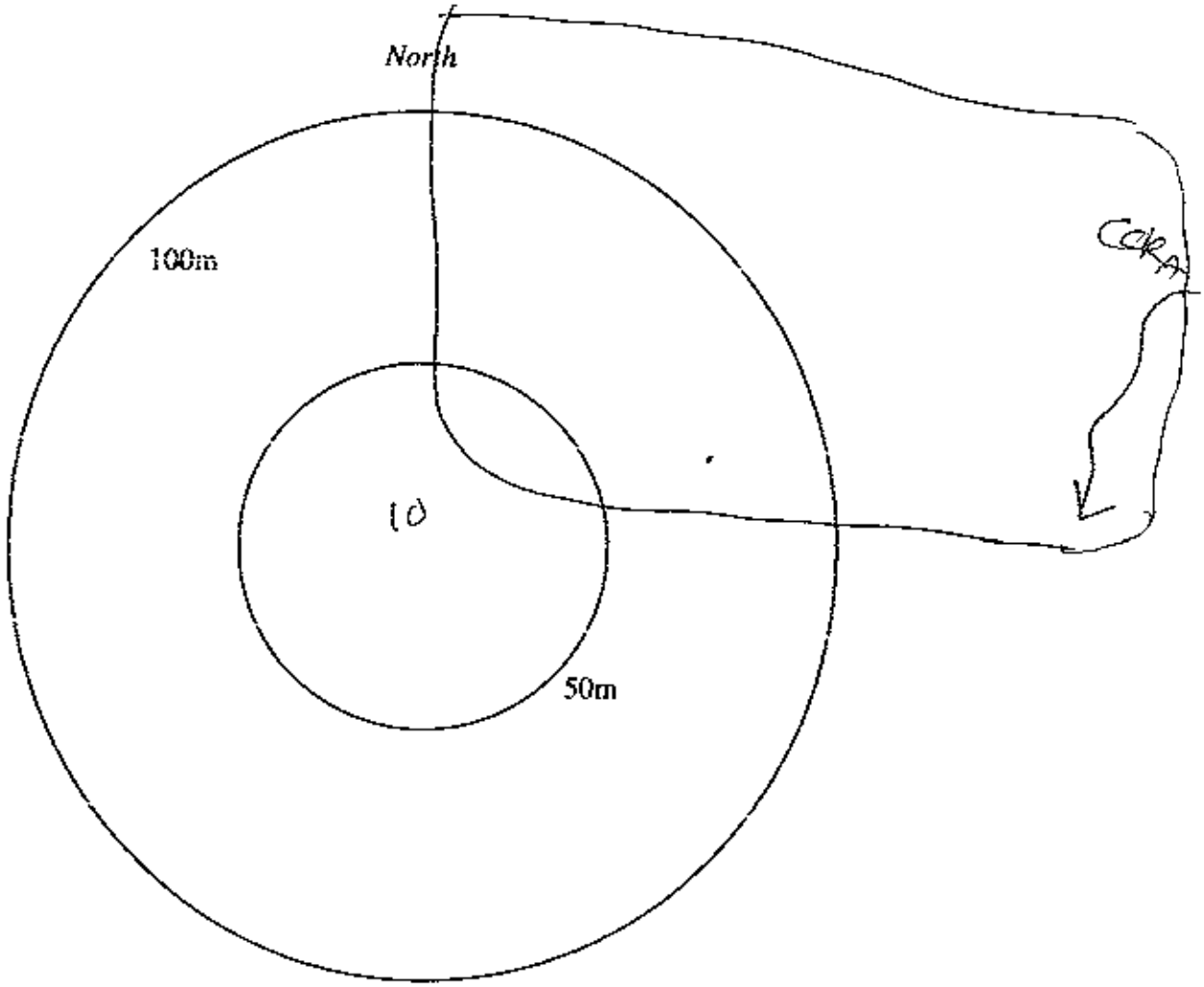
Killdeer
Horned lark
Say's phoebe

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 10 Observer Initials: RJC Sky: 0% Temp: (F) 57

Estimated Average Wind Speed: (MPH) 3 Wind Direction: S

Date (month/day/ year): 10 / 11 / 14 Start Time 09 : 10 End Time 09 : 15



Notes_____

PT10

Species	# individuals	Flythrough	Flyover	Behaviors observed
CORA		✓		

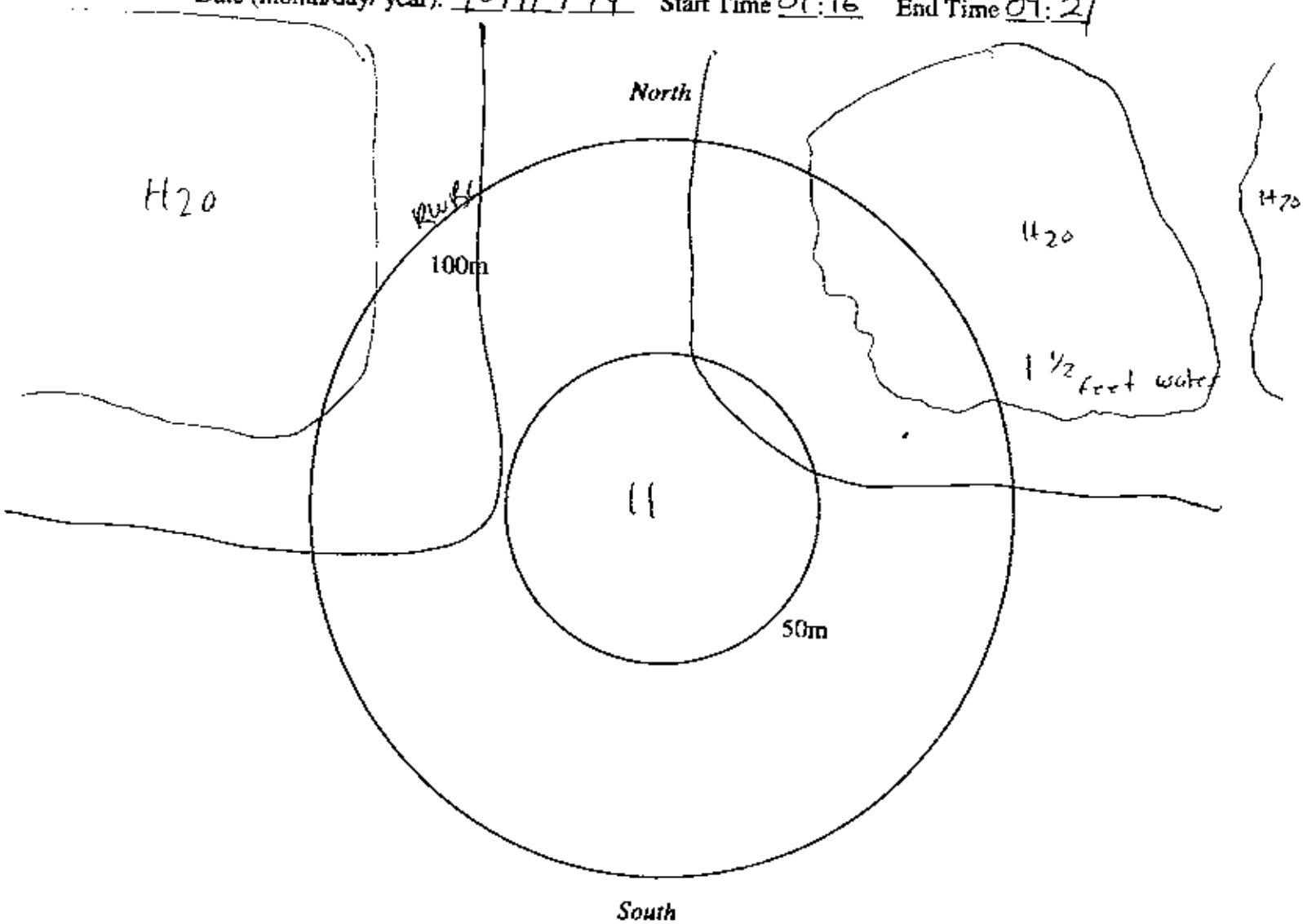
Common Raven

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 11 Observer Initials: KLS Sky: 0% Temp: (F) 52

Estimated Average Wind Speed: (MPH) 3 Wind Direction: S

Date (month/day/ year): 10/11/14 Start Time 09:16 End Time 09:21



Notes Two ♀ RWBL

Pt 11

Species	# individuals	Flythrough	Flyover	Behaviors observed
RWBL	2			feeding on banks

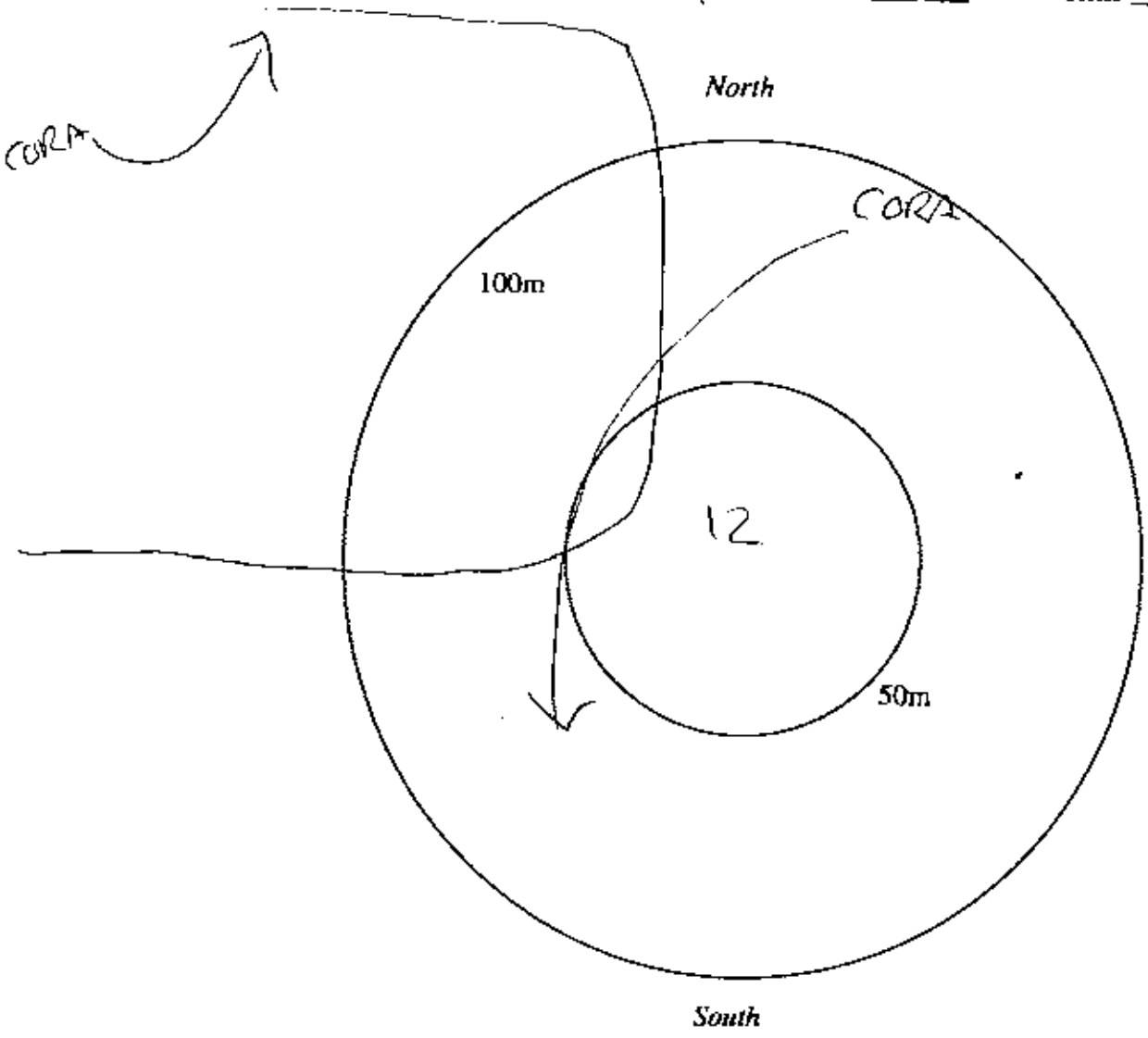
Red-winged Blackbird

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 12 Observer Initials: RK Sky: 0% Temp: (F) 52

Estimated Average Wind Speed: (MPH) 3 Wind Direction: S

Date (month/day/ year): 10 / 11 / 14 Start Time 09 : 25 End Time 09 : 36



Notes _____

PT 12

Species	# individuals	Flythrough	Flyover	Behaviors observed
CORA	4	✓		two pairs flying through

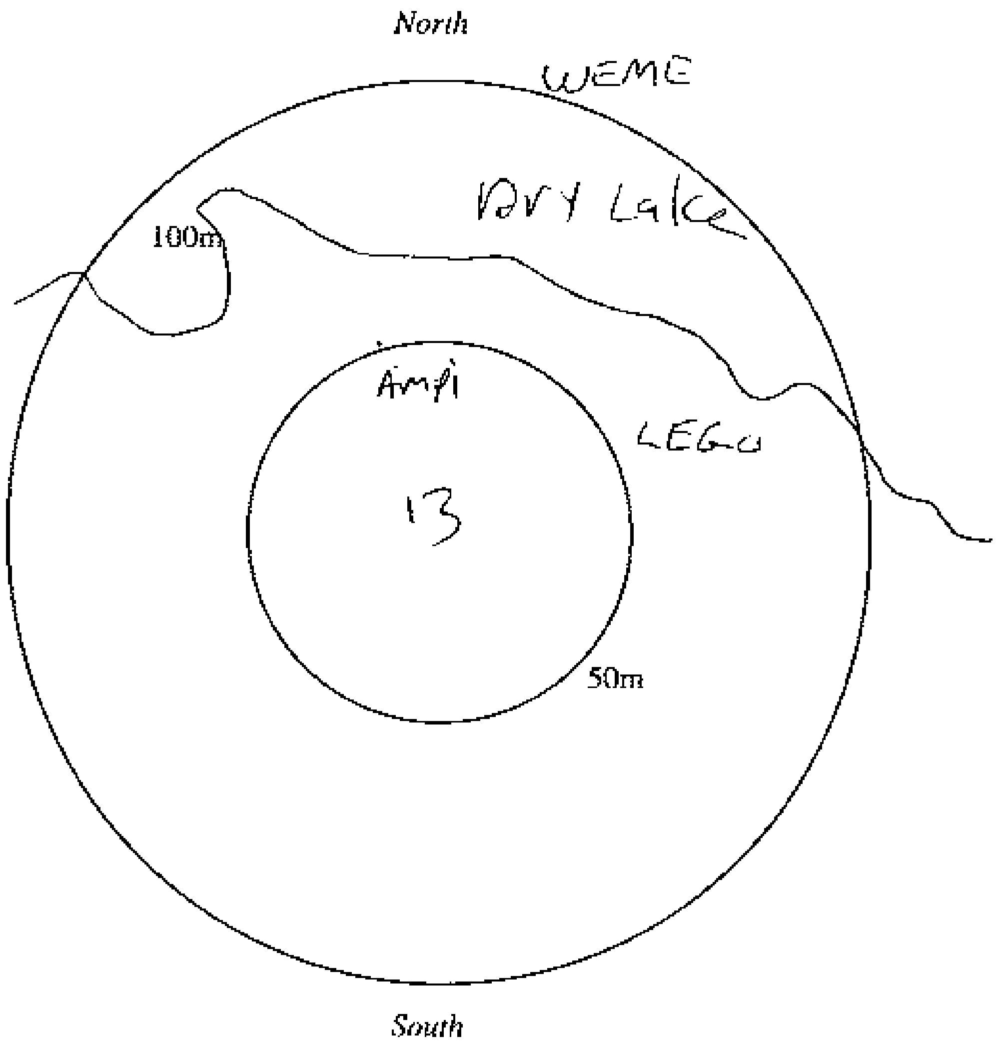
Common Raven

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 13 Observer Initials: RK Sky: 0% Temp: (F) 53

Estimated Average Wind Speed: (MPH) 2 Wind Direction: S

Date (month/day/ year): 10 / 11 / 14 Start Time 09 : 56 End Time 10 : 01



Notes ~~[illegible]~~ NO Water Present

Pt. 13

Species	# individuals	Flythrough	Flyover	Behaviors observed
WEME	1			Perched
LEGO	1			Vocalization
AMPI	1		√	

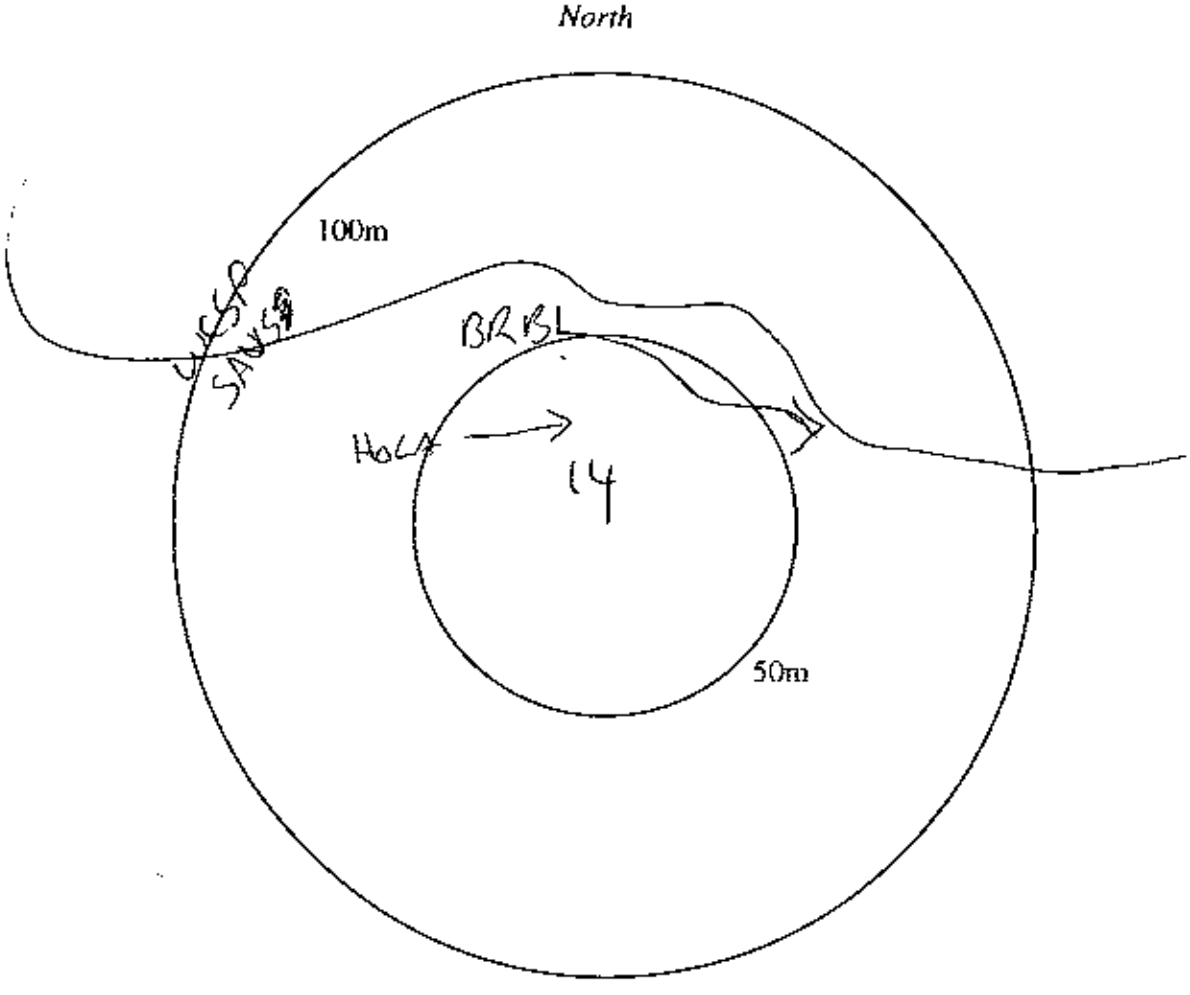
Western Meadow Lark
Lesser Goldfinch
American Pipit

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 14 Observer Initials: RLS Sky: 0% Temp: (F) 55

Estimated Average Wind Speed: (MPH) 0 Wind Direction: 0

Date (month/day/ year): 10/11/14 Start Time 10:06 End Time 10:11



Notes No water present

Pt. 14

Species	# individuals	Flythrough	Flyover	Behaviors observed
WCSP	4			Perched
SAV SP	2			Perched
HOLA	2		V	

Savannah Sparrow

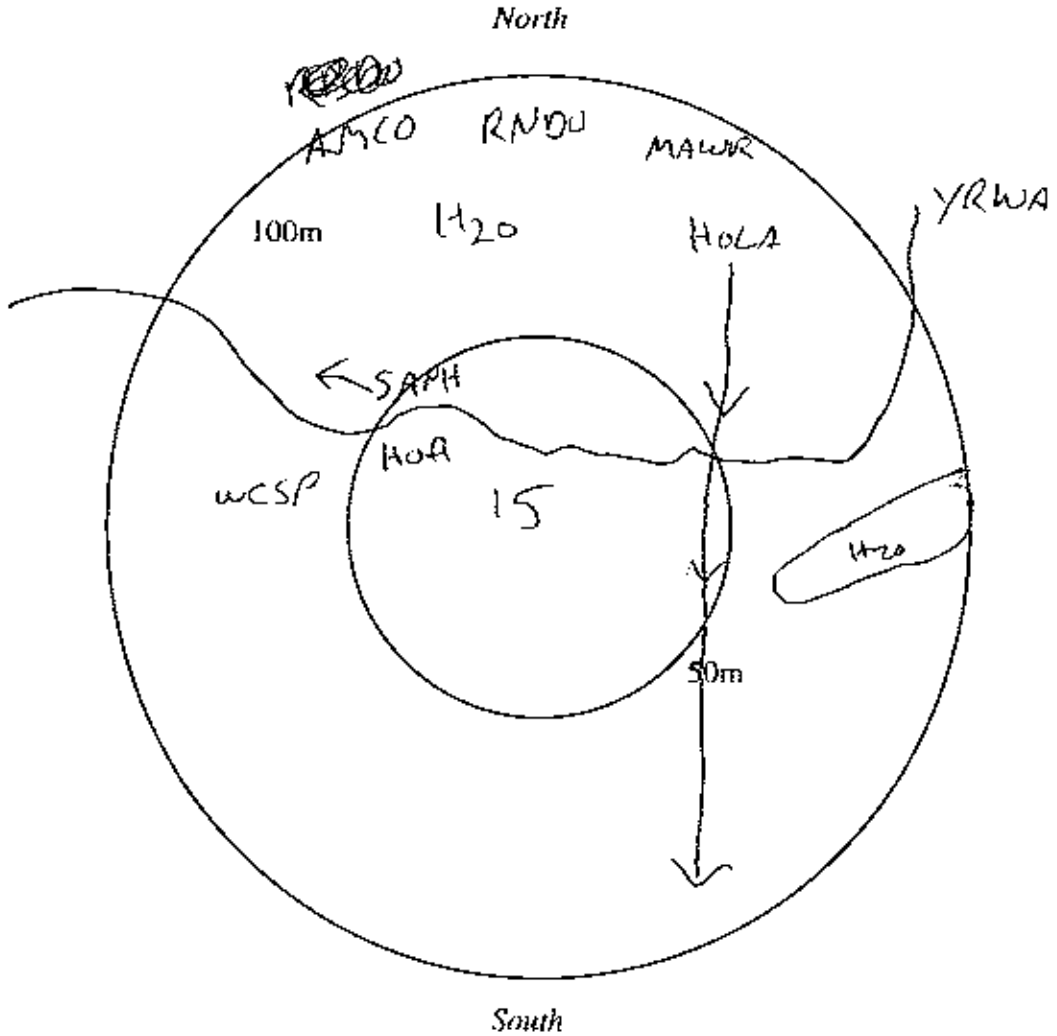
White-Crowned Sparrow
Savannah Sparrow
Horned Lark

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 15 Observer Initials: RK Sky: 0% Temp: (F) 55

Estimated Average Wind Speed: (MPH) 3 Wind Direction: S

Date (month/day/ year): 10/11/14 Start Time 10:20 End Time 10:25



Notes water present

Species	# individuals	Flythrough	Flyover	Behaviors observed
AMCO	62			swimming / feeding
RNDU	4			swimming / feeding
YRWA	1			perched
HOLA	6		V	
SAPH	1		V	
MAWR	2			vocalization from vegetation
WCSP	2			perched
HOFI	4			perched

American Coot
Ringed-necked duck
Yellow-rumped warbler

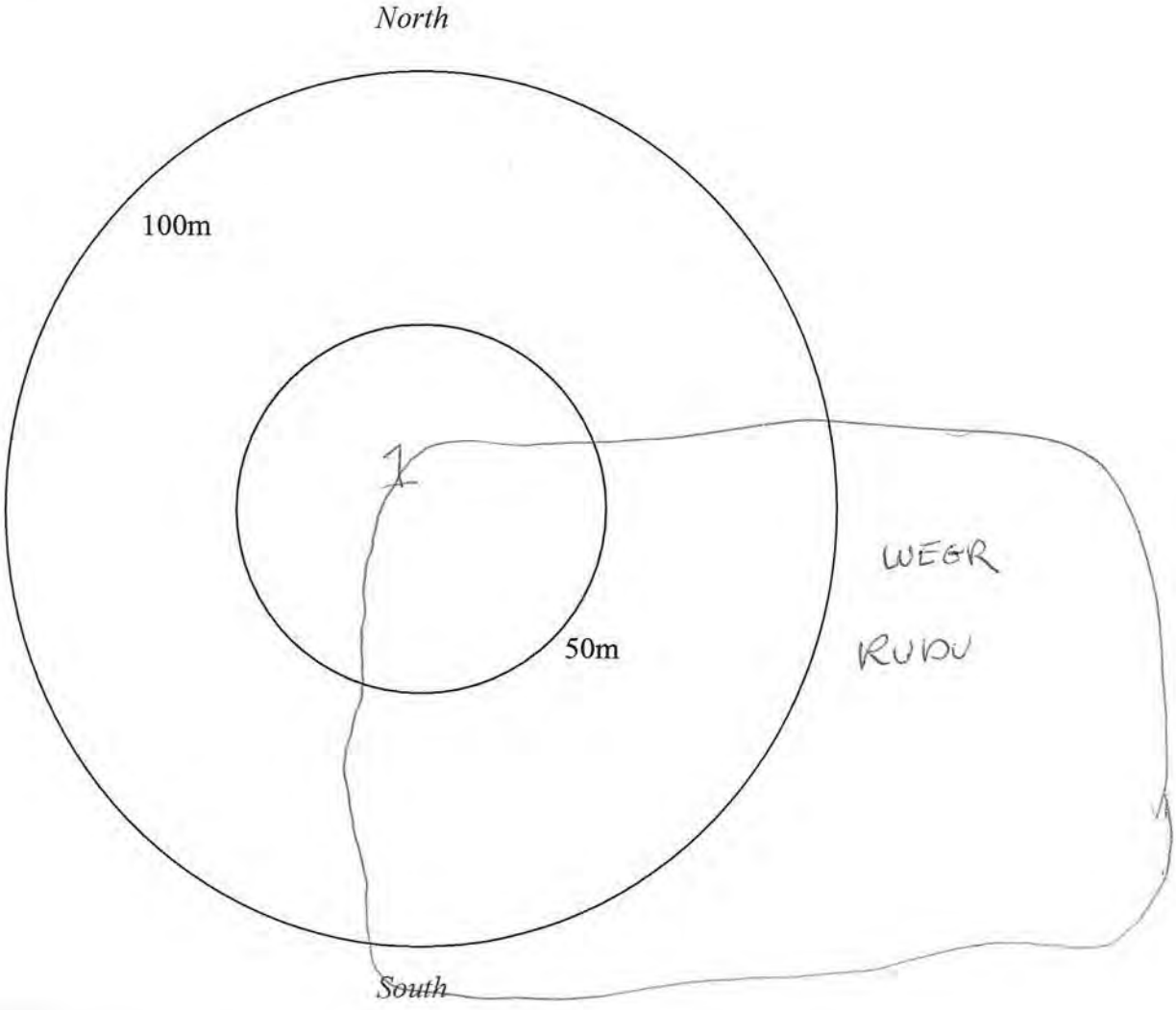
Horned Lark
Say's phoebe
~~Cat~~ Marsh wren
White-crowned sparrow
House finch

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 1 Observer Initials: RK Sky: 20% Temp: (F) 83

Estimated Average Wind Speed: (MPH) 10 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 15:00 End Time 15:05



Notes water depth 3ft

PT 1

Species	# individuals	Flythrough	Flyover	Behaviors observed
WEGR	1			Swimming
RUDU	6			Swimming

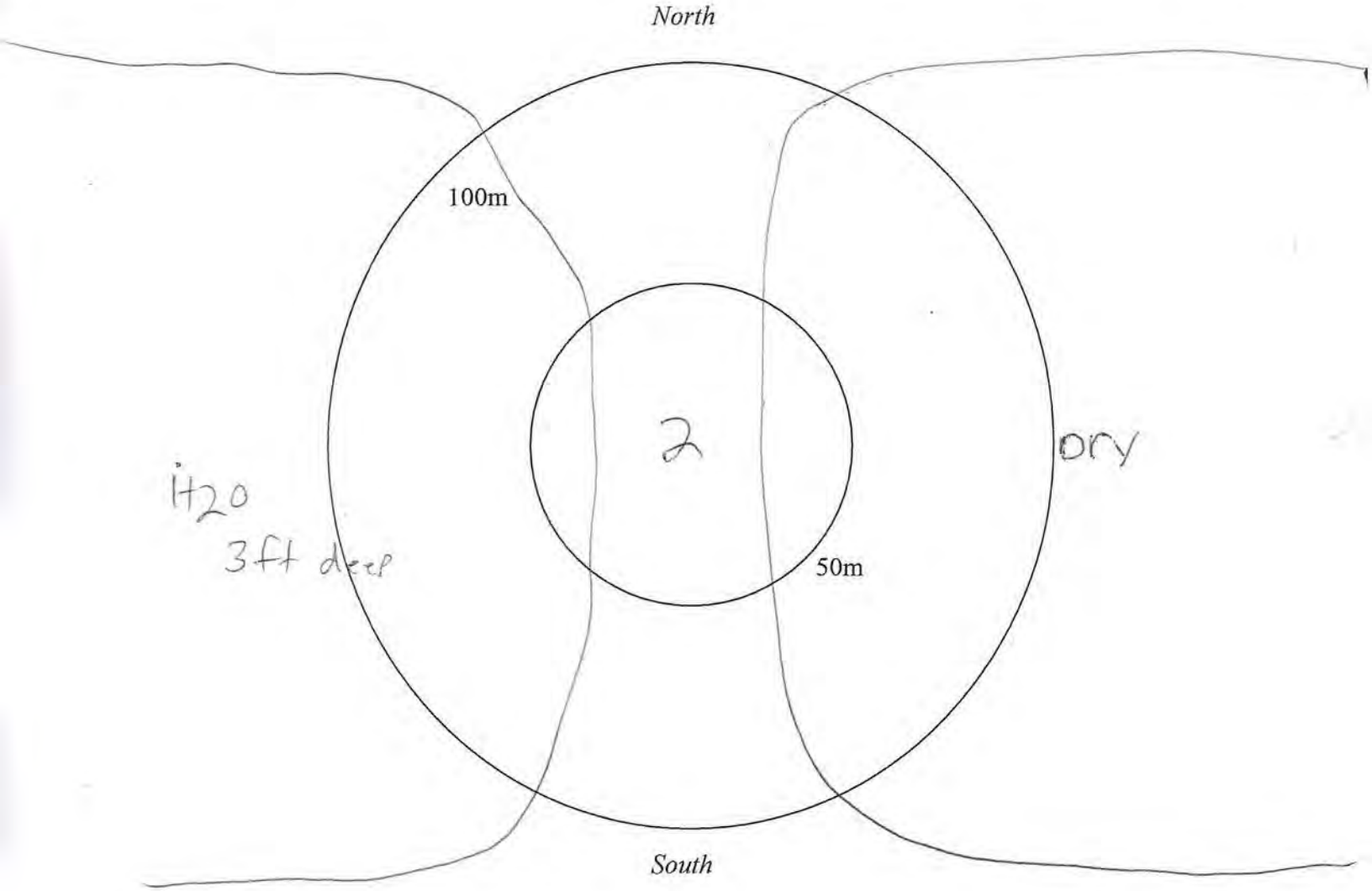
Western Grebe
Ruddy Duck

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 2 Observer Initials: RK Sky: 20% Temp: (F) 83

Estimated Average Wind Speed: (MPH) 10 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 15:07 End Time 15:12



Notes No new observations

PT 2

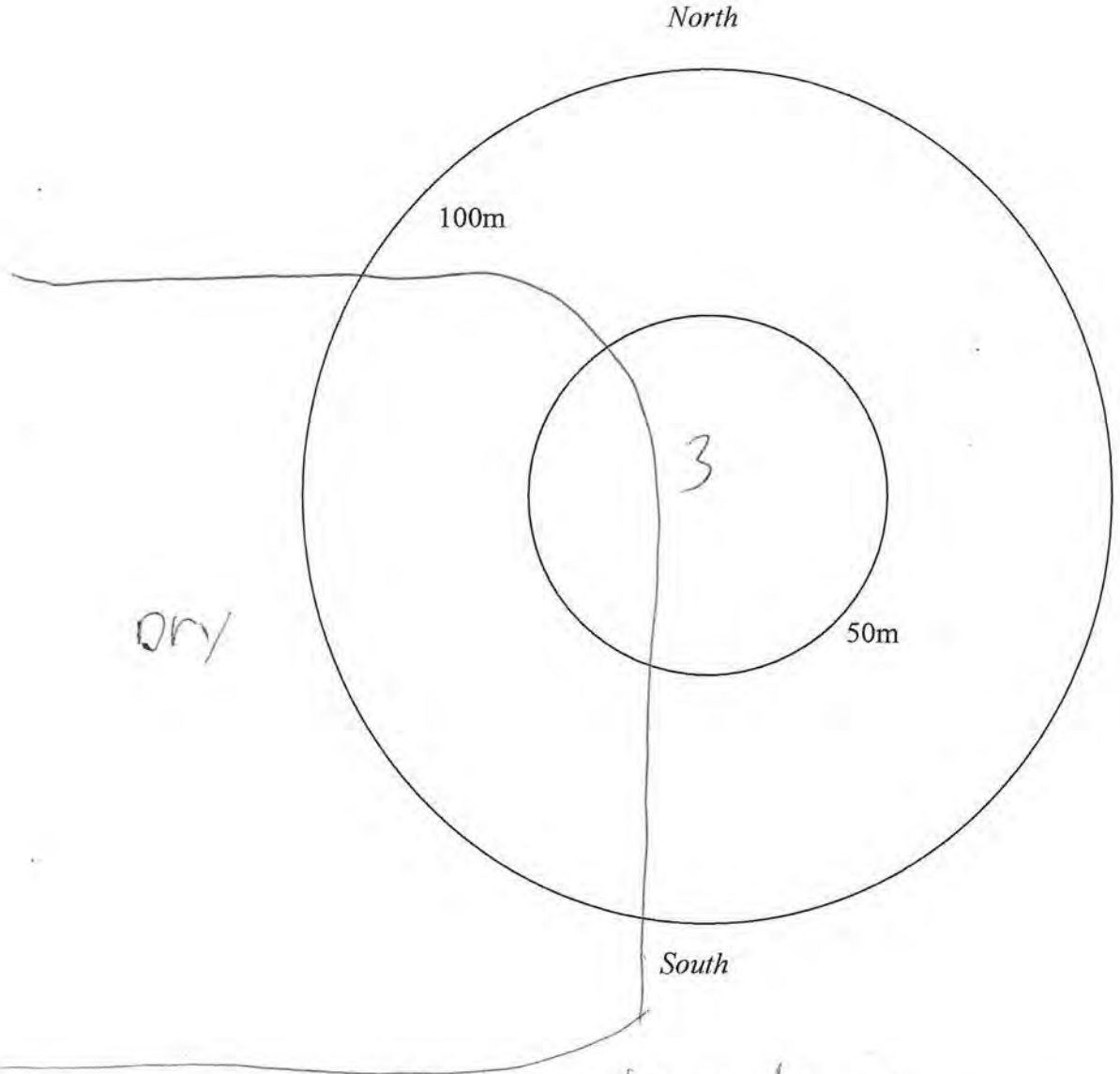
Species	# individuals	Flythrough	Flyover	Behaviors observed
No NEW observations				

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 3 Observer Initials: RK Sky: 20% Temp: (F) 83

Estimated Average Wind Speed: (MPH) 15 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 15:14 End Time 15:19



Notes No new observations

PT. 3

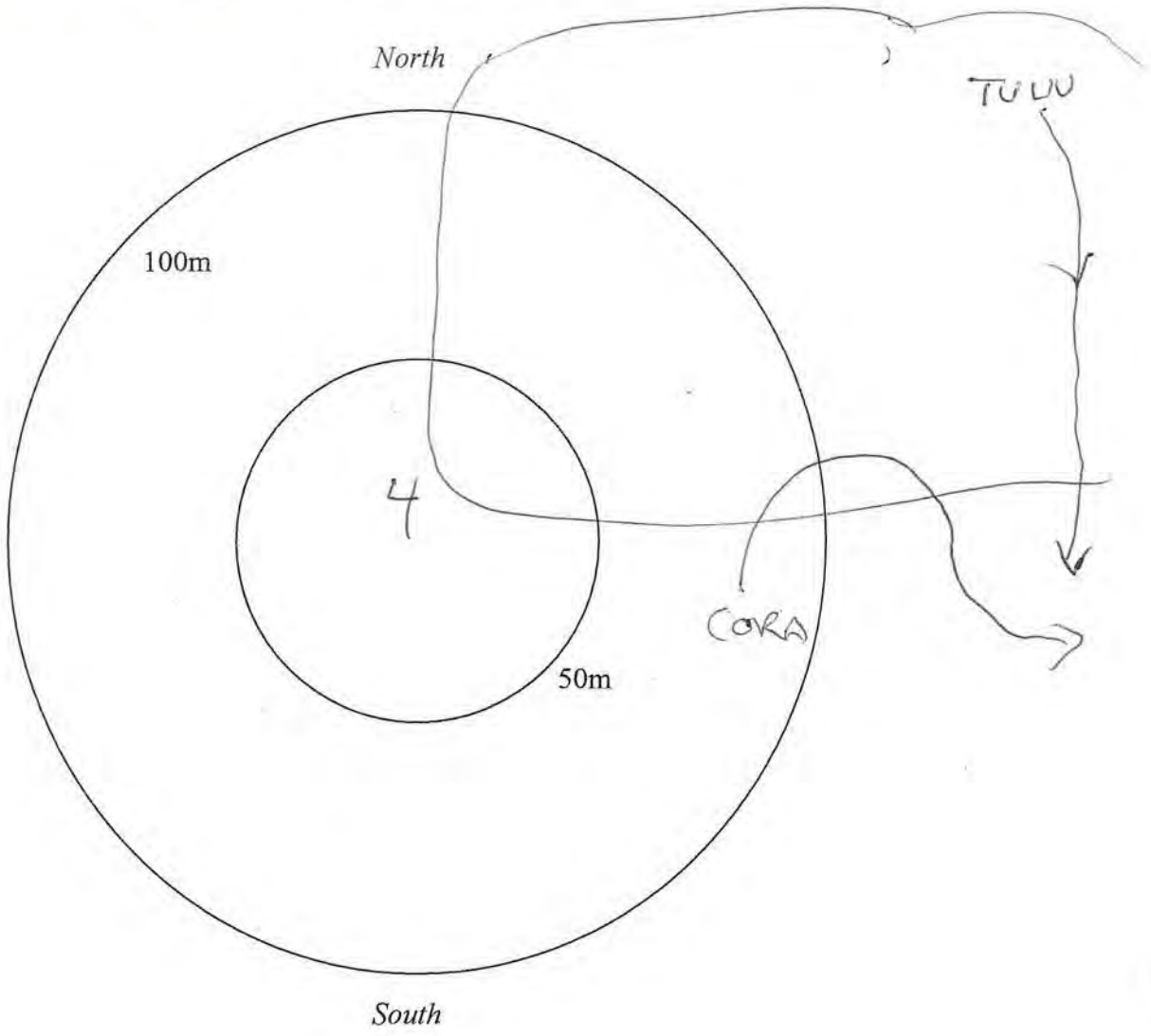
Species	# individuals	Flythrough	Flyover	Behaviors observed
No new observations				

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 4 Observer Initials: RK Sky: 20 Temp: (F) 83

Estimated Average Wind Speed: (MPH) 20 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 15:22 End Time 15:27



Notes one turkey vulture & 2 Common Raven
the western grebe and six Ruddy duck
from Pt. one were still present

PT4

Species	# individuals	Flythrough	Flyover	Behaviors observed
TUVU	1	✓		
CORA	2		✓	

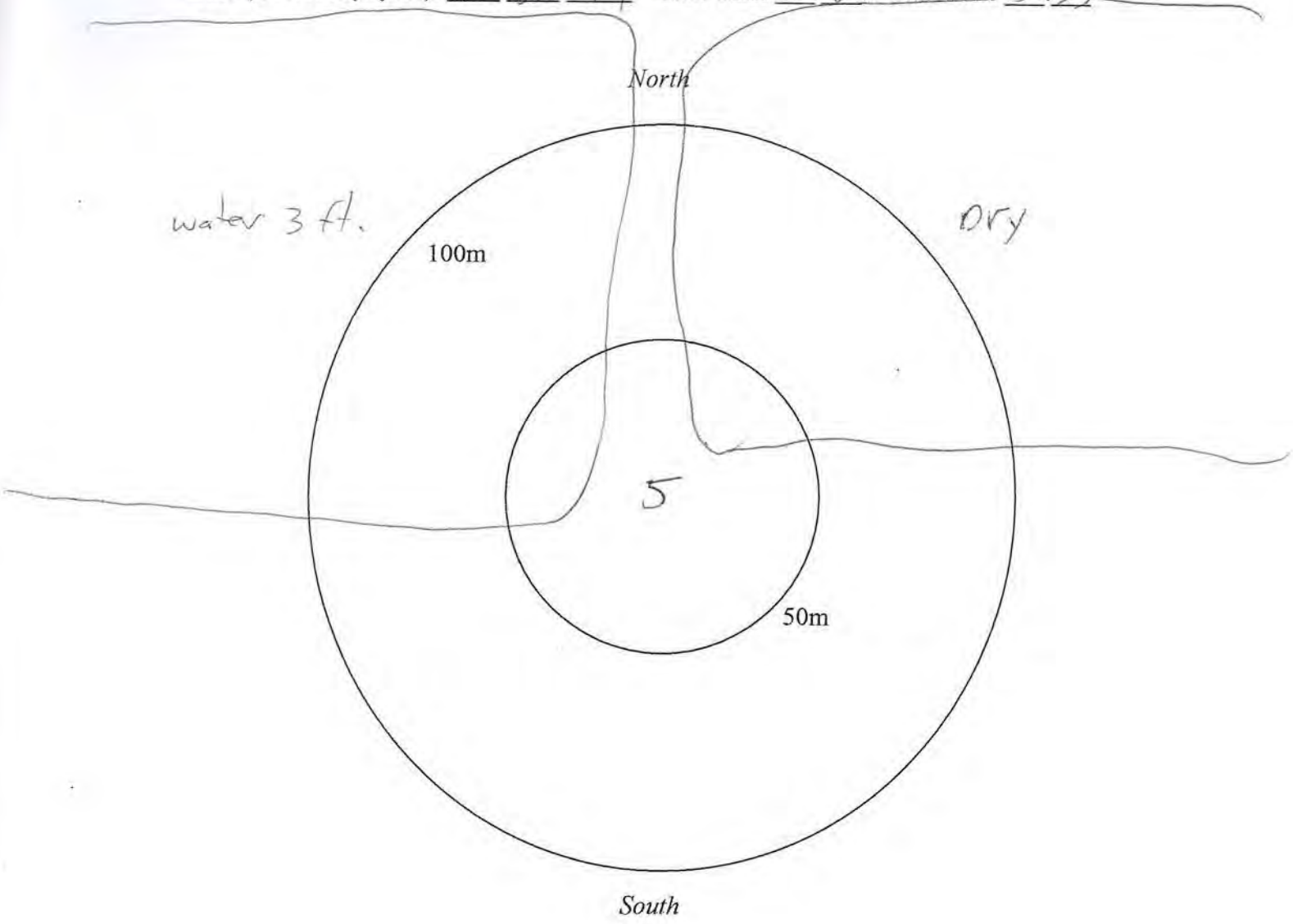
Turkey Vulture
Common Raven

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 5 Observer Initials: RK Sky: 20% Temp: (F) 83

Estimated Average Wind Speed: (MPH) 20 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 15:28 End Time 15:33



Notes No new observations

PT5

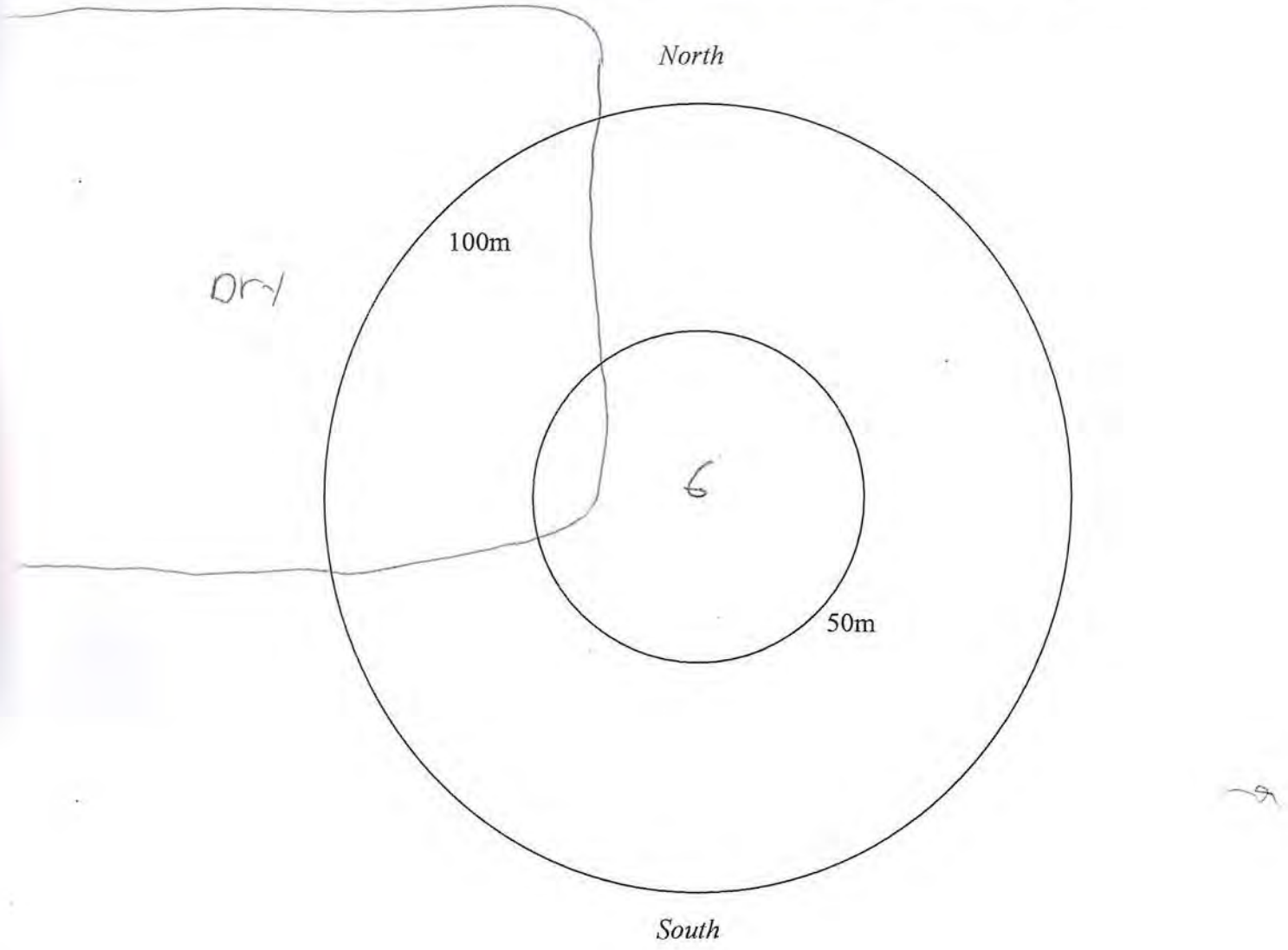
Species	# individuals	Flythrough	Flyover	Behaviors observed
No new observations				

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 6 Observer Initials: RK Sky: 20% Temp: (F) 83

Estimated Average Wind Speed: (MPH) 20 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 15:35 End Time 15:40



Notes _____

PT. 6

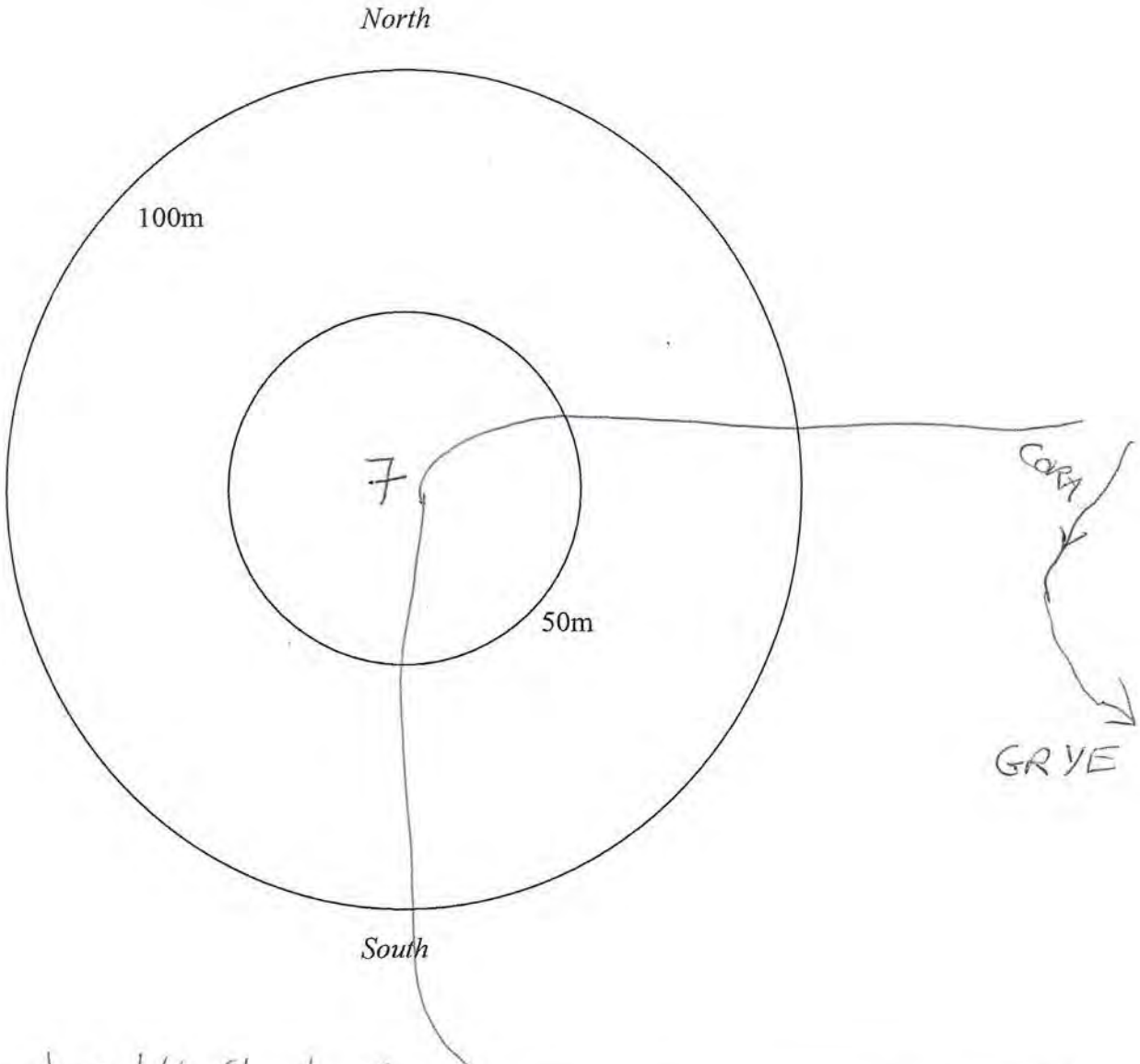
Species	# individuals	Flythrough	Flyover	Behaviors observed
No new observations				

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 7 Observer Initials: RK Sky: 15% Temp: (F) 83

Estimated Average Wind Speed: (MPH) 15 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 15:50 End Time 15:55



Notes water 1½ ft deep

PT7

Species	# individuals	Flythrough	Flyover	Behaviors observed
GR YE	1			walking/wading shoreline
CORA	1	✓		

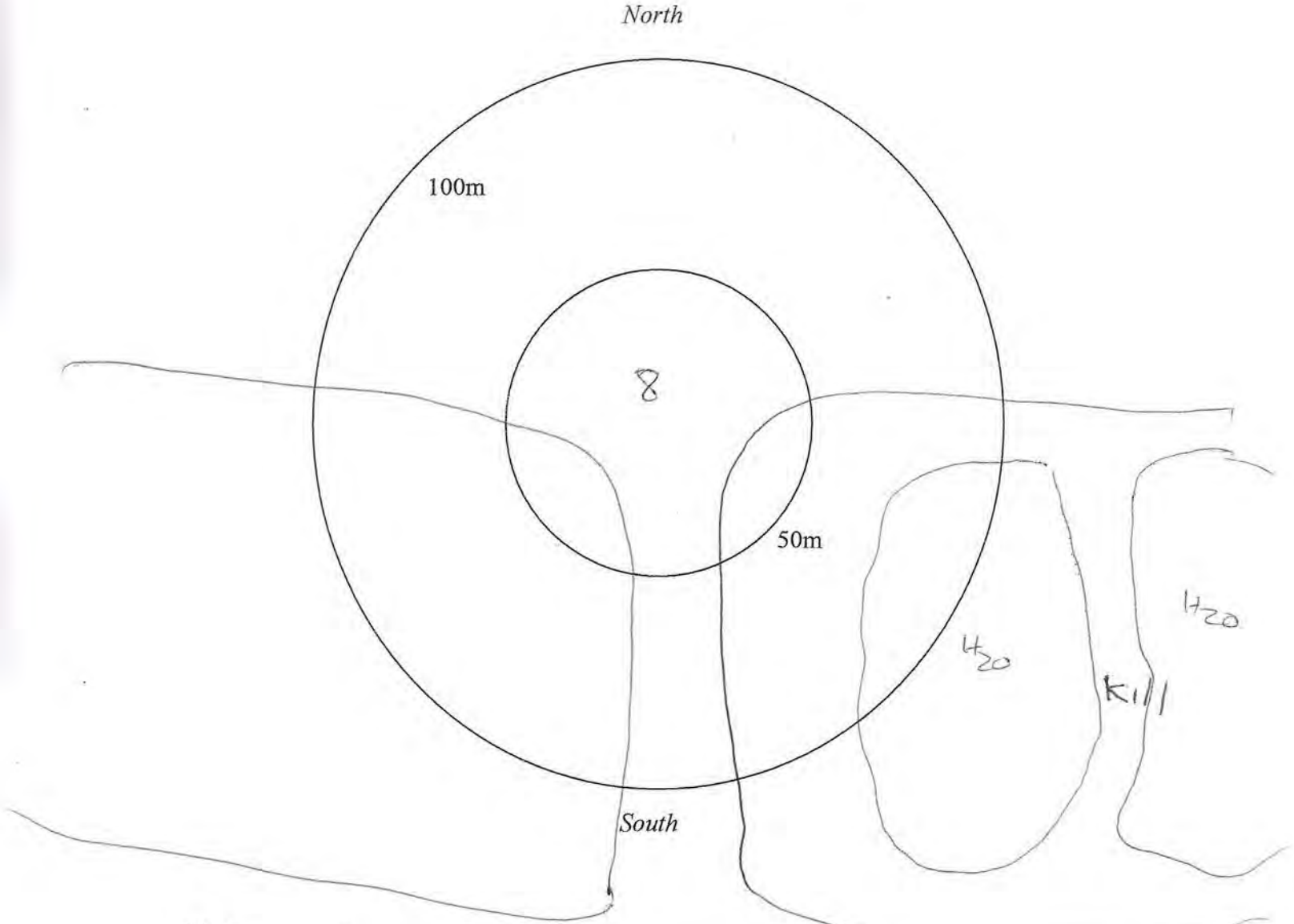
Greater Yellowlegs.
Common Raven

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 8 Observer Initials: RIC Sky: 15% Temp: (F) 84

Estimated Average Wind Speed: (MPH) 20 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 15:58 End Time 16:03



Notes _____

PT 8

Species	# individuals	Flythrough	Flyover	Behaviors observed
Kill	1			walking/wading

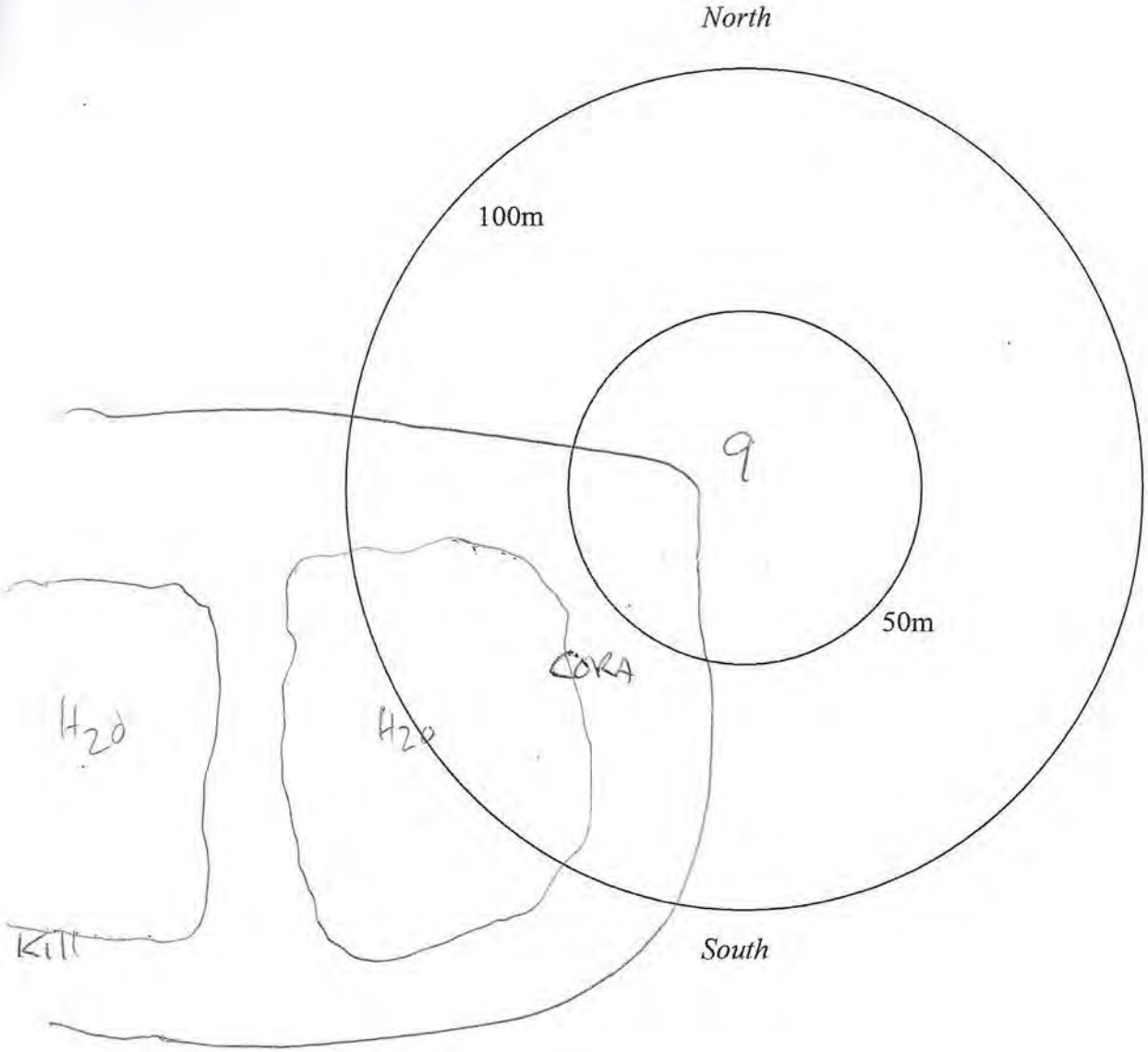
Shoreline

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 9 Observer Initials: RK Sky: 10% Temp: (F) 83

Estimated Average Wind Speed: (MPH) 20 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 16:05 End Time 16:10



Notes _____

PT 9

Species	# individuals	Flythrough	Flyover	Behaviors observed
				drinking
CORA	1			
Kill	1			wading

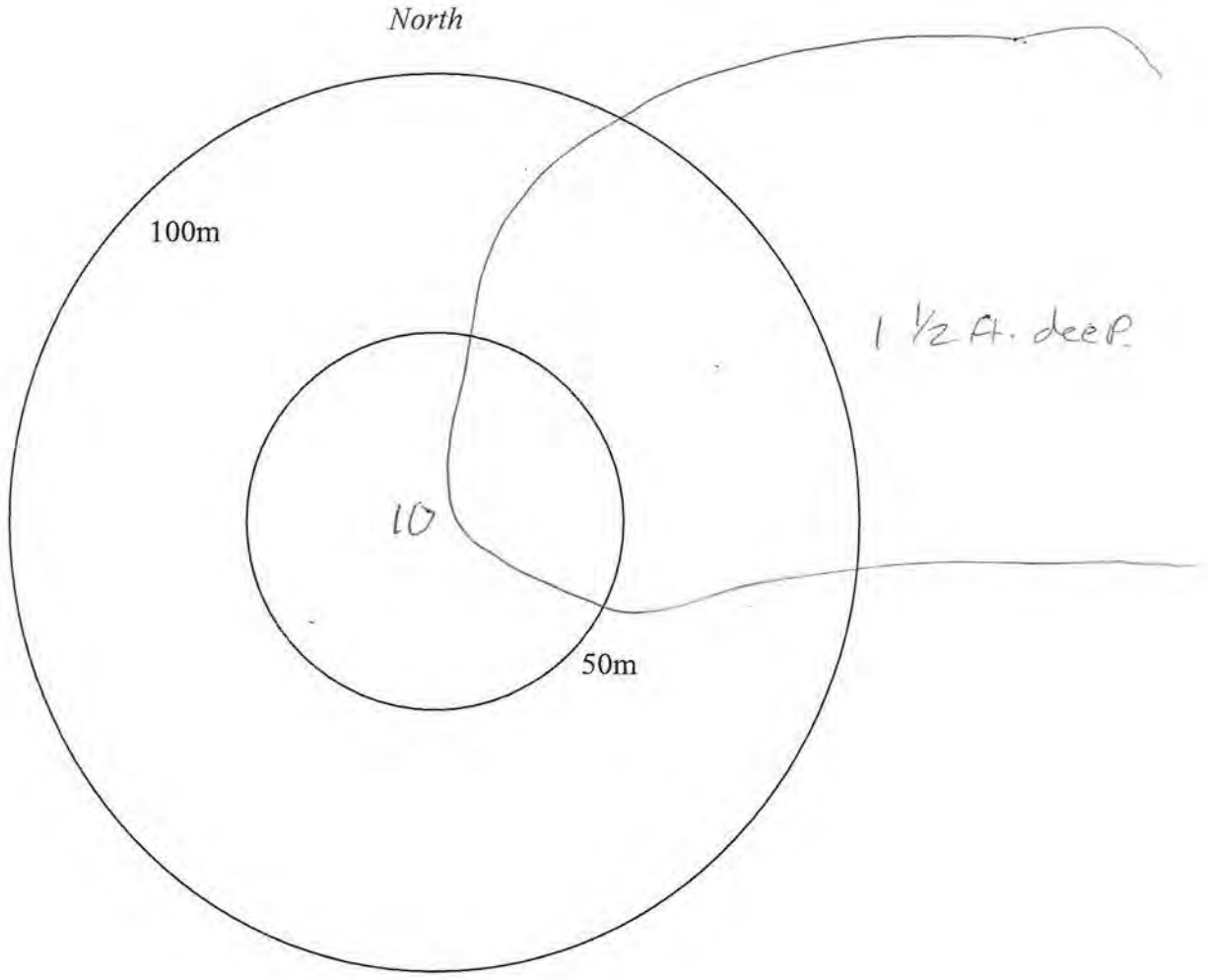
Common Raven

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 10 Observer Initials: RK Sky: 10 Temp: (F) 83

Estimated Average Wind Speed: (MPH) 20 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 16:14 End Time 16:19



Notes No new observations

PT. 10

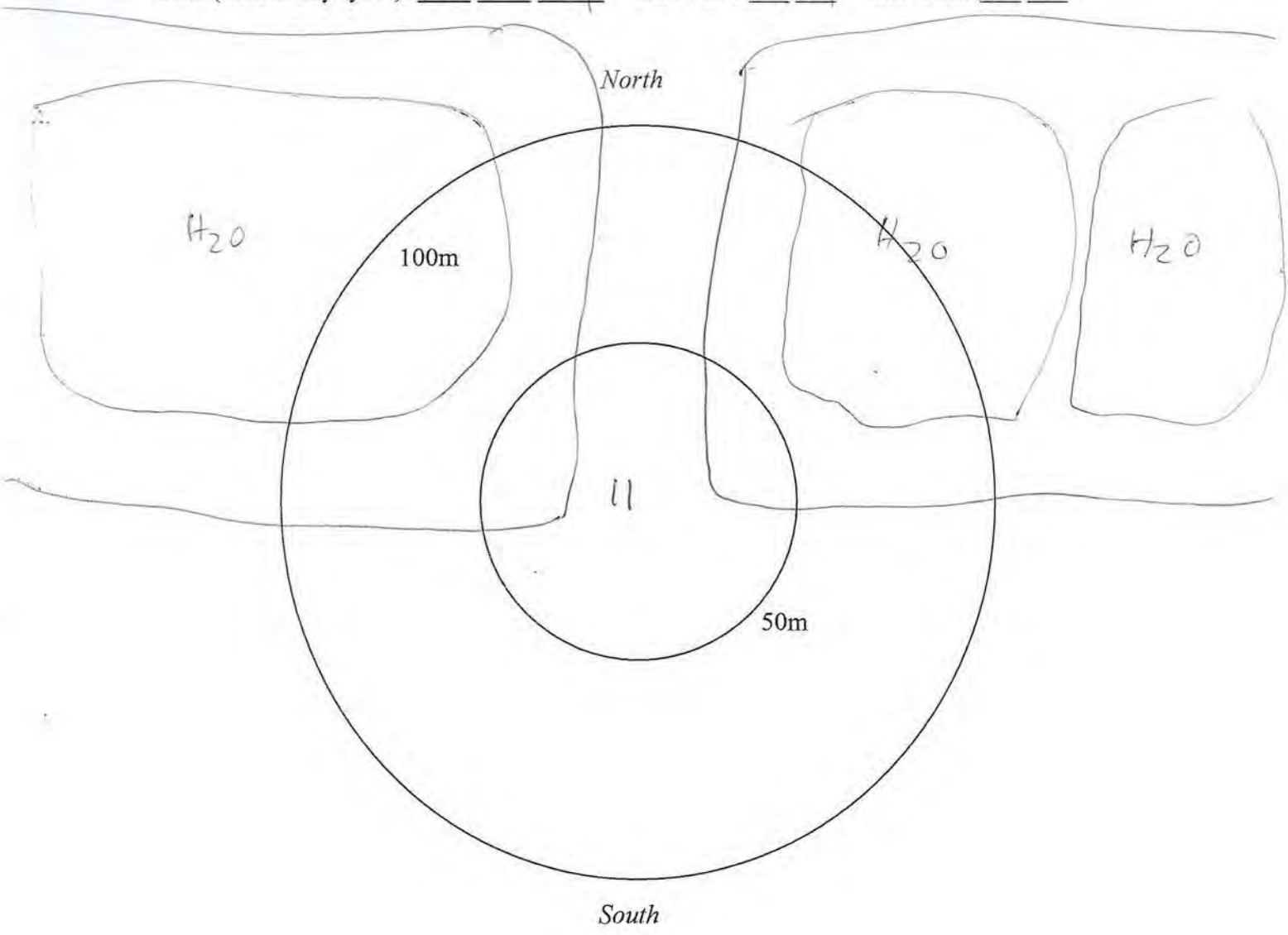
Species	# individuals	Flythrough	Flyover	Behaviors observed
No	new	observations		

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 11 Observer Initials: RK Sky: 10% Temp: (F) 83

Estimated Average Wind Speed: (MPH) 20 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 16:21 End Time 16:26



Notes NO new observations

PT. 11

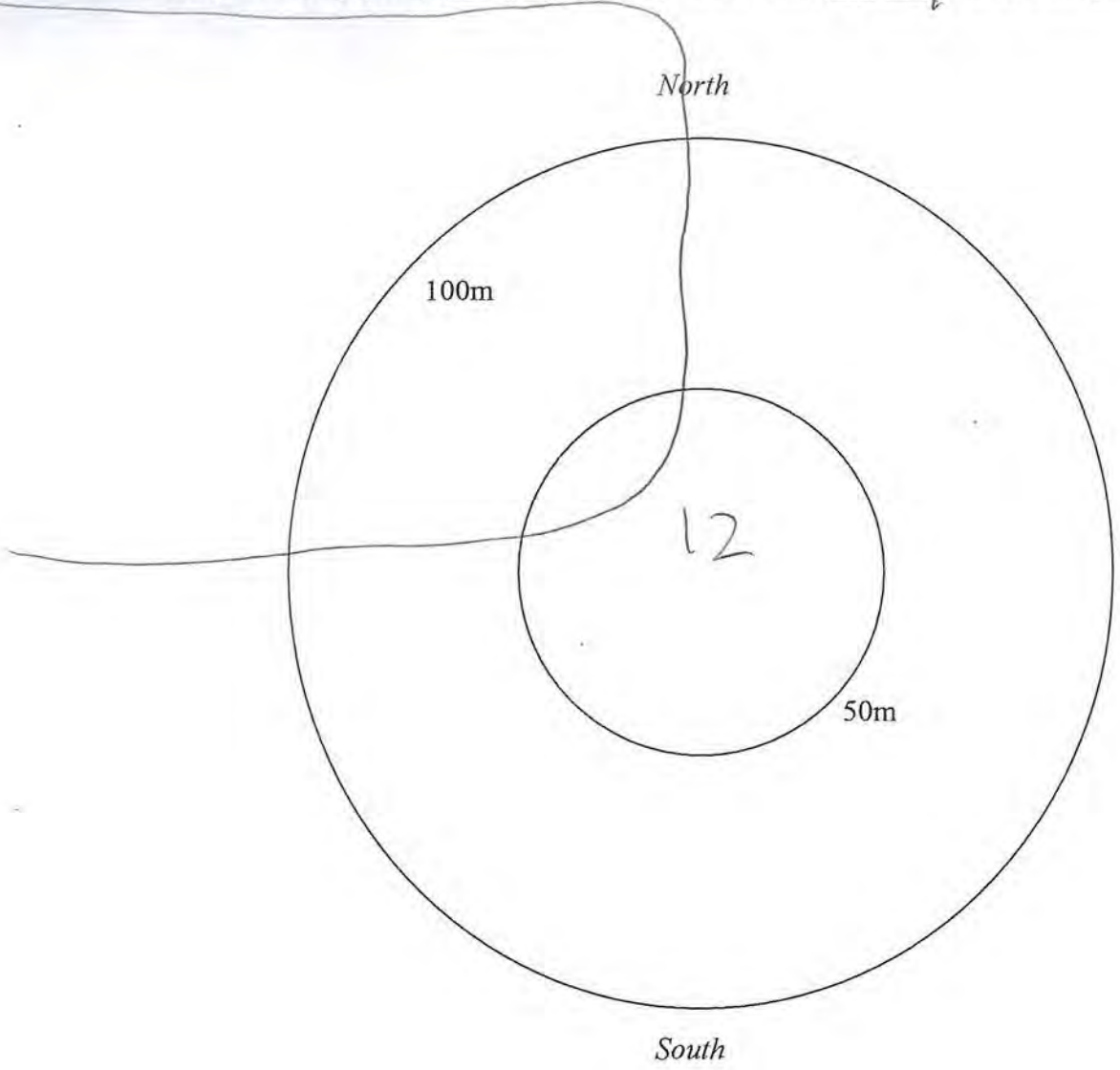
Species	# individuals	Flythrough	Flyover	Behaviors observed
No	new	observations		

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 12 Observer Initials: RK Sky: 10% Temp: (F) 83

Estimated Average Wind Speed: (MPH) 20 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 16:29 End Time 16:34



Notes NO new observations

PT. 12

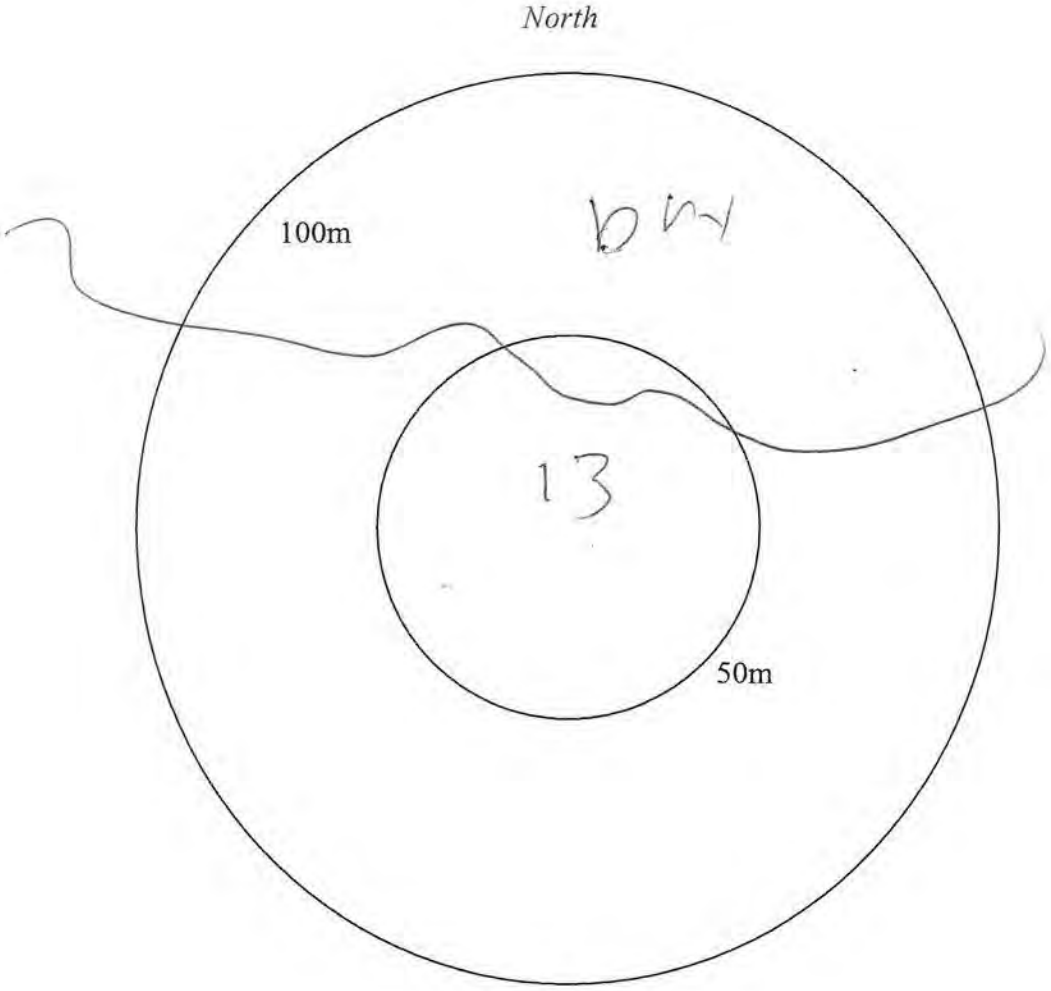
Species	# individuals	Flythrough	Flyover	Behaviors observed
No	New	observations		

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 13 Observer Initials: RJC Sky: 5% Temp: (F) ~~87~~ 79

Estimated Average Wind Speed: (MPH) 25 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 16:50 End Time 16:55



Notes No observations

PT 13

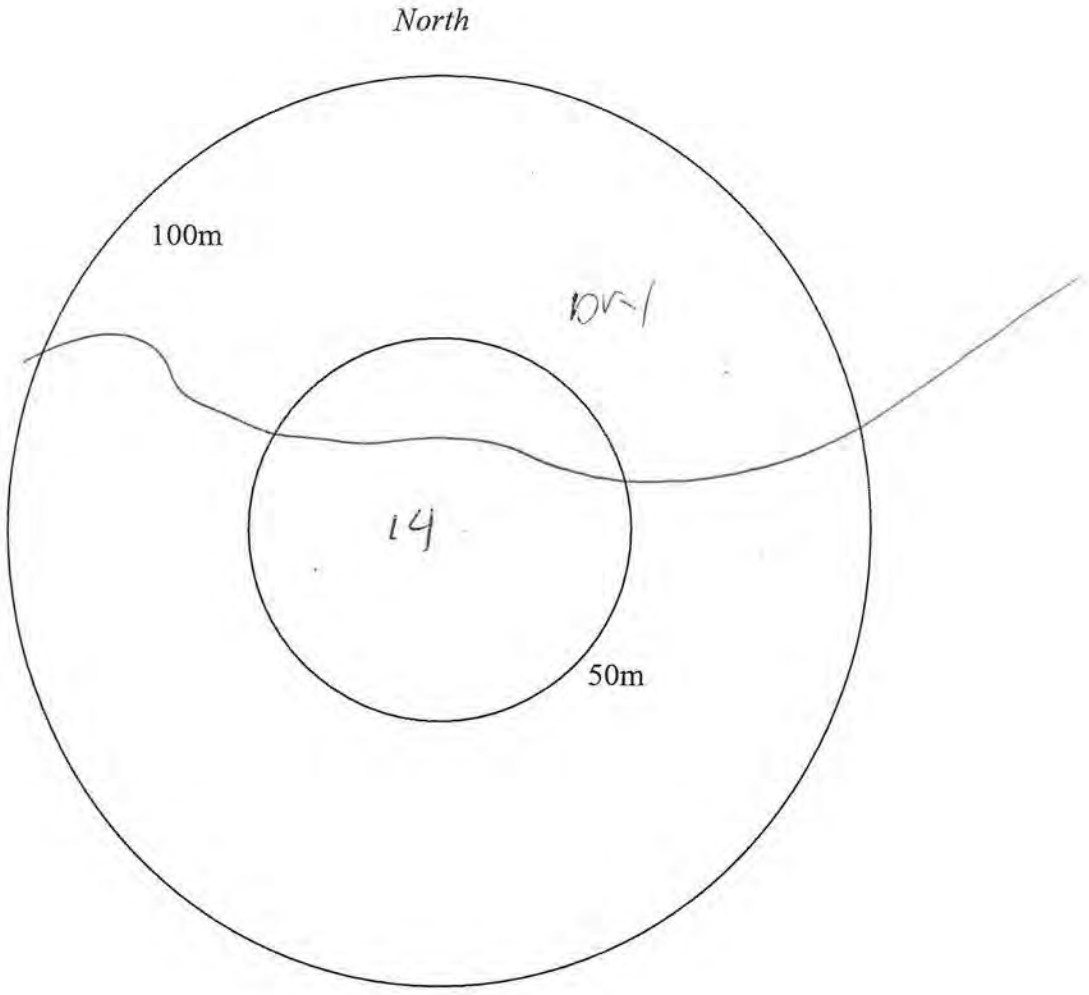
Species	# individuals	Flythrough	Flyover	Behaviors observed
NO	observations			

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 14 Observer Initials: RK Sky: 2% Temp: (F) 78

Estimated Average Wind Speed: (MPH) 15 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 17:02 End Time 17:07



Notes No water No observations

PT. 14

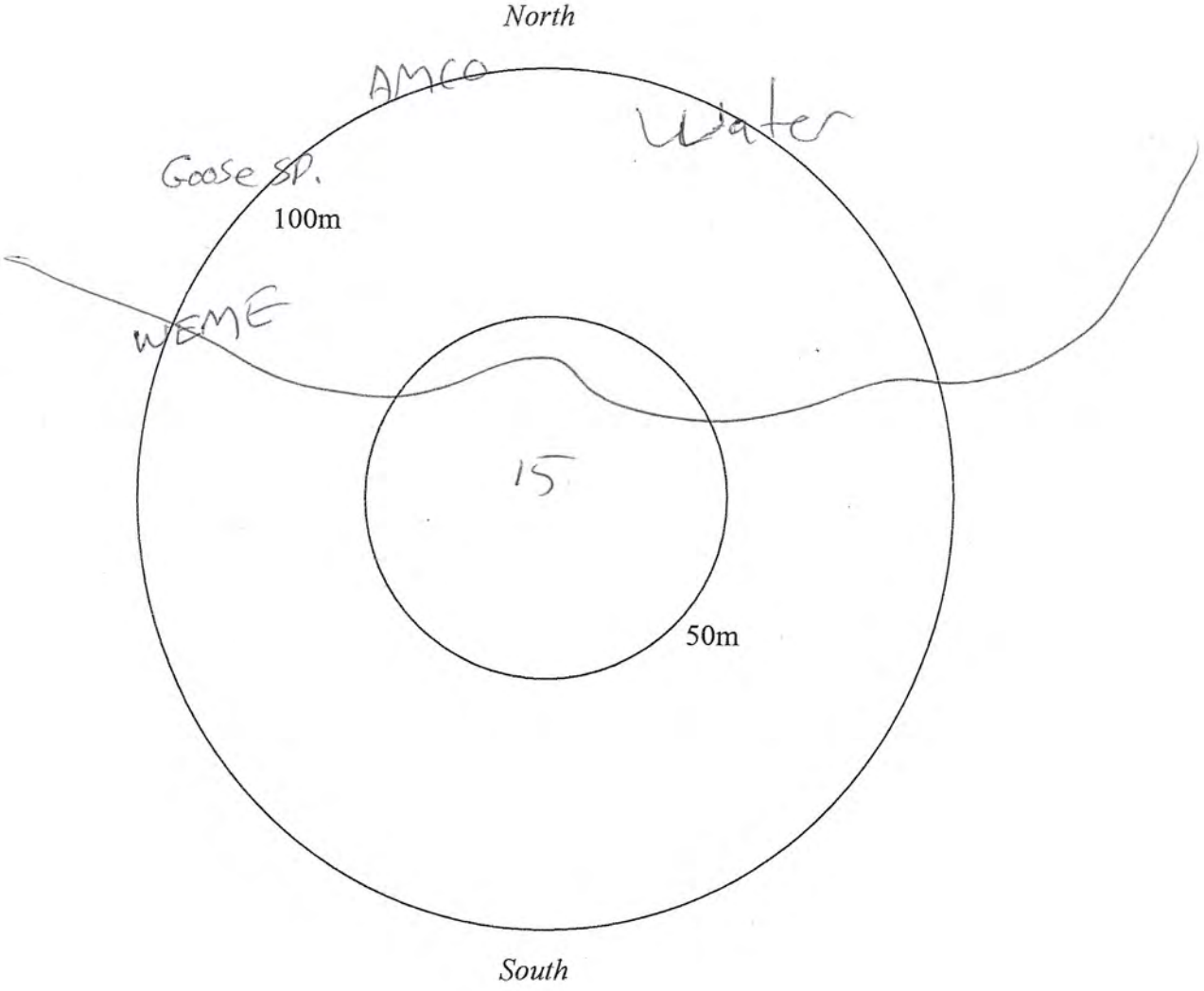
Species	# individuals	Flythrough	Flyover	Behaviors observed
No	observations			

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 15 Observer Initials: RK Sky: 2% Temp: (F) 78

Estimated Average Wind Speed: (MPH) 15 Wind Direction: S

Date (month/day/ year): 10/25/14 Start Time 17:15 End Time 17:20



Notes_____

PT 15

Species	# individuals	Flythrough	Flyover	Behaviors observed
AMCO	42			swimming / feeding
Goose SP.	1			on shore preening
WEME	1			Perched on salt bush
DUCK SP.	2			swimming

American coot
Western meadowlark
Goose SP. Domestic goose mix
Duck SP two unidentified female ducks swam away

Appendix C
Cultural Resources

Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California

October 2014 Reporting Period

Appendix C
Cultural Resources

Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California

October 2014 Reporting Period

CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA
95833-2937
Tel: 916.920.0300
Fax: 916.920.8463

November 6, 2014

Dale Rundquist
Compliance Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Subject: Abengoa Mojave Solar Project (09-AFC-5C)
Monthly Compliance Report CUL-1 and CUL-6

Dear Mr. Rundquist:

CH2M HILL is assisting Abengoa Solar LLC. (Abengoa) in complying with California Energy Commission (CEC) Conditions of Certification, specifically, CUL-1 and CUL-6, for cultural resource monitoring, as set forth in the Commission Decision for the Mojave Solar Project (MSP). This report covers the cultural resources monitoring conducted from October 1, 2014 through October 31, 2014 by CH2M HILL.

Personnel Active in Cultural Monitoring This Period

The Cultural Resources Monitor (CRM) was Sonia Sifuentes and the Native American Monitors (NAM) was David Perezchica. The monitoring program was directed by the Cultural Resource Specialist (CRS), Gloriella Cardenas and the Alternate CRS, Phillip Reid.

Monitoring and Associated Activities This Period

In Alpha West; kit fox burrow, tree removal and rework for fiber optic cable were monitored. In Alpha East; stair foundations, conduit repair trenching excavations, excavation to expose water lines, rework excavations for communication lines, Rack 2 excavations, grounding cable trenching and typical support foundation excavations in Alpha Power Block were monitored. In Beta East; electrical conduit and case on box excavation, well footing excavations, stair foundations, grounding rod and cabling excavations, excavation to expose water lines, foundation and conduit rework excavation, communication line trenching, cooling tower piping support foundations, and fire hydrant removal excavation in Beta Power Block were monitored. In Beta West; tortoise fence repair off Lockhart Road and outside Beta West were monitored.

In addition to the scheduled activities, a cultural crew also assessed four environmental cleanups. On October 8th, 2014, two diesel spills in Beta water treatment plant were examined. On October 10, 2014, a cultural crew assessed environmental cleanups in the

Alpha Power Block, and in Beta West near Building 26. There were no impacts to cultural resources.

Cultural Resources Discoveries This Period

None.

Anticipated Changes in the Next Period

Monitoring will continue for various small excavations such as foundations, electrical trenching, drainages, and other activities. A cultural monitoring crew will remain onsite to continue monitoring and to respond to discoveries if they occur.

Comments, Issues or Concerns

Non-Compliance Reports

No Non-Compliance Reports (NCR) were issued during this reporting period.

Non-Compliance Resolutions

NCR. No. 14 was issued on October 1, 2014. Resolutions were completed with supporting documents submitted to the Alternate CRS on October 6, 2014. The resolution report along with the Contractor's documents are included as an attachment (Attachment 1) to this Monthly Compliance Report (MCR).

Outstanding

NCR. No. 11 was issued on August 21, 2014. Per direction of the CEC CPM, the recommended resolutions were revised on August 22 2014. The CEC requested to review the modified resolutions prior to re-issuance to the Project Owner. Formal re-submittal of the NCR with revised resolutions is pending CEC CPM and Staff Archaeologist review and concurrence.

Sincerely,

CH2M HILL

Phillip Reid, M.A., RPA
Alternate Cultural Resources Specialist

Attachment 1: NCR No. 14 Documentation Submittals

Attachment 1
NCR 14 Documentation Submittals

NON-COMPLIANCE REPORT

MOJAVE SOLAR, LLC

MOJAVE SOLAR PROJECT

NCR Number: Cultural NCR No. 14 **Date:** 09/30/2014 **Other Parties at Site:** N/A

Documenter: Phillip Reid **Time:** 3:30 PM

Station Numbers: N/A **to** **Structure Number:** N/A

Milepost: N/A **Map Number:** N/A

Non-Compliance Level: ☒ Non-Compliance ☐ Stop Task Order

Land Ownership: ☐ Private ☐ Federal

In Non-Compliance With: ☐ EIS ☒ COCs ☐ State Permit ☐ Federal Permit

Mitigation Measure Number/Permit and Condition Number: Commission Decision CUL-2 and CUL-6

Describe Resource Impact (Include Resource Number):

Potential impacts could have included destruction of buried cultural deposits.

Describe Activity That Resulted in Non-Compliance:

Unmonitored trenching may have affected subsurface cultural resources

On September 30, 2014 Layne Christensen, a subcontractor at Mojave Solar Project, began an excavation at Well #3 in the Beta East section of the project area without cultural monitors present. Abeinsa Health and Safety (H&S) halted the activity upon inspection due to failure to follow project protocols and notified the Cultural Resource Monitor (CRM). In addition to failing to follow cultural ground disturbing protocols, Layne Christensen failed to follow H&S permitting requirements; this resulted in permanent dismissal of the supervisor for the activity. .

The unmonitored excavation consisted of a trench aligned in a north/south direction measuring 3 feet (ft) wide by 3 ft deep. Also an area around the well that was approximately 8 ft. long by 5 ft. wide by 4 ft. deep was excavated. Assessments were made to the area to ascertain no impacts to cultural resources appear to have occurred as a result of this non-compliance event.

This activity required scheduling and full time monitoring. Failure to report a ground disturbing activity to the Cultural Resources Specialist (CRS) or Alternate CRS is an infraction per CUL-2. Conducting ground disturbance without cultural coverage, is an infraction of CUL-6.

Documentation: ☒ Photo ☐ Video ☐ Drawing ☐ Lab Sample ☒ Other Daily logs

Communication: ☒ Mojave K. Sullivan ☒ CEC D. Rundquist ☐ BLM

Solar _____ _____ _____

☐ ☐ **Other**

Contractor/Operator _____ _____

Requirements for Resolution:

The recommendations are as follows:

1. Because of an increase of non-compliance events, all activity managers and subcontractors active in excavations should undergo a review of procedures for ground disturbing operations.
2. The subcontractor should be WEAP retrained.
3. A general requirement should be provided by the project owner and owner's engineer to ***all*** subcontractors that no excavations whatsoever are to occur without a cultural resources monitor present, or without a specific clearance from the CRS directly.
4. Construction is recommended to realign their work to be in compliance with the Conditions of Certification, existing plans, and SHPO stipulations regarding Determination of No Adverse Effects, specifically, the specifications listed in the Modification in the Mojave Solar Plant Construction Cultural Monitoring Requirements, dated April 9, 2013

ABEINSA EPC
MOJAVE

Customer Non Conformity Report

Project: Mojave Solar Project	**Reference:** 6007-CUL NCR 14
Date: 09-30-2014	
Affected Area: Construction, CUL-2, and CUL-6.	

Description of the problem:

On September 30, 2014 Layne Christensen, a subcontractor at Mojave Solar Project, began an excavation at Well #3 in the Beta East section of the project area without cultural monitors present. Abeinsa Health and Safety (H&S) halted the activity upon inspection due to failure to follow project protocols and notified the Cultural Resource Monitor (CRM). In addition to failing to follow cultural ground disturbing protocols, Layne Christensen failed to follow H&S permitting requirements; this resulted in permanent dismissal of the supervisor for the activity.

The unmonitored excavation consisted of a trench aligned in a north/south direction measuring 3 feet (ft) wide by 3 ft deep. Also an area around the well that was approximately 8 ft. long by 5 ft. wide by 4 ft. deep was excavated. Assessments were made to the area to ascertain no impacts to cultural resources appear to have occurred as a result of this non-compliance event.

This activity required scheduling and full time monitoring. Failure to report a ground disturbing activity to the Cultural Resources Specialist (CRS) or Alternate CRS is an infraction per CUL-2. Conducting ground disturbance without cultural coverage, is an infraction of CUL-6.

Requires preventive action: No ☐ Yes ☒ (IA Opening)

IRP No: LFI-1754 (in AEM)	**Date:** 10-02-2014
IRP Evaluator: Nicolas Gallo Massa	

Preventative measures to prevent any future infraction of CUL-2, CUL-6

Root Cause:

Unfulfilled Procedure - Potential impacts could have included destruction of buried cultural deposits.

Corrective Action:

IRP Coordinator: Larry Davis	**Date: 10-06-2014**

ABEINSA EPC
MOJAVE

Comment:
It was a subcontractor NCR. The following actions took place to prevent this NCR to happen again:

1. Denied access to people responsible of CUL NCR 14.
2. Subcontractor crew was WEAP retrained.
3. Internal process to communicate and control excavations prior to be made on-site with monitors was improved by involving Construction, H&S, Permitting and Environmental departments to ensure that the Permitting requirements shall be strictly adhered to.
4. Environmental department will make continuous verifications with person responsible for the excavation activity prior to the day of excavation to make sure the CRM's are scheduled and to verify that they are present on the day of excavation.
5. Daily meetings will continue between monitors representatives, Construction and H&S department to discuss the scheduled plan of the day.

Attachments :

- Disciplinary Form denying access to the site to person responsible for CUL NCR 14.
- WEAP training sheet.

NCR Coordinator:
Larry Davis

Position: H&S Manager

Signature of Coordinator:
Electronic Signature

NCR Evaluator:
Nicolas Gallo Massa

Position: Project Sub-Director

Signature of Evaluator:
Electronic Signature

NCR Supervisor:
Efrain Perez

Position: Quality Manager

Signature of Supervisor:
Electronic Signature

ABEINSA EPC
MOJAVE

Disciplinary Form

Date: 9.30.14
Time: 1730
Area: Beta well # 3

Employee Name: Manuel James
Employer Name: AEPC
Badge #: 13059

An Infraction or Violation has been noticed, within the behavior and/or operations, which has revealed unsatisfactory against certain contract specifications or requirements. As the controlling contractor and according to enforcement of the following: policies, procedures and rules whether comprised of project specific or within the Local, State or Federal regulations, the controlling contractor has an obligation to comply and apply enforcement. As a condition of the contract, and its specified requirements, you are required to maintain a safe work environment and to promote the labor risk prevention by controlling all unsafe actions or unsafe conditions while on site.

Category & Type of Infraction / Violation as outlined in the project plan or general policy write up.

1. Cat 2.16 Failure to use A Excavation permit, Excuting A Dig w/o cultural monitors
2.
3.
4.

Infraction / Violation(s)

Cat 2.16

- [x] First Infraction/Violation
- [ ] Second Infraction/Violation
- [ ] Voluntary Quits

Photo Taken?: (Yes) No (circle)

Complete the following and return to the Project Health and Safety Department within the Power Block:

Action(s) Taken:

1. 30 DAy Suspension / AEPC to Remove From MSP Project.
2.
3.
4.

Date: 9.30.14 — ABS mgr
Abeinsa EPC Mojave: Signature/Position

Date: N/A Present to Sign
Employee Signature (if necessary)

Date: 9.30.14 — ABS mgr
Abeinsa EPC Activity Manager (Responsible Party when Relevant)

ABEINSA EPC
MOJAVE

Disciplinary Form

Date: 9-30-14
Time: ~~3~~ 3:45 pm
Area: Alpha

Employee Name: Duane Trammell
Employer Name: Layne
Badge #: 3978

An Infraction or Violation has been noticed, within the behavior and/or operations, which has revealed unsatisfactory against certain contract specifications or requirements. As the controlling contractor and according to enforcement of the following: policies, procedures and rules whether comprised of project specific or within the Local, State or Federal regulations, the controlling contractor has an obligation to comply and apply enforcement. As a condition of the contract, and its specified requirements, you are required to maintain a safe work environment and to promote the labor risk prevention by controlling all unsafe actions or unsafe conditions while on site.

Category & Type of Infraction / Violation as outlined in the project plan or general policy write up.

1. Cat 2.14 Failure to use an Excavation Permit
2.
3.
4.

Infraction / Violation(s)

Cat 2.16

- [x] First Infraction/Violation
- [ ] Second Infraction/Violation
- [ ] Voluntary Quits

Complete the following and return to the Project Health and Safety Department within the Power Block:

Action(s) Taken:

1. 1 Day Suspension – Site Access Denied RTW 10/1/14
2. Re-Attend orientation prior to Return.
3.
4.

Date: 9-30-14 — Abeinsa EPC Mojave: Signature/Position

Date: — Employee Signature (if necessary)

Date: 9-30-14 — Abeinsa EPC Activity Manager (Responsible Party when Relevant)

I violated the process unknowingly.

10.6.14

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	William Bradley	Jw / A&B Electric	
2.	Brian Rae	Jw / A&B Electric	
3.	Max Palmer	Layne	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			
26.			
27.			
28.			
29.			
30.			

Biological Trainer: _____ Signature: _____ Date: ___/___/___

Cultural Trainer: _____ Signature: _____ Date: ___/___/___

Paleo Trainer: _____ Signature: _____ Date: ___/___/___

10.6.14 ohs mgr AFPC

Appendix D
Paleontological Resources

Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California

October 2014 Reporting Period

SWCA
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.

Pasadena Office
150 S. Arroyo Parkway, 2nd Floor
Pasadena, CA 91105
Tel 626.240.0587 Fax 626.240.0607
www.swca.com

Mr. Dale Rundquist, CPM
(09-AFC-5C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

November 5, 2014

RE: PAL-5, Summary of Paleontological Monitoring and Mitigation Activities at the Mojave Solar Project (MSP) for the period of October 2014

Dear Mr. Rundquist:

This letter is to confirm SWCA Environmental Consultants paleontological monitoring and mitigation activities at the MSP site during the period of October 1 through October 31, 2014. As of February 28, 2014, major ground-disturbing activities for the MSP had been completed and SWCA's monitoring services were no longer required onsite. No paleontological monitoring occurred during the above-referenced period.

It has been a pleasure working with you on this project. If you have any questions please do not hesitate to contact me at 626 240 0587 ext 6605 or at ccorsetti@swca.com.

Respectfully,

Cara Corsetti, M.S.
Principal
Paleontological Resources Specialist, MSP

Appendix E
Worker Safety

Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California

October 2014 Reporting Period

Monthly Safety Inspection Report
Larry Davis, Mojave Solar Project Safety Manager
October, 2014

Record of all employees trained for the month
Worked **6,169,328** hours project to date with **85** recordable incidents. **9,458** new employee orientations completed to date. **6,943** visitor safety orientations completed to date. **155** new employee orientations were completed in the month of October.

Summary report of safety management actions and safety-related incidents that occurred:

- **Alpha West/Abengoa parking area secured by H&S, keys turned over to Nicholas P.**
- **All personal vehicles will be excluded from both power blocks effective Monday, 10/6/14. Vehicle stickers for Abengoa personnel have been turned over to Nicholas P. for distribution.**
- **Trash control efforts have been evaluated and more concentrated efforts are being applied to the Alpha and Beta power blocks.**
- **Light level measurements continue to be taken on night shift to ensure compliance for OSHA standards.**
- **H&S continues to audit H&S incidents and injuries including follow up corrective actions.**

Safety management actions included WEAP and new employee orientation training and safety committee meetings. H&S continues with monthly subcontractor audits. Weekly inspection with Bureau Veritas revealed no major safety issues and all other issues corrected right away. Zero off road violations were reported to site biologist/CEC for the month of October 2014.

Recordable incidents in previous months (Updates on bold)

August 2013 open case
- Case #3 8/15/13. Milco. Worker fell while unloading HTF flex pipe resulting in a bruised tailbone. First Aid case reclassified as Lost Time on January 8, 2014.

October 2013 open cases
- Case #4: 10/16/2013. HLC. Left shoulder strain. Recordable reclassified as Lost Time.
- 10/16/2013. E.W. Corp. Physical Altercation Case. This non-occupational case is currently under worker compensation court review.

November 2013 open cases pending closure by Zurich
- Case #1: 11/19/2013. HLC. Worker suffered right clavicle dislocation resulting in RTW modified Duty. Retrained in safe work practices. Classified as recordable.

December 2013 open cases
- Case #1: 12/18/2013. Murray. Worker was unloading material from a flatbed trailer lost his footing and fell backwards to the ground and landed on left hip and leg area. Classified as Lost Time.

Report of accidents and injuries that occurred during the month of October:

Two Recordables were incurred in the month of October 2014, one RWDC and one Recordable Only Case.

Case #1: 10/10/2014 – Abacus, Right shoulder strain; Classified as RWDC

- **Worker was removing an MV breaker. He was applying pressure when the breaker gave and right shoulder overextended. Requested Corrective Action for this recordable.**

Case #2: 10/23/2014 – FHI, Lumbar strain/spasm; Classified as Recordable Only Case

- **Worker was closing a 16 to 1 ration valve in the alpha steam gen area while attempting to snug the valve felt a twinge in his lower back area. Requested corrective action for this recordable.**

No report of any continuing or unresolved situations and incidents that may pose danger to life or health.

Currently we have an average of **541** employees on site daily.
Landing Zone prepared for emergency evacuation cleared at all times.

Construction has worked **6,169,328** hours with **85** recordable cases.
Total Recordable Incident Rate, (TRIR), for Project in the month of October is **2.82%**
Total Recordable Incident Rate, (TRIR), for year to date is **2.93%**
Total Recordable Incident Rate, (TRIR), for Project to date is **2.76%**
Total Lost Work day cases- **15**, Lost Work days total – **1,097**

Safety Conditions Check List

Internal by Work Site

Mojave Solar Project	
Activities performed: **Safety Inspection Report** **Record periodically (monthly)** **October, 2014**	

Date:	Time:	Project Name & Number
10.08.14	10:45 am	Mojave Solar Project -4A6007
Inspected by:		**Title**
Larry Davis		Safety Manager
Accompanied by:		**Title**
Raivo Neggo		BV Safety

A	Safety & Risk Management Program Administration & Record Keeping	Values				Comments
		1	2	3	N/A	
1	Is there a Safety Manual, 29 CFR Sub Part 1926 and HAZCOM Manuals available on-site?			3		
2	Are there Weekly Safety meetings (Toolbox Talks) conducted and documented?			3		
3	Is the Weekly Job Safety Inspection conducted and documented?			3		
4	Are the Federal & State Labor Notices posted in a conspicuous location?			3		
5	Are the Emergency phone numbers & Doctors list posted conspicuously?			3		
6	Are the Company vehicle operators authorized per company policy?			3		
7	Are the New employee orientations documented for all new subcontractor employees?			3		
8	Are the PM follow up letters to subcontractors re: Serious Violations on file?			3		
9	Is the approved safety plan including the emergency action plan on site?			3		
10	Is the Safety Plan updated to reflect any/all scope changes?			3		
B	**Ladders & Stairways - OSHA Subpart X**	**Values**				**Comments**
1	Are the ladders inspected for defects?			3		
2	Are extension ladders extending 3 ft. above landing?			3		
3	Are extension ladders pitched at 1 ft. out from vertical for every 4 ft. of height?			3		
4	Are straight ladders secured in place?			3		
5	Are the straight ladders equipped with safety feet?			3		

Safety Conditions Check List

Internal by Work Site

6	Are the step ladders used only in open position?			3		
7	Are the stepladders tall enough for job without using top step, second step from top step or platform?			3		
8	Is the use on non-conductive (non-metal) ladders only in proximity of electricity?			3		
9	Are the stairways, ramps, and landing equipped with rails and handrails?			3		.
10	Are the stairways and/or landings in use poured, filled, finished and free of debris, slip, trip or fall hazards?			3		
11	Are the stairways adequately lighted?			3		
12	Do the permanent ladders meet OSHA 1910 standards?			3		
C	**Fall Protection OSHA - Subpart M**	**Values**				**Comments**
1	Are the floor/roof deck openings protected with properly secured and marked covers or guardrails?			3		
2	Are the wall openings/open-sided floors protected with fall protection/prevention systems?			3		
3	Are the workers exposed to falls of 6' or more provided with and required to use personal fall arrest systems (PFAS) when not protected by guardrails?			3		
4	Are the exposed rebar in work areas properly protected - capped, etc.? Both vertical and horizontal?			3		
5	Are specialty trades, I.e., roofers, ironworkers, etc., working under fall protection plans prepared by them and approved by controlling contractor?			3		
6	Are the PFAS - Harnesses, Lanyards, Anchorage Points, Lifelines and Retractables inspected?	1				FHI / Abacus harness's found in the field to have not been inspected ,abacus safety removed from the field at the time of discovery
7	Are the anchorage Points 5K per person?			3		
D	**Demolition – OSHA Subpart T**	**Values**				**Comments**
1	Is the Engineering Survey completed and documented?				N/A	
2	Is the work area "Identified & Protected", i.e., electricity, gas, water, sprinkler system?				N/A	
E	**Scaffolds and Aerial Lifts – OSHA Subpart L**	**Values**				**Comments**
1	Is there a competent Person, designated in writing, assigned to supervise operations and conduct documented daily inspections and on-site full time?			3		
2	Are the working surfaces 6' or higher equipped with guardrails?			3		
3	Are the working surfaces clear of debris, slip, trip and fall hazards?	1				Synflex continues to leave elevated work area's with poor housekeeping.
4	Are the plumbs, tied in as necessary, safe footing, base plates, mudsills assembled and erected properly -? Are they equipped with all pins and bracing? Is a complete platform?			3		

Safety Conditions Check List

Internal by Work Site

5	Is there a safe means of access to platform provided?			3		
6	Are the wheels locked on rolling units when platform occupied?			3		
7	Are the scaffolds at least 10 ft. from energized power lines?			3		
8	Are the workers tied off in articulating boom lift?			3		
9	Is the aerial lift on level surface?			3		
10	Has safety been notified in advance of erecting a suspended scaffold?			3		
11	Is there a competent Scaffold Person inspected and signed-off on scaffold prior to each shift daily?			3		
12	Is a Tagging system used?			3		
F	**Excavations & Trenches – OSHA Subpart P**	**Values**				**Comments**
1	Is there a competent Person, designated in writing, assigned to supervise operations and conduct documented daily inspections and on site full time?			3		
2	Are all excavations and trenches 5 ft. or greater in depth equipped with Protective Systems (shoring/shielding or sloped/benched)?			3		
3	Are the ladders or other means of quick exit within 25 ft. of lateral travel for workers?			3		
4	Is the Spoil pile at least 3 ft. from edge of excavation or trench?			3		
5	Are the Underground utilities located & marked before excavation starts? (Verify ticket/maps/plans)			3		
6	Are the barricades provided around all open excavations?			3		
7	Is the Equipment kept at proper distance from occupied excavations/trenches to minimize risk of cave-in or equipment falling in on workers?			3		
8	IF 20' OR DEEPER Has Safety been notified?			3		
9	IF 20' OR DEEPER, are the protective systems designed by a RPE?			3		
10	Are the Surface and subsurface encumbrances identified?			3		
11	Are the Water, atmospheric conditions, & surcharge loads considered?			3		
G	**Motor Vehicles, Mechanized Equipment – OSHA Subpart**	**Values**				**Comments**
1	Are the Tractors, backhoes, other vehicles equipped with operable backup alarms?			3		
2	Are the Operators required wearing seat belts when provided on equipment?	1				Abacus mule operators witnessed without seat belts on several occassions
3	Is the Forklift/Lull operator certification documented and available on project?			3		
4	Is a High visible vest worn around earth moving equipment?			3		
H	**Electrical – OSHA Subpart K**	**Values**				**Comments**

Safety Conditions Check List

Internal by Work Site

1	Are the Ground fault circuit interrupters (GFCI) used with all temporary wiring, e.g., extension cords and power from welding machines?			3		
2	Is the GFCI in good appearance and in working order?			3		
3	Are All tools and equipment inspected for defects in cords and plugs?	1				FHI/ABACUS cords not being inspected prior to use. Cords removed from service with damages. Corrected
4	Are the Extension cords and ground pins are in good condition?	1				FHI/ABACUS cords not being inspected prior to use. several removed from service without ground pins Corrected
5	Are the Sources of electricity, such as energized panel boxes, overhead lines, etc., properly marked, barricaded and protected? Inspected by a Qualified Person?			3		
6	Is there an adequate lockout/tag out/try out procedures in place to protect employees?			3		
7	Is the Temporary Lighting installed properly? (i.e. parking, construction trailer, & site)			3		
I	**Personal Protective Equipment – OSHA Subpart E**	**Values**				**Comments**
1	Is an adequate eye protection available and worn when required?			3		
2	Is a Hearing protection available and used when necessary?			3		
3	Are Hard hats available and worn at all times?			3		
4	Are Work boots with protective toes worn by all employees?			3		
5	Are All employees wearing shirts with sleeves?			3		
6	Is a Hand protection available and in use when required?			3		
7	Is there a Written respirator program available?			3		
8	Are they Using N95 respirators for "voluntary use"?			3		
9	Are the PFAS inspected by employees prior to use?			3		
J	**Fire Prevention – OSHA Subpart F**	**Values**				**Comments**
1	Are the flammable/combustible liquids stored away from ignition sources and identified by warning signs?			3		
2	Are the approved metal safety cans utilized for storing all liquid flammables?			3		
3	Are the fuel tanks surrounded by containment and 20' from building?			3		
4	Are an adequate number of charged fire extinguishers available? With-in 75'?			3		
5	Are the Extinguishers properly located, protected, Inspected?			3		
6	Are the Flammable/combustible debris & storage kept away from welding & cutting?			3		
K	**Welding & Cutting - OSHA Subpart J**	**Values**				**Comments**
1	Are welding leads in good condition?			3		

Safety Conditions Check List

Internal by Work Site

2	Is a Portable fire extinguisher located within 20' of all welding operations?			3		
3	Are Fire blankets available and used to cover combustible material located around welding operations?			3		
4	Are Hot Work Permits used when required?			3		
5	Is an Adequate use of fire curtains to enclose and shield welding operations?			3		
6	Are Hoses, torches, and gauges free from defects, dirt and hydrocarbons such as oil and grease?			3		
7	Are Regulators provided with flash arrestors?			3		
8	Are Welding / cutting helmets, eye protection, gloves, bibs, face shields available and properly used when necessary?			3		
9	Are the Stored oxygen and fuel cylinders separated by a minimum of 20 ft. with valve protection caps in place?			3		
10	Are All cylinders firmly secured in upright position?	1				Wood group found with unsecured cylinders in their storage area.
11	Are Cylinders secured to welding cart, valve closed and caps on when not in use?			3		
12	Are Empty and full cylinders separated and marked?			3		
13	Are Flammable gas cylinders and oxygen gas cylinders are separated 20' apart?	1				Wood group found with compressed gas cylinders stored together.
L	**Tools – Hand & Powered – OSHA Subpart I**	**Values**				**Comments**
1	Are Tools and equipment in good condition?			3		
2	Is the Defective equipment tagged as such and removed from work area?	1				Wood group found with broken unlabelled equipment in the work area's.
3	Are Tools and equipment guards and handles in place and in good condition?			3		.
4	Are the Powder actuated tool operators properly trained and documented?			3		
M	**Confined Space Entry - OSHA 29CFR1910.146**	**Values**				**Comments**
1	Is a competent Person / Entry Supervisor designated in writing? On site full time?			3		
2	Is an Entry permit properly issued prior to work starting?			3		
3	Is the Air sampling equipment available and properly used? Calibrated?			3		
4	Are the Air samples show acceptable oxygen concentrations of (19.5% to 23.5%)?			3		
5	Are the Air samples show space is free of toxic/flammable/explosive gases?			3		
6	Is there a Trained attendant assigned to maintain constant contact with workers inside space?			3		
7	Is there Trained person assigned to recheck air quality frequently throughout the project?			3		
8	Is there an Emergency rescue plan and equipment in place?			3		
N	**Hazard Communication - OSHA 29CFR1910.1200**	**Values**				**Comments**

Safety Conditions Check List

Internal by Work Site

1	Is there an Abeinsa EPC, Subcontractor MSDS's available?			3		
2	Is there an Abeinsa EPC List of Hazardous Chemicals current?			3		
3	Is there an Abeinsa EPC, Subcontractor written programs on site?			3		
4	Are the Containers labelled? Are the Notices posted?		2			Wood group with unlabelled containers in work area.
O	**Health and Safety - OSHA Subparts C & D**	**Values**				**Comments**
1	Is illumination, task lighting adequate?			3		
2	Are sanitary facilities adequate and clean?			3		
3	Is drinking water properly dispensed and community water containers cleaned and secured?			3		
4	Is First Aid kit stocked including latex gloves and Bloodborne clean-up kit?			3		
5	Are Eye wash stations available & accessible?			3		
P	**Housekeeping - OSHA Subparts C & D**	**Values**				**Comments**
1	Are Suitable containers available for disposal of trash, debris and recyclables?			3		
2	Are Walkways, aisles, hallways and passageways clear of trash, debris, materials?			3		
3	Are Tools not in use stored in job boxes?			3		
4	Is the Equipment not in use stored properly?			3		
5	Are Pipes and other materials stored kept neatly?			3		
6	Are Appropriate sub-contractors dumpsters available?			3		
Q	**Cranes and Hoists - OSHA Subpart N**	**Values**				**Comments**
1	Are Operator's "daily inspections" available for review?			3		
2	Is there an Annual Inspection and 3rd party crane inspection documented?			3		
3	Are the Swing radius barricaded?	1				Bigge Crane found with a RT crane with no swing radius barricades
4	Are the Hydraulic crane outriggers padded and on stable ground?			3		
5	Are the Power lines at safe distance? De-energized or protected? (Check clearance heights)			3		
6	Are the Uniform signals properly used?			3		
7	Are Cable and slings regularly inspected and in good condition? Red is dead!			3		
8	Are Operable safety catches provided on load hooks?			3		
9	Is there a Proper rigging used for loads?			3		
10	Are the Operator qualifications on site?			3		
11	Is a competent training person involved with safe rigging practices?			3		
R	**Abatement & Remediation - OSHA Subparts D & Z**	**Values**				**Comments**
1	Is the Personnel trained & medically qualified including fit tests? Documentation on site?				N/A	

Safety Conditions Check List

Internal by Work Site

2	Are the three work zones delineated?				N/A	
3	Are workers wearing the correct level of protection?				N/A	
4	Is on-going air monitoring documented?				N/A	
5	Are vision panels installed where practical?				N/A	
S	**Public Safety & General Liability – ANSI A.10-30-2001**	**Values**				**Comments**
1	Is an adequate placement of flashers, barricades, signs around excavations and equipment or materials located in foot/vehicle traffic areas?			3		
2	Is Security in place? Is the Access control plan established?			3		
3	Is the fencing erected around laydown/material storage areas?			3		
4	Is the Site lighting meets 5-foot candles?			3		
5	Have All contractors submitted COI?			3		
6	Are the way (Traffic signs) signs clear?			3		
7	Are the Off-site work hazards identified?			3		
	Safety Deficiency Point Reduction **Inspection Score: 391 /408 = 95.8 %**					

Comments:

- PTD worked hours 6,169,328 hours with 85 recordable incidents.
- 9,458 New employee orientations completed to date.
- 6,943 Visitor safety orientations completed to date.
- 155 new employee orientations were completed in the month of October.

Weekly Safety Committee Meetings were held every week for the month.

ABENER TEYMA MOJAVE

13911 Park Avenue, Suite 208
Victorville, CA 92392
Phone: 480-287-1419

Subject:	Mojave Solar Project (09-AFC-5C)
Condition No.:	Compliance5
Description:	Monthly Compliance Matrix
Submittal No.:	COMPLIANCE5-00-00

November 11, 2014
Mr. Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
drundqui@energy.state.ca.us

Dear Mr. Rundquist,

As required by the California Energy Commission and more specifically by Condition of Certification COMPLIANCE5, attached please find an update to the following Compliances:

COMPLIANCE-2 [ASI + A/T]

The project owner shall maintain project files on-site or at an alternative site approved by 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. 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.
Hardcopy files of all "as-built" drawings and documents are available for review at the Abeinsa EPC Alpha east main site trailer.

COMPLIANCE-5 [ASI + A/T]

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all Conditions of Certification in a spreadsheet format. The compliance matrix must identify:
1. The technical area;

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Victorville, CA 92392
Phone: 480-287-1419

2. The Condition number;
3. A brief description of the verification action or submittal required by the Condition;
4. The date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
5. The expected or actual submittal date;
6. The date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable; and
7. The compliance status of each Condition, e.g., "not started," "in progress" or "completed" (include the date).
8. If the Condition was amended, the date of the amendment.
Satisfied Conditions shall be placed at the end of the matrix.
The Compliance Matrix has been included, please see attachment.

COMPLIANCE-6 [ASI + A/T]

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date upon which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include the AFC number and an initial list of dates for each of the events identified on the Key Events List found at the end of this section of the Decision.
The Key Events list has been included with current completed activity dates listed, please see attachment. This letter satisfies this compliance as well.

AIR QUALITY PERMIT

Air Quality permit amendment was submitted to MDAQMD on 10/19/2013. MDAQMD approved on 02/24/2014. MDAQMD submitted this approval to the CPM on 02/24/2014, MDAQMD submitted revised ATC to CPM on 03/14/2014. CPM provided revised conditions of certification on 03/21/2014. CPM staff review and public comment period took place on 04/22/2014, CEC approved air quality permit revision. CEC issued revised air quality permits on 04/28/2014.

AQ-12

Specifications for the Ullage Venting System were approved by CPM on 06/10/2014 and MDAQMD on 05/28/2014.

AQ-32

Hour meter for diesel fuel emergency backup generator submitted to CPM and MDAQMD on 05/20/2014.

AQ-43

ABENER TEYMA MOJAVE

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Hour meter for diesel fuel emergency backup generator for fire pumps submitted to CPM and MDAQMD on 04/20/2014.

AQ-54

The project owner shall notify the District at least 10 days prior to performing the required tests. The test results shall be submitted to the District within 30 days of completion of the tests and shall be made available to the CPM if requested. Vapor Recovery system installation and testing occurred on 09/04/2014. AQ-54-00-00 submitted to MDAQMD and CPM on 10/01/2014, please see attachment. MDAQMD added results to their files on 10/02/2014.

AQ-64

Carbon Absorption System monitoring and change-out plan submitted to MDAQMD and CPM on 06/25/2014. Plan resubmitted to MDAQMD and CPM on 07/25/2014, MDAQMD approved on 08/06/2014. CPM approved on 09/05/2014.

AQ-67

AQ-67-00-00, Carbon Adsorption System VOC Monitoring procedure submitted to MDAQMD and CPM on 10/27/2014. MDAQMD issued non-objection on 10/30/2014, please see attachment.

HAZ-1 [ASI and A/T]

The project owner shall not use any hazardous materials not listed in Appendix A (Hazardous Materials Proposed for Use at AMS During Operations), below, or in greater quantities or strengths than those identified by chemical name in Appendix A (Hazardous Materials Proposed for Use at AMS During Operations), below, unless approved in advance by the Compliance Project Manager (CPM). The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility. A revised chemical list is included, please see attachment. Diesel fuel and gasoline and the other listed chemicals were delivered during the month. No HTF deliveries were made for the month. The Nitrogen, Beck Oil (tickets), and spreadsheets for other chemical deliveries for October 2014 are included, please see attachments.

HAZ-2 [ASI and A/T]

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 (HMBP), Spill Prevention, Control, and Countermeasure (SPCC) Plan, and a Process Safety Management (PSM) Plan to the CPM for approval.

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The HMBP was submitted to the CPM and San Bernardino Fire Department on 07/23/2013. The CPM and SBCFD Haz Mat Division approved the HMBP on 08/01/2013 and 10/09/2013 respectively. The SPCC and PSM plans were submitted to the CPM on 10/29/2013, and SBCFD Haz Mat Division on 11/01/2013. The plans were approved by SBC Haz Mat Division as they stated that their only requirement is to have a copy of the SPCC on file at the site should a representative visit. The SPCC was approved by CPM on 11/25/2013. The PSM plan was returned with comments on 12/09/2013. Revised PSM plan, PHA, LOPA and O&M Manuals were resubmitted to the CPM on 01/29/2014, CEC approved on 02/10/2014. The HTF End Loop Testing procedure was submitted to the CPM on 01/17/2014, CPM approved on 01/27/2014. SBCFD provided comments to the SPCC on 02/13/2014. Comments were addressed and submitted to CPM on 02/28/2014, please see attachment. CPM comments for the PSM plan were addressed and submitted to CPM on 01/27/2014. CPM approved PSM plan on 02/10/2014, please see attachment. HMBP was resubmitted on 03/26/2014 to include the hydrogen and CO2 for the turbine cooling system, CEC approved on 04/16/2014, please see attachments. Submittal for steam generator chemical pipe cleaning procedure submitted to CPM on 04/23/2014. Location map showing storage locations of chemical pipe cleaning chemicals submitted to CPM on 04/25/2014, please see attachments. Conditional approval of Chemical Pipe Cleaning process approved by CEC on 04/29/2014. SBC permit to place baker tanks in Harper Lake Road right-of-way for the chemical pipe cleaning submitted to SBC on 03/17/2014, SBC approval on 03/20/2014. HAZ-2-04-00, the revised Hazardous Materials Business Plan (HMBP) was submitted to CPM on 05/01/2014, CPM approved 05/02/2014. HAZ-2-07-00, the revised Hazardous Materials Business Plan (HMBP) was submitted on 07/11/2014 and approved by the CPM on 08/21/2014.

WASTE-2 [ASI and A/T]

Project owner shall keep a copy of the identification number on file at the project site and provide documentation of the hazardous waste generation notification and receipt of the number to the CPM after receipt of the number. Waste generator number issued by California EPA on September 28, 2012. CEC reviewed and approved submittal on November 27, 2012. The application for the USEPA hazardous waste generation notification number was submitted on July 9. 2013. EPA approval issued on 10/02/2013.

WASTE-10 [ASI and A/T]

The project owner shall document all releases and spills of HTF as described in Condition of Certification WASTE-9 and as required in the Soil & Water Resources section of this Decision. Cleanup and temporary staging of HTF-contaminated soils shall be conducted in accordance with the approved Operation Waste Management Plan required in Condition of Certification of WASTE-6. The project owner shall sample HTF-contaminated soil in accordance with the United States Environmental Protection Agency's (USEPA) current version of "Test Methods for Evaluating Solid Waste" (SW-

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Victorville, CA 92392
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846). Samples shall be analyzed in accordance with USEPA Method 1625B or other method to be reviewed and approved by DTSC and the CPM.
Within 28 days of an HTF spill the project owner shall provide the results of the analyses and their assessment of whether the HTF-contaminated soil is considered hazardous or non-hazardous to DTSC and the CPM for review and approval. If DTSC and the CPM determine the HTF-contaminated soil is considered hazardous it shall be disposed of in accordance with California Health and Safety Code (HSC) Section 25203 and procedures outlined in the approved Operation Waste Management Plan required in Condition of Certification WASTE-9 and reported to the CPM in accordance with Condition of Certification WASTE-12. If DTSC and the CPM determine the HTF-contaminated soil is considered nonhazardous it shall be retained in the land farm and treated on-site in accordance with the Waste Discharge Requirements contained in the Soil & Water Resources section of this Decision.
The HTF contaminated soil samples have been submitted to a testing lab. Lab results submitted to the CPM on 04/25/2014 and to DTSC on 05/09/2014. CPM approved on 05/22/2014 and DTSC on 05/09/2014. HTF contaminated soil sample lab results resubmitted to CEC after testing for biphenyl and diphenyl on 07/09/2014, CPM approved on 08/04/2014. A hazardous spill report summary and the spill reports for October 2014 have been provided, please see attachments. WASTE-10-07-01 for the Waste Characterization of the HTF contaminated soil was submitted to DTSC and CPM on 10/28/2014, please see attachment.

WORKER SAFETY-2

At least 30 days prior to the start of commissioning, the project owner shall submit to the SBCFD the final Operations Fire Prevention Plan and Emergency Action for review and the final Project Operations and Maintenance Safety and Health Program to the CPM for approval.
Health & Safety, Fire Prevention and Emergency Response plans for operations submitted to SBCFD and CPM on 02/14/2014, please see attachments. SBCFD issued comments on 02/26/2014, comments addressed and resubmitted to CPM on 02/26/2014. CPM issued comments on 03/03/2014, package resubmitted on 03/05/2014, please see attachment. CPM approved package on 03/10/2014, please see attachment. CPM clarified its approval of this compliance on 03/25/2014.

SOIL&WATER-1

Provide an analysis on the effectiveness of the drainage, erosion, and sediment control measures and the results of monitoring and maintenance activities.
Please see the attached Construction Site Stormwater Runoff Control Inspection forms. The contractor reports as of October 31, 2014 that 0 lf (24,730 lf total for project) of straw rolls and 0 lf (16,219 lf total for project) of new swale have been installed for this month, maintenance required for this month included cleaning all

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waddles running north/south in Alpha East due to sand buildup. The existing fiber rolls and swales continued being monitored, maintained, and replaced as needed. These BMP's were effective in preventing sediment run off from the site. There are two concrete washout stations (1 in Alpha and 1 in Beta). Additionally, the steel rumble strips remain in place at the Alpha east main entrance (north), Alpha east (south) entrance, Alpha west entrance, and on Lockhart Road adjacent to the TAB main entrance. They were effective in preventing dirt and mud from being tracked from the site onto Harper Lake Road and Lockhart Road as well as an effective deterrent against the spreading of noxious weeds. The steel beams are continuously maintained to prevent clogging. Street sweeping of the construction entrances and Harper Lake Road and Lockhart Road is occurring on an as needed basis as a means of good housekeeping; it has improved and will continue to be the main activity to keep the streets free of dirt and mud, especially when high winds and storm events occur. Soil stabilizer wasn't used for this month on traffic areas as daily watering was an effective means for dust control. Project site areas for the month that have been stabilized are 0 acres for Alpha East (279.50 acres total), 0 acres in Alpha West (369 acres total), 0 acres in Beta East (502 acres total), and 0 acres in Beta West (102.50 acres total). No sand build-up was reported in the retention basins between collectors. Trash collection became an issue, as there were changes in personnel and a new crew was assigned to the task. It is now back on track and being taken care of daily. Notification to the subcontractors to clean up their own trash, especially any accumulating in the trenches, pipes and power block areas has been mentioned at the daily subcontractor meetings, especially now that trailers have been moved and accumulated trash underneath the trailers needed to be picked up. Sand removal along tortoise fences was done daily. Please see attachments, which include the SWPPP Summary and weekly Construction Site Stormwater Runoff Control Inspection forms signed by the project QSP and the Bureau Veritas site inspector.

SOIL&WATER-2

The project owner shall comply with the Waste Discharge Requirements (WDRs) established in Soil and Water Resources Appendices C, D, and E for the construction and operation of the surface impoundments (evaporation ponds), land treatment units, and storm water management system. 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). No later than sixty (60) days prior to any wastewater or storm water discharge or use of land

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treatment units, the AMS project shall provide documentation to the CPM, with copies to the Lahontan RWQCB, demonstrating compliance with the WDRs established in Appendices C, D, and E. Any changes to the design, construction, or operation of the ponds, treatment units, or storm water system shall be requested in writing to the CPM, with copies to the Lahontan RWQCB, and approved by the CPM, in consultation with the Lahontan RWQCB, prior to initiation of any changes. The AMS project shall provide to the CPM, with copies to the Lahontan RWQCB, all monitoring reports required by the WDRs, and fully explain any violations, exceedances, enforcement actions, or corrective actions related to construction or operation of the ponds, treatment units, or storm water system. SWAT2-01-00, construction plans for the Evaporation ponds and LTU's were submitted to the CEC, Lahontan and CBO on June 6, 2013 and approved by all agencies on June 11, 2013. SWAT2-02-00, a modification to the LTU plans was submitted to the CEC and Lahontan on August 5, 2013, and an approval was issued on August 8, 2013. SWAT2-04-00 for a change in verification was requested by the CEC but AEPC suggested that any change will be covered by the closure compliances, COMPLIANCE-12, -13 and -14. The CEC responded on September 12, 2013 that they were in agreement. SWAT2-03-00, for the monitoring well system was submitted to the CEC and Lahontan the week of 10/28. Abeinsa EPC engineering staff is still coordinating with the CEC and Lahontan on the final design. Abeinsa EPC submitted a well plan for CEC review on 11/27/2013. CEC provided comments to the well plan on 12/17/2013. Revised well plan submitted to the CEC on 12/23/2013, CPM approved on 01/14/2014. DMP submitted to CEC on 06/03/2014. CEC provided comments, DMP resubmitted on 06/30/2014. SWAT-2-08-02 request to use Cooling Tower and pipe cleaning water for dust control submitted and approved on 06/17/2014. SWAT-2-06-01, Bioremediation Manual, was submitted to CPM on 06/20/2014. CPM approved SWAT-2-06-01 Bioremediation Manual on 07/02/2014. DMP, SWAT-2-09-05 resubmitted to CPM on 08/21/2014, CPM approved on 08/26/2014. SWAT-02-10-05 closure plans for the LTU's and Evaporation ponds approved by the CPM on 08/26/2014. **CEC provided comments on the GMN portion of the combined DMP/GMN plan on 09/29/2014, package resubmitted to CPM on 10/27/2014, please see attachment. SWAT-2-11-00 request to use steam blow test water for dust control submitted on 09/30/2014, CPM approved on 10/02/2014, please see attachment. Now that evaporation ponds are operational, it is required to perform weekly pond inspections. Please see attached for the October 2014 weekly inspection forms for the Alpha and Beta evaporation ponds.**

SOIL&WATER-4

Well abandonment status for remaining abandonments submitted to CPM on 09.06.12, As of 09.06.12, the CEC has approved all well abandonments with the exception of wells 11 and 14 (stuck pump wells). They require a wildlife survey in the area of the two wells to ensure that their habitats won't be disrupted with the use of explosives for the stuck pump wells. As of 10.13.2012, the well contractor was able to remove the pump from Well #11 by conventional means. However, Well #2 has now been determined as having a stuck pump and needing explosives to remove. The abandonment package was revised and resubmitted to the CEC on 10.22.2012. CEC has approved the use of explosives on Wells #2 and #14 as of October 31, 2012. As of March 5, 2013, the remaining wells to be abandoned are: Ryken and Wetlands. Wells #2 and #14 (by explosives) and 8, 10, 19, were abandoned during January 2013 but their well completion reports were finalized this month, please see attachments. Ryken and Wetlands wells were approved to be abandoned by SBC on May 7, 2013. Final abandonment was completed on May 17, 2013

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and well completion reports were submitted to the CEC for approval. ASI and Abeinsa EPC have agreed on a new location of the Beta #4. An exhibit indicating final production well locations (including Beta #4) was provided to CPM on 11/27/2013. CPM responded asking for the well design by well contractor that will show a sealed upper layer which prevents any infiltration of the perched layer into the lower aquifer. Well contractor submitted a permit to SBC on 12/07/2013 but decision was made to go with a different contractor. New contractor submitted a permit for the Beta #4 well on 01/14/2014, SBC approved on 01/31/2014 based on the condition that Beta #1 be retrofitted as a monitoring well and the Beta #2 conductor casing be destroyed. The CPM further approved the use of Beta #1 for construction water while Beta #3 construction was completed. CPM approved the Beta #4 permit on 02/04/2014. A request to extend the discharge permit for well test water to the BLM marsh was submitted to CPM on 02/10/2014, CPM approved on 02/12/2014. Beta #4 well completion report submitted to CPM on 05/22/2014. **SBC final well cards for Alpha #1 and #2, SWAT-4-14-00 and SWAT-4-15-00 respectively, provided by SBC on 09/02/2014, submitted to CPM on 09/30/2014, approved on 10/10/2014, please see attachments. SBC final well card for Beta #4, SWAT-4-12-00, provided by SBC, submitted to CPM on 09/04/2014. SWAT-04-13-01, contractor well certification letter submitted to CPM on 09/09/2014.**

SOIL&WATER-5

Beginning six (6) months after the start of construction, the project owner shall prepare a semi-annual summary report of the 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.
For October 2014, 2,542,000 gallons were pumped from Beta #4, 3,209,000 gallons from Alpha #2 (North), and 1,418,000 gallons from Alpha #1 (South). SBC didn't use any water from the project for the month. The overall total site water usage for October 2014 is 7,169,000 gallons. The running total of water usage for construction/testing purposes from January 1, 2014 to October 31, 2014 is 44,361,451 gallons. To date, there have been 243 working days for 2014 which equates to 182,557 gal/day. This equates to 4,436,145 gal/month, please see attachments.

SOIL&WATER-6

The project owner shall do all of the following:
1. At least sixty (60) days prior to project construction, the project owner shall submit to the CPM, for review and approval, a comprehensive plan (Groundwater Level Monitoring and Reporting Plan) presenting all the data and information required in Item A above. The project owner shall submit to the both the CPM all calculations and assumptions made in development of the plan.
2. During project construction, the project owner shall submit to the CPM quarterly reports presenting all the data and information required in Item B above. The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations.
3. No later than sixty (60) days after commencing project operation, the project owner shall provide to the CPM, for review and approval, documentation showing that any mitigation to private well owners during project construction

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was satisfied, based on the requirements of the property owner as determined by the CPM.
4. During project operation, the project owner shall submit to CPM, applicable quarterly, semi-annual, and annual reports presenting all the data and information required in Item C above. The project owner shall submit to the CPM all calculations and assumptions made in development of report data and interpretations, calculations, and assumptions used in development of any reports.
5. The project owner shall provide mitigation as described in Item D above, if the CPM's inspection of the monitoring information confirms project-induced changes to water levels and water level trends relative to measured preproject water levels, and well yield has been lowered by project pumping. The type and extent of mitigation shall be determined by the amount of water level decline and site-specific well construction and water use characteristics. The mitigation of impacts will be determined as set forth in Item D above.
6. No later than 30 days after CPM approval of the well drawdown analysis, the project owner shall submit to the CPM for review and approval all documentation and calculations describing necessary compensation for energy costs associated with additional lift requirements.
7. The project owner shall submit to the CPM all calculations, along with any letters signed by the well owners indicating agreement with the calculations, and the name and phone numbers of those well owners that do not agree with the calculations.
8. If mitigation includes monetary compensation, the project owner shall provide documentation to the CPM that compensation payments have been made by March 31 of each year of project operation or, if a lump-sum payment is made, payment shall be made by March 31 of the following year. Within 30 days after compensation is paid, the project owner shall submit to the CPM a compliance report describing compensation for increased energy costs necessary to comply with the provisions of this condition.
9. After the first 5-year operational and monitoring period, and every subsequent 5-year period, the project owner shall submit a 5-year monitoring report to the CPM for review and approval. This report shall contain all monitoring data collected and provide a summary of the findings and a recommendation about whether the frequency of water level measurements should be revised or eliminated.
10. During the life of the project, the project owner shall provide to the CPM all monitoring reports, complaints, studies, and other relevant data within 10 days of being received by the project owner.

Fourth quarter water quality report submitted to CPM on 03/28/2014 CPM provided comments, report resubmitted on 04/25/2014. SWAT6-09-00 2014 Q2 Water Quality Report submitted to CPM on 09/04/2014. **CEC provided comments on the GMN portion of the combined DMP/GMN plan on 09/29/2014, since the DMP and GMN are now combined, the CEC required the package to be submitted under both compliances. Package resubmitted to CPM on 10/27/2014, please see attachment.**

SOIL&WATER-9

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 the 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

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requirements set forth in County of San Bernardino Code Title 3, Division 3, Chapter 8 Waste Management, Article 5, Liquid Waste Disposal and Title 6, Division 3, Chapter 3, and the Uniform Plumbing Code. Project construction shall not proceed until the CPM has approved the plans. The project owner shall remain in compliance with the San Bernardino County code requirements for the life of the project.

The septic plans were submitted to CEC on 04/03/2012 for review and approval. CEC approved on 04/23/2012. Plans were resubmitted to SBC on 12/16/2013 to include the addition of the sanitary lift station, comments received regarding the addition and reason for the sanitary lift station, package resubmitted to SBC on 02/19/2014, SBC approved on 02/20/2014. Plans were submitted to CPM on 02/28/2014, CPM approved on 04/23/2014.

SOIL&WATER-10

The project owner shall obtain a permit to operate a nontransient, non-community water system with the County of San Bernardino at least sixty (60) days prior to commencement of construction at the site. The project owner shall supply updates annually for all monitoring requirements and submittals to County of San Bernardino related to the permit, and proof of annual renewal of the operating permit. To date, potable water system is not installed, thus no monitoring requirements are in effect.
Alpha #1 well permit issued by San Bernardino County on 01/10/2012.
Alpha #2 well permit issued by San Bernardino County on 01/10/2012.
Beta #3 well permit issued by San Bernardino County on 06/04/2012.
Non-transient, non-community water system submitted to SBC on 05/05/2014.
Non-transient, non-community water system resubmitted to SBC on 07/30/2014.
Non-transient, non-community water system resubmitted to SBC on 08/27/2014. SBC returned with comments on 09/24/2014, package to be resubmitted on 11/24/2014.

GEN-2

Provide schedule updates in the monthly compliance report.
All engineering disciplines have submitted updated master drawing/spec lists. In addition, the latest construction schedule and equipment list has been provided. Please see attached copies.

CIVIL-1

At least 15 days (or project owner and CBO approved alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the CBO for design review and approval. In the next monthly compliance report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

STRUC-1

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Submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

Struc-1-27.19: Alpha & Beta PB Electrical Buildings (22, 26 & 27) Stairs submitted to CBO on 02/26/2014, CBO approved on 10/20/2014, please see attachment.
Struc-1-79.00: Alpha & Beta Permit to Install Fire Protection Shed Modulars and Fire Pump Modulars submitted to CBO on 06/11/2014, CBO approved on 10/20/2014, please see attachment.

MECH-1

Send the CPM a copy of the transmittal letter.

MECH-2

Alpha & Beta Inspections for Compressed Air and Steam Boiler Systems from California Industrial Relations performed on 10/08/2014, please see attached for photos indicating inspections on vessels.

ECN-1

Send the CPM a copy of the transmittal letter in the next monthly compliance report.

ELEC-1

Send the CPM a copy of the transmittal letter in the next monthly compliance report.

Elec-1-18.02x1: Lighting plans for HTF Tunnels submitted to CBO on 10/21/2014, CBO approved on 10/28/2014, please see attachment.
Elec-1-18.04x2: Water Treatment Plant Lighting System plans submitted to CBO on 09/30/2014, CBO approved on 10/06/2014, please see attachment.
Elec-1-18.05x1: Alpha & Beta PB General Lighting submitted to CBO on 10/03/2014, CBO approved on 10/30/2014, please see attachment.
Elec-1-42.09: Alpha & Beta Temporary Power for UPS-1310 & DC System (DCC-36203 & DCC-36204) submitted to CBO on 05/15/2014, CBO approved on 10/22/2014, please see attachment.
Elec-1-56.00: Alpha & Beta Central Plant General Electric Wiring Diagram submitted to CBO on 10/03/2014, CBO approved on 10/09/2014, please see attachment.
Elec-1-57.00: Alpha & Beta Lightning Protection submitted to CBO on 10/17/2014, CBO approved on 10/22/2014, please see attachment.

NOISE-7

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At least 15 days prior to the first steam blow, the project owner shall notify all residents and business owners within two miles of the project site. The notification may be in the form of letters, phone calls, fliers, or other effective means as approved by the CPM. The notification shall include a description of the purpose and nature of the steam blow(s), the planned schedule, expected sound levels, and explanation that it is a one-time activity and not part of normal plant operation. During steam blow activities, noise levels will be monitored at receptor locations LT-1, ST-1, and ST-2 and the results reported to the CPM.

First steam blow occurred on 08/29/2014 at Alpha power block. All Neighbors within 2 miles of the project site were notified 15 days prior to first steam blow by registered mail and by personal verbal notification. **Steam Blow Decibel Readings submitted to CPM on 10/21/2014, all readings were below the maximum noise level as specified in the compliance, please see attachment.**

TRANS-3 [A/T]

No later than two months after the end of construction activities, the applicant shall submit an analysis of the roadway pavement conditions to San Bernardino County and Caltrans for review and comment and to the CPM for review and approval. The review will include photographs, the visual analysis of pavement and sub-surface conditions, and a schedule for repair. After the repairs are completed, the project owner shall submit a letter to San Bernardino County, Caltrans, and the CPM indicating such repairs are finished and ready for inspection. **Harper Lake Road Restoration plans being reviewed by registered engineer. Plans to be submitted to SBC on 10/06/2014. Submittal to CPM on 09/23/2014 to request that a pavement analysis is no longer valid due to SBC grinding the surface until a new road is in place. CPM approved that a pavement analysis is no longer needed on 09/23/2014 because it will be covered by SBC/CALTRANS comments, please see attachment.**

TRANS-5 [A/T]

The project owner shall not allow hazardous materials deliveries during non-daylight periods (during both construction and operation) to enhance safety at the rail crossing. A record of hazardous materials deliveries shall be provided to the CPM as required in HAZ-3. **Please see attached Beck Oil delivery lists.**

TSE-1

Provide schedule updates in the MCR.
Please see attached Electrical Master List.

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TSE-4

At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer attesting to compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report. The following activities shall be reported in the Monthly Compliance Report:
A. Receipt or delay of major electrical equipment;
Please see attached list of receipt of major electrical equipment.
B. Testing or energization of major electrical equipment;
Please see attachments for electrical tests to date.
C. The number of electrical drawings approved, submitted for approval, and still to be submitted.
Please see attached Electrical Master List.

TSE-5

At least 60 days prior to the start of construction of transmission facilities (or a lesser number of days mutually agreed to by the project owner and CBO), the project owner shall submit to the CBO for approval:

A. Design drawings, specifications and calculations conforming with CPUC General Order 95 or NESC, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, applicable interconnection standards and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems and major switchyard equipment.

B. For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"7 and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", NEC, applicable interconnection standards, and related industry standards.

C. Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements TSE-5 a) through f) above. 7 Worst case conditions for the foundations would include for instance, a dead-end or angle pole.

D. The Special Protection System (SPS) sequencing and timing if applicable shall be provided concurrently to the CPM.

E. A letter stating the mitigation measures or projects selected by the transmission owners for each reliability criteria violation are acceptable,

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F. An Operational study report based on the expected or current COD from the California ISO and/or SCE, and
G. A copy of the executed LGIA signed by the California ISO and the project owner.

Submittal of project LGIA sent to CPM on 11/08/2013, CPM approved on 12/02/2013.

TSE-7
The project owner shall provide the following Notice to the California Independent System Operator (California ISO) prior to synchronizing the facility with the California Transmission system:

1. At least one week prior to synchronizing the facility with the grid for testing, provide the California ISO a letter stating the proposed date of synchronization; and
2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the California ISO Outage Coordination Department.

The project owner shall provide copies of the California ISO letter to the CPM when it is sent to the California ISO one week prior to initial synchronization with the grid. The project owner shall contact the California ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the California ISO shall be provided electronically to the CPM one day before synchronizing the facility with the California transmission system for the first time. **TSE-07-00, 7 day advance synchronization notification letter to CAISO submitted to CAISO and CPM on 10/23/2014, please see attachment. Synchronization was delayed, another letter was submitted to CAISO and CPM on 10/31/2014, please see attachment.**

TLSN-3

The project owner shall file copies of the pre and post energization measurements within 60 days after completion of the measurements.
Pre-energization results were sent to the CPM on 06/09/2014. CPM approved on 07/07/2014.

TLSN-5

The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related lines are grounded according to industry standards regardless of ownership.
At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this Condition.
Confirmation letter sent to the CPM on 11/06/2013, CPM approved on 11/07/2013.

VIS-1

Revised Surface Treatment Package was submitted to CPM on 04/14/2014. CPM approved plans on 05/16/2014. **Colored photographs from Key Observation Points (KOP's) 1-7a submitted to CPM as required by this compliance on 10/29/2014, please see**

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attachment. No date has been set for CPM and CEC visual staff inspection of color schemes on all above ground equipment, buildings and structures.

VIS-3

Permanent Lighting plans. Package was submitted to CPM on 05/05/2014. CPM approved plans on 05/05/2014.

Should you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely,

Steven Pochmara
ABEINSA EPC
13911 Park Avenue, Suite 208
Victorville, CA 92392
Cell: (480) 287-1419

ABENGOA SOLAR	Document	COMPLIANCE MATRIX		Document No:		4A6007-009008	Abbreviation key: H B=Holmes Bassette; S P=Steven Pochmara; M S=Matt Stucky B W=Bob Wilson; M A=Mike Alhalabi; M K=Moe Karrit; P G=Patricia Garcia; A T=Arpan Taylor; L B=Leonardo Bruno , L L=Luis Leal, BG=Bill Grisolia								
	Project	MOJAVE SOLAR PROJECT		Approved												
	Location	Harper Lake, California		Reviewed												
				By	BG/VL											
				Rev./Date	6/13/2014											
Sort code key:	Pre-Cons.	Construction	Construction & Operations	Commissioning	Operations	Approved	15,30,60,90 Day Lead Time		No Longer Req	Change Highlight						

Cond. #	Sort Code	Description	Verification/Action/Submittal Required by Project Owner	Timeframe	Involved Agencies	Lead Respons. Party	Responsible Discipline	Lead Engineer/ Manager	Required Approval Date Drws/Docs	Actual Submittal Date Drws/Docs	Actual Approval Date Drws/Docs	(Submittal due to Change)	Approved As-Builts	Approved Inspection	COO	Cond. #
COMPLIANCE																
COMPLIANCE-12	COMM	Submit Unplanned/Temp Closure and Contingency Plan to CEC	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 CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.	60 days prior to commercial operation	CEC	AS	ASI	ASI Staff	5/1/2014	-	-		-	-	-	COMPLIANCE-12
COMPLIANCE-12	OPS	Submit Updates of Contingency Plan to CEC as Necessary		ACR	CEC	AS	ASI	ASI Staff	As Req	As Req	As Req		-	-	-	COMPLIANCE-12
COMPLIANCE-12	OPS	Notify Agencies of Unplanned/Temp Closure	In the event of an unplanned temporary closure, the project owner shall notify 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 the CPM informed of the circumstances and expected duration of the closure.	within 24 hours of unplanned temporary closure	CEC, SBCFD	AS	ASI	ASI Staff	As Req	As Req	As Req		-	-	-	COMPLIANCE-12
COMPLIANCE-12	OPS	Present Permanent Closure Plan	If the CPM determines that an unplanned temporary closure is likely to be permanent, or for a duration of more than 12 months, a closure plan consistent with the requirements for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).	within 90 days of CPM determination	CEC	AS	ASI	ASI Staff	As Req	As Req	As Req		-	-	-	COMPLIANCE-12
COMPLIANCE-13	OPS	Submit Proposed Closure Plan to CEC that also includes Permanent Measures	Unplanned Permanent Closure/On-Site Contingency Plan: The on-site contingency plan required for unplanned temporary closure shall also cover unplanned permanent facility closure. All of the requirements specified for unplanned temporary closure shall also apply to unplanned permanent closure. In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the event of abandonment. In the event of an unplanned permanent closure, the project owner shall notify 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 the CPM informed of the status of all closure activities.	60 days prior to commercial operation	CEC	AS	ASI	ASI Staff	5/1/2014	-	-		-	-	-	COMPLIANCE-13
AIR QUALITY STANDARDS																
AQ-SC6	COMM	Provide ODCP plan for Dust Control and Evironmental procedures	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.	30 days prior to COD	CEC	AS	ASI	H B	6/1/2014	-	-		-	-	-	AQ-SC6
AQ-SC6	OPS		The plan shall be updated every other year.	ACR	CEC	AS	ASI	H B	-	-	-		-	-	-	AQ-SC6
AQ-SC7	COMM	Provide ODCP plan for Dust Control and Evironmental procedures	Submit to CPM for review and approval a copy of site ODCP 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.	30 days prior to COD	CEC	AS	ASI	H B/B W	6/1/2014	-	-		-	-	-	AQ-SC7
AQ-SC7	OPS	Provide Report Identifying Locations of all site speed limit signs	Provide CPM a report indentifying 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.	60 days after COD	CEC	AS	ASI	H B	6/1/2014	-	-		-	-	-	AQ-SC7

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AIR QUALITY																
Two HTF Ullage/Expansion Sysytems																**Two HTF Ullage/Expansion Sysytems**
AQ-9	COMM/OPS	Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.	HTF Ullage/Expansion System, operation: Make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.	As required	District, ARB, CEC	AS										AQ-9
AQ-10	COMM/OPS	This system shall store only HTF in liquid and/or vapor phase (including low boilers and high boilers), and nitrogen for blanketing.	The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.	As required	District, ARB, CEC	A/T + AS										AQ-10
AQ-11	COMM/OPS	The four (4) vertical expansion vessels, low boiler condensate receiver vessel, and two (2) vertical HTF overflow tanks shall be operated at all times under a nitrogen blanket.	The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.	As required	District, ARB, CEC	A/T + AS										AQ-11
AQ-19	OPS	Reserved														AQ-19
AQ-20	OPS	Reserved														AQ-20
AQ-21	OPS	The project owner shall submit a compliance plan of the toxic or hazardous substances for District approval and CPM review if current non-criteria substances in the HTF become regulated as toxic or hazardous substances.	Toxic or Hazardous Substance Compliance Plan for Newly Regulated Materials If current non-criteria substances become regulated as toxic or hazardous substances and are used in this equipment, the project owner shall submit to the District a plan demonstrating how compliance will be achieved and maintained with such regulations.	As required	District	AS										AQ-21
Cooling Towers																Cooling Towers
AQ-22	OPS	Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.	Make site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.	As required	District, ARB, CEC	AS										AQ-22
AQ-23	OPS	This equipment shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.	The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.	As required	District, ARB, CEC	AS										AQ-23
AQ-25	COMM & OPS	Cooling Tower Recirculation Water TDS Content Test Results- Weekly and Quarterly Logs	The project owner shall perform weekly specific conductivity tests of the blow-down water to indirectly measure total dissolved solids (TDS). Quarterly tests of the blow-down water will be done to confirm the relationship between conductance and TDS. The TDS shall not exceed 10,000 ppm on a calendar monthly basis. The cooling tower recirculation water TDS content test results shall be provided to representatives of the District, ARB, and the Energy Commission upon request.	As required	District, ARB, CEC	A/T + AS										AQ-25
AQ 25	COMM & OPS	Conductivity test procedure				A/T										AQ 25
AQ-27	COMM/OPS	Cooling Tower Operating Data Log	This equipment shall not be operated for more than 5,840 hours per rolling twelve month period.	ACR	CEC	A/T + AS										AQ-27
AQ-28	OPS	Cooling Tower Operating Data Log	The project owner shall maintain an operations log for this equipment on-site and current for a minimum of five (5) years, and said log shall be provided to District personnel on request. The operations log shall include the following information at a minimum: a. Total operation time (hours per day, hours per month, and hours per rolling twelve month period); and b. The date and result of each blow-down water test in TDS ppm, andthe resulting mass emission rate.	As required	District, ARB, CEC	AS										AQ-28
AQ-29	COMM/OPS	Cooling Tower Maintenance Procedure	A maintenance procedure shall be established that states how often and what procedures will be used to ensure the integrity of the drift eliminators. This procedure is to be kept onsite and available to District personnel on request.	O&M Manual includes maintenance procedure and is available upon request.	District	A/T + AS										AQ-29
Two 2,280 kW Emergency IC Engine																Two 2,280 kW Emergency IC Engine
AQ-29a	OPS	Engine Type	This engine shall be a US EPA Tier 2 certified, non-road compression ignition engine, as evidenced by the manufacturer's engine tag	As required	District, ARB, CEC	AS										AQ-29a
AQ-30	OPS	Emergency Generator Operating Log, Records and External Inspection or Visit Procedure	This equipment 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. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.	As required	District, ARB, CEC	A/T + AS										AQ-30
AQ-30	CONS & COMM	Evidence of installation in accordance with manufacturer specifications and sound engineering principals		As required	District, ARB, CEC	A/T										AQ-30
AQ-30	CONS & COMM	Operations and Maintenance Manual		As required	District, ARB, CEC	A/T										AQ-30
AQ-31	COMM/OPS	Fuel Purchase Records Log	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. The project owner shall make the site available for inspection of equipment and fuel purchase records by representatives of the District, ARB, and the Energy Commission.	As required	District, ARB, CEC	A/T + AS										AQ-31
AQ-33	OPS	Emergency Engine Use	This unit shall be limited to use for emergency power, defined as in response to a fire or when utility back-feed power is not available. In addition, this unit shall be operated no more than 0.5 hours per day and 50 hours per year for testing and maintenance, excluding compliance source testing. There is no limit on engine operation for emergency use.	As required	District, ARB, CEC	A/T + AS										AQ-33

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AQ-34	OPS	Emergency Generator Operating Log, Fuel Purchase Logs, Records and External Inspection or Visit Procedure	The project owner shall maintain a operations log for this unit current and on-site, either at the engine location or at a on-site location, for a minimum of two (2) years, and for another year where it can be made available to the District staff within five (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); c. Calendar year operation in terms of fuel consumption (in gallons) and total hours; and, d. Fuel sulfur concentration (the project owner may use the supplier's certification of sulfur content if it is maintained as part of this log). The project owner shall submit records required by this condition that demonstrating compliance with the sulfur content and engine use limitations of conditions AQ-28 and AQ-30 in the Annual Compliance Report, including a photograph showing the annual reading of engine hours. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.	ACR	District, ARB, CEC	A/T + AS										AQ-34
AQ-34	OPS	Records and External Inspection or Visit Procedure	Make site available for inspection of records by representatives of the District, ARB, and the Energy Commission.	As required	District, ARB, CEC	AS										AQ-34
AQ-35	OPS	Engine Isolation	This unit shall not be used to provide power to the interconnecting utility and shall be isolated from the interconnecting utility when operating.	As required	District, ARB, CEC	A/T + AS										AQ-35
AQ-36	OPS	Outage Use	This engine may operate in response to notification of impending loss of utility back-feed power if the interconnected utility has ordered an outage to the plant or expects to order such outages at a particular time, 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.	As required	District, ARB, CEC	A/T + AS										AQ-36
AQ-37		Reserved														AQ-37
AQ-38	COMM	Stack Height	This engine shall exhaust through a stack at a minimum height of 30 feet. Records and External Inspection or Visit Procedure.	As required	District, ARB, CEC	A/T + AS										AQ-38
AQ-39	OPS	Airborne Toxic Control Measure (ATCM)	This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115). In the event of conflict between these conditions and the ATCM, the more stringent shall govern. AEPC to provide ASLLC evidence or statement of conformance to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115)	As required	N/A	A/T										AQ-39
Two 575-617 HP Emergency IC Engine																Two 575-617 HP Emergency IC Engine
AQ-40a		Engine Type	This engine shall be a US EPA Tier 3 certified, non-road compression ignition engine, as evidenced by the manufacturer's engine tag. Records and External Inspection or Visit Procedure	As required	District, ARB, CEC	A/T + AS										AQ-40a
AQ-41	COMM & OPS	Minimum Emissions	This equipment 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. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. Emergency Generator Operating Log, Records and External Inspection or Visit Procedure.	As required		A/T + AS										AQ-41
AQ-42	OPS	Ultra-low sulfur diesel fuel	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. Fuel Purchase Records Log	As required	District, ARB, CEC [?]	A/T + AS										AQ-42
AQ-44	OPS	Direct drive fire pump engine	This new direct drive fire pump engine shall be limited to use for emergency fire suppression, defined as in response to a fire or due to low fire water pressure. In addition, this engine shall be operated no more than 30 minutes in any one hour and no more than 10 hours per year for initial start-up testing and compliance demonstrations. Additionally, this engine shall not operate more than the number of hours necessary to comply with the testing requirements of the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water- Based Fire Protection Systems," (current edition). The hours of operation for source testing or to perform testing on an engine that has experienced a breakdown or failure during testing will not be counted towards either of the allowable annual limits above. There is no limit on engine operation for emergency use. [Title 17 CCR 93115.6(a)(4)] Operating Log, Records	As required	District, ARB, CEC [?]	A/T + AS										AQ-44

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AQ-45	OPS	Sulfur Content & Engine Use	The project owner shall maintain a operations log for this unit current and on-site, either at the engine location or at a on-site location, for a minimum of two (2) years, and for another year where it can be made available to the District staff within five (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); c. Calendar year operation in terms of fuel consumption (in gallons) and total hours; and, d. Fuel sulfur concentration (the project owner may use the supplier's certification of sulfur content if it is maintained as part of this log). The project owner shall submit records required by this condition that demonstrating compliance with the sulfur content and engine use limitations of conditions AQ-42, AQ-44, and AQ-46 in the Annual Compliance Report, including a photograph showing the annual reading of engine hours. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.	ACR	CEC	AS										AQ-45
AQ-48	OPS	Airborne Toxic Control Measure (ATCM)	This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115). In the event of conflict between these conditions and the ATCM, the requirements of the ATCM shall govern.	As required	N/A	A/T										AQ-48
GAS																AGS
AQ-51	OPS	Maintence, Inspection, Test and Repair Log	The project owner shall maintain a log of all inspections, repairs, and maintenance on equipment subject to Rule 461. Such logs or records shall be maintained at the facility for at least two (2) years and available to the District upon request. Records of Maintenance, Tests, Inspections, and Test Failures shall be maintained and available to District personal upon request; record form shall be similar to the Maintenance Record form indicated in EO VR- 401, Figure 2N [EO VR-401; Rule 461].	As required	District, ARB, CEC	AS										AQ-51
AQ 51		Inspection procedure				A/T										AQ 51
AQ-52	CONS	Vapor Recovery System	Any modifications or changes to the piping or control fitting of the vapor recovery system require prior approval from the District. [Rule 204].	As required	District	A/T										AQ-52
AQ-53	CONS	Pressure Relief Valves	Pursuant to EO VR-401-A, vapor vent pipes are to be equipped with Husky 5885 pressure relief valves or as otherwise allowed by EO [EO VR-401; Rule 204].	As required	CEC?	A/T										AQ-53
AQ-54	COMM	Static Pressure Tests - COD	Perform tests. Determination of Static Pressure Performance of Vapor Recovery Systems at Gasoline Dispensing Facilities with Aboveground Storage Tanks, Phase I Adapters, Emergency Vents, Spill Container Drain Valve etc, Liquid Removal Test.	60 days after construction completion	District	A/T + AS										AQ-54
AQ-54	OPS	Static Pressure Tests - Annual	Perform tests. Determination of Static Pressure Performance of Vapor Recovery Systems at Gasoline Dispensing Facilities with Aboveground Storage Tanks, Phase I Adapters, Emergency Vents, Spill Container Drain Valve etc, Liquid Removal Test.	ACR	District	AS										AQ-54
AQ-54		Test Notification District	Notify the District prior to performing the required tests.	10 days prior to testing	District	A/T + AS										AQ-54
AQ-54	COMM & OPS	Test Result Submittal	The test results shall be submitted to the District after completion of the tests and shall be made available to the CPM if requested.	30 days after completion of testing	District	A/T + AS										AQ-54
AQ-55	CONS & OPS	Above-ground Tank	Pursuant to California Health and Safety Code sections 39600, 39601 and 41954, this aboveground tank shall be installed and maintained in accordance with Executive Order (EO) VR-401 for EVR Phase I, and Standing Loss requirements: http://www.arb.ca.gov/vapor/eos/eo-vr401 Additionally, Phase II Vapor Recovery System shall be installed and maintained per G-70-132-A with the exception that hanging hardware shall be EVR Balance Phase II type hanging hardware (VST or other CARB Approved EVR Phase II Hardware). [Rule 204] Phase II Installation and Maintence Records, Records and External Inspection or Visit Procedure	As required	District, ARB, CEC	A/T + AS										AQ-55
AQ-56	COMM & OPS	EVR Phase I OPW system components\OPW Certified Technicians	Pursuant to EO VR-401: Maintenance and repair of EVR Phase I OPW system components, including removal and installation of such components in the course of any required tests, shall be performed by OPW Certified Technicians. [EO VR-401] Maintenance and repair procedures and logs	As required	District, CEC?	A/T + AS										AQ-56
AQ 56		List of certified service providers				A/T										AQ 56
AQ-57	OPS	Misc Maint.\OPW Certified Technicians	Pursuant to EO VR-401, Maintenance Intervals for OPW; Tank Gauge Components; Dust Caps Emergency Vents; Phase I Product and Vapor Adapters, and Spill Container Drain Valve, shall be conducted by an OPW trained technician annually. [EO VR-401] Maintenance and repair procedures and logs	As required	District, CEC?	A/T + AS										AQ-57
AQ-57		Technician training				A/T + AS										AQ-57
AQ-58	OPS	Gasoline Use ACR	The annual throughput of gasoline shall not exceed 600,000 gallons per year. Throughput Records shall be kept on site and available to District personnel upon request. Before this annual throughput can be increased the facility may be required to submit to the District a site specific Health Risk Assessment in accord with a District approved plan. In addition public notice and/or comment period may be required. [Regulation XIII; Rule 204]	ACR	CEC	A/T + AS										AQ-58
AQ-58	OPS	Gasoline Use - District	Maintain on site the annual gasoline throughput records and shall make the site available for inspection of records by representatives of the District.	As required	District	AS										AQ-58

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AQ-59	CONS & OPS	EVR Phase I	The project owner shall install, maintain, and operate EVR Phase I in compliance with CARB Executive Order VR-401, and Phase II vapor recovery in accordance with G-70-132-A with the exception that hanging hardware shall be EVR Balance Phase II type hanging hardware (VST or other ARB Approved EVR Phase II Hardware). In the event of conflict between these permit conditions and/or the referenced EO's the more stringent requirements shall govern. [Rule 204]	As required	District, ARB, CEC [?]	A/T										AQ-59
AQ-59		Operations and Maintenance Manual	?	?	District, ARB, CEC [?]	A/T										AQ-59
AQ-59		Installation	Evidence of installation in accordance with manufacturer specifications and sound engineering principals.	As required	District, ARB, CEC [?]	A/T										AQ-59
AQ-60	COMM & OPS	Operation Requirements	The project owner shall install, maintain, and operate this equipment in compliance with these permit conditions and 40 CFR Part 63 Subpart CCCCC; in the event of conflict the more stringent requirements shall govern. [Rule 204] The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.	As required	District, ARB, CEC [?]	A/T + AS										AQ-60
Carbon Adsorption System																Carbon Adsorption System
AQ-61	COMM & OPS	Operation Requirements	Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.	As necessary	District, CEC	A/T + AS										AQ-61
AQ-62	COMM & OPS	?	This equipment must be in use and operating properly at all times the HTF ullage/expansion system with valid District Permit TBD is venting.	As necessary	District	A/T + AS										AQ-62
AQ-63	COMM	Control Efficiency - Test Notification	This carbon adsorption system shall provide at a minimum 95% control efficiency of VOC emissions vented from the HTF ullage/expansion system under valid District Permit TBD. Control efficiency shall be demonstrated by sampling VOC emissions per US EPA Method 25 at the inlet and outlet of the carbon beds during initial and annual compliance tests.	Within fifteen (15) working days before the execution of the compliance test	District, CEC	A/T + AS										AQ-63
AQ-63	COMM	Control Efficiency - Initial Test Results	This carbon adsorption system shall provide at a minimum 95% control efficiency of VOC emissions vented from the HTF ullage/expansion system under valid District Permit TBD. Control efficiency shall be demonstrated by sampling VOC emissions per US EPA Method 25 at the inlet and outlet of the carbon beds during initial and annual compliance tests.	The initial test results shall be submitted to the District and to the CPM within 180 days of initial start up.	District, CEC	A/T + AS										AQ-63
AQ-63	COMM	Control Efficiency - Annual Test Results	As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with control efficiency.	ACR	CEC	AS										AQ-63
AQ-63	COMM	Efficiency Test Protocol				A/T										AQ-63
AQ-65	COMM & OPS	VOC Emission Limit	Total emissions of volatile organic compounds (VOC) to the atmosphere shall not exceed 792.1 lbs/year, calculated based on the most recent test results.	ACR	CEC	A/T + AS										AQ-65
AQ-65	COMM	Test Protocol				A/T										AQ-65
AQ-66	COMM & OPS	Benzene Emission Limit	Total emissions of benzene to the atmosphere shall not exceed 507.4 lbs/year, calculated based on the most recent test results.	ACR	CEC	A/T + ASI										AQ-66
AQ-66	COMM	Test Protocol				A/T										AQ-66
AQ-67	OPS	VOX Hexane\PID	During operation, the project owner shall monitor VOC (as hexane) measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).	As necessary	District, CEC	AS										AQ-67
AQ-68	OPS	PID Calibration	The photo Ionization detector shall be considered invalid if not calibrated in accordance with the manufactures recommended calibration procedures.	As necessary	District, CEC	AS										AQ-68
AQ-69	OPS	VOC Monitoring Logs	The project owner shall maintain an operations log (in electronic or hardcopy format) current and onsite for a period of five (5) years. The log shall contain at a minimum the following information and shall be provided to District personnel upon request. a. Date and time of VOC monitoring; b. Results of VOC monitoring; and c. Date and description of all maintenance, malfunctions, repairs, and carbon change out(s).	The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.	District, CEC	AS										AQ-69
AQ-70	OPS	VOC Emission Summary - Annual	Prior to January 31 of each new year, the project owner of this unit shall submit to the District a summary report of all VOC emissions (based on annual source test results). As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition.	ACR	CEC	AS										AQ-70
AQ-71	CONS/COMM	Stack Sampling\Port Platform	The project owner shall provide stack sampling ports and platforms necessary to perform source tests required to verify compliance with District rules, regulations and permit conditions. The location of these ports and platforms shall be subject to District approval.	As necessary	District	AT\AS										AQ-71
AQ-72	COMM	Compliance Certification Test Plan - Protocol Submission	The project owner shall conduct all required compliance/certification tests in accordance with a District-approved test plan. Thirty (30) days prior to the compliance/certification tests the operator shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing is completed.	30 Days Prior to the Compliance /Certification Test	District, CEC											AQ-72
AQ-72	COMM	Compliance Certification Test Plan - Notice of Test	The project owner shall notify the District and the CPM within ten (10) working days before the execution of the compliance tests required in AQ-73 and AQ-74.	10 Days prior to test	District, CEC											AQ-72
AQ-72	COMM	Compliance Certification Test Plan - Test Results	The test results shall be submitted to the District and to the CPM within forty-five (45) days after the tests are conducted	45 Days after testing	District, CEC											AQ-72
AQ-72	COMM	Test Protocol				A/T										AQ-72

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AQ-73	COMM	Hexane & Benzene Testing - COD	The project owner shall perform the following initial compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District within 180 days of the commercial operation date (COD). The following compliance tests are required: a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25 and 18 or equivalent). b. Benzene in ppmvd and lb/hr (measured per ARB Method 410 or equivalent).	(30) working days before the execution of the compliance test	Compliance Test Notification	A/T + ASI										AQ-73
AQ-73	COMM	Test Protocol				A/T										AQ-73
AQ-73	OPS	Hexane & Benzene Test Results	The test results shall be submitted to the District and to the CPM within 180 days of initial start up.	Within 180 days of initial start up.	CEC	A/T + ASI										AQ-73
AQ-74	OPS	Hexane & Benzene Testing - Annual	The project owner shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required: a. VOC as hexane in ppmvd and lb/hr (measured per US EPA Reference Methods 25A and 18 or equivalent). b. Benzene in ppmvd and lb/hr (measured per ARB Method 410 or equivalent). As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with operating emission rates	ACR	CEC	ASI										AQ-74
AQ-74	OPS	Hexane & Benzene Test Records	Additionally, records of all compliance tests shall be maintained on site for a period of five (5) years and presented to District personnel upon request.	Five (5) Years	District, CEC	A/T + ASI										AQ-74
BIOLOGICAL																
BIO-6	PC	Provide the CEC a copy of the BRMIMP plan.	Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) Development and Compliance: Provide the specified document prior to start of any site (or related facilities) mobilization. The CEC will determine the BRMIMP's acceptability within 30 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 the CPM within 5 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition within 10 days of their receipt by the project owner. Ten days prior to pre-construction site mobilization the revised BRMIMP shall be resubmitted to the CEC. Site mobilization will not occur without an approved BRMIMP.	45 days prior to site mobilization	CEC	AS	ASI	M S	6/15/2011	4/1/2011	5/1/2011		-	-	-	BIO-6
BIO-6	CONS	Implementation of BRMIMP measures will be reported.	Implementation of BRMIMP measures will be reported.	MCR	CEC	AS	ASI	H B	Monthly	Monthly	Monthly		-	-	-	BIO-6
BIO-6	COMM	Provide a written construction closure report to CEC.	Provide to the CEC, for review and approval, a written construction closure report identifying which items of the BRMIMP have been completed etc. (see COC)	30 days after completion of construction	CEC	AS	ASI	H B	As Req.	As Req.	As Req.		-	-	-	BIO-6
BIO-7	PC	Include all mitigation measures in BRMIMP.	All mitigation measures and their implementaion methods shall be included in the BRMIMP.	45 days prior to site mobilization	CEC	AS	ASI	M S	6/15/2011	4/1/2011	5/1/2011		-	-	-	BIO-7
BIO-7	CONS	Report measures to CEC.	Implementation of the measures will be reported. 8/17/2012 CEC Notice of Decision removed wording limiting HLR speed limit to 25mph.	MCR	CEC	AS	ASI	H B	Monthly	Monthly	Monthly		-	-	-	BIO-7
BIO-7	OPS	Provide construction termination report to CEC, CDFG and USFWS.	Provide to the CEC, for review and approval, a written construction termination report identifying how measures have been completed. Additional copies shall be provided to CDFG and USFWS.	30 days after completion of construction	CEC, CDFG, USFWS	AS	ASI	H B	As Req.	As Req.	As Req.		-	-	-	BIO-7
BIO-15	PC	Submit a formal acquisition proposal to the CEC, CDFG and USFWS describing the parcels intended for purchase or title/easement transfer.	Submit a formal acquisition proposal to the CEC, CDFG and USFWS describing the parcels intended for purchase or title/easement transfer.	90 days prior to acquisition of property	CEC/CDFG	AS	ASI	M S	6/15/2011	5/1/2011	6/1/2011		-	-	-	BIO-15
BIO-15	PC	Provide written verification to the CEC that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipients.	Provide written verification to the CEC that the compensation lands or conservation easements have been aquired and recorded in favor of the approved recipients.	30 days prior to ground disturbance	CEC/CDFG	AS	ASI	M S	-	2/18/2011 PFLAF submitted to CEC	3/23/2011 to CEC CDFG Approved Revised PFLAF 3/18/2011		-	-	-	BIO-15
BIO-15	PC, CONS	Provide CEC with a management plan for review and approval, in consultation with CDFG, for the compensation lands and associated funds.	Provide CEC with a management plan for review and approval, in consultation with CDFG, for the compensation lands and associated funds.	within 6 months of land purchase	CEC/CDFG	AS	ASI	M S	1/1/2011	3/27/2012	4/16/2012		-	-	-	BIO-15
BIO-15	COMM	Provide to the CEC verification that disturbance to desert tortoise and MGS habitat did not exceed 430 acres, and that construction activities did not result in impacts to desert tortoise, MGS, and burrowing owl habitat adjacent to work areas. If habitat disturbance exceeds that described in this analysis, the CEC shall notify of any additional funds required or lands that must be purchased.	Provide to the CEC verification that disturbance to desert tortoise and MGS habitat did not exceed 430 acres, and that construction activities did not result in impacts to desert tortoise, MGS, and burrowing owl habitat adjacent to work areas. If habitat disturbance exceeds that described in this analysis, the CEC shall notify of any additional funds required or lands that must be purchased.	90 days after construction completion	CEC	AS	ASI	H B	As Req.	As Req.	As Req.		-	-	-	BIO-15
BIO-15	PC	If electing to use an in-lieu fee provision, request from the Energy Commission a determination that the project's in-lieu fee proposal meets CEQA and CESA requirements.	If electing to use an in-lieu fee provision, request from the Energy Commission a determination that the project's in-lieu fee proposal meets CEQA and CESA requirements.	As required	CEC	AS	ASI	M S	As Req.	As Req.	As Req.		-	-	-	BIO-15
BIO-16	PC	Project owner shall submit to the CEC a copy of the Energy Commission staff- and CDFG-approved Tamarisk Eradication Monitoring and Reporting Plan, including success criteria.	Project owner shall submit to the CEC a copy of the Energy Commission staff- and CDFG-approved Tamarisk Eradication Monitoring and Reporting Plan, including success criteria.	30 days prior to ground disturbance	CEC	AS	ASI	M S	7/29/2011	6/1/2011	7/1/2011		-	-	-	BIO-16
BIO-16	CONS, COMM, OPS	The Designated Biologist shall submit annual reports to the CEC and CDFG describing the dates, durations and results of monitoring. Reports shall fully describe any actions taken to remedy regrowth. [Monitoring and maintenance of the site shall be conducted for five years unless less monitoring can be justified. Following the first year of monitoring, if the project owner petitions to terminate the monitoring program, staff and CDFG will determine whether more years are of monitoring are needed.]	The Designated Biologist shall submit annual reports to the CEC and CDFG describing the dates, durations and results of monitoring. Reports shall fully describe any actions taken to remedy regrowth. [Monitoring and maintenance of the site shall be conducted for five years unless less monitoring can be justified. Following the first year of monitoring, if the project owner petitions to terminate the monitoring program, staff and CDFG will determine whether more years are of monitoring are needed.]	ACR	CEC	AS	ASI	H B	Annually	Annually	Annually		-	-	-	BIO-16

Cond. #	Sort Code	Description	Verification/Action/Submittal Required by Project Owner	Timeframe	Involved Agencies	Lead Respons. Party	Responsible Discipline	Lead Engineer/ Manager	Required Approval Date Drws/Docs	Actual Submittal Date Drws/Docs	Actual Approval Date Drws/Docs	(Submittal due to Change)	Approved As-Builts	Approved Inspection	COO	Cond. #
BIO-16	CONS, OPS	The CEC and CDFG shall verify compliance with protective measures to ensure the accuracy of the PO's mitigation, monitoring and reporting efforts; and review relevant documents maintained by the project owner, interview the project owner's employees and agents, inspect the work site and take other actions as necessary to assess compliance with or effectiveness of protective measures.	The CEC and CDFG shall verify compliance with protective measures to ensure the accuracy of the PO's mitigation, monitoring and reporting efforts; and review relevant documents maintained by the project owner, interview the project owner's employees and agents, inspect the work site and take other actions as necessary to assess compliance with or effectiveness of protective measures.	None	CEC, CDFG	AS	ASI	H B	As Req.	As Req.	As Req.		-	-	-	BIO-16
BIO-17	PC	Monitoring Impacts of Solar Collection Technology on Birds: Submit to the CEC, USFWS, and CDFG a draft Bird Monitoring Study.	Monitoring Impacts of Solar Collection Technology on Birds: Submit to the CEC, USFWS, and CDFG a draft Bird Monitoring Study.	60 days prior to ground disturbance	CEC, CDFG, USFWS	AS	ASI	M S	6/15/2011	5/15/2011	6/1/2011		-	-	-	BIO-17
BIO-17	PC	Provide CEC with the final version of the Bird Monitoring Plan that has been reviewed and approved by the CEC, in consultation with CDFG and USFWS.	Provide CEC with the final version of the Bird Monitoring Plan that has been reviewed and approved by the CEC, in consultation with CDFG and USFWS.	30 days prior to ground disturbance	CEC, CDFG, USFWS	AS	ASI	M S	6/15/2011	5/15/2011	6/1/2011	12/16/13, BIO17-00-01	-	-	-	BIO-17
BIO-17	OPS	Reports to the CEC, CDFG and USFWS describing the dates, durations and results of monitoring. Reports shall provide a detailed description of any project related bird or wildlife deaths or injuries detected.	Reports to the CEC, CDFG and USFWS describing the dates, durations and results of monitoring. Reports shall provide a detailed description of any project related bird or wildlife deaths or injuries detected.	Quarterly after COD, for at least 2 years	CEC, CDFG	AS	ASI	H B	As Req.	As Req.	As Req.		-	-	-	BIO-17
BIO-17	OPS	Annual Report summarizing 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. Provided to the CEC, CDFG, and USFWS.	Annual Report summarizing 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. Provided to the CEC, CDFG, and USFWS.	ACR	CEC, CDFG, USFWS	AS	ASI	H B	As Req.	As Req.	As Req.		-	-	-	BIO-17
BIO-17	OPS	Quarterly reports shall continue until the CEC, in consultation with CDFG and USFWS, determine whether more years of monitoring are needed, and whether mitigation and/or adaptive management measures are necessary.	Quarterly reports shall continue until the CEC, in consultation with CDFG and USFWS, determine whether more years of monitoring are needed, and whether mitigation and/or adaptive management measures are necessary.	As required	CEC, CDFG, USFWS	AS	ASI	H B	As Req.	As Req.	As Req.		-	-	-	BIO-17
BIO-17	OPS	Prepare a paper describing the study design and monitoring results to be submitted to a peer-reviewed scientific journal. Proof of submittal provided to the CEC within one year of concluding the monitoring study.	Prepare a paper describing the study design and monitoring results to be submitted to a peer-reviewed scientific journal. Proof of submittal provided to the CEC within one year of concluding the monitoring study.	1 year after conclusion of study	CEC, CDFG, USFWS	AS	ASI	H B	As Req.	As Req.	As Req.		-	-	-	BIO-17
BIO-18	PC	Provide CEC, USFWS and CDFG with the final version of the Raven Management Plan that has been reviewed and approved by USFWS and CDFG. CEC shall determine the plan's acceptability within 10 days of receipt of the final plan.	Provide CEC, USFWS and CDFG with the final version of the Raven Management Plan that has been reviewed and approved by USFWS and CDFG. CEC shall determine the plan's acceptability within 10 days of receipt of the final plan.	30 days prior to ground disturbance	CEC, CDFG, USFWS	AS	ASI	M S	6/15/2011	5/1/2011	6/1/2011		-	-	-	BIO-18
BIO-18	PC, CONS, COMM, OPS	All modifications to the approved Raven Management Plan must be made only after consultation with the Energy Commission staff, USFWS, and CDFG. The project owner shall notify the CEC no less than five working days before implementing any CEC-approved modifications to the Raven Plan.	All modifications to the approved Raven Management Plan must be made only after consultation with the Energy Commission staff, USFWS, and CDFG. The project owner shall notify the CEC no less than five working days before implementing any CEC-approved modifications to the Raven Plan.	5 days prior to implementation	CEC, CDFG, USFWS	AS	ASI	M S	6/15/2011	5/1/2011	6/1/2011		-	-	-	BIO-18
BIO-18	PC	Submit to the CEC verification of payment to the REAT Account to support the regional raven monitoring plan. Payment shall be included in the AMS project's land management enhancement fund, pursuant to Condition of Certification BIO-15 (5(D)).	Submit to the CEC verification of payment to the REAT Account to support the regional raven monitoring plan. Payment shall be included in the AMS project's land management enhancement fund, pursuant to Condition of Certification BIO-15 (5(D)).	Prior to ground disturbance	CEC, CDFG, USFWS	AS	ASI	M S	6/15/2011	5/1/2011	6/1/2011		-	-	-	BIO-18
BIO-18	COMM & OPS	Provide to the CEC for review and approval a report identifying which items of the Raven 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.	Provide to the CEC for review and approval a report identifying which items of the Raven 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.	30 days after completion of construction	CEC, CDFG, USFWS	AS	ASI	H B	8/1/2014	-	-		-	-	-	BIO-18
BIO-19	COMM & OPS	Submit a draft Evaporation Pond Monitoring and Adaptive Management plan to the CEC that incorporates the guidance in this condition.	Submit a draft Evaporation Pond Monitoring and Adaptive Management plan to the CEC that incorporates the guidance in this condition.	90 days prior to operation of evaporation ponds	CEC, CDFG, USFWS	AS	ASI	H B		2/3/2014	PENDING		-	-	-	BIO-19
BIO-19	COMM & OPS	Provide the CEC, USFWS, RWQCB and CDFG with the final version of the Plan that has been reviewed and approved by the CEC in consultation with USFWS, RWQCB, and CDFG.	Provide the CEC, USFWS, RWQCB and CDFG with the final version of the Plan that has been reviewed and approved by the CEC in consultation with USFWS, RWQCB, and CDFG.	30 days prior to operation of evap ponds	CEC, CDFG, USFWS	AS	ASI	H B		-	-		-	-	-	BIO-19
BIO-19	OPS	Notify the CEC no less than 5 working days before implementing any CEC approved modifications to the Evaporation Pond Plan.	Notify the CEC no less than 5 working days before implementing any CEC approved modifications to the Evaporation Pond Plan.	As required	CEC, CDFG, USFWS	AS	ASI	H B	As Req.	As Req.	-		-	-	-	BIO-19
BIO-21	PC	Submit USFWS Biological Opinion to CEC.	Submit to CEC copy of USFWS Biological Opinion. Verify that the permit terms and conditions of the Biological Opinion are incorporated into the BRMIMP and will be implemented.	45 days prior to site mobilization	CEC	AS	ASI	M S	6/15/2011	4/1/2011	6/1/2011		-	-	-	BIO-21
CULTURAL																
CUL-4	CONS	Submit the Cultural Resources Report (CRR) to the CEC for review and approval. If any reports have previously been sent to the California Historical Resource Information System (CHRIS), then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.	Submit the Cultural Resources Report (CRR) to the CEC for review and approval. If any reports have previously been sent to the California Historical Resource Information System (CHRIS), then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.	90 days after completion of ground disturbance (including landscaping)	CEC	AS	ASI Staff	ASI Staff	10/1/2014	As Req.	As Req.		-	-	-	CUL-4
CUL-4	CONS	Provide copy of agreement with, or other written commitment from, a curation facility that meets the standards stated in the CA State Historical Resources Commissions *Guidelines for the Curation of Archeological Collections*, to accept cultural materials, if any, from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.	Provide copy of agreement with, or other written commitment from, a curation facility that meets the standards stated in the CA State Historical Resources Commissions *Guidelines for the Curation of Archeological Collections*, to accept cultural materials, if any, from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.	90 days after completion of ground disturbance (including landscaping)	CEC	AS	ASI Staff	ASI Staff	10/1/2014	As Req.	As Req.		-	-	-	CUL-4
CUL-4	CONS	Provide documentation to the CEC confirming that copies of the CRR have been provided to the SHPO, the CHRIS and the curating institution, if archaeological materials were collected.	Provide documentation to the CEC confirming that copies of the CRR have been provided to the SHPO, the CHRIS and the curating institution, if archaeological materials were collected.	within 10 days of CEC approval	CEC	AS	ASI Staff	ASI Staff	7/10/2014	As Req.	As Req.		-	-	-	CUL-4
CUL-4	CONS	Submit a draft CRR to the CEC for review and approval.	Submit a draft CRR to the CEC for review and approval.	within 30 days after requesting a suspension of construction activities	CEC	AS	ASI Staff	ASI Staff	8/1/2014	As Req.	As Req.		-	-	-	CUL-4

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CUL-5	PC	The CRS shall provide the training program draft text and graphics and the informational brochure to the CEC for review and approval. The CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.	The CRS shall provide the training program draft text and graphics and the informational brochure to the CEC for review and approval. The CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.	30 days prior to ground disturbance	CEC	AS	ASI	M S	7/29/2011	5/29/2011	6/29/2011		-	-	-	CUL-5
CUL-5	COMM	On a monthly basis, until ground disturbance is completed, the project owner shall provide in the MCR the WEAP Training Acknowledgement forms of workers at the project site and on the linear facilities who have completed training in the prior month and a running total of all persons who have completed training to date.	On a monthly basis, until ground disturbance is completed, the project owner shall provide in the MCR the WEAP Training Acknowledgement forms of workers at the project site and on the linear facilities who have completed training in the prior month and a running total of all persons who have completed training to date.	MCR	CEC	AS	ASI Staff	ASI Staff	Monthly	Monthly	Monthly		-	-	-	CUL-5
HAZARDOUS MATERIALS																
HAZ-1	OPS	Provide Hazardous Materials list to CEC.	Provide to the CEC a list of hazardous materials contained at the facility.	MCR	CEC	A/T + AS	Permitting/ASI	S P/H B	As Req.	As Req.	As Req.	4/30/2014 HAZ1-01-00	5/20/2014 CEC APPROVAL	-	-	HAZ-1
HAZ-6	COMM	Provide the Site-specific Security plan to the CEC for review and approval.	The project owner shall notify the CEC that a site-specific operations site security plan is available for review and approval.	30 days prior to initial receipt of hazardous materials on-site	CEC	A/T + AS	ASI/Permitting	H B/S P	12/15/2013	12/17/2013	HAZ6-00-00 SENT TO THE CEC 12.17.2013 CONDITIONAL APPROVAL 01.07.2014 FINAL APPROVAL PENDING		-	-	-	HAZ-6
HAZ-6	COMM & OPS	Provide statement in ACR that background checks for all employees have been performed.	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 that updated certification statements have been 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.	ACR	CEC	AS	ASI Staff	ASI Staff	As Req.	As Req.	HAZ6-01-00 (should be HAZ6-01-01) CEC appproved 03/03/2014		-	-	-	HAZ-6
LAND																
LAND-1	PC	Provide Mitigation fee to an Agricultural Land Trust approved by CEC.	Provide a mitigation fee payment to an agricultural land trust such as the Transition Habitat Conservancy or any other land trust that has been previously approved by the CEC prior to the start of construction. The fee payment will be determined by an independent appraisal conducted on available, comparable, farmland property on behalf of the agricultural land trust. The project owner shall pay all costs associated with the appraisal.	prior to the start of construction	CEC	AS	ASI	M S	7/29/2011	6/29/2011	7/29/2011		-	-	-	LAND-1
LAND-1	OPS	Provide CEC proof that fee has been paid and 128 acres of farm land have been purchased within 3 years after commercial operation has begun.	Provide documentation to the CEC that the fee has been paid and that the 128 acres of farmland and/or easements shall be purchased within three years of start of operation as compensation for the 128 acres of FMMP designated Important Farmland to be converted by the AMS project. The documentation also shall guarantee that the land/easements purchased by the trust will be located in San Bernardino County and will be available in perpetuity for productive agricultural use. If no available land or easements can be purchased in San Bernardino County, then the purchase of lands/easements in other areas within western Mojave or adjacent counties, such as Kern County or Riverside County, is acceptable.	3 years after commercial operation	CEC	AS	ASI Staff	ASI Staff	As Req.	As Req.	As Req.		-	-	-	LAND-1
LAND-1	OPS	Provide CEC update of lease purchase.	Provide to the CEC updates on the status of farmland/easement purchase(s).	ACR	CEC	AS	ASI Staff	ASI Staff	As Req.	As Req.	As Req.		-	-	-	LAND-1
LAND-2	OPS	Submit closure plan within 12 months of planned closure.	Consistent with the requirements of COMPLIANCE-11, incorporate the applicable requirements of the San Bernardino County Development Code section 84.29.060, Decommissioning Requirements, into the AMS Facility Closure Plan, to the extent feasible, and in as much as the county requirements do not conflict with the California Energy Commission's requirements and standards related to the closure of power generating facilities. Consistent with the requirements of COMPLIANCE-11, submit the Facility Closure Plan to the CEC.	12 months prior to planned closure/decommissioning	CEC/SBC	AS	ASI Staff	ASI Staff	As Req.	As Req.	As Req.		-	-	-	LAND-2
NOISE																
NOISE-2	CONS & OPS	Submit any Noise Complaint to CEC within 5 days of receipt.	The project owner shall file a Noise Complaint Resolution Form, shown below, with both the local jurisdiction and the CEC, that documents the resolution of the complaint. If mitigation is required to resolve the complaint, and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is performed and complete.	within 5 days of receiving complaint	CEC	A/T + AS	Permitting/ASI	M S/S P	As Req.	As Req.	As Req.		-	-	-	NOISE-2
NOISE-3	PC	Submit Noise Control plan.	Submit the noise control program to the CEC. Make the program available to Cal-OSHA upon request.	30 days prior to ground disturbance	CEC/CAL-OSHA	A/T + AS	Permitting/ASI	M S/S P	6/29/2011	5/29/2011	6/29/2011		-	-	-	NOISE-3
NOISE-4	OPS	Conduct 25 hour survey at LT-1 on a windy day	Conduct a 25 hour survey at LT-1 on a windy day, it shall include measurement of one-third octave band sound pressure levels to ensure no new pure-tone noise components have been caused by the project.	within 90 days of project achieving sustained output >= 90% of rated capacity	CEC	AS	ASI Staff	H B	4/1/2014	-	-		-	-	-	NOISE-4
NOISE-4	OPS	Submit summary report 30 days after completing survey	Submit a summary report to the CEC. Include a description of any additional mitigation measures necessary to achieve compliance with the listed noise limit, and a schedule for implementing these measures. When the measures are in place the survey shall be repeated.	within 30 days of completing survey	CEC	AS	ASI Staff	H B	11/1/2014	-	-		-	-	-	NOISE-4
NOISE-4	OPS	Submit a copy of summary report to CEC.	Submit to the CEC a summary report of the new noise survey, performed as described and showing compliance with this condition.	within 30 days of completing new survey	CEC	AS	ASI Staff	H B	11/1/2014	-	-		-	-	-	NOISE-4
NOISE-5	OPS	Conduct occupational noise survey.	The project owner shall conduct an occupational noise survey to identify any noise hazardous areas in the facility.	after achieving sustained output >= 90% of rated capacity	CEC	AS	ASI Staff	H B	7/1/2014	-	-		-	-	-	NOISE-5
NOISE-5	OPS	Submit Noise survey to CEC.	Submit noise survey report to the CEC. Make the report available to OSHA and Cal-OSHA on request.	within 30 days of completing survey	CEC	AS	ASI Staff	H B	8/1/2014	-	-		-	-	-	NOISE-5
SOIL AND WATER																

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SOIL&WATER-1	PC	Prior to site mobilization, the project owner shall obtain the CPM approval for a site specific DESCP.	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 CBO for review and approval.	No later than 60 days prior to site mobilization	Submit simultaneously to the County of San Bernardino and Lahontan RWQCB no later than 60 days prior to site mobilization	A/T	Permitting	S P	6/29/2011	4/29/2011	6/29/2011		-	-	-	SOIL&WATER-1
SOIL&WATER-1	PC	Submit DESCP Plan to CEC, SBC and RWQCB	Submit a copy of the Drainage, Erosion, and Sediment Control Plan (DESCP) to the County of San Bernadino and the RWQCB for review and comment. CPM shall consider comments from county and RWQCB and approve the DESCP based upon comments as appropriate.	After review comments have been received	CPM shall consider comments from the County of San Bernardino and Lahontan RWQCB and approve the DESCP based on comments as appropriate	A/T	Permitting	S P	6/29/2011	4/29/2011	6/29/2011		5/5/2014 SWAT1-03-00 Approval DESCP revision	-	-	SOIL&WATER-1
SOIL&WATER-1	CONS	Provide SWPPP Udates in MCR.	Provide an analysis on the effectiveness of the drainage, erosion, and sediment control measures and the results of monitoring and maintenance activities.	Monthly during construction	CPM	A/T	Permitting	S P	Monthly	Monthly	Monthly		-	-	-	SOIL&WATER-1
SOIL&WATER-1	OPS	Provide SWPPP Udates to CEC.	Provide information on the results of storm water BMP monitoring and maintenance activities. Also indicate what maintenance activities were completed to maintain the project's on-site storm water flow.	Annually once operational	CEC	A/T	Permitting	S P	Annually	Annually	Annually		-	-	-	SOIL&WATER-1
SOIL&WATER-1	CONS & OPS	Provide 2 Copies of SWPPP Udates to CEC.	Provide the CPM with two copies each of all monitoring or compliance reports.	As required	CEC	A/T + AS	Permitting/ASI	H B/S P	As Req.	As Req.	As Req.		-	-	-	SOIL&WATER-1
SOIL&WATER-2	COMM	The project owner shall comply with the Waste Discharge Requirements (WDR's) established in Soil and Water Resources Appendices C, D and E for the construction and operation of the surface impoundments (evaporation ponds), land treatment units, and storm water management system.	Provide documentation to the CPM, with copies to the Lahontan RWQCB, demonstrating compliance with the WDRs established in Appendices C, D, and E.	No later than 60 days prior to wastewater or stormwater discharge or use of land treatment units	Submit copies to both Lahontan RWQCB and CEC no later than 60 days prior to wastewater or stormwater discharge or use of land treatment units	A/T + AS	Permitting/ASI	H B/S P		6/8/2013 for LTU's, 5/11/2013 for Evap Pond,8/14/2013 Monitoring wells	8/8/2013 for LTU's, 6/11/2013 for Evap Pond,SWAT2-03-01 Monitoring Wells Into the CEC 11.26.2013 Approved 01.10.2014 SWAT2-05-00 Bioremediation Plan Submitted to CEC 2-7-2014 Pending	4/23/14 SWAT2-08-01 Mojave Test/Cleaning Water plan Revision 4/23/14 SWAT2-07-02 CEC and LRWQCB submittal response regarding early discharge request	-	-	-	SOIL&WATER-2
SOIL&WATER-2	CONS & OPS	Submit any design changes to CEC and LRWQCB for review and approval.	Any changes to the design, construction, or operation of the ponds, treatment units, or storm water system shall be requested in writing to the CPM, with copies to the Lahontan RWQCB, and approved by the CPM, in consultation with the Lahontan RWQCB, prior to initiation of any changes.	Prior to initiation of any design, construction, or operational changes	Request in writing any changes to CEC with copies to Lahontan RWQCB	A/T + AS	Permitting/ASI	H B/S P	-	-	-		-	-	-	SOIL&WATER-2
SOIL&WATER-2	OPS	Pay Annual Fees to LRWQCB and send a copy of receipt to CEC.	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.	Annually	Pay annual fees to Lahontan RWQCB, Provide a copy of receipt to CEC	AS	ASI	H B	-	-	-		-	-	-	SOIL&WATER-2
SOIL&WATER-2	OPS	Provide CEC all monitoring reports with copies to RWQCB	Provide to the CPM, with copies to the Lahontan RWQCB, all monitoring reports required by the WDRs, and fully explain any violations, exceedances, enforcement actions, or corrective actions related to construction or operation of the ponds, treatment units, or storm water system.	As required	Provide a copy of any monitoring reports required by the WDR's to CEC, with a copy to Lahontan RWQCB	AS	ASI	H B	-	-	-		-	-	-	SOIL&WATER-2
SOIL&WATER-2	OPS	Pay Annual Discharge Fees to LRWQCB.	The project owner shall pay the annual waste discharge permit fee associated with this facility to the Water Boards.	Annually	Pay annual fee to Lahontan RWQCB, provide copy of receipt to CEC	AS	ASI	H B	-	-	-		-	-	-	SOIL&WATER-2
SOIL&WATER-4	CONS	Pre-well Installation. The project owner shall construct and operate up to two on-site groundwater wells that produce water from the Harper Valley Groundwater Basin and two backup wells.	Submit a Groundwater Monitoring and Management Plan to the County of San Bernardino for review and comment (see Condition of Certification SOIL&WATER-6).	60 days prior to construction of on-site groundwater wells	SBC	A/T	Permitting	S P	6/29/2011	5/29/2011	6/29/2011 SWAT-4-10-00 Beta 4 Location in 11.25.2013, Approved 12.10.2013		-	-	-	SOIL&WATER-4
SOIL&WATER-4	CONS	Submit to CEC a copy of the Well Abandonment Packet.	Submit to the CPM a copy of the water well abandonment and construction packet submitted to the County of San Bernardino for review and comment.	60 days prior to the abandonment and const. of the on-site groundwater wells	Submit to CPM a copy of the water well and abandonment and construction packet submitted to County of San Bernardino no later than 60 days prior to abandonment and construction of the on-site groundwater wells	A/T	Permitting	S P	6/29/2011	5/29/2011	6/29/2011		-	-	-	SOIL&WATER-4
SOIL&WATER-4	CONS	Submit to CEC a copy of any comments from SBC.	Submit a copy of any written comments received from the County of San Bernardino indicating whether the proposed well abandonment and construction activities comply with all county well requirements and meet the requirements established by the county's water well permit program.	30 days prior to construction of on-site water supply wells	Submit to CPM a copy of any written comments from County of San Bernardino indicating whether proposed well abandonment and construction activities comply with all county standards no later than 30 days prior to construction of on-site wells	A/T	Permitting	S P	6/29/2011	5/29/2011	6/29/2011		-	-	-	SOIL&WATER-4
SOIL&WATER-4	CONS	Provide Well Completion Reports to CEC.	Provide to the CEC copies of the Well Completion Reports submitted to the DWR by the well driller. Submit to the CEC, together with the Well Completion Report, a copy of well drilling logs, water quality analyses, and any inspection reports.	60 days after installation of each well	Submit to CPM copies of the well completion reports submitted to CA DWR no later than 60 days after installation of each well	A/T	Permitting	S P		5/22/2014 SWAT4-11-00 BETA 4 8/26/2013 BETA 3 12/4/2012 SWAT4-09-00 ALPHA 1 & 2	6/5/2014 SWAT4-11-00 CEC APPROVAL 02/04/2014 S&W-4-10-00 CEC APPROVAL (New Beta Well Location-SBC Permit) 06/05/2013 SWAT4-08-00 CEC APPROVAL 12/14/2012 ALPHA 1 & 2 CEC APPROVAL SWAT4-09-00 CEC APPROVAL		-	-	-	SOIL&WATER-4
SOIL&WATER-4	CONS & OPS	Submit 2 Copies of any changes to Well Construction.	Submit two (2) copies to the CPM for review and approval any proposed well construction or operation changes.	During const & op life of well	CEC	A/T + AS	Permitting/ASI	H B/S P	As Req.	As Req.	As Req.		-	-	-	SOIL&WATER-4
SOIL&WATER-4	OPS	Submit 2 Copies of all monitoring reports.	Provide the CPM with 2 copies of all monitoring and other reports required for compliance with the County of San Bernardino water well standards and operation requirements.	As required	CEC	AS	ASI	H B	-	-	-		-	-	-	SOIL&WATER-4

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SOIL&WATER-4	CONS	Submit Documentation to CEC confirming all drilling and disposal was per applicable LORS.	Submit documentation to the CEC 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 on-site drilling sumps used for project drilling activities were removed in compliance with 23 CCR section 2511(c).	15 days after completion of wells	CEC	A/T	Permitting	S P		BG 3/25 - VL to prepare submittal			-	-	-	SOIL&WATER-4
SOIL&WATER-7	PC	A water quality baseline fo pre-construction conditions shall be established for all wells in the monitoring network established by Condition of Certification SOIL&WATER-6, including all monitoring wells that are installed to comly with Waste Discharge Requirements for the evaporation ponds and land treatment unit associated with the project, the existing BLM well and any retrofitted or newly installed BLM marsh water supply well.	Groundwater Quality Monitoring and Reporting Plan in compliance with Item A shall be submitted to the CPM for review and approval.	60 days prior to construction	Submit to CEC at least 60 days prior to the start of construction	AS	ASI	M S	6/29/2011	6/7/2011	6/29/2011		-	-	-	SOIL&WATER-7
SOIL&WATER-7	PC	Submit Pre-Construction Groundwater quality report 30 days prior to start of construction.	Pre-construction groundwater quality report in compliance with Item B shall be submitted to the CPM for review and approval.	30 days prior to construction	Submit to CEC at least 30 days prior to start of construction	AS	ASI	M S	7/29/2011	6/7/2011	7/29/2011		-	-	-	SOIL&WATER-7
SOIL&WATER-7	CONS & OPS	Submit Semi-Annual Groundwater quality reports to CEC for approval and BLM for review	Semi-annually, by March 31 and September 31, submit Groundwater Quality Reports in compliance with Item D to the CEC for review and approval and to the BLM for review.	Semi-annually	Submit semi-annually to CEC and BLM	AS	ASI/CH2M Hill	H B/B W	7/29/2011	6/7/2011	7/29/2011		-	-	-	SOIL&WATER-7
SOIL&WATER-7	OPS	Submit 5-year monitoring report after initial 5-year period and every 5-years after.	After the first 5-year operational and monitoring period, and every subsequent 5-year period, submit a 5-year monitoring report to the CPM, for review and approval, that contains all groundwater quality data collected and provides a summary of the findings and a recommendation about whether the frequency of groundwater quality data collection should be revised or eliminated.	Every 5 years	Submit to CEC every 5 years	AS	ASI	ASI Staff	As Req.	As Req.	As Req.		-	-	-	SOIL&WATER-7
SOIL&WATER-7	CONS & OPS	Provide CEC all monitoring reports, complaints, studies and other relevant data for life of project.	During the life of the project, provide to the CEC all monitoring reports, complaints, studies, and other relevant data.	CEC	CEC	AS	ASI	ASI Staff	As Req.	As Req.	As Req.		-	-	-	SOIL&WATER-7
SOIL&WATER-8	COMM & OPS	The project owner shall recycle and reuse all process wastewater streams to the extent practicable.	Prior to transport and offsite disposal of any facility operation wastewaters that are not suitable for treatment and reuse on-site, test and classify the stored wastewater to determine proper management and disposal requirements. All records of this testing and classification shall be maintain at the project site. 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).	As required	Project owner shall test any on-site soils to assess whether they are suitable or not. Project owner shall ensure that all unsuitable material is transported and disposed per the aforementioned LORS.	A/T/AS	Permitting/ASI	H B/S P	As Req.	As Req.	As Req.		-	-	-	SOIL&WATER-8
SOIL&WATER-10	PC	The project is subject to the requirement of Title 22, Article 3, Sections 64400.80 through 64445 for a non-transient, non-community water system.	The project owner shall obtain a permit to operate a non-transient, non-community water system with the County of San Bernardino at least thirty (30) days prior to construction of the potable water treatment system. The project owner shall supply updates annually for all monitoring requirements and submittals to County of San Bernardino related to the permit, and proof of annual renewal of the operating permit.	30 days prior to construction of the potable water treatment system.	Project owner to obtain permit from County of San Bernardino to operate a non-transient, noncommunity water system at least 30 days prior to construction	A/T	Permitting	S P	6/29/2011, 10/1/2013 Water plans	4/29/2011	6/29/2011 BG 3/18 VL: AEPC working with SBC on submittal which will supercede this VL - earlier dates refer to wells for potable system		-	-	-	SOIL&WATER-10
SOIL&WATER-10	COMM & OPS	Supply Annual Updates of Monitoring Requirements and Proof of Annual Renewal Fee permit payment.	Supply updates annually for all monitoring requirements and submittals to County of San Bernardino related to the permit, and proof of annual renewal of the operating permit.	Annually	Submit annual monitoring reports to County of San Bernardino	A/T+AS	ASI/Permitting	ASI Staff/S P	As Req.	As Req.	As Req.		-	-	-	SOIL&WATER-10
SOIL&WATER-11	OPS	As a conservation method, the project owner shall annually sequester a volume of Free Production Allowance (FPA) equal to the annual volume of groundwater pumped for the AMS project.	The volume of FPA sequestered shall be documented and submitted to the CPM and Watermaster. This documentation shall include a table showing the annual and cumulative total FPA sequestered.	Annually	Submit annually to Lahontan RWQCB and CEC	AS	ASI	ASI Staff	As Req.	As Req.	As Req.		-	-	-	SOIL&WATER-11
SOIL&WATER-12	OPS	The project owner may be required to contribute up to $50,000 annually, for the life of the AMS project, towards the Mojave Water Agency's (MWA) turf replacement program, high-efficiency toilet program, or other water conservation programs as approved by CPM.	Submit to the CPM a copy of the receipt from the MWA for the annual contribution; and an accounting of the following: i. The annual and cumulative volume of groundwater used by the project in acre-feet per year; ii. The annual and cumulative volume of FPA sequestered by the project in acre-feet per year; iii. The numerical difference between annual and cumulative totals in Items i and ii above; and iv. The annual and cumulative monetary contribution and estimated annual and cumulative volume of water conserved by the project owner's contribution to MWA's turf replacement program, high-efficiency toilet program, or other water conservation program approved by the CPM.	Annually	Submit annual fee to MVA. Submit to CEC copy of receipt from MVA	AS	ASI	ASI Staff	As Req.	As Req.	As Req.		-	-	-	SOIL&WATER-12
SOIL&WATER-12	OPS	The project owner may be required to contribute up to $50,000 annually, for the life of the AMS project, towards the Mojave Water Agency's (MWA) turf replacement program, high-efficiency toilet program, or other water conservation programs as approved by CPM.	If owner proposes to reduce the amount of the annual contribution based on the water conservation achieved through previous contributions, provide a plan demonstrating how the adjusted amount will ensure the water conservation program meets the requirements of this condition. The plan shall be provided for CPM review and approval 60 days prior to the annual contribution anniversary date.	60 days prior to the annual contribution anniversary date	Submit to CEC for review and approval	AS	ASI	ASI Staff	-	-	-		-	-	-	SOIL&WATER-12
TRANSPORTATION																
TRANS-3	PC	Prior to construction, the project owner shall document the existing condition of the primary roadways that will be used by the construction workers and heavy vehicle deliveries along Harper Valley Road to SR-58 and SR-58 for 1000 feet in each direction from Harper Lake Road.	Submit a review of existing roadway pavement conditions to San Bernardino County and Caltrans for review and comment and the CPM for review and approval. This review will include photographs and the visual analysis of pavement and sub-surface conditions. The CPM will need to approve the summary of existing pavement conditions prior to commencement of construction.	90 days prior to site mobilization	County of San Bernardino, Caltrans, CEC	A/T	Permitting	S P	6/29/2011	1/1/2011	3/1/2011		-	-	-	TRANS-3
TRANS-3	COMM	Submit Roadway Analysis report to SBC and CEC.	Submit an analysis of the roadway pavement conditions to San Bernardino County and Caltrans for review and comment and to the CPM for review and approval. The review will include photographs, the visual analysis of pavement and sub-surface conditions and a schedule for repair.	60 days after the end of construction activities	County of San Bernardino, Caltrans, CEC	A/T	Permitting	S P	9/15/2014	-	-		-	-	-	TRANS-3
TRANS-3	COMM	Submit Roadway Analysis report to SBC and CEC.	Submit a letter to San Bernardino County, Caltrans, and the CPM indicating such repairs are finished and ready for inspection.	After completion of repairs	County of San Bernardino, Caltrans, CEC	A/T	Permitting	S P	9/15/2014	-	-		-	-	-	TRANS-3
TRANS-4	PC	During construction, the project owner will stagger the employee start times and delivery times so as not to overload the existing highway traffic.	Include these restrictions in the construction traffic control plan required by TRANS-2	60 days prior to site mobilization	County of San Bernardino, Caltrans, CEC	A/T	Permitting	S P	6/29/2011	1/1/2011	3/1/2011		-	-	-	TRANS-4
TRANS-5	COMM & OPS	The project owner shall not allow hazardous materials deliveries during non-daylight hours.	A record of hazardous deliveries shall be provided to the CPM as required in HAZ-3.	As required	CEC	A/T + AS	ASI/Permitting	H B/S P	As Req.	As Req.	As Req.		-	-	-	TRANS-5
TRANSMISSION LINES																
TSLN-3	CONS	File Energization Measurements	File copies of the pre-and post-energization measurements with the CPM after completion of the measurements.	60 days after completion of the measurements	CEC	A/T	Electrical	M K		-	-		-	-	-	TSLN-3
TSLN-4	OPS	Submit Inspection Results and Fire Prevention Activities	During the first five years of 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 ACR for transmission line safety and nuisance-related requirements.	ACR, for first 5 years of operation	CEC	AS	ASI	H B	As Req.	As Req.	As Req.		-	-	-	TSLN-4

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TSLN-5	COMM & OPS	Ground All Metallic Objects Within Transmission Line Right-of-Way	The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related lines are grounded according to industry standards regardless of ownership. Transmit to the CPM a letter confirming compliance with this condition.	30 days before lines are energized	CEC	A/T	Electrical/Field	M K	41548	TLSN5-00-00 To the CEC 11.06.2013	TLSN5-00-00 CEC Approval 11.07.2013		-	-	-	TSLN-5
VISUAL																
VIS-3	CONS	Notify CEC that Compliance has been Met	Contact the CPM to show compliance with all of the above requirements. This shall include: final lighting plans, fixture and control schedules, fixture and control cut sheets and specifications, a photometric plan showing vertical and horizontal footcandles at all property lines to a height of 20 feet, and the proposed time clock schedule.	90 days prior to ordering exterior lighting	CEC	A/T	Permitting	S P	temp light, 4/27/12, perm light, 8/28/13	temp light, 2/27/12, perm light, 5/28/13	temp light, 3/1/12, perm light, 8/9/13		-	-	-	VIS-3
VIS-3	PC, CONS, & COMM	Notify CEC that Temp and Permanent Lighting is complete and ready for inspection	Notify the CPM that the temporary and permanent lighting has been completed and is ready for inspection. If after inspection the CPM says that modifications to the lighting are needed, within 30 days of receiving that notification owner shall implement the modifications and notify the CPM that the modifications have been completed and are ready for inspection.	Prior to construction/Prior to operation	CEC	A/T	Permitting	S P	As Req.	5/5/2014 VIS3-04-00 Submittal Final CBO approved solar field lighting plan; layout included.	5/5/2014 VIS3-04-00 Approval Permanent Exterior Lighting		-	-	-	VIS-3
VIS-3	CONS & OPS	Notify CEC of Lighting Complaints	Provide the CPM with a complaint resolution form report as specified in the Compliance General Conditions, including a proposal to resolve the complaint, and a schedule for implementation. A copy of the complaint resolution form report shall be submitted to the CPM within 30 days and included in the Annual Report.	within 48 hours of receiving lighting complaint	CEC	AS	ASI	H B	As Req.	As Req.	As Req.		-	-	-	VIS-3
VIS-4	PC	Submit Screening Plan to CEC	The screening plan shall be submitted to the CPM for review and approval.	90 days prior to installation	CEC	A/T	Permitting	S P	4/9/2012	12/9/2011	3/26/2012		-	-	-	VIS-4
VIS-4	CONS	Notify CEC that Screen Fence is Completed	Notify the CPM that the screening is ready for inspection.	7 days after completing screening install	CEC	A/T	Permitting	S P	7/1/2014	-	-		-	-	-	VIS-4
VIS-4	OPS	Report Maintenance Activities to CEC in ACR	Report maintenance activities, including replacement of damaged or destroyed screening for the previous year of operation.	ACR	CEC	AS	ASI	H B	ACR 2014	-	-		-	-	-	VIS-4
WASTE																
WASTE-2	PC & CONS	The project owner shall obtain a hazardous waste generator identification number from the USEPA.	Obtain a hazardous waste genereator identification number form the USEPA prior to generating any hazardous waste during project construction and operations.	Prior to Haz Waste generation	USEPA, CPM	A/T	Permitting	S P	12/31/2012	9/28/2012	11/27/2012		-	-	-	WASTE-2
WASTE-2	CONS & OPS	Project Owner Shall Keep a Copy of Waste Generator Number on File at Project Site	Project owner shall keep a copy of the identification number on file at the project site and provide documentation of the hazardous waste generation notification and receipt of the number to the CPM after receipt of the number. Submittal of the notification and issued number documentation to the CPM is only needed once unless there is a change in ownership, operation, waste generation, or waste characteristics that requires a new notification to USEPA.	Monthly	USEPA, CPM	A/T + AS	Permitting	S P	12/31/2012	9/28/2012	11/27/2012		-	-	-	WASTE-2
WASTE-2	CONS & OPS	Changes in Waste Generator Numbers Shall Be Submitted to CEC	Documentation of any new or revised hazardous waste generation notifications or changes in identification number shall be provided to the CPM.	As required	USEPA, CPM	A/T + AS	ASI/Permitting	H B/S P	As Req.	CEC 1/27/2012 CA EPA Submittal Fed EPA Application 07/09/2013	10/02/2013 US EPA approval		-	-	-	WASTE-2
WASTE-7	CONS & OPS	During the construction and operation phase, the project owner shall maintain copies of the contracted waste and/or refuse haulers documentation of each waste load transferred from the construction site to a disposal site and/or recycling center.	Identify permitted solid waste facilities or recycling centers that receive construction waste and maintain copies of weigh tickets and manifests showing the type and volume of waste disposed. This information shall be maintained at the project site and made accessible to CPM and the San Bernardino County Environmental Health Service Department Solid Waste Program.	As required	San Bernardino County Environmental Health Service Dept. Solid Waste, CEC	A/T + AS	ASI/Permitting	H B/S P	As Req.	As Req.	As Req.		-	-	-	WASTE-7
WASTE-9	COMM	The project owner shall prepare an Operation Waste Management Plan	Submit the Operation Waste Management Plan to the CPM for approval.	30 days prior to commercial operation	Local Certified Unified Program Agency, Dept of Toxic Substances Control, CEC	AS	ASI	ASI Staff	6/15/2014	-	-		-	-	-	WASTE-9
WASTE-9	COMM	The project owner shall prepare an Operation Waste Management Plan	Submit any required revisions to the CPM.	20 days of notification from the CPM revisions required	CEC	AS	ASI	ASI Staff	As Req.	As Req.	As Req.		-	-	-	WASTE-9
WASTE-9	OPS	Document Actual Waste Volumes and Methods and Update Waste Plan as Necessary.	Document 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	CEC	AS	ASI	ASI Staff	As Req.	As Req.	As Req.		-	-	-	WASTE-9
WASTE-10	OPS	The project owner shall submit to CEC and DTSC for approval the applicant's assessment of whether the HTF contaminated soil is considered hazardous or not.	Document all releases and spills of HTF as described in Condition of Certification WASTE-9 and as required in the SOIL & WATER RESOURCES section of the Staff Assessment. Cleanup and temporary staging of HTF-contaminated soils shall be conducted in accordance with the USEPA's current version of "Test Methods for Evaluating Solid Waste" (SW-846). Samples shall be analyzed in accordance with USEPA Method 1625B or other method to be reviewed and approved by DTSC and the CPM.	As required	DTSC, CEC	A/T + AS	ASI/Permitting	T B/S P	As Req.	As Req.	As Req.		-	-	-	WASTE-10
WASTE-10	OPS	Provide test results of HTF contaminated soil to DTSC and CEC.	Provide the results of the analyses and their assessment of whether the HTF-contaminated soil is considered hazardous or non-hazardous to DTSC and the CPM for review and approval.	within 28 days of an HTF spill	DTSC, CEC	A/T + AS	ASI/Permitting	T B/S P	As Req.	5/12/2014 WASTE10-01-00	5/22/14 CEC APPOROVAL		-	-	-	WASTE-10
WASTE-10	OPS	Dispose of Soil per CA HSC 25203 if DTSC and CEC determine that it is hazardous.	If DTSC and the CPM determine the HTF-contaminated soil is considered hazardous it shall be disposed of in accordance with California HSC Section 25203 and procedures outlined in the approved Operation Waste Management Plan required in Condition of Certification WASTE-9 and reported to the CPM in accordance with Condition of Certification WASTE-12.	As required	DTSC, CEC	A/T + AS	ASI/Permitting	T B/S P	As Req.	As Req.	As Req.		-	-	-	WASTE-10
WASTE-10	OPS	If Soil is deemed Non-Hazardous by DTSC and CEC it shall be disposed of and retained in an on-site land farm.	If DTSC and the CPM determine the HTF-contaminated soil is considered nonhazardous it shall be retained in the land farm and treated on-site in accordance with the Waste Discharge Requirements contained in the Soil & Water Resources section of the PMPD.	As required	DTSC, CEC	A/T + AS	ASI/Permitting	T B/S P	As Req.	As Req.	As Req.		-	-	-	WASTE-10
WASTE-11	COMM & OPS	The project owner shall ensure that the cooling tower basin sludge is tested.	Report the results of filter cake testing to the CPM. If two consecutive tests show that the sludge is non-hazardous, may apply to the CPM to discontinue testing.	within 30 days of sampling	CEC	A/T + AS	ASI/Permitting	T B/S P	As Req.	As Req.	As Req.		-	-	-	WASTE-11
WASTE-11	OPS	Report Test Results in ACR as condition of compliance WASTE-9.	The test results and method and location of sludge disposal shall reported in the ACR as required in Condition of Certification WASTE-9.	Annually	CEC	AS	ASI Staff	ASI Staff	As Req.	As Req.	As Req.		-	-	-	WASTE-11
WASTE-12	CONS & OPS	The project owner shall ensure that all spills or releases of hazardous substances, materials, or wastes are reported cleaned up, and remediated as necessary.	Document all unauthorized releases and spills of hazardous substances, materials, or wastes that are in excess of reportable quantities that occur on the project property or transmission corridors during construction and on the project property during operation.	As required	CEC	A/T + AS	ASI/Permitting	T B/S P	As Req.	As Req.	As Req.		-	-	-	WASTE-12
WASTE-12	CONS & OPS	Provide any unauthorized spill documentation to CEC.	Copies of the unauthorized spill documentation shall be provided to the CEC.	within 30 days of the date the release was discovered	CEC	A/T + AS	ASI/Permitting	T B/S P	As Req.	As Req.	As Req.		-	-	-	WASTE-12

Cond. #	Sort Code	Description	Verification/Action/Submittal Required by Project Owner	Timeframe	Involved Agencies	Lead Respons. Party	Responsible Discipline	Lead Engineer/ Manager	Required Approval Date Drws/Docs	Actual Submittal Date Drws/Docs	Actual Approval Date Drws/Docs	(Submittal due to Change)	Approved As-Builts	Approved Inspection	COO	Cond. #
WORKERSAFETY																
WORKERSAFETY-2	COMM	The project owner shall submit to CPM a Maintenance Safety and Health Program.	Submit to the SBCFD the final Operations Fire Prevention Plan and Emergency Action for review and the final Project Operations and Maintenance Safety and Health Program to the CPM for approval.	30 days prior to start of commissioning	San Bernardino County Fire Dept., CEC	AS	ASI	MS	7/20/2011	rev 0, 6/23/11, rev 1, 6/18/13	rev 0, 7/23/11, rev 1, 6/19/13	WKSF2-00-01 Heat Stress Submittal CEC 03/05/2014	WKSF2-00-00 Fire Prevent Plan & Emergency Action Plan CEC Appoval 03/10/2014	-	-	WORKERSAFETY-2
WORKERSAFETY-6	CONS	The project owner shall either, 1) reach a funding agreement with SBCFD regarding its project share-related costs of capital and operations to improve fire protection response or if no agreement can be reached, the project owner shall fund a study conducted by an independent contractor and in consultation with SBCFD to study project's fire protection requirements.	(1) A copy of the individual agreement with the SBCFD or, if the owner joins a power generation industry association, a copy of the group's bylaws and a copy of the group's agreement with the SBCFD; and evidence in each January Monthly Compliance Report that the project owner is in full compliance with the terms of such bylaws and/or agreement; or (2) A protocol, scope and schedule of work for the independent study and the qualifications of proposed contractor(s) for review and approval by the CPM; a copy of the completed study showing the precise amount the project owner shall pay for mitigation; and documentation that the amount has been paid.	five (5) days before construction of permanent aboveground structures	San Bernardino County Fire Dept., CPM	AS	ASI	ASI Staff	-	9/28/2012	10/10/2012 CEC Approved SBCFD & MSP Funding Agreement		-	-	-	WORKERSAFETY-6
WORKERSAFETY-6	OPS	Provide CEC verification of payment to the SBCFD.	Annually thereafter, the owner shall provide the CPM with verification of funding to the SBCFD if annual payments were approved or recommended under either of the above-described funding resolution options.	Annually	San Bernardino County Fire Dept., CPM	AS	ASI	ASI Staff	-	4/7/2013	5/28/2013		-	-	-	WORKERSAFETY-6
WORKERSAFETY-7	PC	The project owner shall provide a $200,000 payment to San Bernardino County Fire Department prior to start of construction to offset any initial funding required by WORKER SAFETY-6.	Provide a $200,000 payment to San Bernardino County Fire Department prior to the start of construction. Provide documentation of the payment described above to the CPM. The CPM shall adjust the payments initially required by WORKER SAFETY-6 based upon the accounting provided by the SBCFD.	5 days prior to start of construction	San Bernardino County Fire Dept., CPM	AS	ASI	MS	7/31/2011	5/29/2011	8/10/2011☐		-	-	-	WORKERSAFETY-7
WORKERSAFETY-8	PC	The project owner shall develop and implement an enhanced Dust Control Plan.	Enhanced Dust Control Plan shall be provided to the CPM for review and approval.	60 days prior to site mobilization	CPM	A/T + AS	ASI	M S/S P	6/29/2011	3/4/2011	8/17/2011		-	-	-	WORKERSAFETY-8
WORKERSAFETY-9	COMM	The project owner shall participate in joint training exercises with the SBCFD.	Submit to the CPM proof that the joint training with the SBCFD is established.	10 days prior to commissioning	San Bernardino County Fire Dept., CPM	AS	ASI	H B		-	-		-	-	-	WORKERSAFETY-9
WORKERSAFETY-9	OPS	Submit to CEC proof that joint training with SBCFD was conducted.	Submit to the CPM proof that the joint training with the SBCFD was conducted. Include the date, list of participants, training protocol, and location in the yearly compliance report to the CPM.	Annually	San Bernardino County Fire Dept., CPM	AS	ASI	ASI Staff	3/11/14 WKSF9-00-01	Annually	Annually		-	-	-	WORKERSAFETY-9
GENERAL																
GEN-8	CONS	Submit Letter to CBO with copy to CEC that all work is ready for inspection.	Submit to the CBO, with a copy to 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.	within 15 days of completion of CBO-approved work	CBO/CEC	A/T	Permitting	S P	As Req.	As Req.	As Req.		-	-	-	GEN-8
GEN-8	CONS	Submit Letter confirming all documents are stored on site and location to CPM.	Submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.	After storing the final approved engineering plans etc	CEC	A/T	Permitting	S P	7/15/2014	As Req.	As Req.		-	-	-	GEN-8
GEN-8	COMM	Submit 3 Sets of Electronic Copies to CBO.	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 disks.	within 90 days of completion of construction	CBO	A/T	Civil/Permitting	P G/S P	10/15/2014	As Req.	As Req.		-	-	-	GEN-8
CIVIL STRUCTURAL MECHANICAL ELECTRICAL																
CIVIL-4	CONS	Submit Grading Plans to CBO for Review and Approval with a Transmittal Copy to CEC	Submit to the CBO, for review and approval, the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes, along with a copy of the transmittal letter to the CPM.	30 days of completion of erosion and sediment control work	CBO/CEC	A/T	Civil/Permitting	S P	7/1/2014	-	-		-	-	-	CIVIL-4
CIVIL-4	CONS	Send the CPM a copy of the transmittal letter in the next monthly compliance report.	Submit a copy of the CBO's approval to the CPM in the next monthly compliance report.	In the next MCR following approval	CEC	A/T	Permitting	S P	As Req.	As Req.	As Req.		-	-	-	CIVIL-4
STRUC-4	CONS	Submit Structural Tank or Vessel Plans to CBO for Review and Approval with a Transmittal Copy to CEC	Prior to the start of installation of the tanks or vessels containing the specified quantities of toxic or hazardous materials, submit to the CBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.	30 days prior to installation	CBO	A/T	Structural/Permitting	A T/S P	As Req.	As Req.	As Req.		-	-	-	STRUC-4
STRUC-4	CONS	Submit a copy of the CBO's Plan and Inspection Approvals.	Send copies of the CBO approvals of plan checks to the CPM in the following monthly compliance report. Also transmit a copy of the CBO's inspection approvals to the CPM in the monthly compliance report following completion of any inspection.	In the next MCR following approval	CBO/CEC	A/T	Permitting	S P	As Req.	As Req.	As Req.		-	-	-	STRUC-4
MECH-2	CONS	Submit Pressure Vessel Plans to CBO for Review and Approval and Transmittal to CEC.	For all pressure vessels installed in the plant: Submit to the CBO for design review and approval, the listed documents, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.	30 days prior to the start of PV on-site fabrication or installation	CBO	A/T	Mechanical/Permitting	M A/S P	As Req.	As Req.	As Req.		-	-	-	MECH-2
MECH-2	CONS & COMM	Send the CPM a copy of the Inspection Approval from CBO.	Transmit to the CPM, following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal-OSHA inspection approvals.	In the next MCR following inspection	CEC	A/T	Permitting	S P	As Req.	As Req.	As Req.		-	-	-	MECH-2
MECH-3	CONS	Submit HVAC Plans to CBO for Review and Approval and Transmittal to CEC.	Prior to the start of construction of any HVAC or refrigeration system, submit to the CBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the CBC and other applicable codes, with a copy of the transmittal letter to the CPM.	30 days prior to construction of any HVAC or refrigeration system	CBO/CEC	A/T	Mechanical/Permitting	M A/S P	As Req.	As Req.	As Req.		-	-	-	MECH-3
ELEC-1	CONS	Submit Electrical Plans to CBO for Review and Approval with a Transmittal Copy to CEC	Prior to the start of each increment of electrical construction, submit to the CBO for design review and approval the above listed documents. Include in this submittal a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS.	30 days prior to start of each increment of electrical construction	CBO/CEC	A/T	Electrical	M K	As Req.	As Req.	As Req.		-	-	-	ELEC-1
ELEC-1	CONS	Send the CPM a copy of the transmittal letter in the next monthly compliance report.	Send the CPM a copy of the transmittal letter in the next monthly compliance report.	in the next MCR	CBO/CEC	A/T	Permitting	S P	As Req.	As Req.	As Req.		-	-	-	ELEC-1
ARCHAEOLOGICAL																

Cond. #	Sort Code	Description	Verification/Action/Submittal Required by Project Owner	Timeframe	Involved Agencies	Lead Respons. Party	Responsible Discipline	Lead Engineer/ Manager	Required Approval Date Drws/Docs	Actual Submittal Date Drws/Docs	Actual Approval Date Drws/Docs	(Submittal due to Change)	Approved As-Builts	Approved Inspection	COO	Cond. #
PAL-7	CONS	Submit PRR	Submit the PRR under confidential cover to the CPM.	within 90 days of completion of ground disturbance	CEC	AS	ASI	M S	10/7/2014	-	-		-	-	-	PAL-7
TRANSMISSION SYSTEM ENGINEERING																
TSE-5	CONS	Submit Prposed Transmission Facility Drawings to CBO	To ensure the proposed transmission facilities will conform to all applicable LORS, submit to the CBO for approval: Items A through G listed in the COC, including Design drawings, specifications and calculations, with design criteria, Electrical one-line diagrams, the Special Protection System (SPS) sequencing and timing if applicable, a letter stating the mitigation measures or projects selected by the transmission owners for each reliability criteria violation are acceptable, an Operational study report based on the expected or current COD from the California ISO and/or SCE, and a copy of the executed LGIA signed by the California ISO and the project owner.	60 days prior to construction of transmission facilities	CBO	A/T + AS	Electrical	TSLNM K	As Req.	TSE5-00-00 INTO THE CEC 11.08.2013 APPROVED 12.02.2013	TSE5-00-00 INTO THE CEC 11.08.2013 APPROVED 12.02.2013		-	-	-	TSE-5
TSE-6	CONS	Submit Change Request of Transmission Facility Drawings to CBO and CEC	Inform the CBO and the CPM of any impending changes that may not conform to requirements of TSE-5 and request approval to implement such changes.	60 days prior to construction of transmission facilities	CBO, CEC	A/T	Electrical	M K	As Req.	As Req.	As Req.		-	-	-	TSE-6
TSE-7	COMM	Provide CEC a Copy of CAISO Letter	Provide copies of the CAISO letter to the CPM when it is sent to the CAISO.	1 week prior to initial synchronization with grid	CAISO, CEC	A/T	Electrical	M K	5/24/2014	-	-		-	-	-	TSE-7
TSE-7	COMM	Contact CAISO One Day Prior to Synchronization	Contact CAISO Outage Coordination Department, Mon thru Fri, btwn 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the CAISO shall be provided electronically to the CPM one day before synchronizing the facility with the CA transmission system for the first time.	1 day prior to initial synchronization with grid	CAISO, CEC	A/T	Electrical	M K	5/31/2014	-	-		-	-	-	TSE-7
TSE-8	COMM	Submit As-Built Drawings to CBO and CEC	Transmit to the CPM and CBO: "As Builts" and one-line drawings of the electrical portion; "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities they shall be maintained at the power plant and made available if requested for CPM Audit; A summary of inspections of the completed transmission facilities. [See COC]	within 60 days after first synchronization	CBO, CEC	A/T	Electrical	M K	8/1/2014	-	-		-	-	-	TSE-8

KEY EVENTS LIST

PROJECT: MOJAVE SOLAR PROJECT

DOCKET #: 09-AFC-5

COMPLIANCE PROJECT MANAGER: DALE RUNDQUIST

EVENT DESCRIPTION	DATE
Certification Date	09/2010
Obtain Site Control	
Online Date	
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	08/2011
Start Ground Disturbance	08/2011
Start Grading	08/2011
Start Construction	08/2011
Begin Pouring Major Foundation Concrete	09/2011
Begin Installation of Major Equipment	07/2012
Completion of Installation of Major Equipment	07/2014
First Combustion of Gas Turbine	N/A
Obtain Building Occupation Permit	
Start Commercial Operation	11/2014
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	11/2012
Synchronization with Grid and Interconnection	11/2014
Complete T/L Construction	02/2013
FUEL SUPPLY LINE ACTIVITIES	
Start Gas Pipeline Construction and Interconnection	N/A
Complete Gas Pipeline Construction	N/A
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	01/2013
Complete Water Supply Line Construction	08/2014

ABENER TEYMA MOJAVE

LETTER OF TRANSMITTAL

Date: October 1, 2014
Subject: Mojave Solar Project (09-AFC-5C)
Condition Number: AQ-54
Description: **VOC Calculation and Testing**
Submittal No.: AQ-54-00-00
To: Mr. Chris Anderson
Mojave Desert Air Quality
Management District.

WE ARE SENDING YOU

Document Name	Title	REV
AQ-26 Technical Memo		
MDAQMD Rule 461 Testing form	VOC Calculation and Testing results	NA
Tiger Select PID Certification	Calibration Certificate	NA

THESE ARE TRANSMITTED as checked below:

☒ For Approval

REMARKS _____

COPY TO: File SIGNED BY: _____

Vernon D. Leeming
Permitting Engineer
ABEINSA EPC

ABENER TEYMA MOJAVE

Technical Memo

Date:	October 1, 2014
Subject:	Mojave Solar Project (09-AFC-5C)
Condition Number:	AQ-54
Description:	**VOC Calculation and Testing for Onsite Gasoline Tank**
Submittal No.:	AQ-54 -00-00

Mr. Chris Anderson
Mojave Desert Air Quality
Management District.
Permitting Department
14306 Park Ave
Victorville CA 92392
canderson@mdaqmd.ca.gov

Dear Mr. Anderson,

In compliance with AQ-54 we are submitting VOC Calculation and Testing results for the onsite gasoline tank of the Mojave Solar Project.

For your convenience, we are including the Compliance language below:

AQ-54: The project owner shall perform the following tests within 60 days of construction completion and annually thereafter in accord with the following test procedures:

a. Determination of Static Pressure Performance of Vapor Recovery Systems at Gasoline Dispensing Facilities with Aboveground Storage Tanks shall be conducted per EO VR-401-A Exhibit 4. and,

b. Phase I Adapters, Emergency Vents, Spill Container Drain Valve, Dedicated gauging port with drop tube and tank components, all connections, and fittings shall NOT have any detectable leaks; test methods shall be per EO VR-401-A Table 2-1, and

c. Liquid Removal Test (if applicable) per TP-201.6, and Summary of Test Data shall be documented on a Form similar to EO VR-401-A Form 1.

The District shall be notified a minimum of 10 days prior to performing the required tests with the final results submitted to the District within 30 days of completion of the tests. The District shall receive passing test reports no later than six (6) weeks prior to the expiration date of this permit.

ABENER TEYMA MOJAVE

Verification: The project owner shall notify the District at least 10 days prior to performing the required tests. The test results shall be submitted to the District within 30 days of completion of the tests and shall be made available to the CPM if requested.

Should you have any questions or comments, please don't hesitate to contact me.

COPY TO: File SIGNED BY:

Vernon D. Leeming
Permitting Engineer
ABEINSA EPC

Mojave Desert Air Quality Management District
14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 • FAX 760.245.2022
www.mdaqmd.ca.gov

17029

MDAQMD Rule 461 Testing Notification Form

Today's Date: 8·26·2014

Facility Information: MDAQMD Co. # 1876 Fac. # 3130 ATC / PTO # N011039

Name: Mojave Solar

Site Address: Harper Lake Road (Street), Hinkley (City), CA (State) 92347 (Zip)

Site Contact Person: _____ Site Phone: _____

Testing Company Information:

Name: Belshire Environmental Services, Inc.

Site Address: 25971 Towne Centre Drive (Street) Foothill Ranch (City) CA (State) 92610 (Zip)

Testing Person: Hensley Barbour Phone: 949-460-5200 Fax: _____

Reported By: Shawna Chambers Phone: 949-460-5200 Fax: _____

Test Information: Test Date: 9/4/2014 Test Time: 7:00AM 10-day Prior Notice - ☐ *Yes* or *No* ☒

System Type: *Balance:* ☒ *Assist:* [ ] *Hirt:* [ ] *Hasstech:* [ ] *Healy:* [ ] *VST:* [ ] *AGT:* [ ] *Exec. Order #* VR-402

ATC Initial Test: ☒ *Annual Test:* [ ] *Retest:* [ ] *Cancellation:* [ ] *Reschedule:* [ ]

The following TP list is not exhaustive, refer to District permit conditions and use blank spaces for tests not listed

Scheduled	P/F	TP #	Test	Scheduled	P/F	TP #	
		201.3	Leak Decay (2")			201.1D	Leak Rate of Drop Tube Overfill Prevention Device & Drain Valve
X	P	201.3B	AGT Leak Decay (2")	X	P	201.1E	Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves
		201.3C	Tie Tank Test			Exhibit 4	Determination of Static Pressure Performance of Healy CAS VR-201/VR-202
X	P	201.4	Dynamic Back Pressure			Exhibit 5	Vapor to Liquid Volume Ratio; VR-201/202
		201.5	Air/Liquid Ratio			Exhibit 6	VST ECS Hydrocarbon Sensor Verification Test VR-203/204
X	P	201.6C	Determination of Liquid Removal of VR system*			Exhibit 7 OR 10	Nozzle Bag Test Procedure VR-202/201 OR VR-203/204
		201.1B	Static Torque of Rotatable Phase I Adaptors			Exhibit 8	Vapor Pressure Sensor Verification Test VR-203/204
		201.1C	Leak Rate of Drop Tube/Drain Valve Assembly			Exhibit 9	ISD Operational Test Procedure VR-202 OR VST ECS Processor Activation Pressure VR-203/204
						Exhibit 11, 12, 13	ISD Operational Test Procedures for VST system VR-204

Comments/notes/additional tests:

* Applicable and required when hose loop is greater than 10 inches.

2 Inch
Pressure Decay
TP201.3

Ref. No.:
Permit #: 10995
Site Name: Abengoa Mojave Solar
Address: 9 Miles North West
Hinkley Ca.
Phone: 714-744-4049

Testing Company

Name: **Orange Coast Petroleum Equipment**
Address: **1015 N. Parker**
Orange, CA 92867
Phone: **714-744-4049**

Phase I System? Two Point
Phase II System? Coaxial Balance

Tanks Manifolded? No
Vapor Pot Present? No

Total # of Nozzles 1
Products per Nozzle 1

Total # of Tanks 1

Tank Information	1	2	3	4	All
1. Product Grade	87				
2. Actual Tank Capacity, gallons	2,000				
3. Gasoline Volume, gallons	500				
4. Ullage, **(V)** gallons (line #2 minus line#3)	1,500				
Test Information	**1**	**2**	**3**	**4**	**5**
5. Start time	7:00				
6. Initial Test Pressure, inches H_2O	2.00				
7. Pressure after 1 minute, inches H_2O	1.96				
8. Pressure after 2 minutes, inches H_2O	1.92				
9. Pressure after 3 minutes, inches H_2O	1.88				
10. Pressure after 4 minutes, inches H_2O	1.83				
11. Pressure after 5 minutes, inches H_2O	1.79				
12. Allowable Final Pressure	1.72				
13. Pass / Fail (Enter "GF" for Gross failure)	PASS				

9/4/14 — Requested Test Date.
8:00 Am — Requested Test Time.
MANOMETER — What type of pressure device used?
9/3/14 — Calibration date for pressure device (90 days).
-1.86 — Enter initial tank ullage pressure (Vent if over 0.5 in. w.c., then start the 30 min no dispensing period)
2 CFM — Enter flowmeter rate, **F**(Must be 1 to 5 CFM).
2m.25. — Calculate ullage fill time, t_2. $t_2 = \frac{V}{[1522]F}$
4m.45. — Calculate gross failure time (Twice t_2).
0 — Enter ending value of drift test (Must be 0.01 in. w.c. or less).
2.01 — Record Vapor Coupler Integrity Test Assembly pressure after 1 minute and location.
PHASE II — Nitrogen introduction point. Phase I vapor coupler or Phase II vapor riser?

Tester: J Bradders
Tester Id:

Signature: J Bradders
Test Date: 9-4-14

Liquid Removal
TP 201.6 C

AQMD

Ref. No.:
AQMD Id.: 10995
Site Name: Abengoa Mojave Solar
Address: 9 Miles North West
Hinkley Ca.
Phone: 714-744-4049

Testing Company

Note: If using short version, disregard adhesion/evaporation column.

Name: **Orange Coast Petroleum Equipment**
Address: **1015 N. Parker**
Orange, CA 92867
Phone: **714-744-4049**

Dispenser Number	Product Grade	Gasoline Added (VI), ml.	Gasoline Dispensed (G), gal.	Dispense Time (T), sec.	Dispensing Rate (GPM) 60(G) / (T)	Gasoline Remaining (VF), ml.	Adhesion/ Evaporation (VW), ml.	Removal Rate ml/gal (VI-VW-VF)/G	Comments (Liquid Drained - No Test required if less than 25mL)
1	UNL					Ø			0

Tester Name: Jeff Brandt
Signature:

Tester Id.:
Test Date: 9-4-14

Updated 02/08/05 TATT Team

Dynamic Pressure
TP 201.4

Ref. No.: _____
AQMD Id: 10995
Site Name: Abengoa Mojave Solar
Address: 9 Miles North West
Hinkley Ca.
Phone: 714-744-4049

Testing Company

Name: **Orange Coast Petroleum Equipment**
Address: **1015 N. Parker**
Orange, CA 92867
Phone: **714-744-4049**

Dispenser Number	Product Grade	Nozzle Mfg. & Model Num.	60 CFH	80 CFH	Comments
1	UNL	VST	.16	.26	

9/3/14 Rotameter calibration date (Annual)
9/3/14 Pressure measuring device calibration date (Annual)
7:05 Time of back pressure unit leak check (Prior to each sites' tests)
1.98 Final pressure decay of back pressure unit in 5 minute.

Tester: Jeff Badders
Tester Id: _____

Signature: _____
Test Date: 9-4-14

Leak Rate and Cracking Pressure of P/V Vent Valves

AQMD

Ref. No.:
AQMD Id: 10995
Site Name: Abengoa Mojave Solar
Address: 9 Miles North West
Hinkley Ca.
Phone: 714-744-4049

Testing Company

Name: **Orange Coast Petroleum Equipment**
Address: **1015 N. Parker**
Orange, CA 92867
Phone: **714-744-4049**
Calibration Date of Flow Meter
Calibration Date of Pressure Gauge

P/V Valve Manufacturer:	Husky	Model Number: 5885	Pass/Fail: PASS
Manufacturer Specified Positive Leak Rate (CFH):	.Ø5	Manufacturer Specified Negative Leak Rate (CFH):	.21
Measured Positive Leak Rate(CFH)	Ø	Measured Negative Leak Rate (CFH)	Ø
Positive Cracking Pressure (in. H2O)	5.3Ø	Negative Cracking Pressure (in. H2O)	9.6Ø

P/V Valve Manufacturer:		Model Number:	Pass/Fail:
Manufacturer Specified Positive Leak Rate (CFH):		Manufacturer Specified Negative Leak Rate (CFH):	
Measured Positive Leak Rate(CFH)		Measured Negative Leak Rate (CFH)	
Positive Cracking Pressure (in. H2O)		Negative Cracking Pressure (in. H2O)	

P/V Valve Manufacturer:		Model Number:	Pass/Fail:
Manufacturer Specified Positive Leak Rate (CFH):		Manufacturer Specified Negative Leak Rate (CFH):	
Measured Positive Leak Rate(CFH)		Measured Negative Leak Rate (CFH)	
Positive Cracking Pressure (in. H2O)		Negative Cracking Pressure (in. H2O)	

P/V Valve Manufacturer:		Model Number:	Pass/Fail:
Manufacturer Specified Positive Leak Rate (CFH):		Manufacturer Specified Negative Leak Rate (CFH):	
Measured Positive Leak Rate(CFH)		Measured Negative Leak Rate (CFH)	
Positive Cracking Pressure (in. H2O)		Negative Cracking Pressure (in. H2O)	

P/V Valve Manufacturer:		Model Number:	Pass/Fail:
Manufacturer Specified Positive Leak Rate (CFH):		Manufacturer Specified Negative Leak Rate (CFH):	
Measured Positive Leak Rate(CFH)		Measured Negative Leak Rate (CFH)	
Positive Cracking Pressure (in. H2O)		Negative Cracking Pressure (in. H2O)	

P/V Valve Manufacturer:		Model Number:	Pass/Fail:
Manufacturer Specified Positive Leak Rate (CFH):		Manufacturer Specified Negative Leak Rate (CFH):	
Measured Positive Leak Rate(CFH)		Measured Negative Leak Rate (CFH)	
Positive Cracking Pressure (in. H2O)		Negative Cracking Pressure (in. H2O)	

Tester: Jeff Badders
Tester Id:
Signature: [signature]
Test Date: 9-4-14

belshire
environmental services, inc.

25971 Towne Centre Drive
Foothill Ranch, CA 92610
(949) 460-5200

BELSHIRE TESTING & COMPLIANCE SERVICES

WORK ORDER

Date	Job No.	Truck No.	Customer PO No.	Closeout No.
9.4.14	13692	2		

Site Information:

Brand Name: MOJAVE SOLAR Address: HARPER LAKE RD.

Station No.: _____ City: HINKLEY Phone: _____

Job Type:

☐ Secondary Containment ☐ Monitor Certification ☒ Vapor Recovery Test ☐ Repairs ☐ Inspection / Other

Services Performed:

*AST START-UP VAPOR RECOVERY TEST

TP 201.3B PASS

TP 201.4 PASS

TP 201.6C PASS

TP 201.1E PASS

Arrival: 6:30 **Departure:** _____ **Time On-Site: (Less Meals)** _____ **Number of Personnel:** 2

Jeff Buddress — N/A

Technician Name **Dealer/Manager Name**

Technician Signature **Dealer/Manager Signature**

WHITE - Original CANARY - Leave at Site PINK - Invoice Copy

CALIBRATION CERTIFICATE

Date of Calibration: :4-07-14
Calibrated by: C Sims
Customer: ICON Safety

Certificate Number – 4071401
Signed: S

Description: Tiger Select
Manufacturer: Ion Science
Type Number: N/A
Serial Number:T-107685

Calibration Due Date:4-15

Status of instrument upon receipt : New

X	Correct Working Condition
	Minor Work Required
	Incorrect Operation or Mechanically Broken

Measurement standards are derived from volumetric and time sources, which themselves are traceable to NIST. The relevant procedures are recorded and are available for inspection if required. The following indicates the identification numbers of traceable items used during the calibration procedure.

LOT# BAN-21-5-8

ION Science hereby certifies that on the day of calibration the instrument was working according to the manufacturer's original sales specification as checked by the calibration procedure, unless otherwise stated.

RESULTS AFTER CALIBRATION

Applied Flow: 100ppm Isobutylene	Instrument Indication: 100ppm Isobutylene
Applied Flow. 5ppm Benzene	Instrument Indication 5.1ppm Benzene

CHECKLIST FOR

PHOCHECK TIGER PRODUCT RANGE

KIT CONTENTS

PhoCheck Tiger Instrument	
PhoCheck Tiger Select Instrument	✓
Li-ion Battery Pack	✓
Alkaline Battery Pack	
Instrument Boot	✓
Charger	✓
Power Supply (12V)	✓
Quick Start Guide (Standard)	
Quick Start Guide (Tiger Select)	✓
Warranty Registration Card	✓
USB Stick	✓
USB Cable	✓
Accessory Kit	✓

Benzene Pre-Filter Tubes (pack of 10)	✓
Benzene Tube Holder	✓
Benzene Tube Opener	✓

UPGRADES

H&S (STEL & TWA)	861300	
PPB (Sensitivity)	861301	
Data Logging (Full)	861303	
Single Log (Push to log)	861309	
Multi Log	861310	
Tiger Select		✓

QUALITY CHECK

Software version:	0.4.22
Integrity seal present?	(Yes) / No

Final instrument inspection date:	[signature]	06/11/13

PD-FM-075-07

Chris Anderson
10/01/2014 02:44 PM

Send To	"Steven.Pochmara@abeinsaepc.abengoa.com" <Steven.Pochmara@abeinsaepc.abengoa.com>
cc	"drundqui@energy.state.ca.us" <drundqui@energy.state.ca.us>, "drundqui@energy.ca.gov" <drundqui@energy.ca.gov>, "Kathleen.Sullivan@solar.abengoa.com" <Kathleen.Sullivan@solar.abengoa.com>, "nicholas.potrovitza@solar.abengoa.com"
bcc	
Subject	RE: AQ-54-00-00

Results received, I'll add these to the file.

Thanks

Chris

From: Steven.Pochmara@abeinsaepc.abengoa.com [mailto:Steven.Pochmara@abeinsaepc.abengoa.com]

Sent: Wednesday, October 01, 2014 1:12 PM
To: Chris Anderson
Cc: drundqui@energy.state.ca.us; drundqui@energy.ca.gov; Kathleen.Sullivan@solar.abengoa.com; nicholas.potrovitza@solar.abengoa.com; frances.sanchez@solar.abengoa.com; william.grisolia@solar.abengoa.com; manjunath.shivalingappa@abeinsaepc.abengoa.com; angel.muller@abeinsaepc.abengoa.com; vernon.leeming@abeinsaepc.abengoa.com; mercedes.macias@abeinsaepc.abengoa.com
Subject: AQ-54-00-00

Good Afternoon Chris,
Please see attached for the VOC calculations and testing results for the onsite gasoline tank for the Mojave Solar site. Per the AQ-54 CEC compliance, we are required to submit this information to MDAQMD. No approval is required. Don't hesitate to contact me with any questions or concerns.

Regards,

Steven Pochmara - Permit Manager

ABENGOA
Abeinsa
Teyma - Phoenix - Arizona - USA
13911 Park Avenue, Suite 208
Victorville, CA 92392
Phone: +13142751312 Cell: +14802871419 Fax: +16022659360
Steven.Pochmara@teyma.abengoa.com
www.teyma.com

ABENER TEYMA MOJAVE

LETTER OF TRANSMITTAL

Date: October 27, 2014
Subject: Mojave Solar Project (09-AFC-5C)
Condition Number: AQ-67
Description: **Carbon Adsorption System VOC Monitoring Procedure**
Submittal No.: AQ67-00-00
To: Mr. Chris Anderson
Mojave Desert Air Quality
Management District.

WE ARE SENDING YOU

Document Name	Title	REV
AQ-67 Technical Memo		
Carbon Adsorption System VOC Monitoring Procedure	Carbon Adsorption System VOC Monitoring Procedure	0
Carbon Adsorption System	Carbon Adsorption System	0
VOC (as Hexane) Concentration Log	Attachment 1 VOC (as Hexane) Concentration Log	0
Tiger Select Calibration Sheet	Attachment 2 Phocheck Tiger Select Calibration Sheet	0
Tiger Instrument User Manual	Attachment 3 Phocheck Tiger Instrument User Manual	0
Tiger Select Instrument User Manual	Attachment 4 Phocheck Tiger Select Instument User Manual	0

THESE ARE TRANSMITTED as checked below:

☒ For Approval

REMARKS

COPY TO: File

SIGNED BY:

Vernon D. Leeming
Permitting Engineer

ABENER TEYMA MOJAVE

ABEINSA EPC

ABENER TEYMA MOJAVE

Technical Memo

Date:	October 27, 2014
Subject:	Mojave Solar Project (09-AFC-5C)
Condition Number:	AQ-67
Description:	**Carbon Adsorption System VOC Monitoring Procedure**
Submittal No.:	AQ67-00-00

Mr. Chris Anderson
Mojave Desert Air Quality
Management District.
Permitting Department
14306 Park Ave
Victorville CA 92392
canderson@mdaqmd.ca.gov

Dear Mr. Anderson,

In accordance with AQ-67 we are submitting the Carbon Adsorption System VOC Monitoring procedure for your approval. For your convenience, we are including the Compliance language below:

AQ-67:
During operation, the project owner shall monitor VOC (as hexane) measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

Should you have any questions or comments, please don't hesitate to contact me.

COPY TO: File SIGNED BY:

Vernon D. Leeming
Permitting Engineer
ABEINSA EPC

October 27, 2014

Mr. Chris Anderson
Mojave Desert Air Quality
Management District.
Permitting Department
14306 Park Ave
Victorville CA 92392
canderson@mdaqmd.ca.gov

PROCEDURE FOR MONITORING VOC (AS HEXANE) MEASURED AT OUTLET FROM THE CARBON BEDS USING A DSTRICT APPROVED PHOTO IONIZATIOON DETECTOR (PID)

Dear Mr. Anderson:

This request is being submitted in behalf of Abeinsa EPC, primary contractor working at Mojave Solar LLC. Abeinsa EPC(AEPC) is requesting the Mojave Desert Air Quality Management District to review and approve the VOC monitoring procedure as per AQ-67 and the District's approval of using the PhoCheck Tiger Select Photo Ionization Detector.

Background

Mojave Solar LLC is a wholly owned subsidiary of Abengoa Solar Inc. The project will use established parabolic trough solar thermal technology to produce electrical power using a steam turbine generator fed from a solar steam generator. The solar steam generator receives heated heat transfer fluid (HTF) from solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun. The HTF is a synthetic material whose composition is a mixture of 26.5% biphenyl and 73.5% diphenyl ether. The HTF is heated to between 100 and 740 degrees Fahrenheit and through a series of heat exchangers, generates steam for power production. The California Energy Commission (CEC) has exclusive jurisdiction to license this project. The Mojave Solar site will occupy a 1,765-acre site in an unincorporated area of San Bernardino County near the community of Hinkley, California. The project site is accessed by Harper Lake Road, which is located approximately 20 miles west of Barstow along the Highway 58 corridor. The project site is approximately six miles north of where Harper Lake Road intersects with Highway 58.

The Project has two air pollution control devices – carbon adsorption system for the HTF/Ullage expansion system. According to the AQ-67 requirement, during operation, the project owner shall monitor volatile organic compound (VOC), as hexane, measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).

Scope of Application

This procedure is used to monitor the VOC concentrations (as hexane) weekly.

Summary of the Procedure

A vent gas sample is monitored for the VOC's using a Photo Ionization Detector (PID) at the Outlets of the Carbon Adsorption System.

Sampling Equipment

PhoCheck Tiger Select Photo Ionization Detector

Procedure

1. Identify the sampling location at the Outlet of the Carbon Adsorption System in operation.
2. Use the calibrated Photo Ionization Detector (PID) to measure VOC concentration in parts per million (ppm).
3. Setup the PID as per the manufacturer's O&M (Phocheck Tiger and Pho Check Tiger Select Manuals) before measuring. See attachments 3 and 4.
4. Once the PID is turned on, insert the PID at the Outlet location and wait for about 3 minutes to allow the reading to stabilize.
5. Once the reading is recorded, close the outlet sampling port.
6. The reading is recorded by following the manufacturer's O&M for Phocheck Tiger and PhoCheck Tiger Select Manuals.
7. Record the readings weekly in the VOC log sheet and save the electronic file.
8. The records shall be available for inspection for a period of 5 years.

Calibration

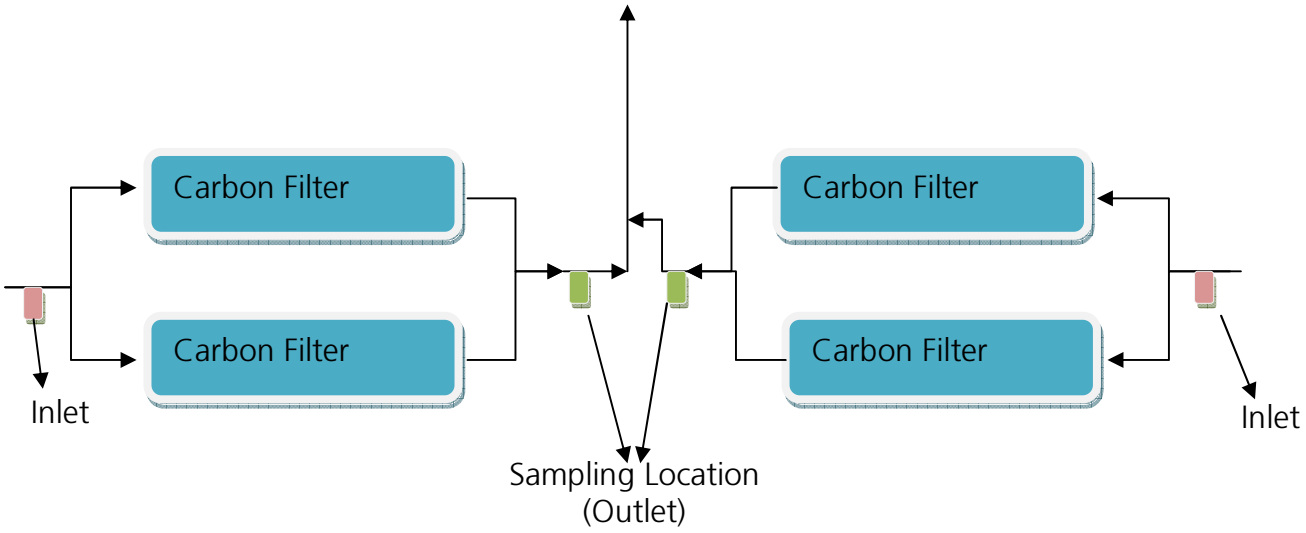
The PhoCheck Tiger Select Photo Ionization Detector will be calibrated as per the manufacturer's recommendations.

VOC concentration log

All measurements from the weekly VOC test shall be recorded in the VOC log table included in the appendix.

System Configuration

Carbon Adsorption System



Please confirm if the above described VOC testing procedure satisfies the requirements set forth in AQ-67.
Please feel free to contact the undersigned at (480) 768-7793 if you have any questions or require additional information.

Sincerely,

Manjunath Shivalingappa
Environmental Engineer
Abeinsa EPC, LLC

(480) 768-7793
Manjunath.shivalingappa@abeinsaepc.abengoa.com

Cc: Efrain Perez, Steven Pochamora

Attachments:

1. VOC (as Hexane) Concentration Log
2. Phocheck Tiger Select Calibration Sheet
3. Phocheck Tiger Instrument User Manual
4. Phocheck Tiger Select Instrument User Manual

MOJAVE DESERT AQMD
14306 Park Avenue, Victorville, CA 92392-2310

AUTHORITY TO CONSTRUCT

B011046

If construction is not completed by the expiration date of this permit, it may be renewed for one additional year upon payment of applicable fees. Any additional extension will require the written approval of the Air Pollution Control Officer. This Authority to Construct may serve as a temporary Permit to Operate provided the APCO is given prior notice of intent to operate and the Permit to Operate is not specifically denied.

EXPIRES LAST DAY OF: SEPTEMBER 2014

OWNER OR OPERATOR (Co: 1876)
Mojave Solar LLC
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

EQUIPMENT LOCATION (Fac: 3130)
Mojave Solar
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

Description:
HEAT TRANSFER FLUID ULLAGE/EXPANSION SYSTEM (ALPHA) consisting of:
Heat Transfer Fluid (HTF) expansion, storage, and condensation system as follows:

Capacity	Equipment Desciption
0	Four vertical ASME rated expansion vessels with a nitrogen ullage cooler on vent stack before scrubber
0	One horizontal ASME rated low boiler condensate receiver vessel
0	Ullage vent scrubber
0	Overflow tank vent scrubber
0	Activated carbon filters-ullage/overflow tank system (Permit C012015)
0	Two vertical HTF overflow/storage tanks with water cooled liquid HTF cooler
0	Associated temperature monitoring devices
0	HTF circulation pumps
0	Associated valves, flanges/connectors, pump seals, and pressure relief valves
0	One common vent stack venting carbon beds

CONDITIONS:

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This system shall store only HTF, in liquid and/or vapor phase (including low boilers and high boilers), and nitrogen for blanketing.

3. The four (4) vertical expansion vessels, low boiler condensate receiver vessel, and two (2) vertical HTF overflow tanks shall be operated at all times under a nitrogen blanket.

4. The ullage/expansion system nitrogen venting (to atmoshpere) shall be carried out only through District permit unit C012015.

5. The owner/operator shall establish an inspection and maintenance program to determine, repair, and log leaks in HTF piping network and expansion tanks. Inspection and maintenance program and documentation shall be available to District staff upon request.
a. All pumps, compressors and pressure relief devices (pressure relief valves or rupture disks) shall be electronically, audio, or visually inspected once every operating day.

Fee Schedule: 7(i) | Rating: 1 device | SIC: 4911 | SCC: 40703601 | Location/UTM(Km): 470E/3877N

This permit does not authorize the emission of air contaminants in exces of those allowed by law, including Division 26 of the Health and Safty Code of the State of California and the Rules and Regulations of the District. This permit cannot be constructed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This permit must be renewed by the expiration date above. If billing for renewal fee required by Rule 301(c) is not received by expiration date above, please contact the District.

Mojave Solar LLC
13911 Park Avenue, Suite 206
Victorville, CA 92392-2407

BY:

Eldon Heaston
Air Pollution Control Officer

DATE: 03/03/2014

b. All accessible valves, fittings, pressure relief devices (PRDs), hatches, pumps, compressors, etc. shall be inspected quarterly using a leak detection device such as a Foxboro OVA 108 calibrated for methane.
c. Inspection frequency for accessible components, except pumps, compressors and pressure relief valves, may be changed from quarterly to annual when two percent or less of the components within a component type are found to leak during an inspection for five consecutive quarters.
d. Inspection frequency for accessible components, except pumps, compressors and pressure relief valves, shall be increased to quarterly when more than two percent of the components within a component type are found to leak during any inspection or report.
e. If any evidence of a potential leak is found the indication of the potential leak shall be eliminated within 7 calendar days of detection.
f. VOC leaks greater than 10,000-ppmv shall be repaired within 24-hours of detection.
g. After a repair, the component shall be re-inspected for leaks as soon as practicable, but no later than 30 days after the date on which the component is repaired and placed in service.
h. O/o shall maintain a log of all VOC leaks exceeding 10,000-ppmv, including location, component type, date of leak detection, emission level (ppmv), method of leak detection, date of and repair, date and emission level of reinspection after leak is repaired.
i. O/o shall maintain records of the total number of components inspected, and the total number and percentage of leak components found, by component types made.
j. O/o shall maintain record of the amount of HTF replaced on a monthly basis for a period of 5 years.

6. If current non-criteria substances become regulated as toxic or hazardous substances and are used in this equipment, the owner/operator (o/o) shall submit to the District a plan demonstrating how compliance will be achieved and maintained with such regulations.

MOJAVE DESERT AQMD
14306 Park Avenue, Victorville, CA 92392-2310

AUTHORITY TO CONSTRUCT

B011047

If construction is not completed by the expiration date of this permit, it may be renewed for one additional year upon payment of applicable fees. Any additional extension will require the written approval of the Air Pollution Control Officer. This Authority to Construct may serve as a temporary Permit to Operate provided the APCO is given prior notice of intent to operate and the Permit to Operate is not specifically denied.

EXPIRES LAST DAY OF: SEPTEMBER 2014

OWNER OR OPERATOR (Co: 1876)
Mojave Solar LLC
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

EQUIPMENT LOCATION (Fac: 3130)
Mojave Solar
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

Description:
HEAT TRANSFER FLUID ULLAGE/EXPANSION SYSTEM (BETA) consisting of:
Heat Transfer Fluid (HTF) expansion, storage, and condensation system as follows:

Capacity	Equipment Desciption
0	Four vertical ASME rated expansion vessels with a nitrogen ullage cooler on vent stack before scrubber
0	One horizontal ASME rated low boiler condensate receiver vessel
0	Ullage vent scrubber
0	Overflow tank vent scrubber
0	Two sets of activated carbon filters; ullage system and overflow system (Permit C012016)
0	Two vertical HTF overflow/storage tanks with water cooled liquid HTF cooler
0	

CONDITIONS:

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This system shall store only HTF, in liquid and/or vapor phase (including low boilers and high boilers), and nitrogen for blanketing.

3. The four (4) vertical expansion vessels, low boiler condensate receiver vessel, and two (2) vertical HTF overflow tanks shall be operated at all times under a nitrogen blanket.

4. The ullage/expansion system nitrogen venting (to atmosphere) shall be carried out only through District permit unit C012016.

5. The owner/operator shall establish an inspection and maintenance program to determine, repair, and log leaks in HTF piping network and expansion tanks. Inspection and maintenance program and documentation shall be available to District staff upon request.
a. All pumps, compressors and pressure relief devices (pressure relief valves or rupture disks) shall be electronically, audio, or visually inspected once every operating day.
b. All accessible valves, fittings, pressure relief devices (PRDs), hatches, pumps, compressors, etc. shall be inspected quarterly using a leak detection device such as a Foxboro OVA 108 calibrated for methane.
c. Inspection frequency for accessible components, except pumps, compressors and pressure relief valves, may be changed from quarterly to annual when two percent or less of the components within a component type are found to leak during an inspection for five consecutive

Fee Schedule: 7(i) | Rating: 1 device | SIC: 4911 | SCC: 40703601 | Location/UTM(Km): 470E/3877N

This permit does not authorize the emission of air contaminants in exces of those allowed by law, including Division 26 of the Health and Safty Code of the State of California and the Rules and Regulations of the District. This permit cannot be constructed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This permit must be renewed by the expiration date above. If billing for renewal fee required by Rule 301(c) is not received by expiration date above, please contact the District.

Mojave Solar LLC
13911 Park Avenue, Suite 206
Victorville, CA 92392-2407

BY:

Eldon Heaston
Air Pollution Control Officer

DATE: 03/03/2014

quarters.
d. Inspection frequency for accessible components, except pumps, compressors and pressure relief valves, shall be increased to quarterly when more than two percent of the components within a component type are found to leak during any inspection or report.
e. If any evidence of a potential leak is found the indication of the potential leak shall be eliminated within 7 calendar days of detection.
f. VOC leaks greater than 10,000-ppmv shall be repaired within 24-hours of detection.
g. After a repair, the component shall be re-inspected for leaks as soon as practicable, but no later than 30 days after the date on which the component is repaired and placed in service.
h. O/o shall maintain a log of all VOC leaks exceeding 10,000-ppmv, including location, component type, date of leak detection, emission level (ppmv), method of leak detection, date of and repair, date and emission level of reinspection after leak is repaired.
i. O/o shall maintain records of the total number of components inspected, and the total number and percentage of leak components found, by component types made.
j. O/o shall maintain record of the amount of HTF replaced on a monthly basis for a period of 5 years.

6. If current non-criteria substances become regulated as toxic or hazardous substances and are used in this equipment, the owner/operator (o/o) shall submit to the District a plan demonstrating how compliance will be achieved and maintained with such regulations.

AQ-7 (Deleted)

AQ-8 (Deleted)

Application No. ~~00010906~~ MD1000001202 and ~~00010907~~ MD1000001204 (Two - HTF Ullage/Expansion System)

EQUIPMENT DESCRIPTION

Two HTF ullage/expansion systems.

AQ-10 This system shall store only HTF, ~~specially the condensable fraction of the vapors vented from the ullage system.~~ **in liquid and/or vapor phase (including low boilers and high boilers), and nitrogen for blanketing.**

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-11 The ~~expansion tanks (5)~~, ~~nitrogen condensing tank~~ **four (4) vertical expansion vessels, low boiler condensate receiver vessel,** and two **(2)** vertical HTF ~~storage~~ **overflow** tanks shall be operated at all times under a nitrogen blanket.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-12 The ullage/expansion system nitrogen venting shall be carried out only through ~~vents which have vapor condensing coolers which shall be maintained at or below 120 degrees Fahrenheit.~~ **District permit numbers C012015 and C012016.**

Verification: The project owner shall provide the District and CPM manufacturer design specifications showing compliance with this condition at least 30 days prior to the installation of the ullage/expansion vent system. ~~The project owner shall have active temperature gauges that can be inspected to show compliance with this condition.~~

~~**AQ-13** The HTF storage tank shall have in place a properly operating liquid HTF air cooler which shall maintain the tank at or below 165 degrees Fahrenheit.~~

~~**Verification:** The project owner shall provide the District and CPM manufacturer design specifications showing compliance with this condition at least 30 days prior to the installation of the HTF storage tanks. The project owner shall have active temperature gauges that can be inspected to show ongoing compliance with this condition.~~

~~**AQ-14** The nitrogen condensing tanks shall be maintained at or below 176 degrees Fahrenheit.~~

~~**Verification:** The project owner shall provide the District and CPM manufacturer design specifications showing compliance with this condition at least 30 days prior to~~

the installation of the nitrogen condensing tanks. The project owner shall have active temperature gauges that can be inspected to show ongoing compliance with this condition.

AQ-15 Vent release and HTF storage tank temperatures shall be monitored in accordance with a District approved Inspection, Monitoring and Maintenance plan.

Verification: The project owner shall provide the District for review and approval and the CPM for review the required Inspection, Monitoring and Maintenance plan at least 30 days prior to the installation of the HTF storage tanks and vent systems.

AQ-13 (Reserved)

AQ-14 (Reserved)

AQ-15 (Reserved)

AQ-17 The project owner shall submit to the District a compliance test protocol within sixty (60) days of start-up and shall conduct all required compliance/certification tests in accordance with a District approved test plan. Thirty (30) days prior to the compliance/certification tests the project owner shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing.

Verification: The project owner shall provide a compliance test protocol to the District for approval and CPM for review at least no later than sixty (60) days after start-up and submit a test plan to the District for approval and CPM for review at least thirty (30) days prior to the compliance tests. The project owner shall notify the District and the CPM within ten (10) working days before the execution of the compliance tests required in **AQ-18** and **AQ-19**, and the test results shall be submitted to the District and to the CPM within forty-five (45) days after the tests are conducted.

AQ-18 The project owner shall perform the following initial compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District within 180 days of initial start up. The following compliance tests are required:

a. VOC as CH_4 in ppmvd and lb/hr (measured per USEPA Reference Methods 25A and 18 or equivalent).

b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).

~~**Verification:** The project owner shall submit the test results to the District and to the CPM within 180 days after initial start up.~~

~~**AQ-19** The project owner shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:~~

~~a. VOC as CH_4 in ppmvd and lb/hr (measured per USEPA Reference Methods 25A and 18 or equivalent).~~

~~b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).~~

~~Additionally, records of all compliance tests shall be maintained on site for a period of five (5) years and presented to District personnel upon request.~~

~~**Verification:** As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.~~

~~**AQ-20** Emissions from this equipment may not exceed the following emission limits, based on a calendar day summary:~~

~~a. VOC as CH_4 – 4.55 lb/day, verified by compliance test.~~

~~b. Benzene – 1.9 lb/day, verified by compliance test.~~

~~**Verification:** As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.~~

AQ-17 (Reserved)

AQ-18 (Reserved)

AQ-19 (Reserved)

AQ-20 (Reserved)

Application No. ~~00010712~~ MD1000001206 and ~~00010713~~ MD1000001207 (Two - ~~4,190 HP~~ 2,280kW Emergency IC Engine)

EQUIPMENT DESCRIPTION

Two - ~~190 HP~~ 2,280kW diesel fueled emergency generator engines, each driving a generator.

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

AUTHORITY TO CONSTRUCT

C012015

If construction is not completed by the expiration date of this permit, it may be renewed for one additional year upon payment of applicable fees. Any additional extension will require the written approval of the Air Pollution Control Officer. This Authority to Construct may serve as a temporary Permit to Operate provided the APCO is given prior notice of intent to operate and the Permit to Operate is not specifically denied.

EXPIRES LAST DAY OF: SEPTEMBER 2014

OWNER OR OPERATOR (Co.#1876)

Mojave Solar LLC
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

EQUIPMENT LOCATION (Fac.#3130)

Mojave Solar
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

Description:
CARBON ADSORPTION SYSTEM, HTF ULLAGE/EXPANSION SYSTEM (ALPHA) consisting of: Carbon adsorption system having two (2) multi-bed carbon filter sets capturing ullage/expansion system emissions. Ullage vent scrubber and overflow tank vent scrubber will each vent only to their own carbon filter set. Both sets will vented to atmosphere through one common stack.

CONDITIONS:

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment must be in use and operating properly at all times the HTF ullage/expansion system with valid District Permit B011046 is venting.

3. This carbon adsorption system shall provide at a minimum 95% control efficiency of VOC emissions vented from the HTF ullage/expansion system under valid District Permit B011046. Control efficiency shall be demonstrated by sampling VOC emissions per US EPA Method 25 at the inlet and outlet of the carbon beds during initial and annual compliance tests.

Fee Schedule: 7 (h)	Rating: 1 device	SIC: 4911	SCC: 30688801	Location/UTM(Km): 470E/3877N

This permit does not authorize the emission of air contaminants in exces of those allowed by law, including Division 26 of the Health and Safty Code of the State of California and the Rules and Regulations of the District. This permit cannot be constructed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This permit must be renewed by the expiration date above. If billing for renewal fee required by Rule 301(c) is not received by expiration date above, please contact the District.

Mojave Solar LLC
13911 Park Avenue, Suite 206

Victorville, CA 92392-2407

By: _____
Eldon Heaston
Air Pollution Control Officer

4. The owner/operator shall prepare and submit a monitoring and change-out plan for the carbon adsorption system which ensures that the system is operating at optimal control efficiency at all times for District approval 60 days prior to commercial operation date (COD). Once approved, any subsequent changes to the monitoring and change-out plan must be submitted in writing to the District for approval prior to implementation.

5. Total emissions of VOC to the atmosphere shall not exceed 792.1 lbs/year, calculated based on the most recent test results.

6. Total emissions of benzene to the atmosphere shall not exceed 507.4 lbs/year, calculated based on the most recent test results.

7. During operation, o/o shall monitor VOC (as hexane) measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).

8. PID shall be considered invalid if not calibrated in accordance with the manufactures recommended calibration procedures.

9. The o/o shall maintain an operations log (in electronic or hardcopy format) current and on-site for a period of five (5) years. The log shall contain at a minimum the following information and shall be provided to District personnel upon request.
a. Date and time of VOC monitoring;
b. Results of VOC monitoring; and
c. Date and description of all maintenance, malfunctions, repairs, and carbon change out(s).

10. The o/o shall provide stack sampling ports and platforms necessary to perform source tests required to verify compliance with District rules, regulations and permit conditions. The location of these ports and platforms shall be subject to District approval.

11. Prior to January 31 of each new year, the o/o of this unit shall submit to the District a summary report of all VOC emissions (based on annual source test results).

12. The o/o shall conduct all required compliance/certification tests in accordance with a District-approved test plan. Thirty (30) days prior to the compliance/certification tests the operator shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing is completed.

13. The o/o shall perform the following initial compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District within 180 days of COD. The following compliance tests are required:
a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25 and 18 or equivalent).
b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).

14. The o/o shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25A and 18 or equivalent).
b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).

Additionally, records of all compliance tests shall be maintained on site for a period of five (5) years and presented to District

personnel upon request.

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

AUTHORITY TO CONSTRUCT

C012016

If construction is not completed by the expiration date of this permit, it may be renewed for one additional year upon payment of applicable fees. Any additional extension will require the written approval of the Air Pollution Control Officer. This Authority to Construct may serve as a temporary Permit to Operate provided the APCO is given prior notice of intent to operate and the Permit to Operate is not specifically denied.

EXPIRES LAST DAY OF: SEPTEMBER 2014

OWNER OR OPERATOR (Co.#1876)

Mojave Solar LLC
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

EQUIPMENT LOCATION (Fac.#3130)

Mojave Solar
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

Description:
CARBON ADSORPTION SYSTEM, HTF ULLAGE/EXPANSION SYSTEM (BETA) consisting of: Carbon adsorption system having two (2) multi-bed carbon filter sets capturing ullage/expansion system emissions. Ullage vent scrubber and overflow tank vent scrubber will each vent only to their own carbon filter set. Both sets will vented to atmosphere through one common stack.

CONDITIONS:

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment must be in use and operating properly at all times the HTF ullage/expansion system with valid District Permit B011047 is venting.

3. This carbon adsorption system shall provide at a minimum 95% control efficiency of VOC emissions vented from the HTF ullage/expansion system under valid District Permit B011047. Control efficiency shall be demonstrated by sampling VOC emissions per US EPA Method 25 at the inlet and outlet of the carbon beds during initial and annual compliance tests.

Fee Schedule: 7 (h) | Rating: 1 device | SIC: 4911 | SCC: 30688801 | Location/UTM(Km): 470E/3877N

This permit does not authorize the emission of air contaminants in exces of those allowed by law, including Division 26 of the Health and Safty Code of the State of California and the Rules and Regulations of the District. This permit cannot be constructed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This permit must be renewed by the expiration date above. If billing for renewal fee required by Rule 301(c) is not received by expiration date above, please contact the District.

Mojave Solar LLC
13911 Park Avenue, Suite 206

Victorville, CA 92392-2407

By:
Eldon Heaston
Air Pollution Control Officer

4. The owner/operator shall prepare and submit a monitoring and change-out plan for the carbon adsorption system which ensures that the system is operating at optimal control efficiency at all times for District approval 60 days prior to commercial operation date (COD). Once approved, any subsequent changes to the monitoring and change-out plan must be submitted in writing to the District for approval prior to implementation.

5. Total emissions of VOC to the atmosphere shall not exceed 792.1 lbs/year, calculated based on the most recent test results.

6. Total emissions of benzene to the atmosphere shall not exceed 507.4 lbs/year, calculated based on the most recent test results.

7. During operation, o/o shall monitor VOC (as hexane) measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).

8. PID shall be considered invalid if not calibrated in accordance with the manufactures recommended calibration procedures.

9. The o/o shall maintain an operations log (in electronic or hardcopy format) current and on-site for a period of five (5) years. The log shall contain at a minimum the following information and shall be provided to District personnel upon request.
a. Date and time of VOC monitoring;
b. Results of VOC monitoring; and
c. Date and description of all maintenance, malfunctions, repairs, and carbon change out(s).

10. The o/o shall provide stack sampling ports and platforms necessary to perform source tests required to verify compliance with District rules, regulations and permit conditions. The location of these ports and platforms shall be subject to District approval.

11. Prior to January 31 of each new year, the o/o of this unit shall submit to the District a summary report of all VOC emissions (based on annual source test results).

12. The o/o shall conduct all required compliance/certification tests in accordance with a District-approved test plan. Thirty (30) days prior to the compliance/certification tests the operator shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing is completed.

13. The o/o shall perform the following initial compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District within 180 days of COD. The following compliance tests are required:
a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25 and 18 or equivalent).
b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).

14. The o/o shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25A and 18 or equivalent).
b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).

Additionally, records of all compliance tests shall be maintained on site for a period of five (5) years and presented to District

personnel upon request.

Verification: The project owner shall submit to the CPM gasoline throughput records demonstrating compliance with this condition as part of the Annual Compliance Report. The project owner shall maintain on site the annual gasoline throughput records and shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-59 The project owner shall install, maintain, and operate **Enhanced Vapor Recovery (**EVR**)** Phase I **and Phase II** in compliance with ~~CARB Executive Order VR-401-A, and Phase II vapor recovery in accordance with G-70-116-F~~**132-A current ARB Executive Orders with the exception that hanging hardware shall be EVR Balance Phase II type hanging hardware (Vapor Systems Technologies [VST] or other ARB Approved EVR Phase II Hardware)**. In the event of conflict between these permit conditions and/or the referenced EO's the more stringent requirements shall govern. **[Rule 204]**

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-60 The project owner shall install, maintain, and operate this equipment in compliance with these permit conditions and 40 CFR Part 63 Subpart CCCCC; in the event of conflict the more stringent requirements shall govern. [Rule 204]

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Application No. MD100000tbd and MD100000tbd (Two Air Pollution Control Devices- Carbon Adsorption System for the HTF Ullage/Expansion system)

EQUIPMENT DESCRIPTION

Two Air Pollution Control Devices- Carbon Adsorption System for the HTF Ullage/Expansion system

AQ-61 Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-62 This equipment must be in use and operating properly at all times the HTF ullage/expansion system with valid District Permit numbers B011046 and B011047 is venting.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-63 This carbon adsorption system shall provide at a minimum 95% control efficiency of VOC emissions vented from the HTF ullage/expansion system under valid District Permit numbers B011046 and B011047. Control efficiency shall be demonstrated by sampling VOC emissions per US EPA Method 25 at the inlet and outlet of the carbon beds during initial and annual compliance tests.

Verification: The project owner shall notify the District and the CPM within fifteen (15) working days before the execution of the compliance test required in this condition. The initial test results shall be submitted to the District and to the CPM within 180 days of initial start up. As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with control efficiency.

AQ-64 The project owner shall prepare and submit a monitoring and change-out plan for the carbon adsorption system which ensures that the system is operating at optimal control efficiency at all times for District approval 60 days prior to commercial operation date (COD). Once approved, any subsequent changes to the monitoring and change-out plan must be submitted in writing to the District for approval prior to implementation.

Verification: The project owner shall provide the District for review and approval and the CPM for review the required monitoring and change-out plan within the timeframe required by this condition.

AQ-65 Total emissions of volatile organic compounds (VOC) to the atmosphere shall not exceed 792.1 lbs/year, calculated based on the most recent test results.

Verification: As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-66 Total emissions of benzene to the atmosphere shall not exceed 507.4 lbs/year, calculated based on the most recent test results.

Verification: As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-67 During operation, the project owner shall monitor VOC (as hexane) measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-68 The photo Ionization detector shall be considered invalid if not calibrated in accordance with the manufactures recommended calibration procedures.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-69 The project owner shall maintain an operations log (in electronic or hardcopy format) current and onsite for a period of five (5) years. The log shall contain at a minimum the following information and shall be provided to District personnel upon request.

a. Date and time of VOC monitoring;

b. Results of VOC monitoring; and

c. Date and description of all maintenance, malfunctions, repairs, and carbon change out(s).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-70 Prior to January 31 of each new year, the project owner of this unit shall submit to the District a summary report of all VOC emissions (based on annual source test results).

Verification: As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-71 The project owner shall provide stack sampling ports and platforms necessary to perform source tests required to verify compliance with District rules, regulations and permit conditions. The location of these ports and platforms shall be subject to District approval.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-72 The project owner shall conduct all required compliance/certification tests in accordance with a District-approved test plan. Thirty (30) days prior to the compliance/certification tests the operator shall provide a

written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing is completed.

Verification: The project owner shall provide a compliance test protocol to the District for approval and CPM for review at least thirty (30) days prior to the compliance tests. The project owner shall notify the District and the CPM within ten (10) working days before the execution of the compliance tests required in AQ-73 and AQ-74, and the test results shall be submitted to the District and to the CPM within forty-five (45) days after the tests are conducted.

AQ-73 The project owner shall perform the following initial compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District within 180 days of the commercial operation date (COD). The following compliance tests are required:

a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25 and 18 or equivalent).

b. Benzene in ppmvd and lb/hr (measured per ARB Method 410 or equivalent).

Verification: The project owner shall notify the District and the CPM within thirty (30) working days before the execution of the compliance test required in this condition. The test results shall be submitted to the District and to the CPM within 180 days of initial start up.

AQ-74 The project owner shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:

a. VOC as hexane in ppmvd and lb/hr (measured per US EPA Reference Methods 25A and 18 or equivalent).

b. Benzene in ppmvd and lb/hr (measured per ARB Method 410 or equivalent).

Additionally, records of all compliance tests shall be maintained on site for a period of five (5) years and presented to District personnel upon request.

Verification: **As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with operating emission rates.**

IT IS SO ORDERED.

CERTIFICATION

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of an Order duly and regularly adopted at a meeting of the California Energy Commission held on April 22, 2014.

AYE: Weisenmiller, Douglas, Hochschild, Scott
NAY: None
ABSENT: McAllister
ABSTAIN: None

Harriet Kallemeyn,
Secretariat

VOC Concentration Log

Operator's Name:
Plant:
Carbon Bed Name:

Date	Time	Measured Concentration, ppm VOC (as Hexane)	Vent Duration, minutes/day

CALIBRATION CERTIFICATE

Date of Calibration: :4-07-14
Calibrated by: C Sims
Customer: ICON Safety

Certificate Number – 4071401
Signed:

Description: Tiger Select
Manufacturer: Ion Science
Type Number: N/A
Serial Number:T-107685

Calibration Due Date:4-15

Status of instrument upon receipt : New

X	Correct Working Condition
	Minor Work Required
	Incorrect Operation or Mechanically Broken

Measurement standards are derived from volumetric and time sources, which themselves are traceable to NIST. The relevant procedures are recorded and are available for inspection if required. The following indicates the identification numbers of traceable items used during the calibration procedure.

LOT# BAN-21-5-8

ION Science hereby certifies that on the day of calibration the instrument was working according to the manufacturer's original sales specification as checked by the calibration procedure, unless otherwise stated.

RESULTS AFTER CALIBRATION

Applied Flow: 100ppm Isobutylene	Instrument Indication: 100ppm Isobutylene
Applied Flow. 5ppm Benzene	Instrument Indication 5.1ppm Benzene

CHECKLIST FOR
PHOCHECK TIGER PRODUCT RANGE

KIT CONTENTS

PhoCheck Tiger Instrument	
PhoCheck Tiger Select Instrument	✓
Li-ion Battery Pack	✓
Alkaline Battery Pack	
Instrument Boot	✓
Charger	✓
Power Supply (12V)	✓
Quick Start Guide (Standard)	
Quick Start Guide (Tiger Select)	✓
Warranty Registration Card	✓
USB Stick	✓
USB Cable	✓
Accessory Kit	✓

Benzene Pre-Filter Tubes (pack of 10)	✓
Benzene Tube Holder	✓
Benzene Tube Opener	✓

UPGRADES

H&S (STEL & TWA)	861300	
PPB (Sensitivity)	861301	
Data Logging (Full)	861303	
Single Log (Push to log)	861309	
Multi Log	861310	
Tiger Select		✓

QUALITY CHECK

Software version:	0.4.22
Integrity seal present?	(Yes) / No

Final instrument inspection date:	[signature]	06/11/13

PD-FM-075-07

TIGER

Instrument User Manual V3.2

Register your instrument online to receive your extended warranty.

Unrivalled Detection.

www.ionscience.com

Register your instrument online for extended warranty

Thank you for purchasing your Ion Science product.

The standard warranty of your instrument can be extended to up to five years on Tiger and two years on other Ion Science product.

To receive your extended warranty, you must register your instrument online within one month of purchase (terms and conditions apply.)

Visit www.ionscience.com/instrument-registration

Part number: 861265

Warnings

USER MANUAL:	Read and understand this user manual completely before operating the TIGER instrument.
Intrinsically Safe:	**This instrument has been designed and certified intrinsically safe.**
STATIC HAZARDS:	Do not use abrasive or chemical detergents to clean the TIGER instrument as this may reduce the antistatic properties of the materials used, clean it using a damp cloth only.
MATERIAL EXPOSURE	The TIGER must not be exposed to atmospheres known to have an adverse effect on Thermoplastic polyolefin or Anti-static PC/ABS.
SERVICING:	No part of the TIGER may be opened in a hazardous area except for replacement of the battery pack. The TIGER must be serviced in a Non Hazardous environment and by Ion Science Ltd authorised service centres only. Do not service the instrument live; Remove the battery pack before servicing. Substitution of components may impair intrinsic safety.
BATTERY CHARGING:	Charge TIGER and its Lithium ion battery pack in a Non Hazardous environment only.
BATTERY REPLACEMENT:	Never replace primary Alkaline battery cells while in a potentially explosive or hazardous location. Use only Duracell Procell Alkaline batteries MN1500.
BATTERY CONNECTION:	The TIGER's Lithium ion and Alkaline battery packs have been specially designed to allow connection to the TIGER Instrument while in potentially hazardous atmospheres. The TIGER instruments ingress protection rating is reduced to IP 20 when its battery pack is removed so avoid changing batteries in dusty or wet environments.
FUNCTIONAL TEST:	The TIGER must be functionally checked prior to entering a hazardous area after every occasion when a connection has been made to the USB port. The instrument must complete its start up routine and display legible readings. If the LCD display fails to show an intelligible and uncorrupted display the instrument must not enter a hazardous area.
USB CONNECTION:	The USB port can only be used in a Non Hazardous environment

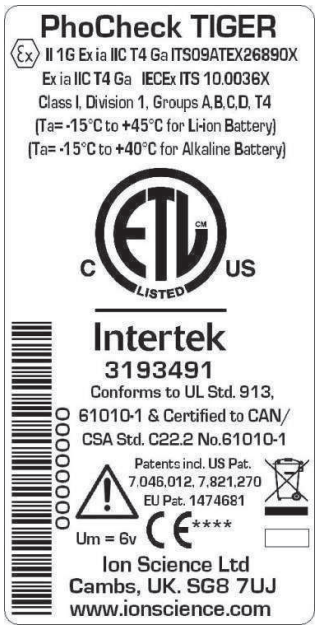
Special Conditions for safe use	If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. The TIGER must be functionally checked prior to entering a hazardous area after every occasion when a connection been made to the USB port. The instrument must complete its start up routine and display legible readings. If the LCD display fails to show an intelligible and uncorrupted display the instrument must not enter a hazardous area.

Declaration of conformity

Manufacturer:	Ion Science Ltd, The Way, Fowlmere, Cambridge, UK. SG8 7UJ
Product:	TIGER
Product description:	Intrinsically safe photo-ionisation gas detector for detecting volatile organic compounds
Directive 94/9/EC	**Required Coding -** ⟨Ex⟩ II 1 G Ex ia IIC T4 Ga

$T_{amb.}$ = -15ºC to +45 ºC (with Lithium ion Battery pack)

$T_{amb.}$ = -15 ºC to +40 ºC (with Alkaline Battery pack)



Certificate Number-	ITS09ATEX26890X IECEx ITS 10.0036X
Notified body:	Intertek, 0359, Chester, UK
Report number:	11052972D1
Intertek	3193491 Conforms to UL Std. 913, 61010-1 & Certified to CAN/CSA Std. C22.2 No.61010-1
Standards	
BS EN 60079-0: 2009	Electrical apparatus for explosive gas atmospheres. General requirements
BS EN 60079-11: 2007	Explosive atmospheres. Equipment protection by intrinsic safety "i"
BS EN61326-1:2006	Electrical equipment for measurement, control and laboratory use - EMC requirements. Group 1, Class B equipment - (emissions section only)
BS EN61326-1:2006	Electrical equipment for measurement, control and laboratory use - EMC requirements. Industrial location immunity - (immunity section only)
BS EN50270:2006	Electromagnetic compatibility - Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen. Immunity Type 2 - industrial environments.
CFR 47:2008	Class A Code of Federal Regulations: 15 Subpart B- Radio Frequency Devices - Unintentional Radiators
Other Standards	
BS EN ISO 9001: 2008	Quality Management System - Requirements
BS EN 13980: 2002	Potentially Explosive Atmospheres - Application of Quality Systems

On behalf of Ion Science Ltd, I declare that, on the date this product accompanied by this declaration is placed on the market, the product conforms to all technical and regulatory requirements of the above listed directives.

Name: Mark Stockdale

Position: Technical Director

Signature:

Date: 20th January 2010

Contents

Statements

Responsibility for Use
TIGER instruments detect a large range of gases which are potentially dangerous from both a poisoning and/or an explosive perspective. TIGER instruments have many adjustable and selectable features allowing the detector to be used in a variety of ways. Ion Science Ltd can accept no responsibility for the incorrect adjustment of features that cause harm or damage to persons or property. TIGER can be used as a personal safety device. It is the user's responsibility to respond appropriately to an alarm situation.

Inadequate performance of the gas detection equipment described in this manual may not necessarily be self-evident and consequently equipment must be regularly inspected and maintained. Ion Science Ltd recommends that personnel responsible for equipment use a regime of regular checks to ensure it performs within calibration limits, and that a record be maintained which logs calibration check data. The equipment should be used in accordance with this manual, and in compliance with local safety standards.

IMPORTANT
It is essential that the TIGER is always used with a supplied 0.5 micron PTFE Filter Disc fitted to the front of the instrument. Without a filter, particles of debris and dust can be drawn into the detector inhibiting the function of the instrument. These filters are consumable and should be changed after every 100 hours of use. The frequency of replacement should be increased for dusty or moisture laden environments. Filters are available from your distributor or at www.ionscience.com.

Quality Assurance
TIGER has been manufactured in compliance with ISO9001:2008, which ensures that the equipment supplied to our customers has been designed and assembled reproducibly, from traceable components, and leaves Ion Science Ltd calibrated to stated standards.

Disposal
Dispose of TIGER, its components and any used batteries in accordance with all local and national safety and environmental requirements. This includes the European WEEE (Waste Electrical and Electronic Equipment) directive. Ion Science Ltd offers a take back service. Please contact us for more information. The TIGER field case material is recyclable polypropylene.

Calibration Facility
Ion Science Ltd offers a calibration service including the issue of certification confirming calibration with equipment traceable to national standards. A TIGER calibration kit is available from your distributor or service centre or at www.ionscience.com. Ion Science Ltd recommends annual return of all instruments for yearly service and calibration.

Legal Notice
Whilst every attempt is made to ensure the accuracy of the information contained in this manual, Ion Science Ltd accepts no liability for errors or omissions, or any consequences deriving from the use of information contained herein. It is provided "as is" and without any representation, term, condition or warranty of any kind, either express or implied. To the extent permitted by law, Ion Science Ltd shall not be liable to any person or entity for any loss or damage which may arise from the use of this manual. We reserve the right at any time and without any notice to remove, amend or vary any of the content which appears herein.

Introduction to Tiger

TIGER is a portable gas detector that uses Photo-ionization technology to detect a large range of Volatile Organic Compounds (VOC's) which can be dangerous from both a poisoning and explosive perspective.

The TIGER uses a Photo-Ionization Detector (PID) to measure gas concentrations. The patented fence electrode technology minimises the effects of moisture and contamination, avoiding the need for compensation.

Survey is the default mode of operation. This mode is often used in applications such as Head Space Sampling and Leak Detection where several areas (or Zones) are to be monitored and readings data logged. All sensor readings are real time measurements and alarm levels are set manually.

Health and Safety (optional) mode is used to check for conformity of short-term exposure levels (STEL) or time-weighted averages (TWA) that are specific for particular hazardous environments (for example EH40 in the UK and OSHA in the USA). In this mode of operation STEL's and TWA's are continually calculated and compared to levels set in the instrument's gas table.

The TIGER can be upgraded from the users own desk top. Additional features can be added without the need to return the instrument to a service centre.

Like its predecessor, PhoCheck+, the TIGER also has an intuitive graphical interface allowing easy access to instrument settings. Two soft keys A and B can be configured to suit the user's application, so many functions can be selected without entering the main menu structure. This improves efficiency of use, particularly with repeatable tasks.

TIGER PC (the TIGER's PC Software) maintains the intuitive look and feel by adopting the same graphical symbols. TIGER PC also helps manage logged data files and multiple instrument settings in a clear and concise way.

The TIGER uses a Lithium-ion battery pack that not only boasts an impressive running time and short charge time, but also allows the battery pack to be replaced in potentially hazardous environments. Field replaceable alkaline battery packs (non-rechargeable) are also available for when power to recharge is unavailable.

The TIGER has true USB capability so the instrument can be connected directly to a PC via a standard USB cable. It also offers fast data download.

A loud audio output, vibration and bright LED's indicate alarm conditions. Orange and Red LED's indicate High and Low conditions respectively. This colour scheme is used within TIGER PC to offer clear indication of alarm levels within logged data.

Getting started

Thank you for choosing TIGER from Ion Science Ltd. We hope that your TIGER will give you many years of active and trouble-free service.

The Manual
Ion Science Ltd recommend that you familiarise yourself with this manual before using your TIGER. The 'Statements' and 'Introduction to TIGER' sections contain important information, which should be read before you turn your TIGER on for the first time.

Inlet Nozzles
Ensure that the inlet nozzle supplied is fitted to your TIGER. Details on how to fit and change inlet nozzles is detailed in the 'Maintenance' section. If the supplied inlet nozzle is unsuitable for your application, details of alternative inlet nozzles can be found in the 'Maintenance' section as well.

Turn On
Press the **Enter / On/Off** key once to turn TIGER on.

Turn Off
Press and hold the **Enter / On/Off** key for 3 seconds, indicated by a 3 second countdown, to turn TIGER off. (**Note:** If the TIGER fails to shut down, press the **Escape** (**Esc**) key once or twice to return to the main screen, then press and hold the **Enter** / **On**/**Off** key again.)

Batteries
Check that your TIGER has sufficient charge for use. The battery icon (see 'Understanding the display screen') should show at least two full segments.

Rechargeable Batteries
TIGER instruments leave the factory with the Rechargeable Battery Pack (A2) fully charged. However prolonged periods of storage may result in the battery pack discharging. We recommend charging the instrument for seven hours before use. See the 'Batteries' section of this manual pages 33 to 35.

Alkaline Batteries
An alkaline AA Battery Pack (A3) is also supplied with the TIGER. For more information please see the 'Batteries' section of this manual.

Select the Gas
TIGER instruments leave Ion Science Ltd pre-set for gas type TVOC (total volatile organic compounds). Instruments are factory calibrated against isobutylene and all response factors are equivalent to this. By changing the gas from the internal gas table all readings will be given using that gas's response factor.
Switch the TIGER on by pressing the Enter / On/Off key once.
Press the **Information** icon i (see 'Using your TIGER') and check the correct gas alarms are selected.
Change the gas (if necessary) as instructed under Gas Selection in the 'Using your TIGER' section.

Set Alarm Levels
We recommend that alarm levels are set to user specifications as soon as possible before the TIGER is used for the first time. Please see the 'Using your TIGER' section of the manual for details of how to set alarm levels.

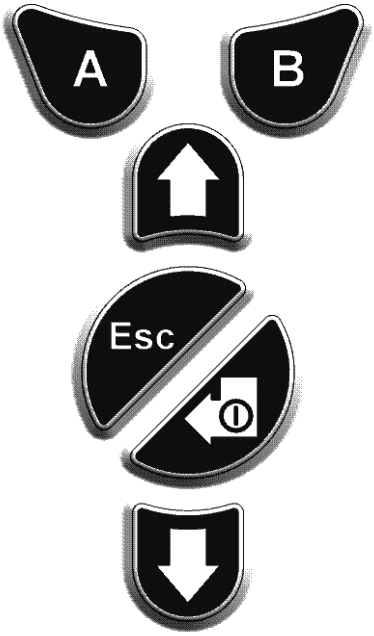
TIGER PC. The full functionality of your TIGER can only be realised through the TIGER PC software.
Ion Science Ltd recommend that you load the software supplied with your instrument and set up your TIGER according to the instructions in the 'TIGER PC Software' section of this manual.

Understanding the keypad

General Description
The keypad comprises two soft keys: **A** and **B**, **Up** and **Down** arrow keys, an **Escape (Esc)** key, and an **Enter / On/Off** button. In general, setup and application settings are selected and adjusted via the soft keys, options are selected by the arrow keys and confirmed by the **Enter** key. A single press is used as a switching operation. A continuous press is used to adjust numbers or change gas selections by automatically rolling.

Keypad Function Descriptions

Soft keys **A** and **B** rely on graphical prompts on the display to indicate their functionality.
Note: Pressing both soft keys together switches the flashlight / torch on and off.



Up and **Down** keys are used to adjust settings and navigate through the menu structure.

Enter / **On**/**Off** key is used to accept adjustments and select functions; also to turn the TIGER on and off.

Escape (**Esc**) key is used to abort an adjustment or exit from a menu.

Understanding the display screen

Screen Display
The display is divided into four sections.

Fixed LCD Status icons fill the top of the screen offering instrument status at a glance. The Icons display only when a function is selected. The main central viewing screen will display readings in large numbers only, 4 digits and decimal place will display 0.001 ppm to 19,999 ppm. Two soft key areas have been set aside as soft key indicators. The area between the soft key indicators displays the measurement units.

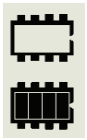
Left is the default display with no functions active.

Right is the display with all functions active.

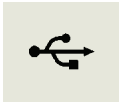
Status icon

Health and Safety (optional)**:** The icon consists of a single part and will flash in an alarm condition and when health and safety readings are being collected.

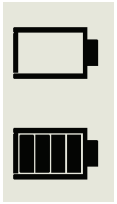
Peak Hold: When peak hold is switched on, the icon appears.



Memory Status: This icon only appears if the instrument has the data logging functionality. Four sections within the border fill as the data log memory is filled.
Empty border = 100% memory available through to full, where all segments are present.



USB: The icon will appear when connected to a host device.



Battery Status: This icon consists of a border and four segments. The segments fill or empty to indicate 0-25, 26-50, 51-75 and 76-100% full. When discharging, the border will flash for 1 minute before the instrument shuts down. When charging, the segments will successively fill until 100% charge is reached.

Understanding the display screen

Backlight: Light beam lines appear when the backlight is on.

Sound: The main body of the icon is present at all times.
The disable lines appear if all 3 alarm sounders are disabled and the volume is at 0%.
Three sound projection lines indicate the volume level.
However there are four sound levels and the quietest level has no line.

Alarm Bell: The icon consists of 2 parts, the Bell and the sound bars. When the instrument reaches a 'Low alarm' the Bell and one sound bar will flash; when a 'High alarm' is reached the Bell and both sound bars flash.

Flashlight / Torch: When the flashlight / torch is illuminated the light beams appear.

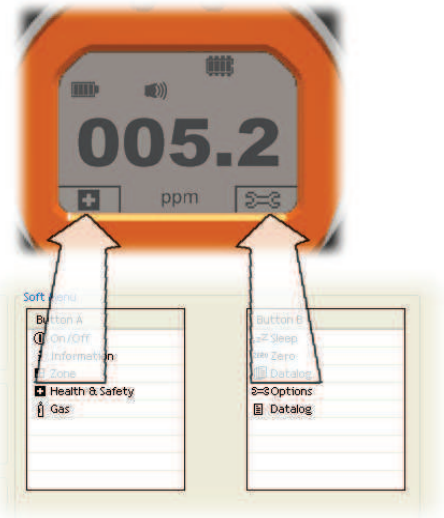
Lock: The Lock icon will appear when the configuration of the TIGER has been locked in TIGER PC. Soft keys in Button **A** column are enabled and Buttons in column **B** disabled, see page 13.

Main Screen Area
During normal operation this area displays the readings in four large numbers, with the units of measurement below.
During setup and adjustment, a function bar overlays the main screen.

Understanding display screen

Soft key areas

The following icons will appear in the soft key areas as soft key options. They are selected using the **Up** and **Down** keys. Those labelled 'optional' will only appear if your TIGER has that functionality. These icons can be reorganised using the TIGER PC software.



Button A		*Button B*	
	Information		**Sleep**
	Zone(s)	ZERO	**Zeroing**
	Gas Selection		**Peak Hold**
	Options		**Average**
	Health and Safety (optional)		**Data Log** (optional)
	Multiple Data Log (optional)		**Stealth**

Using your Tiger

Instrument functionality is broken into two parts; Application and Setup. Application settings are initially selected via the soft keys **A** and **B**. Setup functions like Backlight, Sound, Calibration and Alarm setting are adjusted within **Options**. Many of the screens have a 2 second time out which returns to the main screen if no other keys are pressed.

On
To switch the TIGER on press the **Enter** / **On**/**Off** key once. Startup screen 1 appears showing the TIGER logo. Startup screen 2 contains variable text sent from the TIGER PC configuration screen. The lower half of the screen contains the instrument IRN (Internal Reference Number) and firmware version. The third screen shows TIGER checking that the lamp has 'struck'. When 'OK' appears, the working screen will follow. If the lamp fails to strike, turn the TIGER off, wait for 30 seconds and try again. If the problem persists, change the lamp or contact Ion Science Ltd or your distributor.

Off
To switch the TIGER off press and hold the **Enter** / **On**/**Off** key. A 3 second count down takes place before the instrument shuts down. During this count down the instrument activates the upper alarm. viz. Red LED's flash and audible alarm sounds. This is done to alert the user to avoid accidental switch off.

Sleep
Press and hold the **Zzz** soft key to send the TIGER to sleep. A 3 second count down takes place before entering sleep mode. This function is not available when the instrument is locked. All peripherals switch off. Only Zzz remains on the screen. Press the **Esc** key to awaken the instrument. (The instrument can also enter 'Sleep mode' during data logging when the duration between logs exceeds 2 minutes. This is a power saving function which only occurs when a tick box is set in TIGER PC.)

Zeroing

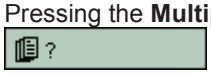
Pressing the **Zero** soft key presents two zero options  selected with the **Up** or **Down** keys. The upper symbol represents an absolute zero. The lower symbol represents a relative zero which follows the drift of the PID detector. Having made your selection, press **Esc**. If the relative zero has been selected TIGER will zero itself before returning to the main screen.

Zones

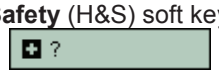
Press the **Zone** soft key to display the currently selected Zone: 

The TIGER's default is 'Zone 1' Zones are set up in TIGER PC only and the name given to the zone(s) will appear on the screen. Use the **Up** and **Down** keys to select alternative zones.

Single Data Log (optional)
Press the **Single Data Log** soft key to take a single data log reading. The single data log symbol appears with a tick:  Press **Esc** to return to the main screen. Press the **Single Data Log** soft key again to take another reading. The fixed LCD memory icon flashes off when a single log is taken.

Multiple Data Log (optional)
Pressing the **Multiple Data Log** soft key results in the multiple log symbol appearing with a question mark:  Press the **Enter** key to start the data logging process based on TIGER PC setup. A tick appears beside the question mark, confirming that data logging has started. The fixed LCD memory icon flashes at 1 Hz while continuous data logging is in progress. Press **Esc** to return to the main screen. To stop data logging, press the soft key again. A crossed out data log symbol is presented with a question mark. Press the **Enter** key to confirm the action. A tick appears beside the question mark, confirming that data logging has stopped and the LCD memory icon ceases to flash. Press **Esc** to return to the main screen.

Using your Tiger

Health and Safety (optional)
Press the **Health and Safety** (H&S) soft key to display the H&S symbol with a question mark to ask if the user wishes to proceed:  Press **Enter** to start the calculation. The STEL (Short Term Exposure Level) and TWA (Time Weighted Average) values are shown. The fixed LCD H&S icon will continually flash while calculating. Pressing the **Enter** key while the values are displayed presents the user with a screen asking if the calculation should stop. Press **Enter** again to stop the calculation. Press **Esc** to return to the main screen. If a gas has no STEL and TWA level allocated in the gas table the following symbol will appear:  .

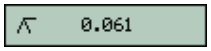
IMPORTANT: *TIGER STEL.*

While the TIGER calculates the 15 minute STEL the instrument displays the ongoing STEL as it is calculated. This ongoing calculation is for indication purposes only to allow the user to gauge how the calculation is progressing. Only the final reading at the end of the calculation is logged by the instrument and should be referenced by the user.

Gas Selection

Press the **Gas Selection** soft key to display an alphabetical letter which can be changed using the **Up** and **Down** keys:  Press the **Enter** key to present the gases beginning with that letter. Using the **Up** and **Down** keys scroll through the gases starting with that letter to find the subject gas. Press **Enter** to select the chosen gas. If a tick appears, press **Enter** again and TIGER will use the relevant data for the chosen gas from the gas table for alarms and response factor etc. Should the selected gas have no numeric response factor then a warning screen  will appear. The message can be cleared by pressing the **Enter** key and the gas will still be selected. An alternative lamp type may then be selected to match the chosen gas. Should an incompatible gas/lamp combination be selected the instrument will show the warning screen again.

Peak Hold

Press the **Peak Hold** soft key to present the screen  When Peak Hold is selected the sub display will appear and this will continue to display the peak reading until peak hold is no longer required. To deselect the peak hold function press **Esc**

Average
Press the **Average** soft key to display a rolling average over 10 seconds. A tick appears when time is up. Pressing the **Average** soft key again resets the calculation even if there is an average already running. Press **Esc** to return to the main screen.

Stealth
When selected all audible and visual alarms are disabled except for the alarm indicator on the screen. This function may help avoid triggering panic in public places.

Options
Press the **Options** soft key to give access to various adjustable features, selected with the **Up** and **Down** keys. Press **Enter** to confirm selection.

Backlight
Four options are presented: 'Permanently Off', 'Permanently On', 'On in low ambient light' and 'Timed' (Set the time in TIGER PC). Select the preferred option with the **Up** and **Down** keys and confirm with **Enter**.

Using your Tiger

Sound

The sound options are presented as set up in TIGER PC. Use the **Down** key to select either keypad beep, alarm sound, crescendo or percentage volume. Press **Enter** to turn selection on or off. For percentage volume, press **Enter** again to confirm selection. The frame will flash. Use **Up** and **Down** keys to change the percentage volume and press **Enter** to confirm the chosen value. Press **Esc** twice to return to the main screen.

Calibration

Only two options are presented: Factory Calibration and Custom Calibration. Select the preferred option with the **Up** and **Down** keys and confirm with **Enter**. Whichever calibration standard is selected, the TIGER will operate against that calibration. Readings taken against unsatisfactory calibrations may be unreliable.

Factory Calibration Not for operator use.
Return to Ion Science Ltd or your distributor for calibration. (see the 'Maintenance' section of the manual page 37)

Custom Calibration see the 'Maintenance' section of the manual page 37.

Alarms Upper and Lower alarm settings are displayed. Select the subject alarm using the **Up** and **Down** keys and press **Enter**. The arrow(s) on the chosen alarm will flash. Adjust the level using the **Up** and **Down** keys and press **Enter**. Repeat, if necessary for the other alarm. Press **Esc** twice to return to the main screen.

Note: The Lower alarm setting must never be greater than the Higher alarm.

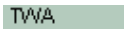
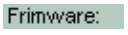
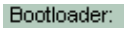
Units Select the available units by using the **Up** and **Down** keys and then press **Enter**.

Lamp Select the lamp type by pressing the **Up** and **Down** keys and then press **Enter**

Information

Pressing the **Information** soft key allows access to a number of other information screens. Use the **Down** key to scroll through the screens. Press **Esc** to return to the main screen:

Using your Tiger

First Screen	Gas selected	
	Response Factor	
	Upper alarm	
	Lower alarm	
Second screen	Lamp selected	
	Date of Factory calibration	
	Date of Custom calibration	
	Date of Select tube calibration (optional)	
Third Screen	SPAN 1	 (gas concentration set in TIGER PC)
	SPAN 2	 (gas concentration set in TIGER PC)
	PID detector in units	
	PID sensor A/D reading	
Fourth Screen	Sort Term Exposure Levels (optional)	
	Time Weighted Average (Optional)	
	Internal Reference Number	
	Firmware version	
	Bootloader version	
	Battery type and voltage	
Fifth Screen	Memory available	
	Gas Table Date	
	Date and time	
Sixth Screen	Features. A icon will appear for each feature available	

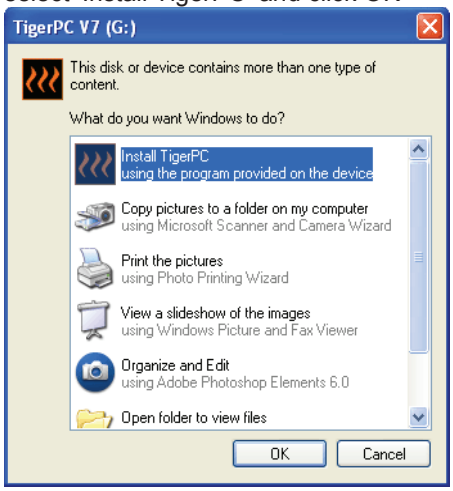
Tiger PC software

PC Requirements
TIGER PC Software must be used in conjunction with a PC or laptop using Windows XP, Windows Vista or Windows 7. The software is supplied on a USB memory stick.

Installation of TIGER PC Software
When the memory stick is plugged into a USB socket the following screen (below left) should appear. If it doesn't, view the content of the memory stick and double click the file named:

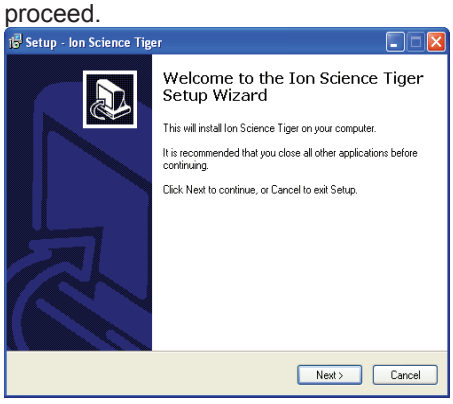
' ion_cd_Tiger.exe '.

On the 'TigerPC' screen (below), select 'Install TigerPC' and click OK

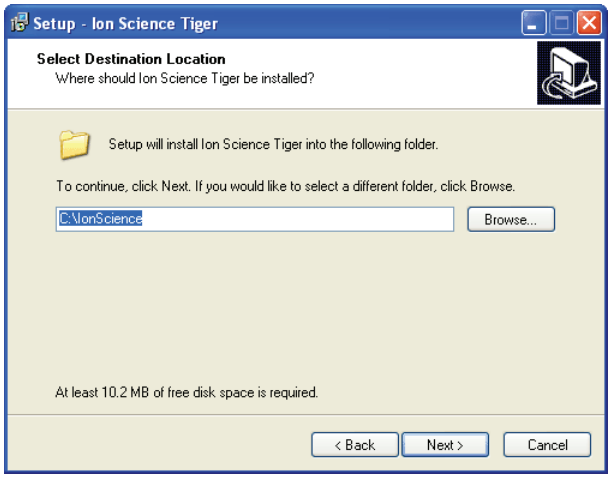


On the 'Ion Science' screen (below), select 'Install Tiger Software'

On the 'Welcome' screen (below), click 'Next' to proceed.

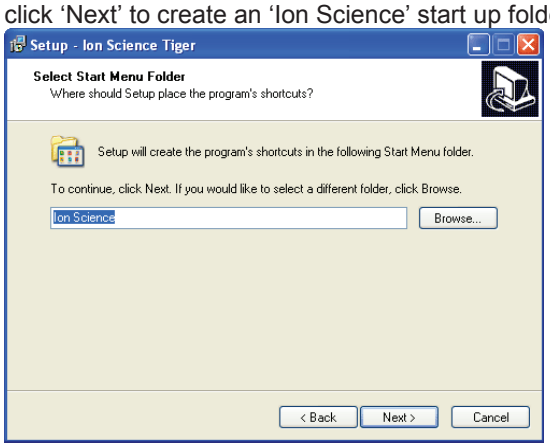


On the 'Select Destination Location' screen (below), click 'Next' to create an 'Ion Science' folder on your C drive.

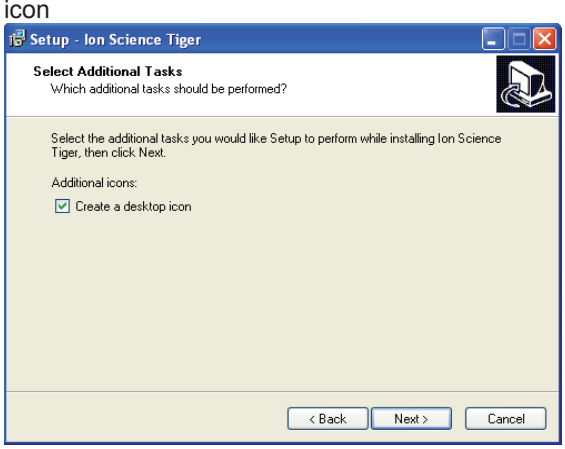


Tiger PC software

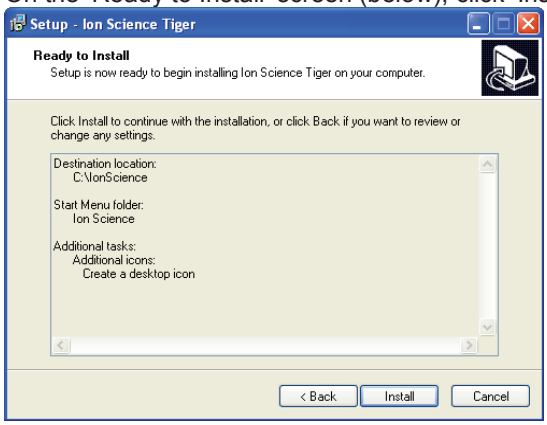
On the ‘Setup’ screen (below)
click ‘Next’ to create an ‘Ion Science’ start up folder.



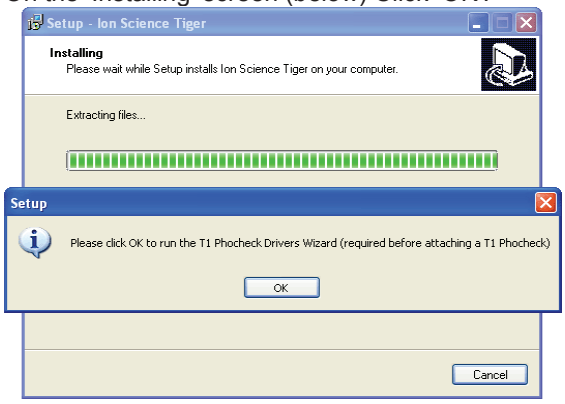
On the ‘Select Additional Tasks’ screen (below) tick the box and click ‘Next’ to Create a desktop icon



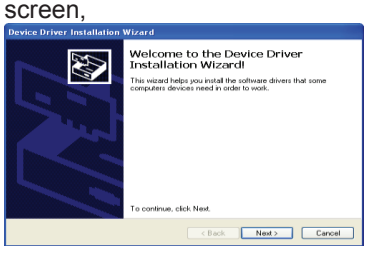
On the ‘Ready to Install’ screen (below), click ‘Install’



On the ‘Installing’ screen (below) Click ‘OK’.

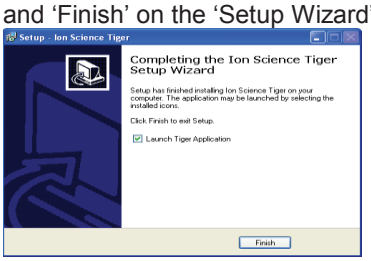


Click ‘Next’ on the ‘Device Driver’ screen,



‘Finish’ on the ‘Installation Wizard’

and ‘Finish’ on the ‘Setup Wizard’.



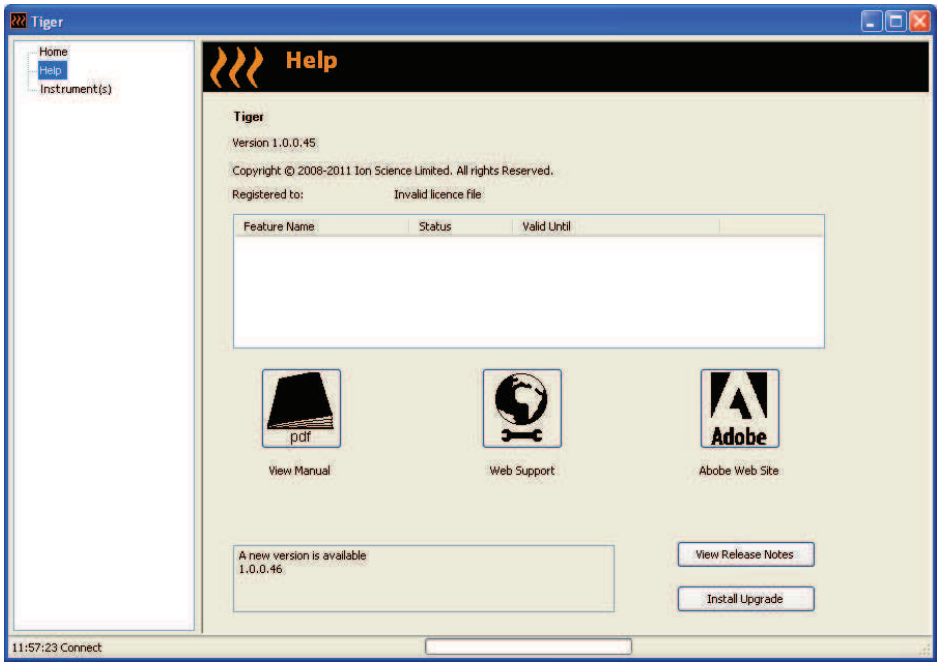
Tiger PC software

Connecting TIGER to a PC

1. Double click the TIGER icon on your desktop and open TIGER PC.
   The Home page should appear:

The Help Screen

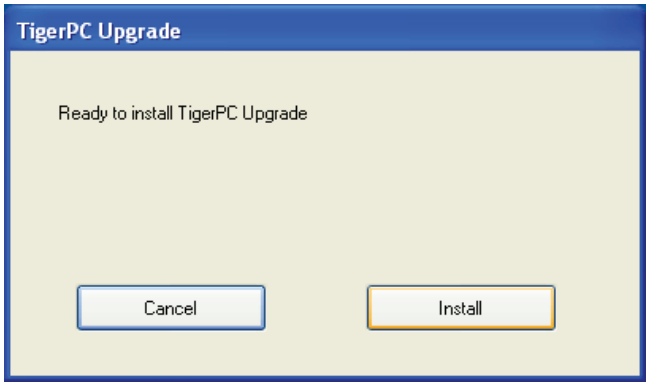
This screen will show you if a new version of PC software is available. You can then install the upgrade if required.

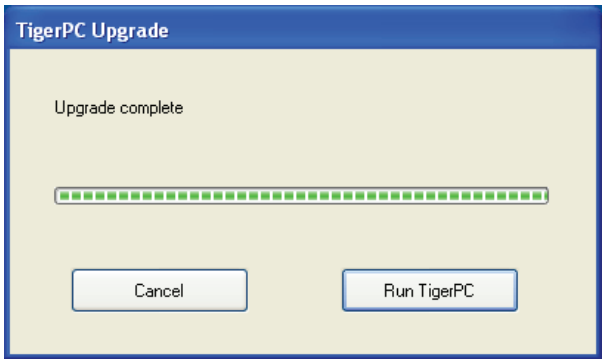


Tiger PC software

2. Click on 'Instrument(s)'. If your TIGER has previously been connected to your PC your instruments IRN (Internal Reference Number) will appear.

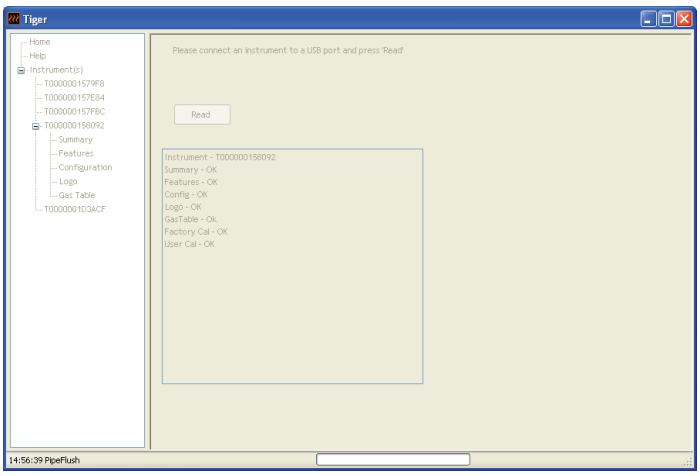
   Note: If, while using this software your TIGER should inadvertently be turned off or disconnected from your computer, click on 'Instrument(s) again and proceed as below:





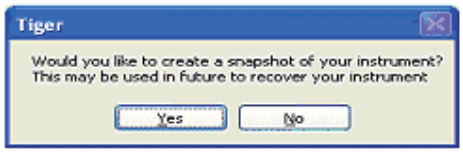
3. Switch TIGER on and when fully booted up connect to a USB socket on your PC using the USB cable supplied. If the 'Found New Hardware' screen appears, follow the prompts to install your instrument on your PC.

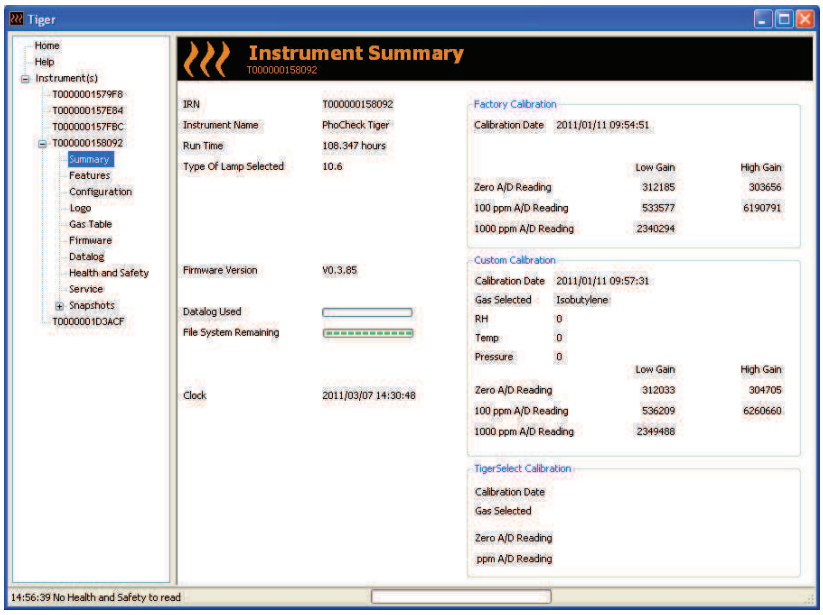
4. Click on 'Read'. Your instrument number will appear under 'instrument(s)' (if it was not there already) and the Instrument Summary page will appear.



Tiger PC software

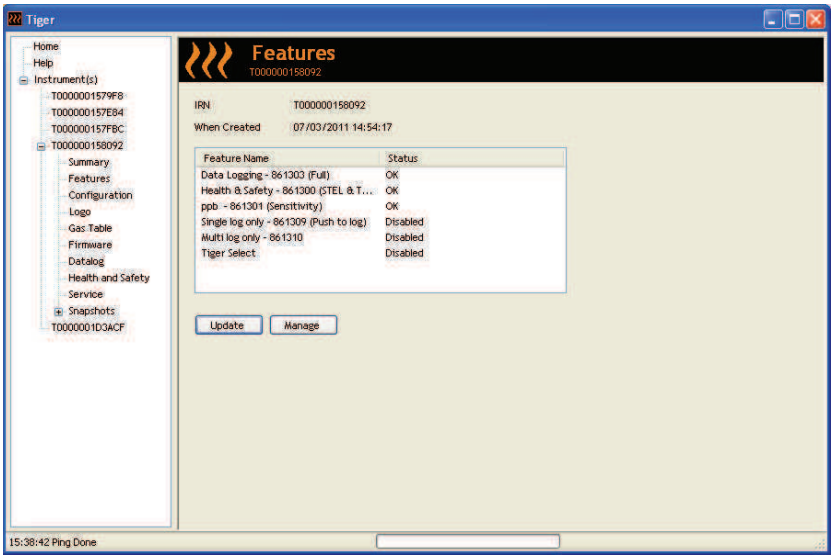
5. This page gives the current status of your TIGER. If the 'snapshot' screen appears click 'Yes'. You can delete the snapshot later if you wish (see 'TIGER PC Software').





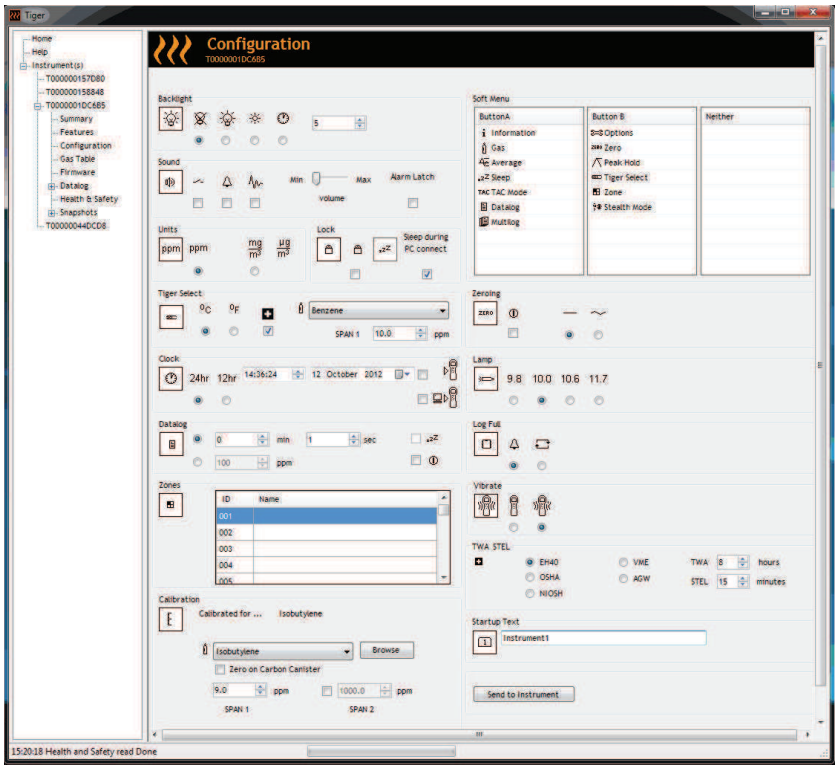
The Features Screen

The 'Features' screen indicates which of the available updates has been added to your TIGER. Should you wish to purchase additional features, contact Ion Science Ltd or your Distributor. Some updates may be available on the website www.ionscience.com . Once the transaction is complete and confirmed, click on Update to add the relevant features to your TIGER.



Tiger PC software

The Configuration Screen
Use this screen to configure your TIGER.



Backlight
Choose from 'Permanently Off', 'Permanently On', 'On in low ambient Light', or 'On For Limited Time'. The Backlight Timeout can be set from 1 to 99 seconds.

Sound
The three icons represent: key press; alarm; and crescendo. Crescendo increases the sound as the upper alarm is approached. Sound on each of these may be enabled or disabled by ticking or un-ticking the box. Sound volume is adjusted with the slider.

Units
The units of measurement may be chosen as parts per million (ppm) or milligrams per cubic meter cubed (mg/m^3). If you have the high the high sensitivity option / upgrade then Parts Per Billion (ppb) and Micrograms per meter cubed ($\mu g/m^3$) are also available.

Lock
The TIGER may be locked in any configuration to avoid unauthorised changes by the operator. A tick in the box locks the instrument. Soft keys in Button **A** column are enabled and Buttons in column **B** disabled. Sleep during PC connect will send the instrument into sleep mode while it is connected to the PC software. The instrument will awaken as soon as it is disconnected from the PC software.

Soft Menu
The various functions may be allocated to the soft buttons in any order of preference by dragging and dropping the icons.

Tiger PC software

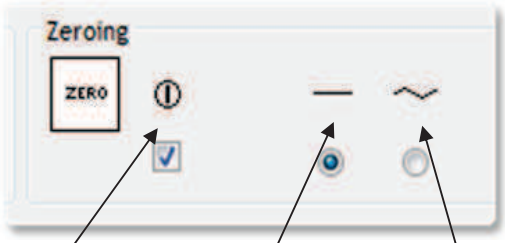
Tiger Select
Please refer to the TIGER Select User Manual.

Zeroing
This function allows either an assumed constant zero or for the zero to be tracked compensating for the shift in the zero of the PID lamp during operation. The function may be enabled or disabled by ticking or un-ticking the box. Constant or tracked zero is selected by use of the radio buttons associated with the icons.

There are various options for zeroing a TIGER or TIGER Select. The symbols below are found on the configuration screen of TIGER PC.

Zero at switch on

When selected, the TIGER will automatically set its zero reading based on ambient air. When deselected the instrument will use its calibration zero.



Zero at switch on Fixed zero Zero tracking

Fixed zero

When selected, TIGER uses the fixed calibration Zero. If used in conjunction with the 'Zero at switch on' feature the instrument will zero at switch on and then remain at that level.

Zero tracking

When selected, the Zero level will move negative if a cleaner ambient air is detected. This ensures 0.0 ppm is displayed in clean air and ensures sub ppb levels are always detected.

Clock
Select 24 or 12 hour format using the radial buttons. Set the time and date and tick the box on the right to set the time on your TIGER. Alternatively, tick the lower box to synchronise your TIGER with the time on your computer.

Lamp
Enables the selection of different lamp types you may have purchased to use with your instrument. Ensure that the lamp selected is the same as that fitted in your TIGER. If not, select the correct lamp from the options provided.

IMPORTANT
If you have purchased the instrument with the MiniPID Lamp (Argon)11.7eV (LA4SM700), there are a number of things related to applications that you must take into consideration before using the lamp.

1. It is important for the lamps to be stored in their desiccated vials in cool conditions (15-25°C).

2. The lamps should not be used in:
   - Chemically severe environments, i.e. those containing significant concentrations of acids and strong solvents such as dichloromethane.
   - Conditions of condensing humidity; always pass dry cool air through the instrument before storage. For long storage periods, remove the lamp and return it to the desiccated vial.
   - Physically severe environments: large temperature changes may initiate lamp failure.

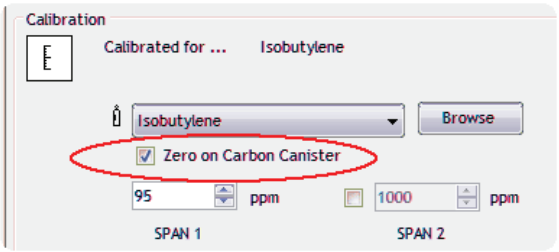
Tiger PC software

11.7 eV lamps may not strike/illuminate first time and result in a 'lamp fail' alarm on the TIGER instrument, particularly if the lamps are unused for an extended period. If the TIGER instrument raises a lamp fail alarm please switch the instrument off and then switch on again. Several start cycles may be required.

11.7 eV lamps have a relatively short life partly due to the type of lamp window material. Prolonged exposure to airborne moisture slowly degrades the lamp window. Therefore the lamps should be removed from the TIGER and stored in their desiccated vial when not in use.

11.7 eV lamps have quite different characteristics to the standard 10.6 eV lamps.

In applications where the detected gas levels are expected to be below 100 ppm then only a two point calibration (Zero and 100 ppm IE) is necessary however in applications that require measurement above 100 ppm (IE) a three point calibration (Zero, 100 ppm and 1,000 ppm IE) should be carried out.



When setting up the custom calibration on TIGER PC's configuration screen select the 'Zero on Carbon Canister' option, this will ensure a near zero reading after calibration. The fixed zero option should also be selected on the configuration screen, do not select 'Zero at switch on'.

Datalog
Use this area to set the interval between readings. The minimum time permitted is one second. If you wish your TIGER to switch to sleep mode during data-logging, tick or un-tick the sleep box to enable or disable the function. The sleep mode will only operate for datalog intervals of 2 minutes or greater.

Log Full
If you select the bell symbol your TIGER will alarm when the memory log is full. Alternatively, if you wish new data to overwrite the oldest stored data in the memory and continue to store new data during data-logging, select the recycle symbol.

Zones
Use this table to define and name up to 128 separate zones. The name field is limited to eight characters including spaces.

Vibrate
To set your TIGER to vibrate under alarm conditions select the 'vibrate' symbol.

TWA STEL
Select the appropriate regulatory code to which you are working.

Tiger PC software

Calibration

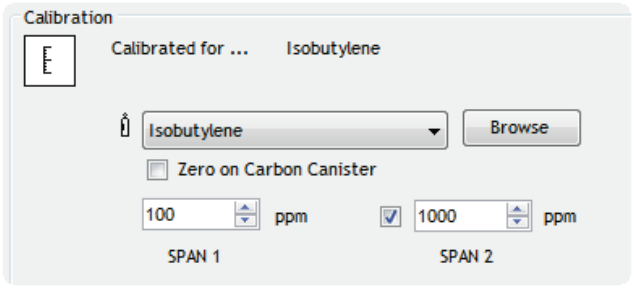
Use this area to define your Custom Calibration parameters.

First connect TIGER to your PC as detailed above under 'Connecting your TIGER to a PC'.

If no gas is shown in the drop down box, browse your system to find the gas table for your instrument. Go to the location where the TIGER PC software files are saved. Follow the path:

IonScience/TIGER/software/instruments/serial no./gas table

Select the appropriate instrument number and open the Gas Table.



Select the calibration gas using the drop-down box.

TIGER PC offers a two-point calibration

(zero + span 1) or three-point (zero + span 1 + span 2) calibration. Enter the SPAN 1 concentration. For two-point calibration ensure that the box is un-ticked. For three-point calibration tick the box and enter the SPAN 2 concentration. Send this information to your TIGER. The calibration procedure is detailed under the 'Maintenance' section of this manual.

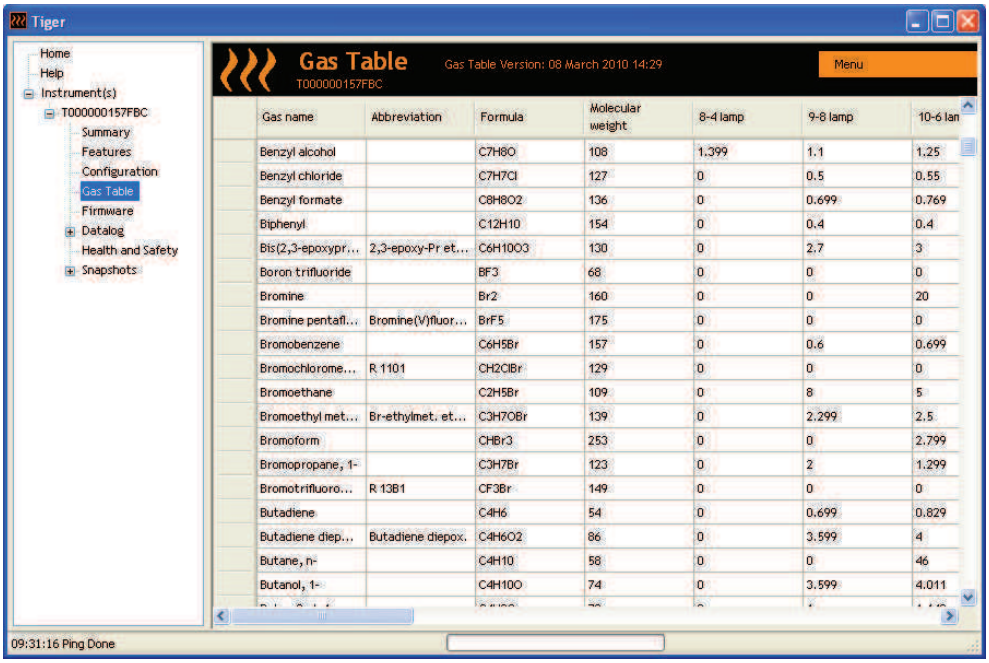
Startup Text
Enter the text you wish to appear on the startup screen of your TIGER.

Send to Instrument
When you have configured your instrument or completed your changes, send them to your TIGER by clicking the 'Send to Instrument' box. If the message 'There was a problem sending to the instrument' appears, click OK and return to the Home screen. Repeat the procedure under 'Connecting your TIGER to a PC' above. If the 'Summary' screen for your TIGER appears, visit the configuration screen again. If not, repeat the entire procedure. If your PC still fails to read or write to your TIGER seek advice from your distributor or from Ion Science Ltd.

Tiger PC software

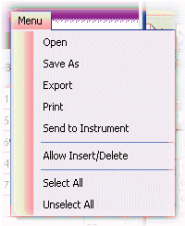
The Gas Table Screen (including setting alarm levels)
Connect your TIGER to your PC as described previously. Any fresh data-logged readings will be down loaded as the software 'reads' your TIGER.

Select 'Gas Table' from the menu to display the Gas Table.



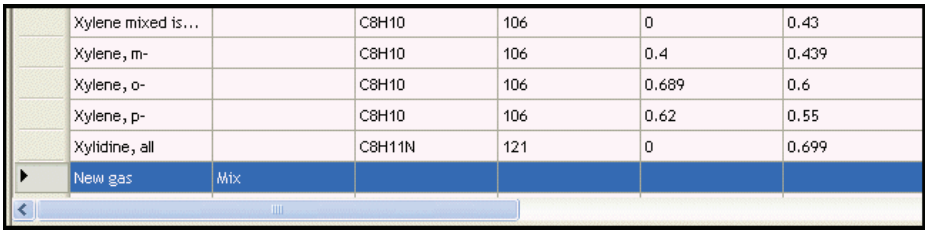
Gas name	Abbreviation	Formula	Molecular weight	8-4 lamp	9-8 lamp	10-6 lan
Benzyl alcohol		C7H8O	108	1.399	1.1	1.25
Benzyl chloride		C7H7Cl	127	0	0.5	0.55
Benzyl formate		C8H8O2	136	0	0.699	0.769
Biphenyl		C12H10	154	0	0.4	0.4
Bis(2,3-epoxypr...	2,3-epoxy-Pr et...	C6H10O3	130	0	2.7	3
Boron trifluoride		BF3	68	0	0	0
Bromine		Br2	160	0	0	20
Bromine pentafl...	Bromine(V)fluor...	BrF5	175	0	0	0
Bromobenzene		C6H5Br	157	0	0.6	0.699
Bromochlorome...	R 1101	CH2ClBr	129	0	0	0
Bromoethane		C2H5Br	109	0	8	5
Bromoethyl met...	Br-ethylmet. et...	C3H7OBr	139	0	2.299	2.5
Bromoform		CHBr3	253	0	0	2.799
Bromopropane, 1-		C3H7Br	123	0	2	1.299
Bromotrifluoro...	R 13B1	CF3Br	149	0	0	0
Butadiene		C4H6	54	0	0.699	0.829
Butadiene diep...	Butadiene diepox.	C4H6O2	86	0	3.599	4
Butane, n-		C4H10	58	0	0	46
Butanol, 1-		C4H10O	74	0	3.599	4.011

You are now able to modify this table and then download it to your instrument.



If you wish to add new gases to the table, select the 'Menu' tab, and from the drop down menu select 'Allow Insert/Delete'.

This will add an additional line at the bottom of the Gas Table which allows the user to add new gas types as below.



	Xylene mixed is...		C8H10	106	0	0.43
	Xylene, m-		C8H10	106	0.4	0.439
	Xylene, o-		C8H10	106	0.689	0.6
	Xylene, p-		C8H10	106	0.62	0.55
	Xylidine, all		C8H11N	121	0	0.699
▶	New gas	Mix				

Upper and lower alarm levels in Survey mode can be adjusted via the Gas Table. Type the desired alarm level in the appropriate column (either high or low alarm) against the gas you wish to change.

Always save modified gas tables under a different file name, keeping the original complete.

To send the Gas Table to the instrument, select 'Send to Instrument' from the dropdown menu shown above.

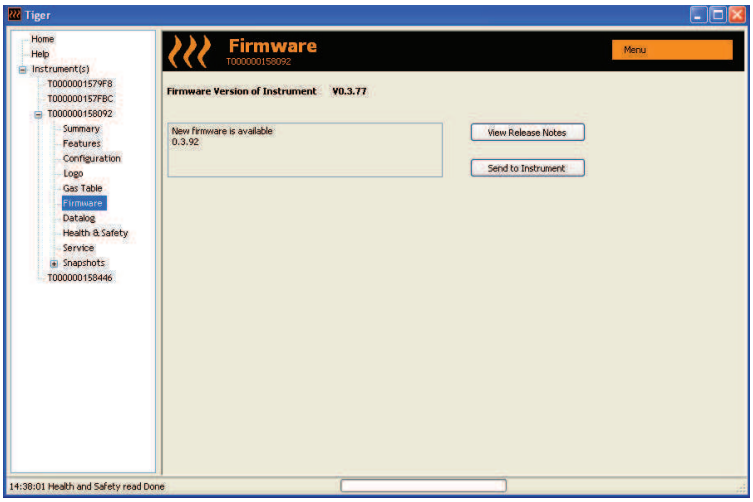
Tiger PC software

The Firmware Screen
This screen displays the current firmware version installed on your TIGER. It also provides a facility to download updated versions to your TIGER.

At this point you can also check the 'View Release Notes' information which is a description of the changes in the new version as shown here.

To download a firmware update, connect TIGER to your computer as detailed previously. Ensure that your instrument is in normal Survey mode, is not in an alarm condition and that no datalogging or Health and Safety readings are being collected. Check that the battery pack is sufficiently charged (at least two bars).

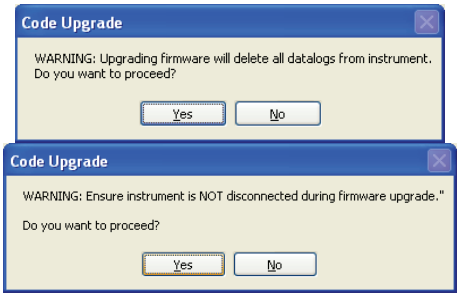
IMPORTANT: *The 'Firmware' upgrade process will delete all data from the instrument. To avoid loss of any data during the upgrade process, take a snapshot of the instrument before proceeding. The snapshot can be re-installed after the update process is complete.*



When you are ready to send the new Firmware to the instrument. Select 'Send to Instrument'.

You will now see a message that will warn you that all the data will be lost on your instrument. If you are happy to continue confirm with 'Yes'.

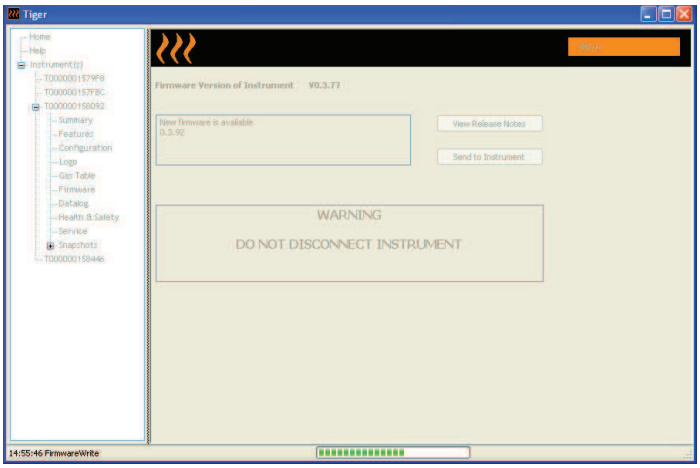
A 'WARNING' message will appear. If you are happy to continue confirm with 'Yes'.



Tiger PC software

IMPORTANT: *Do not attempt to operate your TIGER during the update process.*

The firmware on your TIGER will be updated and the new version will be shown on the 'Firmware' screen.



A bar at the bottom of the screen will indicate the progress of the update.

IMPORTANT: *Do not disconnect the TIGER at this point. Please follow the next part before disconnecting the TIGER.*

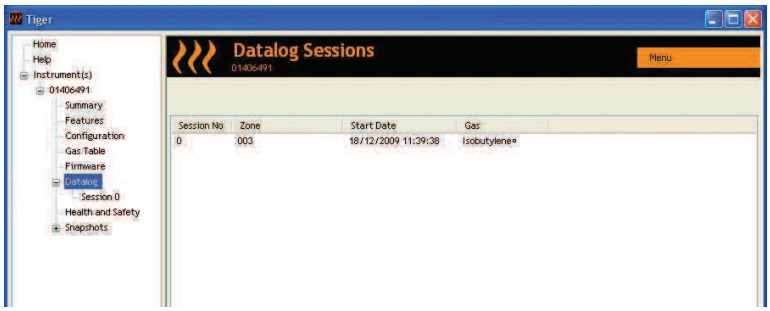
After the PC Software has completed sending the upgrade to the TIGER the instrument will then have to finish the upgrade process. The TIGER will flash the two torch LED's and the screen on the Tiger will remain blank for approximately 30 Seconds. A bar will then appear and travel across the screen. A message will be displayed as follows, 'verifying file system'. The Firmware is now installed on to the instrument and will start up automatically.

Tiger PC software

Downloading Data Logged Readings

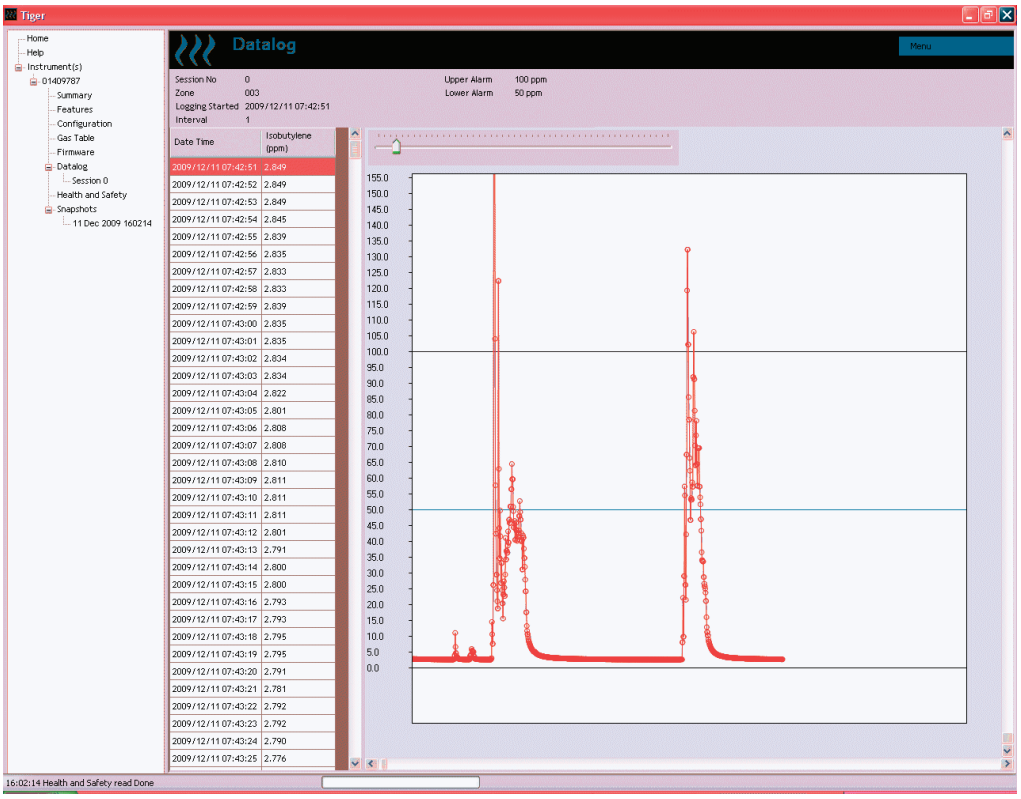
Connect your TIGER to your PC as described previously. Any fresh data-logged readings will be downloaded as the software 'reads' your TIGER.

Go to the datalog screen and a list of the datalog sessions is presented.



Expand the datalog folder and select the session of interest.

Details of the data collected during that session are presented in numerical and graphical form.



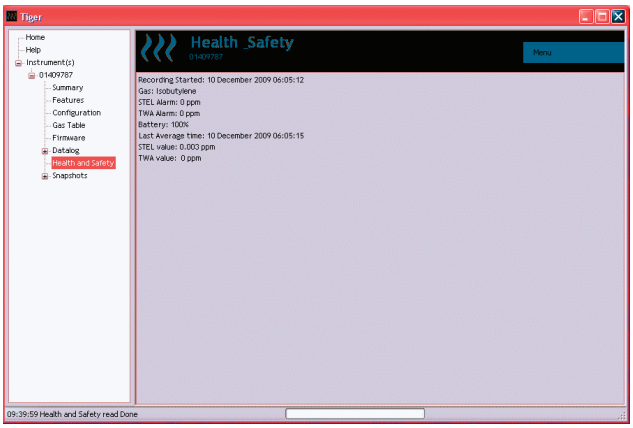
Use the menu function at the top right hand corner of the window to print, export or delete the data.

CAUTION:
The delete function deletes all logged data from your TIGER. Ensure all valuable data is exported to your PC before selecting 'Delete'.

Tiger PC software

The Health Safety Screen

This screen displays the latest Health and Safety readings held on your TIGER. Click 'Menu' then 'Export' to save this data to a file on your computer. The next readings will overwrite the data on your TIGER.

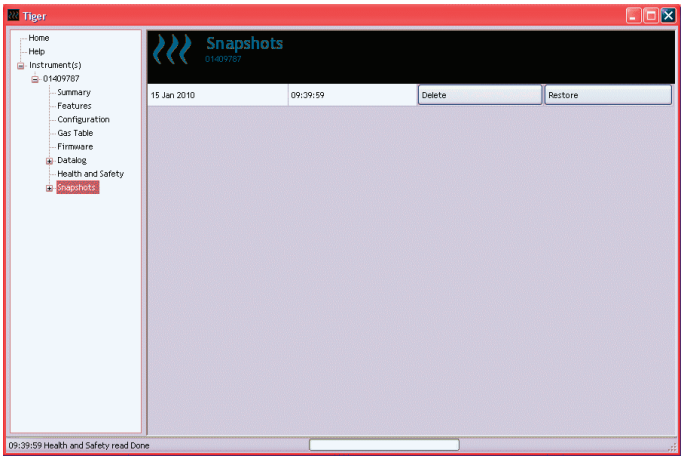


The Snapshots Screen

A snapshot records the settings and calibration data on your TIGER at any particular point in time. The 'Snapshots' screen displays a list of all those stored on your PC.

Click 'Delete' to remove a selected snapshot.

To restore the stored settings to your TIGER, first ensure that your instrument is fully booted and connected to your PC as detailed previously. Ensure that your instrument is in normal Survey mode, is not in an alarm condition and that no data logging or Health and Safety readings are being collected. Click 'Restore' against the relevant snapshot



Be aware that this process will replace all setup and calibration files

On the restore screen click 'Yes'. When complete, click 'Close' and restart your TIGER. Your TIGER will now be restored to the settings and calibration data stored at the time of that snapshot.

The snapshot menu also allows review of stored data when an instrument is not attached.

Expand the menu until the latest or relevant snapshot is displayed. Double-click on the snapshot and all the data stored in that snapshot can be accessed.

Tiger PC software

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Limitation of Liability
Ion Science Ltd will not be liable for any direct, indirect, consequential or incidental damages (including damages for loss of business profits, business information, or possibility of such damages). The above limitation will apply where allowed under local laws.

Governing Law
The laws of the United Kingdom govern this Agreement.

Batteries

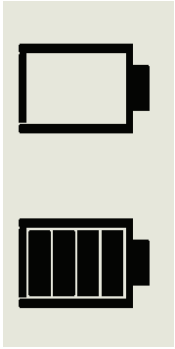
Warnings

BATTERY CHARGING:	Charge TIGER and its Lithium ion battery packs in a Non Hazardous environment only.
BATTERY REPLACEMENT:	Never replace primary Alkaline battery cells while in a potentially explosive or hazardous location. Use only Duracell Procell Alkaline batteries MN1500.
BATTERY CONNECTION:	The TIGER's Lithium ion and Alkaline battery packs have been specially designed to allow connection to the TIGER Instrument while in potentially hazardous atmospheres. The TIGER instruments ingress protection rating is reduced to IP 20 when its battery pack is removed so avoid changing batteries in dusty or wet environments.

Two battery packs are available for use with the TIGER instrument. A lithium ion Rechargeable Battery Pack **(A2)** and non-rechargeable AA Battery Pack **(A3)**, (that may be fitted with 3 AA Alkaline batteries). The rechargeable pack is recommended for normal operation with the Non-rechargeable pack available when power is not available and the use of the instrument is needed. The rechargeable pack is normally fitted as standard to the instrument when shipped.

Recharging Batteries
Ensure the TIGER is charged for at least 7 hours before using it for the first time. To ensure optimum charging the TIGER should be switched off during charging. If left on, the TIGER will take longer to charge, but should not suffer any damage. The TIGER should be charged in a non hazardous environment only.

To charge your TIGER, first connect the Charger Cradle **(A4)** to the mains, and switch on. A red light will indicate that the charger is ready. Place the TIGER in the Charger Cradle such that the contacts on the TIGER are aligned with those in the cradle. (There is no need to remove the Instrument Boot (**8**) from the TIGER during charging.) During charging, the charger will display an orange light. A green light indicates that charging is complete.



Discharged

The battery icon on the TIGER will display the level of charge.

Fully Charged

Note:
1. Only use the Charger Cradle supplied with your TIGER to charge your instrument.
2. Ion Science Ltd recommends keeping your TIGER on charge at all times when not in use, as batteries can lose power over time.

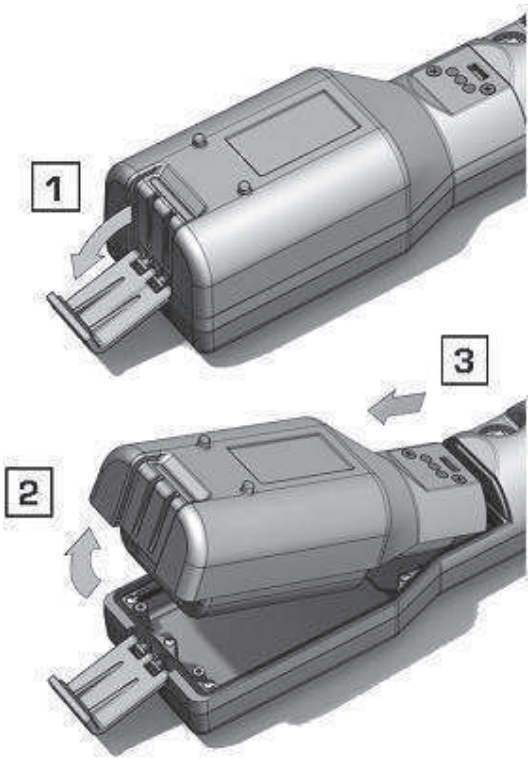
Batteries

Replacement / Exchange of Battery Packs
To replace the Rechargeable Battery Pack (**A2**), proceed as follows:

a. Ensure TIGER is switched Off;

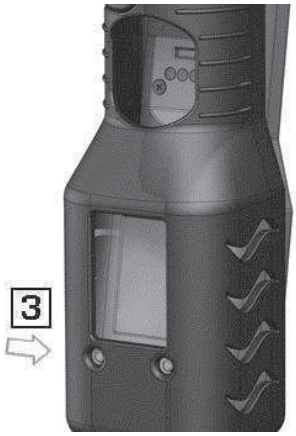
b. Remove the Instrument Boot (**8**) from your TIGER (this is most easily achieved by starting at the front end of the instrument (step 4 below));

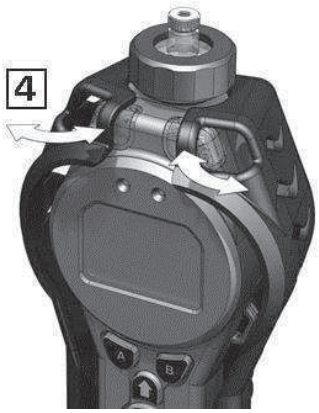
c. Release the clip at the rear end of the instrument and lift the Rechargeable Battery Pack (**A2**) away from the Instrument Body (**A1**), coincidently sliding it slightly backwards;



d. Reverse the procedure to install the replacement battery pack ensuring that the Boot is a snug fit around the front of the instrument and the lights are not obscured;

e. Charge the TIGER for 7 hours before use.





Item numbers in (bold) refer to the illustrations and parts list on page 41.

Batteries

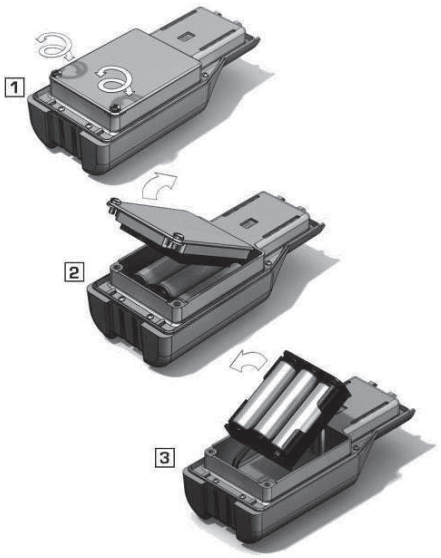
Replacement of Non-rechargeable Batteries in Battery Pack

WARNING

BATTERY REPLACEMENT:	Never replace primary Alkaline battery cells while in a potentially explosive or hazardous location. Use only Duracell Procell Alkaline batteries MN1500.

a. Ensure TIGER is switched Off.

b. Remove the AA Battery Pack (**A3**) as in (b) and (c) on page 34;



c. Remove the screws retaining the battery cover and lift it off. This reveals a set of 3 x AA cells contained in a removable battery holder;

d. Remove the battery holder;

e Replace the exhausted batteries; Use Duracell PROCELL Alkaline batteries MN1500

f. Check all batteries have the correct polarity before replacing the battery holder;

g. Assemble the battery holder into the AA Battery Pack (**A3**), refit the battery cover and fix in place using the securing screws. Replace the Instrument Boot (**8**) ensuring that it is a snug fit around the front of the Instrument Body (**A1**) and the lights are not obscured.

CAUTION:
Fitting batteries or connecting the battery pack with the wrong polarity may result in damage to the instrument!

CAUTION:
Non-rechargeable batteries must not be replaced in the field. Batteries should be loaded into the battery holder in a safe environment only. Only the assembled AA Battery Pack (A3) may be changed in the field.

CAUTION:
Do not make any connections to the USB port of this instrument whilst in a hazardous area.

Note: When loading batteries check for correct battery polarity before connecting them.

Note: Dispose of used batteries in accordance with all local and national safety and environmental requirements.

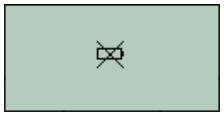
Diagnostics

Basic faults or diagnostics are presented as symbols. Should a fault occur most can be corrected by pressing **Enter** or **Esc** to clear the fault message. All fault conditions cause the TIGER to alarm.

Pump failure

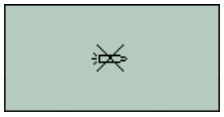
Pump blocked or pump failure
The flow of gas through the instrument has fallen below 100cc/minute. Check the probe and filter for signs of blockage. Water or dirt in the probe, a bent probe, dirty filter on the inlet or blockage of the exhaust (finger over hole on the back?) can all cause low flow. If the blockage can be removed, press **Esc** to clear the alarm. If the fault persists send the instrument to your distributor for service.

Battery dead



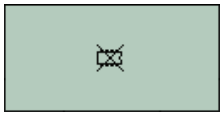
Battery low or battery failure
The TIGER will shut down when the battery level falls below 2%. Recharge the battery as instructed in the 'Batteries' section of this manual ensuring that all connections are sound and the indicator lights on the charger are in order. If the battery fails to charge, fit another battery pack if available. If using alkaline batteries, replace them. If the fault persists send the instrument and charger to your distributor for service.

Lamp out



Lamp failure
The PID lamp has failed to strike (illuminate); this may occur at switch on or during use. Switch the TIGER off and replace the lamp. See the 'Maintenance' section.

Memory full



Memory cannot receive more data
The data log memory is full. This will only happen if the Log Full box is set to 'alarm' on the TIGER PC configuration screen. Press the **Esc** key to continue, but the TIGER will no longer continue to log data. Select 'recycle' in TIGER PC and the TIGER will overwrite the oldest data and no alarm will be raised.

System error

Total system failure
The instrument's firmware is corrupted. In the unlikely event of this message appearing, contact Ion Science Ltd or your nearest authorised service centre.

Maintenance

Calibration

Ion Science Ltd recommends an annual service and calibration for users who require a traceable calibration. During this service the lamp and detector are brought back to factory specifications and new Factory Calibration data is stored.

Due to the linear output of the Ion Science PID detector, a two-point calibration is often adequate. TIGER scales its linear output across a ZERO level (clean air reference) and the SPAN 1 user defined gas concentration. For more exacting requirements, TIGER offers a three-point calibration with a higher SPAN 2 gas concentration.

TIGER offers the options of Factory Calibration or Custom Calibration. 'Factory Calibration' is set by Ion Science Ltd during instrument manufacture or on re-calibration. 'Custom Calibration' can be set by the instrument user.

For ***Factory Calibration*** contact Ion Science Ltd or your distributor.

'Factory Calibration' offers a safe set of three-point calibration data. This should be used if the custom calibration fails and will keep the unit working until a good custom calibration is completed.

For ***Custom Calibration***, first set up the parameters in TIGER PC - see the 'TIGER PC Software' section of the manual.

TIGER allows you to custom calibrate using any gas from the Gas Table at any concentration from 10ppm. You will need a cylinder of the selected gas at each of the chosen concentrations. Each cylinder should be regulated for a flow rate above 250ml/min.

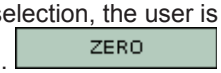
Have the cylinder(s) of gas, regulator(s) and the zero carbon filter (included in the Calibration Kit (A-861418) for your TIGER) on hand before starting the procedure. Alternatively a known clean air supply may be used as the 'zero' gas. Please ensure you are familiar with the entire calibration procedure before attempting to calibrate your TIGER.

Note: The calibration of your TIGER must be carried out in a clean air environment. Ensure all parts of the Calibration Kit are available and ready for use.

Never calibrate the zero with the span gas connected.

Press the **Options** soft key  on your TIGER to access the adjustable features.

Then use the **Up** or **Down** key to select calibration.  Press **Enter** to confirm selection.

Select **Custom Calibration**  and press **Enter** to confirm. On confirming the selection, the user is presented with a 15 second count down. 

Remove both caps from the Carbon Filter Assembly (A-31057) and then fit onto the probe of your TIGER. Press **Enter** to start the 'zero' countdown. At the end of the count down a tick '✓' will appear, indicating that the Zero has been accepted. Disconnect the Carbon Filter Assembly and replace the cap ends. The useful life of the Carbon Filter Assembly will be shortened if the Carbon Filter Assembly is open to atmosphere for prolonged periods.

Maintenance

Press **Enter** again and the gas and concentration for Span 1 (previously set up in TIGER PC) are displayed along with a 15 second countdown. SPAN 1 Attach the 'Span 1' gas using the Calibration Adaptor (861476) supplied in the Accessory Box (A-861267) (see 'Accessories') and press **Enter** to start the Span 1 countdown. At the end of the count down a tick '✓' will appear, indicating that the Span 1 has been accepted. For two-point calibration, press **Enter** and the calibration is complete.

For three-point calibration, press **Enter** to display the gas and concentration for Span 2 (previously set up in TIGER PC) along with a 15 second countdown. SPAN 2 Attach the 'Span 2' gas and press **Enter** to start the Span 2 countdown. At the end of the count down a tick '✓' will appear, indicating that the Span 2 has been accepted.

Press **Enter** again and the calibration is complete.

Inlet Nozzle
Should the Inlet Nozzle become cantaminated or damaged, replacement Inlet Nozzles may be obtained from your distributor or from Ion Science Ltd. Please note that a small O-Ring at the base of the Inlet Nozzle ensures the Inlet Nozzle is sealed, this can bee seen in the transparent Filter Clamp when the Inlet Nozzle is removed.

The Inlet Nozzle can be removed for cleaning or replacement by unscrewing it from the transparent Filter Clamp.

Refit the Inlet Nozzle using fingers only, avoid using tools as this may damage the filter housing. To ensure the assembly is sealed, place a finger over the Inlet Nozzle to block the flow while the instrument is running. A flow alarm should occur if sealed correctly.

PTFE Filter Disc (861221)
The Filter Disc should be changed after every 100 hours of use. This frequency should be increased for dusty or moisture laden environments or whenever the filter appears 'dirty' when viewed through the transparent upper surface of the Filter Clamp. Filter Disc changing should be conducted in a suitably clean environment, with clean hands and equipment to avoid contamination of the new Filter Disc.

To change the Filter Disc, unscrew the Filter Housing Cap, lift off the Filter Clamp and O-Ring and lift the Filter Disc from the Instrument Body. Carefully place a new Filter Disc into the Instrument Body. ***(Under no circumstances should a Filter Disc be used once it has been removed.)*** Replace the Filter Clamp, ensuring the locating lugs are correctly positioned in the cut-outs in the Instrument Body and that the O-Ring is correctly seated. Replace the Filter Housing Cap. Do not over-tighten.

Maintenance

PID Sensor/Lamp Replacement and Cleaning
When using your TIGER in conditions of high ambient humidity, the PID may show unexpected readings appearing to increase. This occurs due to dust or other small particles within the detector becoming hydrated with humidity. This causes these particles to conduct a signal between the electrodes. The problem can be resolved by the user in the field using the procedure below and a can of computer duster air.

In normal use the lamp should be cleaned after every 100 hours of use (based on 30 ppm for 100 hours). Reduce this if TIGER is used in heavily gas contaminated environments. Please note that some esters, amines and halogenated compounds may accelerate window fouling; in these cases cleaning may be required after every 20 hours of use. Cleaning frequency will also depend upon alarm levels set and prevailing environmental conditions.

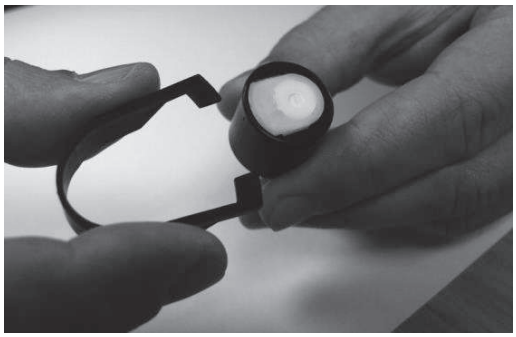
CAUTION!
The TIGER is a sensitive detector. Internal components must be handled with clean hands and clean tools. The TIGER lamp is fragile. Handle with great care. Never touch the window and do not drop!!

To remove the MiniPID Sensor for cleaning or lamp replacement, first ensure that the TIGER is turned off and that you are in a clean environment such that the sensor parts will not be contaminated by dust, oil or grease. Remove the Sensor Cover (see image on right). The centre screw may be turned with a small coin or a suitable flat bladed screwdriver.

Ensure that the Sensor Seal, on the inside of the Sensor Cover is not disturbed.

Carefully lift the MiniPID Sensor from the Instrument Body, ensuring that the two Inlet/Outlet Seals remain in place in the Instrument Body.

Using the special Removal Tool MiniPID Stack (846216) provided, locate its 'prongs' in the slots in the side of the Mini PID Sensor body. Using the forefinger to restrain the sensor, (the internal parts are spring-loaded and careless disassembly will leave you hunting for the spring!) squeeze the tool to release the lamp housing.



The lamp may now be removed.

To replace the lamp or install a new one, reverse the procedure, ensuring the seals are all in place. When replacing the Sensor Cover ensure that the markers are aligned correctly and that the cover is a snug fit.

The instrument MUST be re-calibrated after fitting a replacement or cleaned lamp.

CAUTION!
Never refit a damaged lamp!

Maintenance

Lamp Cleaning
The TIGER PID relies on an ultraviolet light source ionising VOC gases as they pass across the lamp window. This process may result in a very fine layer of contamination appearing on the detector window that must be removed on a regular basis.

CAUTION!
The TIGER is a sensitive detector. Internal components must be handled with clean hands and clean tools. The TIGER lamp is fragile. Handle with great care!

First ensure that the TIGER is turned off and that you are in a clean environment such that the sensor parts will not be contaminated by dust, oil or grease.

Remove the lamp as detailed on page 39.

Inspection of the lamp may reveal a layer of contamination on the detection window that presents itself as a 'blue hue.' To check for confirmation, hold the lamp in front of a light source and look across the window surface. Clean the window using the PID Lamp Cleaning Kit (A-31063) supplied.

USE of PID Lamp Cleaning Kit A-31063

The container of cleaning compound contains Aluminium Oxide as a very fine power (CAS Number 1344-28-1).

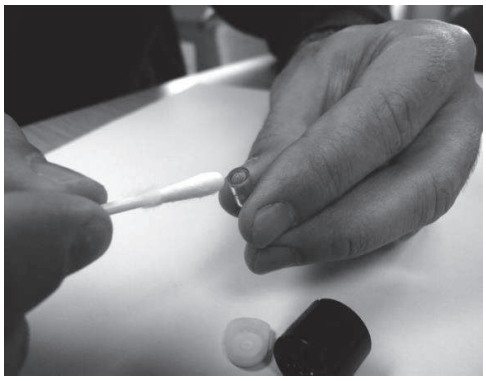
A full material safety data sheet MSDS is available on request from Ion Science Ltd. The key issues are listed below:
Always replace the lid after using the cleaning compound.

Hazard identification:
- May cause irritation of respiratory tract and eyes.

Handling:
- Do not breathe vapour/dust. Avoid contact with skin, eyes and clothing;
- Wear suitable protective clothing;
- Follow industrial hygiene practices: Wash face and hands thoroughly with soap and water after use and before eating, drinking, smoking or applying cosmetics;
- The Compound has a TVL(TWA) of 10 mg/m3.

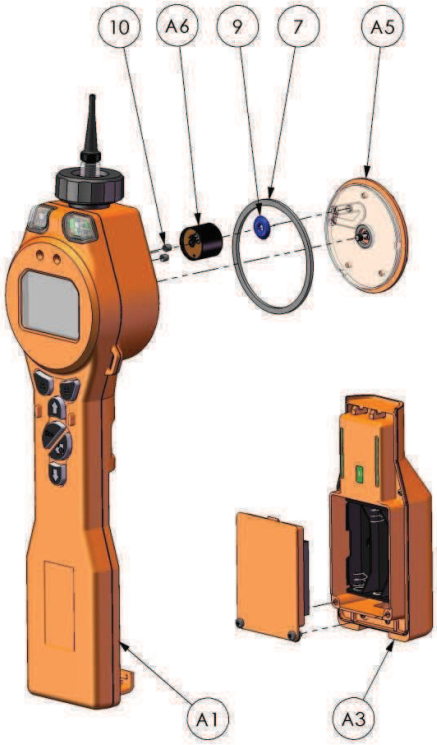
Storage:
- Keep container closed to prevent water adsorption and contamination.

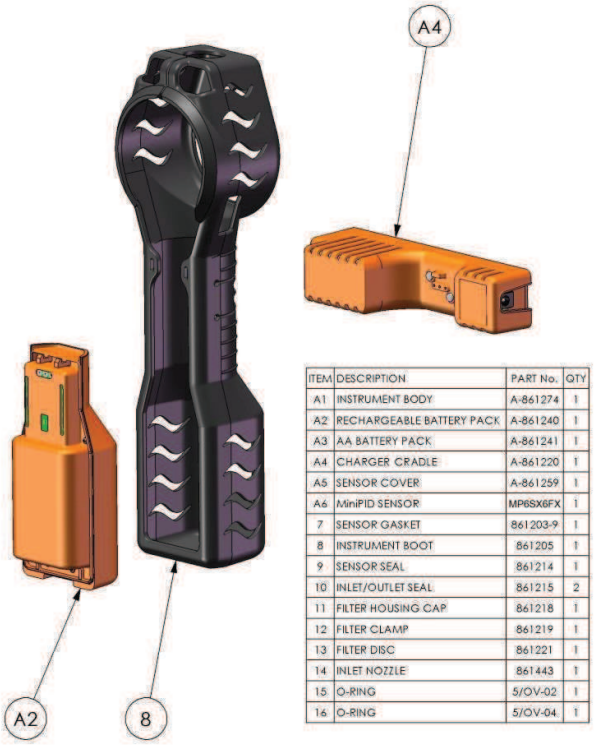
To clean the lamp:
1. Open the vial of Aluminium Oxide polishing compound. With a clean cotton bud collect a small amount of compound;
2. Use this cotton bud to polish the PID lamp window. Use a circular action applying light pressure to clean the lamp window. Never touch the lamp window with fingers;
3. Continue polishing until an audible "squeaking" is made by the cotton bud with compound moving over the window surface (usually within fifteen seconds);
4. Remove the residual powder with short blast of air from the can of air duster;
5. The instrument MUST now be re-calibrated.



Tiger parts

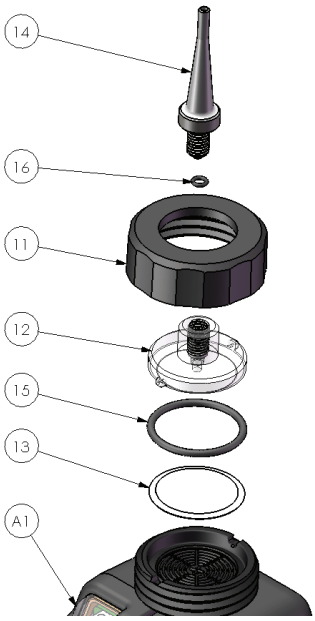
Tiger main assembly





ITEM	DESCRIPTION	PART No.	QTY
A1	INSTRUMENT BODY	A-861274	1
A2	RECHARGEABLE BATTERY PACK	A-861240	1
A3	AA BATTERY PACK	A-861241	1
A4	CHARGER CRADLE	A-861220	1
A5	SENSOR COVER	A-861259	1
A6	MiniPID SENSOR	MP6SX6FX	1
7	SENSOR GASKET	861203-9	1
8	INSTRUMENT BOOT	861205	1
9	SENSOR SEAL	861214	1
10	INLET/OUTLET SEAL	861215	2
11	FILTER HOUSING CAP	861218	1
12	FILTER CLAMP	861219	1
13	FILTER DISC	861221	1
14	INLET NOZZLE	861443	1
15	O-RING	5/OV-02	1
16	O-RING	5/OV-04	1

Front end filter assembly



Accessories

Ion Science Ltd has developed an exclusive range of high quality accessories to compliment the TIGER. Please see a selection of these below:

Part Number	Accessory Description
1/jawu-01	2.1mm DC Jack - Cigar Lighter Plug Car Charger Lead – Allows the Charger Cradle (**A4**) to be powered from a standard vehicle cigar lighter (12 volt only)
861214	PID Sensor Seal (**9**) – Seal between the MiniPID Sensor (**A6**) and the Sensor Cover (**A5**)
846216	Removal Tool MiniPID Stack – Used to remove Stack / Pellet from the MiniPID Sensor (**A6**)
861205	Protective, Removable Rubber Boot (**8**) – Supplied with every TIGER, this is a replacement
861219	Filter Clamp (**12**) – Transparent clamp that covers the PTFE filter and accepts the Inlet Nozzle (**14**)
861230	USB Cable – Angled B Connector – Supplied with every TIGER, this is a replacement
861266	Leather instrument holster – TIGER can be carried on a belt around the waist allowing hands free operation
861412	Leather instrument harness – TIGER can be carried against upper body allowing hands free operation
861443	Inlet Nozzle (**14**)
A/OV-04	O'ring for use with Inlet Nozzle (**14**)
A-861474	O'rings for use with Inlet Nozzle (**14**) pack of 5
861476	Calibration Adaptor – Must be used when calibrating using flow regulators
A-31057	Carbon Filter – Used during calibration to set a zero
A-31063	PID Lamp Cleaning Kit- Contains Alumina powder and 40 cotton buds
A-861413	5m Extension Hose – Replaces the standard probe, pipe material: PTFE
A-861414	10m Extension Hose – Replaces the standard probe, pipe material: PTFE
A-861415	Diluter – Dilutes immediate sample with ambient air
A-861406	Flexible Probe Assembly – 300mm, replaces the standard probe, internal pipe material: PTFE
A-861240	Lithium ion battery pack, intrinsically safe – Replacement / spare
A-861241	Alkaline battery pack, intrinsically safe. 3 x AA batteries included – Replacement / spare
A-861267	Accessory box as supplied with the TIGER – Includes carbon filter, lamp cleaning kit, PID Stack / Pellet removal tool, lanyard, calibration adaptor and PID sensor seal
A-861472	Pack of 10 PTFE Filter Discs
A-861511	Anti vibration charger cradle – Allows wall mounting of vehicle charging, includes charge cradle
LA4TM600	MiniPID Lamp 10.6eV ppm
LA4SM700	MiniPID Lamp 11.7eV

For more information please visit www.ionscience.com/Tiger and select Accessories.

Instrument warranty and service

Warranty
Standard Warranty can be extended to up to 5 years on the TIGER when registering your instrument via our website: www.ionscience.com/instrument-registration To receive your Extended Warranty, you need to register within one month of purchase (Terms and Conditions apply).

To register your TIGER instrument, simply fill in the online form. You will need to enter your instrument serial (IRN) number to hand. To find this, switch on your instrument. Using your soft keys, go into the 'info' menu and scroll down until you find the IRN number.
You will then receive a confirmation email that your Extended Warranty Period has been activated and processed.

Full details, along with a copy of our Warranty Statement can be found by visiting:
www.ionscience.com/instrument-registration

Service
Ion Science Ltd also offers a number of service options for your TIGER that allows you to choose the instrument cover to best suits your requirements.

At Ion Science Ltd we recommend that all of our gas detection instruments be returned for service and factory calibration once every 12 months.

Contact Ion Science Ltd or your local distributor for service options in your area.

Find your local distributor by visiting: www.ionscience.com

Contact Details:

UK Head Office
Ion Science Ltd
The Way, Fowlmere
Cambridge
SG8 7UJ
UK
Tel: +44 (0)1763 207206
Fax: +44 (0) 1763 208814
Email: info@ionscience.com
Web: www.ionscience.com

USA Office
Ion Science LLC
33 Commercial Drive
Waterbury
VT 05676
USA
Tel: +1 802 244 5153
Fax: +1 802 244 8942
Email: info@ionscienceusa.com
Web: www.ionscience.com

German Office
Ion Science Messtechnik GMBH
Laubach 30
Metmann-Neandertal
40822
GERMANY
Tel: +49 2104 14480
Fax: +49 2104 144825
Email: info@ism-d.de
Web: www.ism-d.de

Technical specification

Response time:	T90 < 2 second		
Detectable Range:	1 ppb – 10,000 ppm & ppb to 20,000ppm for Specific Gases		
Resolution:	+/- 1 ppb		
Accuracy:	+/- 5% displayed reading +/- one digit		
Linearity:	+/- 5% displayed reading +/- one digit		
Battery:	Lithium ion:	24 hours	
	Alkaline (Duracell Procell MN1500):	8.5 hours	
Data log:	Including date / time:	120,000	
Alarm visual:	Flashing Red and Amber LED		
Alarm audible:	95 dBA @ 30 cm		
Flow Rate:	≥ 220 ml/min in Ambient conditions		
Temperature:	Operating:	-20 to 60 °C (-4 to 140 °F)	
	Storage:	-25 to 60 °C (-13 to 140 °F)	
	Certified to:	-15 to 45 °C (-5 to 140 °F)	
Dimensions:	Instrument:	340 x 90 x 60 mm	
Weight:	Instrument:	0.720 kg (1.6 lb)	
Materials:	Instrument:	Anti-static PC/ABS (Polycarbonate/ Acrylonitrile Butadiene Styrene)	
		Rubber Boot:	Anti-static TPE (Thermoplastic Polyolefin Elastomeric)

Manual log

Manual version	Amendment	Issue Date	Instrument Firmware	PC Software
1.0	First issue	15/01/2010	V 0.3.40	V 1.0.0.18
1.4	Updated filter replacement instructions on page 34.	9/4/2010	V 0.3.49	V 1.0.0.26
1.5	Addition of ATEX information and new probe graphics	11/05/2010	V0.0.57	V 1.0.0.30
1.6	Addition of IECEx number on page 4	17/06/2010	V0.0.63	V 1.0.0.31
1.7	Instrument Warranty Information added to page 41 Accessory images added to page 39-40 Images added on pages 33 and 34	21/07/10	V0.0.63	V 1.0.0.31
1.8	Pg 38 – Part Numbers LA4SB600 & LA4SM600 have been deleted and replaced with LA4TM600, LA4TB600 & LA4SM700	30/09/10	V0.0.63	V 1.0.0.31
1.9	Page 21 – New screen shot of PC software. New tick box added for 'Sleep during PC connect' mode. Page 33 – carbon filter adaptor added in instructions. Page 33 – Note added, 'Never calibrate the zero with the span gas connected'	10/10/10	V0.0.74	V 1.0.0.31
2.0	Page 41 – Accessory added, Sensor seal .	12/11/10	V0.0.74	V 1.0.0.33
2.1	Page 37 – Part number 5/OV-02 changed from 5/OV-04	13/01/11	V.0.0.77	V 1.0.0.39
2.2	Battery Charging & Proper use added. Page 3 Field replacement of alkaline battery pack note added. Page 8 Information screens updated to include features screen. Page 16 Firmware upgrade screen updated. Page 25	25/02/11	V.0.0.85	V.1.0.0.42
2.3	Battery Charging note added. Page 30 Two battery packs note added. Page 30 11.7eV lamp information and spec added to page 22 Page 4 &7 updated to correct Quality Management System. Page 7 Responsibility for use updated and Legal Notice added	03/03/11	V.0.0.85	V.1.0.0.42

Manual log

Manual version	Amendment	Issue Date	Instrument Firmware	PC Software
2.4	Front cover, Issue updated to V2.4 Servicing warnings and Intrinsically safe note added to warnings section on page 3 Page 12, Softkey note added Page 15, Stealth mode added Page 19 & 20, PC Software upgrade Updated Page 23, Lock Softkeys mote added Page 26 & 27, TIGER Firmware upgrades updated	29/03/11	V0.3.93	V1.0.0.45
2.5	Lamp information added on page 25 Page 37, Reference to Carbon Filter Adaptor deleted as this is not used. Page 44, A-861229, Carbon Filter Adaptor deleted.	07/06/11	V0.3.93	V1.0.0.45
2.8	Manual part number added (front cover) Option icon updated - ppm & lamp added (p.14) Unit and lamp icons and text added (p. 15) Entire table checked & updated with icons and text (p. 16) Option icon updated - ppm & lamp added (p.35)	18/10/2012	V0.4.17	V1.0.0.63
2.9	Outer front cover updated. Instrument registration note added to inside front cover.	29/1/2013	V0.4.17	V1.0.0.63
3.0	Page 15 – Removed temperature icon	19/04/2013	V0.4.20	V 1.0.0.70
3.1	SW & FW upgrade SPAN 2 adjusts to 5,000 ppm.	23/07/2013	V0.4.22	V 1.0.0.73
3.2	Accessory clarification 861443/5/OV-04 and A861474. Page 41	13/02/2014	V0.4.22	V 1.0.0.73

Tiger Select

Instrument User Manual V2.5

Register your instrument online to receive your extended warranty.

Unrivalled Detection.

www.ionscience.com

Register your instrument online for extended warranty

Thank you for purchasing your Ion Science instrument.

The standard warranty of your instrument can be extended to up to five years on PhoCheck Tiger and two years on other Ion Science instruments.

To receive your extended warranty, you must register your instrument online within one month of purchase (terms and conditions apply.)

Visit www.ionscience.com/instrument-registration

Part number: 861489

Contents

About this manual

This manual describes the function and operation of the Tiger Select instrument. It is a supplement to the standard Tiger user manual (part number: 861265)

Please read and understand both manuals completely before operating the Tiger Select instrument.

Statements

Responsibility of Use
Inadequate performance of the gas detection equipment described in this manual may not necessarily be self-evident and consequently equipment must be regularly inspected and maintained. Ion Science recommends that personnel responsible for equipment use institute a regime of regular checks to ensure it performs within calibration limits, and that a record be maintained which logs calibration check data. The equipment should be used in accordance with this manual, and in compliance with local safety standards.

Legal notice
Whilst every attempt is made to ensure the accuracy of the information contained in this manual, Ion Science accepts no liability for errors or omissions, or any consequences deriving from the use of information contained herein. It is provided “as is” and without any representation, term, condition or warranty of any kind, either express or implied. To the extent permitted by law, Ion Science shall not be liable to any person or entity for any loss or damage which may arise from the use of this manual. We reserve the right at any time and without any notice to remove, amend or vary any of the content which appears herein.

Caution
It is essential that the Tiger Select is always used with a supplied PTFE 0.5 micron filter fitted to the front of the instrument. Without a filter, particles of debris and dust can be drawn into the detector inhibiting the function of the instrument. These filters are consumable and should be changed after every 100 hours of use. The frequency of replacement should be increased for dusty or moisture laden environments. Filters are available from your distributor or at www.ionscience.com .

Quality Assurance
Tiger Select has been manufactured in compliance with ISO9001:2000, which ensures that the equipment supplied to our customers has been designed and assembled reproducibly, from traceable components, and leaves Ion Science calibrated to stated standards.

Disposal
Dispose of Tiger Select, its components and any used batteries in accordance with all local and national safety and environmental requirements. This includes the European WEEE (Waste Electrical and Electronic Equipment) directive. Ion Science Ltd offers a take back service. Please contact us for more information. The Tiger Select field case material is recyclable polypropylene.

Calibration Facility
Ion Science Ltd offers a calibration service including the issue of certification confirming calibration with equipment traceable to national standards. A Tiger Select calibration kit is available from your distributor or service centre or at www.ionscience.com . Ion Science recommends annual return of all instruments for yearly service and calibration.

Introduction

Benzene gas is a carcinogen often associated with petrochemical processing but it is also used as a solvent in the production of drugs, plastics, synthetic rubbers and dyes. Photo ionization detectors (PID) readily detect a wide range of VOC gases of which includes Benzene.
Gases that are cross sensitive to Benzene will result in significant errors in reading which are unacceptable when occupational exposure levels are set around 1ppm.

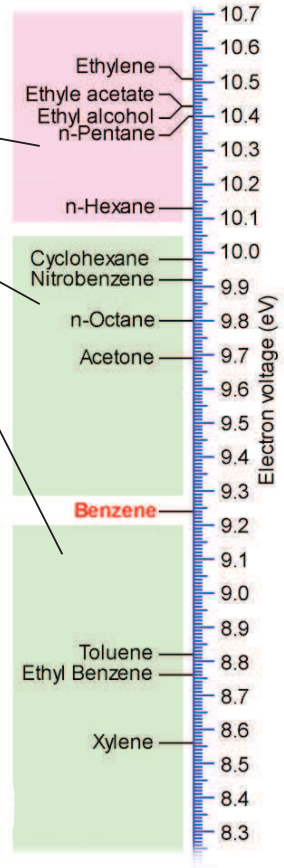
The Tiger Select has been developed to give an accurate and repeatable measurement of Benzene gas specifically to sub ppm levels.

The Tiger Select has two modes of operation; TAC mode which identifies the presence of Total Aromatic Compounds (which include Benzene), and Select mode which then identifies the specific Benzene content. This two stage approach avoids using filter tube unnecessarily; if there are no TAC gases present there is also no Benzene.

The Tiger Select uses a 10.0 eV light source so many of the gases associated with Benzene are ignored.

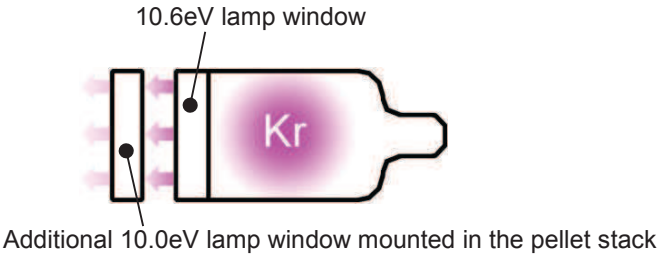
The remaining gases associated with Benzene are filtered using a Benzene pre-filter tube.

Note: n-Butane, n-Pentane, Ethylene, Propylene, Alcohol and Acetate are not shown on this illustration, however they are also beyond the detection range of the 10.0 eV lamp so are not detected.



Lamp output

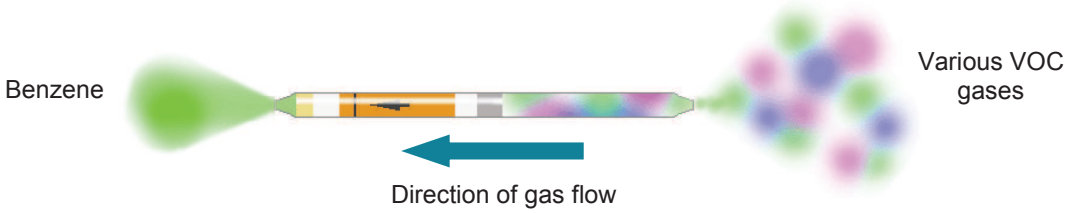
The number of gases a PID can detectable directly relates to the Electron Voltage (eV) output of the PID lamp being used, the higher the eV level the more gases can be detected. In the standard PhoCheck Tiger the 10.6eV lamp allows the detection of over 450 gases. The Tiger Select still uses a 10.6 eV lamp however an additional 10.0 eV glass filter is fitted in to the electrode stack which limits the amount of detectable gases down to 115.



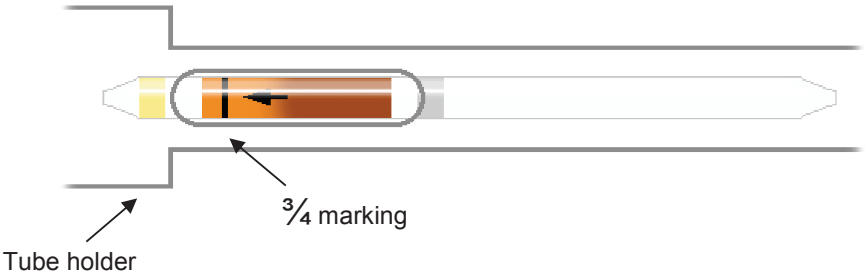
Important
Always recalibrate the Tiger Select after servicing, particularly if the lamp or electrode stack is cleaned or replaced.

Filter tubes

Benzene Pre filter tubes absorb many VOC gases however the Benzene content passes through. The gas sample must be drawn through the tube to condition it before the absorption level becomes stable. Please see the leaflet supplied with the pack of tubes for maximum absorption levels.



Important
During the Benzene measurement, the Yellow/Orange indicating layer turns brown or green in the presence of other aromatic hydrocarbons and/or benzene hydrocarbons. If this colouring is longer than the ¾ marking, the filter capacity of the tube is not sufficient anymore and the Benzene display may not be accurate.



Fitting the tube holder

Always ensure the filter tube is visible while viewing the display screen. If necessary the filter tube assembly should be removed and refitted.

1. Unscrew and remove the Filter Cap.

2. Remove the filter clamp and tube holder together.

3. Place the O'ring on the filter lamp and push the assembly in to the filter housing with the window facing forward. Continual pressure may be required to keep the assembly in place while tightening the filter cap.

The filter disk should be replaced if it appears dirty, or is disturbed from its seating position.
The filter disks can be fitted either way round however the orientation should never be reversed once used.

Start up

The Tiger Select will start up in either Standard running mode or TAC mode depending on the mode selected when it was switched off. In Standard running mode the instrument will work as a standard PhoCheck Tiger instrument. (See user manual part number: 861265).
Standard running mode has a default sensitivity of 0.1 ppm Isobutylene equivalent (EQ). if higher sensitivity (ppb) or data logging is required, upgrades can be purchased. Please contact your local distributor for further information.

TAC mode 

TAC mode automatically offers higher sensitivity, selects a response and allows data logging functionality.
The Tiger Select can be left in this mode even through a power cycle or battery replacement.
TAC mode can only be used a 10.0 eV lamp is selected.
The 10.0eV lamp output help filter out many VOC gases associated with Benzene.

IMPORTANT

The TAC gas used within TAC mode has a STEL set to 1 ppm, this level has been chosen based the low STEL levels often associated with Benzene vapour. The Tiger Select TAC STEL however is not supported by nationally recognised bodies who publish official levels.

Soft keys available within TAC mode

Single log 

Single point data log allows individual readings to be logged in memory, logged data can then be downloaded to Tiger PC for review and analysis.

Multi log 

Multiple data logging allows multiple readings to be logged in memory, logged data can then be downloaded to Tiger PC for review and analysis. The frequency of the data log and other log settings must be setup on the TigerPC configuration and sent to the instrument before use.

TAC 

Pressing the TAC soft key simply enters and exits TAC mode.

Tube mode 

Pressing the tube soft key simply enters tube mode

Please note: A tube calibration must be carried out before tube mode can be used. The following icon will appear until a Tube calibration is carried out. To carry out a tube calibration see page 13. Tube mode is designed to identify the level of Benzene gas after TAC mode has identified a significant background. Unlike the other modes of operation soft keys are unavailable during the Tube mode test.

IMPORTANT: When entering Tube mode the pump will stop until the test cycle begins. This is not a fault condition.

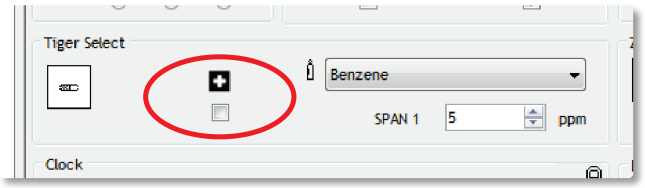
This mode of operation has two parts; an initial single point reading followed by an optional STEL calculation however both tests use the same pre-filter tube.
The initial Benzene test has a test time which varies with temperature. This test time is required to condition the tube which thereafter offer a proportional output relating to the Benzene being sampled.

Start up

A 15 minute STEL can then be carried out using the same tube, The STEL for Benzene will be automatically selected from the gas table. If a Benzene STEL is not specified within the selected gas table a figure can be entered on to the gas table and then sent to the instrument. To allow the table to be edited 'Allow inert/Delete' must be selected from the drop down Menu found in the top of the gas table screen.

H&S function (STEL calculation)

The second stage of Tube mode is optional; to enable it select the H&S option on the configuration screen of Tiger PC and then sent to the instrument. (See below)



If selected a STEL calculation will automatically start calculating after the initial test.

The H&S icon will flash in the left corner of the screen, if the STEL measurement is required then the ENTER key.

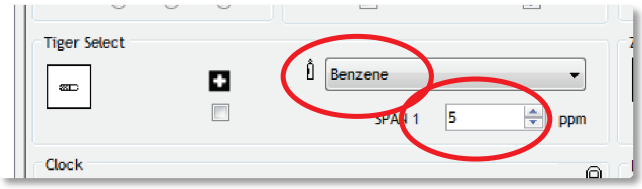
If the H&S stage is not required then press the 'Esc' key, the instrument will offer the opportunity to fit another Benzene pre-filter tube to carry out another test.

Calibration

Calibration type
Tiger Select has 3 calibration options:-

1. Factory calibration: This calibration is only used in normal running mode so is not used in TAC or Select mode. Factory Calibration is carried out at Ion Science during manufacture. This can be selected by the user but cannot be changed. Factory calibration should be carried out annually by Ion Science Ltd or an authorised service centre only.
2. Custom calibration: This calibration is used in normal running mode and TAC mode. Custom Calibration allows the user to calibrate the Tiger on alternative gases and using alternative concentrations.
3. Select calibration: The Tiger Select has a separate calibration set aside for tube mode. Please note that a tube calibration must be carried out before access to tube mode is allowed. Please see page 13.

The Select calibration settings can be adjusted on the configuration screen in Tiger PC. Benzene gas must be selected when using a Benzene pre filter however the calibration gas concentration can be adjusted.



Frequency of calibration
The frequency at which the Tiger Select is calibrated can vary considerably. Changes in environmental conditions, frequency of use or the gas being detected can all affect the accuracy of the instrument. Ion Science suggests customers carry out weekly calibrations but then extend this time as confidence is gained and any environmental effects identified.

Tiger Select should also be calibrated for the following reasons:-

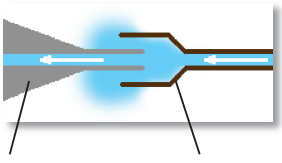
* When a new batch of pre-filter tubes are used. Batch numbers can be found on the end of the tube carton.

* After servicing

Demand and flow regulators
The Tiger Select can be calibrated using either a flow regulator or a demand regulator.

Demand regulators rely on the instrument pump drawing the sample from the gas bottle. These regulators supply exactly the amount of gas necessary to calibrate so are economical. They also avoid the risk of leaving the gas bottle switched on. Demand regulators however rely on the host instruments pump to draw the sample which causes a slight partial vacuum of between -7 to -10 mbar. For an accurate calibration the entire pneumatic system must be completely sealed.

Flow regulators supply a fixed amount of gas which should exceed what the instrument requires. A little gas is lost and the instrument takes what it needs. The Tiger Select requires 250 cc/min so flow regulators of 300 cc/min (0.3Lr/min) is advised. Being a flood leak the sample has the benefit of being matched to ambient air pressure.



Calibration

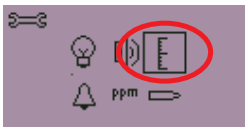
Calibration routine

For best results place the Tiger Select instrument and any Benzene pre-filter tubes in the calibration environment. Switch the Tiger Select on and leave it running in the calibration environment for 30 minutes. This ensures the instrument and the tubes acclimatize to the environment and ensure any trace benzene is purged from the instrument after previous testing.

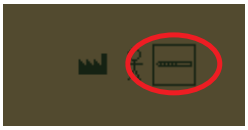
Tiger Select relies on a two point calibration to create its calibration factor. Both Zero and SPAN are set with a single stage. The Zero is set using initial slug of clean gas passing through a pre-filter tube, the span is set later. Please note the accuracy of the calibration will be affected by ambient temperature.

1. Select the settings soft key: 

2. Choose the calibration option

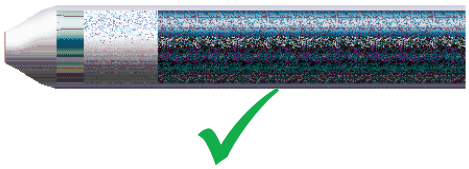


3. Choose the Tube calibration



4. Use the up and down keys to adjust the temperature on screen to the ambient. Use a separate temperature measuring device if necessary.
Note: At this point the pump will stop running

5. Remove both ends of the pre filter tube using the tube opener tool. This is done by inserting the tube in to the tube opener and twisting the tube. A slight angle may be required to cut the glass.
Should the tube break up to the shoulder it must not be used as this will damage the seals within tube holder when inserted.



6. Unscrew the cap of the tube holder, insert the tube in to the tube holder cap ensuring the black arrow on the tube is pointing towards the open end (towards the instrument). Screw the tube holder cap and the tube on to the instrument.

6a. If using a flow regulator, remove the grub screw from the end of the tube holder cap before starting the calibration, this allows excess gas top escape.

WARNING: failing to allow excess pressure to escape could damage the Tiger Select pump.

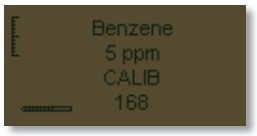
Calibration

7. Connect the calibration gas to the Probe by pushing the pipe on to the end of the tube holder.

IMPORTANT: For best results the pipe between the calibration gas and the instrument should be as short as practically possible.

8. If using a flow regulator; switch the gas on and then press the ENTER key to start the calibration routine. IMPORTANT: At the end of the test cycle switch off the calibration gas.
8a. If using a demand regulator just press the ENTER key to start the calibration routine.

The timer will count down, at the end of the calibration cycle a tick / check (✓) will appear.
Press the ENTER key to accept the calibration.



TAC mode routine

The TAC soft key is used to ENTER and EXIT from TAC mode.

1. To select TAC mode press the TAC soft key then press then press the ENTER key to continue.

2. A tick / check '✓' will appear to confirm the selection

3. Press the Esc key to clear the confirmation

4. The TAC response factor will be displayed temporarily before entering TAC mode operation.

5. TAC mode automatically selects a specific instrument setup, to ensure best results. The TAC response factor, high sensitivity and data logging functions become available.

This mode offers single point data logging, multiple data logging, STEL and Tube mode.

Important
The TAC gas used within TAC mode has a STEL set to 1 ppm, this level has been chosen based the low STEL levels often associated with Benzene gas. The Tiger Selects TAC STEL however is not supported by nationally recognised bodies who publish official levels

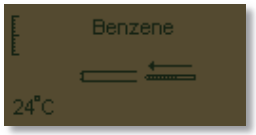
6. To exit TAC mode Press the TAC soft key and then ENTER.

7. A tick / check '✓' will appear to confirm the selection, then press the Esc key.

8. The gas repose factor will be displayed temporarily before exiting TAC mode.

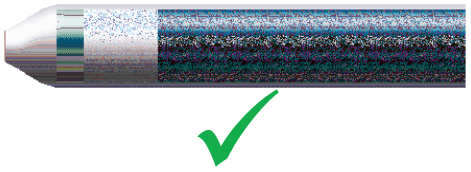
Select mode routine

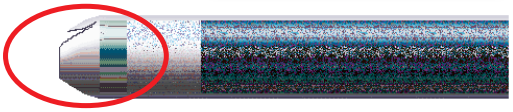
1. To enter Select mode press the Select soft key ( ) at this point the pump will stop running. A screen will appear to prompt the fitting of a pre-filter tube, this screen also indicates which gas is selected, ensure this is Benzene.



2. Adjust the on screen temperature to the ambient using the Up and Down keys. Preferred temperature units (^{o}C or ^{o}F) are set on the Configuration screen of TigerPC.

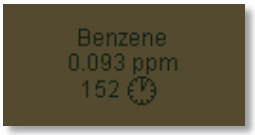
3. Remove both ends of the pre filter tube using the tube opener tool. This is done by inserting the tube in to the tube opener and twisting the tube. A slight angle may be required to cut the glass.
Should the tube break up to the shoulder it must not be used as this will damage the seals within tube holder when inserted.





4. Unscrew the cap of the tube holder, insert the tube in to the tube holder cap ensuring the black arrow on the tube is pointing towards the open end (towards the instrument). Screw the tube holder cap and the tube on to the instrument.

5. Pressing the Enter key to start the test cycle. A count down timer will indicate the remaining test time, and a live Benzene reading is displayed. Please note that this live reading is for indication only. Only the final ready at the end of the test cycle should be used as a reference. This final reading will also be automatically data logged.



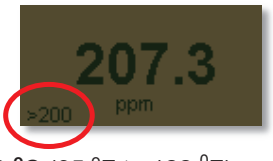
WARNING: If the Benzene reading exceeds 200 ppm the reading should be treated with caution.
Note, when using the Tiger Select to measure higher concentrations of Benzene the concentrations of other hydrocarbons may also be high and the Pre-filter's tube capacity should be considered. As the Pre-filters capacity is reached the tube will turn from a bright orange to "greenish brown". If the colour changes beyond the ¾ marking the Benzene concentration displayed may not be accurate, see figure 2. If the colour turns past the ¾ mark, as long as the benzene reading is below the test limit (e.g., 200 ppm) the result still within environmental compliance and the work activity can continue.

6. A 15 minute STEL can be carried out after the initial reading using the same pre-filter tube. Press the ENTER to continue or press the Esc key to return to the Tube test screen.

If H&S mode does not appear as an option it can be selected on the configuration screen of TigerPC in the Tiger Select section. The STEL threshold is taken from the internal gas table however some authorities have no published STEL level for Benzene so the instrument will not alarm.

7. At the end of the STEL test the instrument will display the final reading which will be data logged. Press the Esc key will return to TAC mode.
Pre-filter tubes must only be used for 1 single reading + 1 once STEL test only.

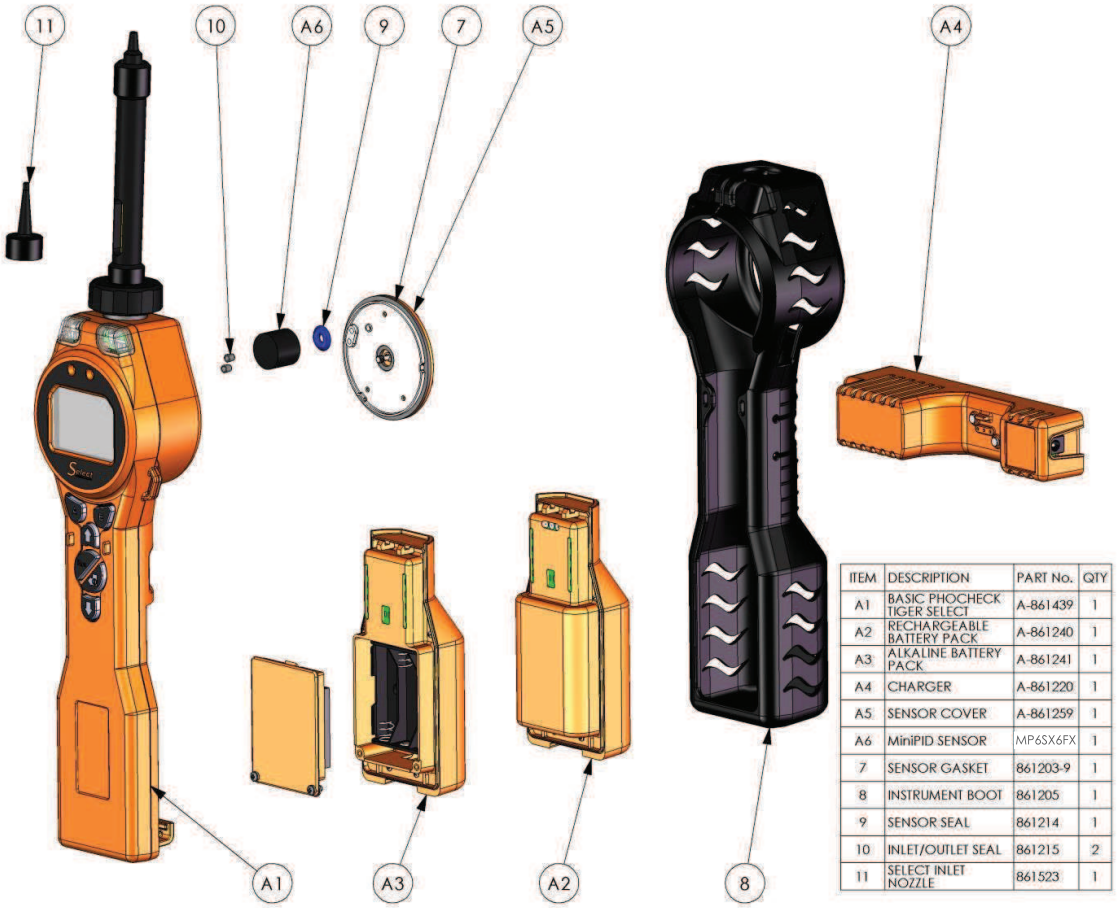
WARNING: Should the level of Benzene through the filter tube exceed 200 ppm the accuracy of the reading should be approached with caution. Readings above 200 ppm are still displayed however '>200' flashes in the bottom left corner of the screen.



Important:
* The working temperature range of the Benzene pre-filter is between 2 to 40 °C (35 ^{o}F to 122 ^{0}F)

Parts list

PID sensor access and batteries

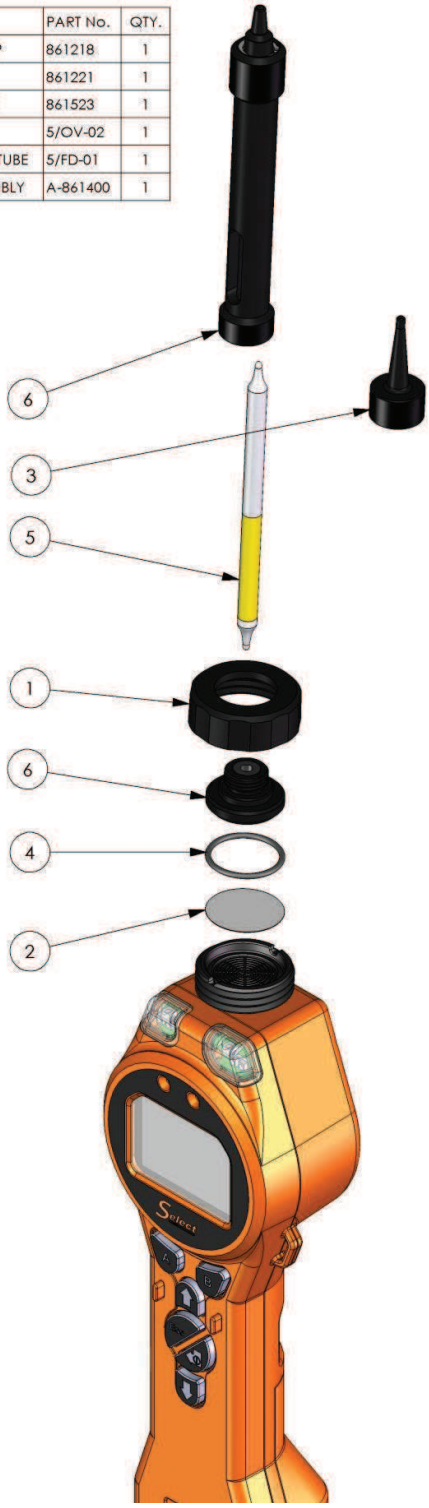


ITEM	DESCRIPTION	PART No.	QTY
A1	BASIC PHOCHECK TIGER SELECT	A-861439	1
A2	RECHARGEABLE BATTERY PACK	A-861240	1
A3	ALKALINE BATTERY PACK	A-861241	1
A4	CHARGER	A-861220	1
A5	SENSOR COVER	A-861259	1
A6	MiniPID SENSOR	MP6SX6FX	1
7	SENSOR GASKET	861203-9	1
8	INSTRUMENT BOOT	861205	1
9	SENSOR SEAL	861214	1
10	INLET/OUTLET SEAL	861215	2
11	SELECT INLET NOZZLE	861523	1

Parts list

Probe assembly

ITEM No.	DESCRIPTION	PART No.	QTY.
1	FILTER HOUSING CAP	861218	1
2	FILTER DISC	861221	1
3	SELECT INLET NOZZLE	861523	1
4	O-RING	5/OV-02	1
5	BENZENE PRE-FILTER TUBE	5/FD-01	1
6	TUBE HOLDER ASSEMBLY	A-861400	1



Contact details

UK Head Office
Ion Science Ltd
The Way, Fowlmere
Cambridge
SG8 7UJ
UK
Tel: +44 (0)1763 207206
Fax: +44 (0) 1763 208814
Email: info@ionscience.com
Web: www.ionscience.com

USA Office
Ion Science LLC
33 Commercial Drive
Waterbury
VT 05676
USA
Tel : +1 802 244 5153
Fax : +1 802 244 8942
Email : info@ionscienceusa.com
Web: www.ionscience.com

German Office
Ion Science Messtechnik GMBH
Laubach 30
Metmann-Neandertal
40822
GERMANY
Tel: +49 2104 14480
Fax: +49 2104 144825
Email: info@ism-d.de
Web: www.ism-d.de

Manual log

Version	Amendment	Date of issue	Instrument firmware	PC software
1.0	First issue	27/02/2011	V0.3.85	V1.0.0.42
1.1	Front cover version. Page 9, Health and Safety mode added. Page 10 Health and Safety mode added.	8/04/2011	V0.3.93	V1.0.0.45
2.0	Completely restructured, also the addition of TAC mode	21/10/11	V0.4.03	V1.0.0.54
2.1	Tube holder changes Page 8, 9	01/03/12	V0.4.04	V1.0.0.58
2.2	Rewritten to include new software and firmware	23/08/12	V0.4.17	V1.0.0.63
2.3	Layout updated	29/01/2013	n/a	n/a
2.4	Benzene limit removed (>200ppm) various pages updated	22/04/2013	V0.4.20	V1.0.0.70
2.5	SW & FW upgrade SPAN 2 adjusts to 5,000 ppm.	23/07/2013	V0.4.22	V 1.0.0.73