URS

DOCKET 08-AFC-5	
DATE	June 5 2009
RECD.	JUNE 5 2009

June 5, 2009

Mr. Christopher Meyer
Project Manager
Attn: Docket No. 08-AFC-5
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: SES Solar Two (08-AFC-5)
Responses to CEC and BLM Data Requests 128-141
URS Project No. 27657106.00608

Dear Mr. Meyer:

On behalf of SES Solar Two, LLC, URS Corporation Americas (URS) hereby submits the Applicant's Responses to CEC and BLM Data Requests 128-141 (SES Solar Two 08-AFC-5).

I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge. I also certify that I am authorized to submit the data responses on behalf of SES Solar Two, LLC.

Sincerely,

Angela Leiba
Project Manager

AL:ml

URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
Tel: 619.294.9400
Fax: 619.293.7920

In Response to CEC & BLM Data Requests 128-141
Set 2, Part 1
Application for Certification (08-AFC-5)
SES Solar Two, LLC

Submitted to:
Bureau of Land Management
1661 S. 4th Street, El Centro, CA 92243

Submitted to:
California Energy Commission
1516 9th Street , MS 15, Sacramento, CA 95814-5504

Submitted by:
SES Solar Two, LLC
2920 E. Camelback Road, Suite 150, Phoenix, AZ 85016

URS
With Support From:
URS Corporation

June 2009

SES Solar Two
In Response to CEC and BLM Data Requests
Set 2, Part 1
Data Requests 128-141
08-AFC-5

TECHNICAL AREA: AIR QUALITY

Data Request 128: Please describe the amount of soil binder that would be used (liters/square meter, or similar units), the thickness of the bound soil that would be equivalent to asphalt paving, and if possible provide a sample of the bound soil at the proposed thickness using surface soils from the project site.

Response: The soil binder, Soiltac™, created by Soilworks LLC will be used on the roads at the Solar Two site to minimize dust emissions. According to the Soilworks representative, Soiltac™ will be applied in several different ways. For areas that will be frequently traveled or for soils that require significant strengthening Soiltac™ will be mixed into the existing soils. This mix-in process consists of tilling the soils to a depth of six inches, adding the proper amount of Soiltac™ to the disturbed soils to ensure appropriate strengthening and binding, re-tilling the soil to ensure complete mixing, grading the area, and finally rolling/compacting the area. After compaction, a top coat is added to the soil mixture. For most of the soils at the Solar Two site, the recommended application rate of Soiltac™ is 0.45 gallons per square yard. The recommended top coat rate is 0.10 gallons per square yard. These application rates were determined by Soilworks staff to meet the required soil strength of 400-500 pounds per square inch. The dilution rate of the Soiltac™ will be field determined as the difference between in-situ and optimum moisture. The dilution rate of the top coat will typically be a 1:4 ratio of undiluted Soiltac™ to water.

For areas that will be infrequently traveled or for soils that do not require significant strengthening (typically clay-type soils) Soiltac™ will be applied topically onto the existing soils. Penetration for a topical road application is dependent on soil type, but will typically be anywhere from ¼ to 1 inch. The recommended top coat rate is 0.15 gallons per square yard. This application rate was determined by Soilworks staff to meet the required soil strength of 400-500 pounds per square inch. If the soils at the roadway locations require significant strengthening, Soiltac™ will be mixed into the existing soils as described above and at the rates listed above. The dilution rate of the top coat will typically be a 1:6 ratio of undiluted Soiltac™ to water.

A sample of the bound soil using surface soils from the project site was submitted to Will Walters for the CEC and Jaime Hernandez of the ICAPCD on May 20, 2009. The soil pills are 4.5 inch tall cylinders of soil from the Solar Two site mixed with Soiltac™. They were made with the project specific recommended mix-in application rate of 0.45 gallons per square yard. It should be noted that the on site mix-in application is recommended to a 6 inch depth, another 1.5 inches deeper than the samples.

TECHNICAL AREA: AIR QUALITY

Data Request 129: Staff needs to determine appropriate maintenance procedures for the bound soil roads to ensure they maintain an asphalt paved quality surface. Please identify the ongoing measures necessary to maintain these bound soil roads and identify road maintenance procedures that the applicant would be willing to stipulate to in a condition of certification.

Response: After the initial application of the soil binder Soiltac™ to the roads, the first recommended maintenance should occur between 12 and 24 months after installation. At some point between 12 and 24 months a topical maintenance coat of Soiltac™ will need to be applied to the original treated areas for both the mix-in and topical applications. The mix-in application will be good indefinitely with maintenance done on the surface (topical seal coat) to ensure that the polymers that are destroyed by traffic and photo degradation will be renewed.

The initial maintenance coat will be applied with the same dilution rate as the initial topical application coat (1 gallon of Soiltac™ to 6 gallons of water or 0.15 gallons per square yard) but at a significantly reduced rate, approximately 30% of the original rate. Each subsequent maintenance coat will require approximately 30% of the previous maintenance application.

The maintenance procedures would start by ensuring the Soiltac™ material is applied in a manner that meets all vendor requirements (proper surface compaction, correct application and dilution rates, etc.). After initial application and curing a thorough visual inspection of all treated surfaces will be performed to ensure the material is ready for use. Every 2 weeks during the first 12 months after application all areas will be visually evaluated for possible problems. After the first 12 months, the visual evaluations will occur every week. These once a week inspections will continue until application of the first maintenance coat is required (no later than 24 months after initial application). After verification that all vendor specifications are met prior to application of the maintenance coat a thorough visual inspection will be performed after application and curing. Then visual inspections will be done every 2 weeks for the next 12 months. Inspections will then occur once per week for 12 months after the application of the first maintenance coat. These once a week inspections will continue until application of the second maintenance coat is required. This cycle will continue as needed.

TECHNICAL AREA: AIR QUALITY

Data Request 130: Please identify why the gasoline fuel tank annual usage identified in Data Response 93 is less than 1/5th of the estimated on-site annual gasoline usage in Data Response 103 and Attachment AQ-2, and correct the annual gasoline usage given in Data Response 93, and associated calculations, as necessary to match the fuel use estimates shown in Data Response 103 and Attachment AQ-2.

Response: The gasoline usage identified in Data Response 93 was estimated based on the fuel efficiency provided by project engineers for of the wash vehicles, the LRU maintenance trucks, security and van pool vehicles. The gasoline usage outlined in Data Response 103 was estimated based on fuel efficiencies from the EMFAC2007 model and the security vehicle vendor data. Per conversations with CEC staff, it was noted that fuel efficiency should be reduced at low operating speeds, thus the conservative fuel usage rate provided in the EMFAC2007 model was used to estimate the gasoline usage. Onsite gasoline usage is presented in Table DR-130. It should be noted that the staff and visitor vehicles will not get gasoline from the onsite gasoline tank, thus are excluded from the estimation of annual gasoline throughput. Table DR-93 Revised presents the revised VOC emissions from the onsite gasoline tank for an annual throughput of 85,000 gallons. The annual VOC emission rate from the gasoline tank increased from 0.65 tons per year as presented previously to 0.92 tons per year.

Table DR-93
Revised Estimated VOC Emissions from the Gasoline Tank and Vehicle Refueling

Description	VOC Emission Factor[1] (lbs/1000 gal)	VOC Emissions (tons/year)[2]	VOC Emissions (lbs/day)
Working Loss[3]		0.298	1.631
Breathing Loss[3]		0.575	3.152
Vehicle Refueling - Vapor Displacement	0.74	0.031	0.172
Vehicle Refueling - Spillage	0.42	0.018	0.098
Total Vehicle Refueling		0.049	0.270
Total TOG Emissions		0.922	5.053

Note:
[1] Emission factors from CARB Emission Inventory Estimation Guidelines Section 4.10 GASOLINE DISPENSING FACILITIES (Revised May 1999).
[2] Emission estimate based on 85,000 gallon per year tank throughput.
[3] Emission estimate from EPA Tank4.0.9d model results.

Table DR-130
Estimated On-site Gasoline Usage and
Gasoline Tank Throughput

Equipment Description	Vehicle Weight (lbs)	Fuel	No. Of Units	Max. Operating Hours / Day	Annual CO_2 emissions (metric tons)	Fuel Efficiency from EMFAC2007 (mpg)	Gasoline Usage all vehicles (gallon per hour)	Gasoline Usage per vehicle (gallon per hour)	Gasoline Usage all vehicles (gallon per year)
Maintenance Trucks and Vehicles - Onsite									
Washing Vehicle (running)	24000	Gasoline	35	8	147.36	5.30	5.81	0.17	16,727
Washing Vehicle (idling)	24000	Gasoline	35	8	240.54	-	9.48	0.27	27,303
LRU Maintenance Truck with Boom (running)	20000	Gasoline	20	24	84.21	5.30	3.32	0.17	9,558
LRU Maintenance Truck with Boom (idling)	20000	Gasoline	20	8	137.45	-	5.42	0.27	15,602
Staff & Security Truck	4500	Gasoline - Hybrid	5	8	19.36	27*	0.25	0.05	2,198
Van Pooling - onsite portion	8000	Gasoline	4	2	6.32	6.05	1.00	0.25	717
								Subtotal	72,105
Staff and Visitor Vehicles - Onsite									
Staff Cars	4000	Gasoline & diesel	100	8	92.47	10.47	14.29	0.14	10,287
Visitor Cars	4000	Gasoline & diesel	8	2	5.43	10.47	0.29	0.04	603
								Subtotal	10,890
								Onsite Annual Gasoline Usage	82,995

Table DR-130
Estimated On-site Gasoline Usage and
Gasoline Tank Throughput
(Continued)

Equipment Description	Vehicle Weight (lbs)	Fuel	No. Of Units	Max. Operating Hours / Day	Annual CO_2 emissions (metric tons)	Fuel Efficiency from EMFAC2007 (mpg)	Gasoline Usage all vehicles (gallon per hour)	Gasoline Usage per vehicle (gallon per hour)	Gasoline Usage all vehicles (gallon per year)
Maintenance Trucks and Vehicles - Offsite									
Van Pooling - offsite portion	8000	Gasoline	4	2	84.24	6.05	13.28	3.32	9,562

Notes:
Gasoline throughput for the on-site gasoline tank is approximately 81,666 gallons.
This estimate assumes that the staff and visitor cars won't get gasoline from the on-site gasoline tank and the van pooling vehicles will get all gasoline from the onsite tank.
Note that 2% of staff and visitor cars burn diesel, the remainder burn gasoline.
Some numbers have been rounded; therefore, discrepancies in tables may occur.
* The fuel efficiency for the Staff & security trucks was obtained from the Toyota Highlander Hybrid website for city performance of 27 mile/gallon.
In reality, these vehicles will get much better fuel efficiency since at low speeds these vehicles operate primarily on electricity, thus burning no fuel.

TECHNICAL AREA: AIR QUALITY

Data Request 131: Please provide calculations for the project construction greenhouse gas emissions in CO2-equivalent tons for the entire construction period, and include estimates of total fuel use by type of fuel during the entire construction period.

Response: The project construction greenhouse gas emissions in CO2-equivalent metric tons for the entire construction period, and the estimate of total fuel use by type of fuel are presented in Tables DR-131a and 131b, respectively.

Table DR-131a
Greenhouse Gas Emissions Estimated for the Entire 44-Month Construction Period (Metric Tonnes)

Activity	CO_2	CH_4	N_2O	CO_2e
On-Site Construction Emissions				
On-Site Combustion Emissions				
Construction Equipment	4,940.70	2.05	0.00	4,983.73
Construction Trucks (Concrete, Dump Trucks, Flatbed Trucks, …)	1,111.79	0.03	0.03	1,122.84
Worker Vehicles	74.07	0.00	0.01	75.76
Security Vehicles	64.55	0.01	0.01	68.44
SunCatcher Delivery Trucks	612.06	0.01	0.01	615.30
Subtotal of On-site Combustion Emissions	6,803.16	2.11	0.06	6,866.06
On-Site Fugitive Dust Emissions				
Construction Equipment				
Construction Trucks (Concrete, Dump Trucks, Flatbed Trucks, …)				
Worker Vehicles				
Security Vehicles				
SunCatcher Delivery Trucks				
Subtotal of On-Site Fugitive Emissions				
Subtotal of On-Site Emissions	6,803.16	2.11	0.06	6,866.06

Table DR-131a
Greenhouse Gas Emissions Estimated for the Entire 44-Month Construction Period (Metric Tonnes)
(Continued)

Activity	CO_2	CH_4	N_2O	CO_2e
Off-Site On-Road Emissions				
Off-Site Combustion Emissions				
Construction Trucks (Concrete, Dump Trucks, Flatbed Trucks, …)	120.22	0.01	0.01	123.35
Worker Vehicles	9,875.50	0.58	0.69	10,101.93
SunCatcher Delivery Trucks	14,165.30	0.27	0.22	14,240.30
Subtotal of Off-Site Combustion Emissions	24,161.03	0.85	0.92	24,465.58
Off-Site Paved Road Fugitive Emissions				
Construction Trucks (Concrete, Dump Trucks, Flatbed Trucks, …)				
Worker Vehicles				
SunCatcher Delivery Trucks				
Subtotal of Off-Site Fugitive Emissions				
Subtotal of Off-Site Emissions	24,161.03	0.85	0.92	24,465.58
Total Entire Construction Period Emissions	30,964.19	2.96	0.99	31,331.65

Notes:

Some numbers have been rounded; therefore, discrepancies in tables may occur.

Table DR-131b
Fuel Usage Based on CO2e Emissions for the Entire 44-Month Construction Period

Fuel Type	Entire Construction Period CO_2 Emissions (tons)	Emission Factor (lb CO_2 /gallon fuel)	Entire Construction Period Fuel Usage (gallons/year)
On-site			
Gasoline	250	19.42	25,738
Diesel (Distillate Fuel #1,2&4))	6,347	22.38	567,269
Propane	902	12.65	142,619
Off-site			
Gasoline	10,750	19.42	1,107,000
Diesel (Distillate Fuel #1,2&4))	15,882	22.38	1,419,542
Propane	-	12.65	-
Total			
Gasoline	11,000	19.42	1,132,738
Diesel (Distillate Fuel #1,2&4))	22,229	22.38	1,986,811
Propane	902	12.65	142,619

Notes:
1. Assumed 2% of worker passenger vehicles CO_2 emissions are from burning diesel; the rest of them from burning gasoline.
2. Greenhouse gas emission factor from CCAR General Reporting Protocol April 2008 Table C.4.

SES Solar Two
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TECHNICAL AREA: ALTERNATIVES

Data Request 132: In order to facilitate preparation of the PSA/DEIS document and allow further analysis of this alternative, please provide the Biology and Cultural survey results for the 300 MW Alternative (Phase 1) separate from those of the complete Proposed Project.

Response: **Biological Resources:**

Figure 132-1, attached behind this response as BIO-1 shows documented biological resources within and adjacent to the 300MW alternative. The table below summarizes the vegetation acreages for the 300MW site.

VEGETATION TYPE	Acres
Disturbed Habitat	10.5
Sonoran Creosote Bush Scrub	2566.5
Total	2577.0

Sensitive species occurrences within the 300MW site include flat-tailed horned lizard (*Phrynosoma mcallii*; one sighting location), Le Conte's Thrasher (*Toxostoma lecontei*; one location), and loggerhead shrike (*Lanius ludovicianus*; two locations). Bighorn sheep (*Ovis canadensis nelsoni*; BHS), an endangered species, were detected in March 2009. The BHS sighting location occurs north of the 300MW alternative site (see attachment BIO-1). Additional flat-tailed horned lizard sighting locations and potential burrowing owl burrows occur in areas adjacent to the north and east boundaries of this alternative.

Five flood flow channels that are potential waters of the state are also associated with this site (see attachment BIO-1).

Cultural Resources:

Please refer to the discussion in Section 5, *Report of Findings*, in the *Class III Confidential Cultural Resources Technical Report – Revised Draft*, dated September 2008. Section 5 includes Cultural survey results for the 300 MW Alternative (Phase1) in Subsection 5.3.1.1 that was separate from the discussion of the 450 MW Alternative (Phase 2), found in Subsection 5.3.1.2, and separate from the complete Proposed Project. A discussion of ancillary facilities needed for the Proposed Project was also provided. Ancillary facilities include a 750 MW substation, laydown areas, laydown staging areas, a main service complex, a waterline, appropriate buffers outside the boundaries of these areas, as well as other related facilities.

The discussion in Subsection 5.3.1.1 of the *Confidential Cultural Resources Technical Report* includes the following information:

5.3.1.1 300-MW Phase 1

Cultural resource investigations conducted in this component of the Project area revealed 52 sites, and 12 isolated finds. Unless otherwise noted, the lithic scatters did not include temporally diagnostic artifacts or features. Ceramics could not be attributed to specific, identifiable, temporal or cultural affiliation due to erosion of diagnostic surfaces beyond assignment to the Late Prehistoric. The following describes the data collected within the 300-MW Phase I APE (Figure 5-3, 300-MW Solar Field [Phase I]).

Each individual site was then presented in paragraph fashion, with a discussion of the site attributes of each site location and the relevant features that were found during the Class III cultural resource survey of the Proposed Project site.

BIO-1

flat-tailed horned lizard
brown turbans
annual rock-nettle
prairie falcon
barefoot banded gecko
flat-tailed horned lizard
Le Conte's thrasher
Thurber's pilostyles
flat-tailed horned lizard
8
slender cottonheads
Le Conte's thrasher
annual rock-nettle
Harwood's milk-vetch
flat-tailed horned lizard
American badger
flat-tailed horned lizard
98
black-tailed gnatcatcher
flat-tailed horned lizard
black-tailed gnatcatcher
barefoot banded gecko
barefoot banded gecko
barefoot banded gecko
prairie falcon
prairie falcon
pink fairy-duster
barefoot banded gecko
Le Conte's thrasher
pink fairy-duster
brown turbans
Emory's crucifixion-thorn
dwarf germander
flat-tailed h

LEGEND

Sensitive Species
- Desert bighorn sheep
- Desert Horned Lizard
- Burrowing Owl
- Owl Burrow
- Flat-Tailed Horned Lizard
- Flat-Tailed Horned Lizard (Dead)
- Le Conte's Thrasher
- Loggerhead Shrike
- Loggerhead Shrike (pair)

CNDDB Critical Species
- Flat-tailed horned lizard
- Other CNDDB Species

Vegetation
- Disturbed Habitat
- Agricultural
- Developed
- Sonoran Creosote Bush Scrub
- Disturbed - Sonoran Creosote Bush Scrub
- Potential Waters of the State
- 300-MW Solar Field
- 5Mile Buffer

SOURCES: ESRI (roads);
Stantec (substation fence line 2007);
USFWS (peirsons milk vetch critical habitat 2008);
CNDDB (sensitive species Apr. 2009);
USDA (NAIP aerial 2005);
URS (sensitive species, vegetation 2007);

BIOLOGICAL MAP
300 MG SUBSTATION
SOLAR TWO PROJECT

URS

3500 0 3500 7000 Feet
SCALE: 1" = 7,000' (1:84,000)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: LG	DATE: 05-22-09	FIG. NO:
PM: WM	PROJ. NO: 27657106.00608	132-1

Path: G:\gis\projects\15771222389\80\mxd\Biology\300MG_bio_fig.mxd 05/22/09 lisa_garvey

TECHNICAL AREA: ALTERNATIVES

Data Request 133: Similarly, please provide the air emissions for the 300 MW Alternative (Phase 1) separate from those the Proposed Project and consistent with the information provided in recent Air Quality Data Requests.

Response: Peak monthly and annual construction emissions would not change much as the same buildings would be built, areas would need to be cleared, and roads would need to be built. The main difference in the construction emissions would be the shorter construction time frame, thus less total construction emissions. Hence, the main change in emissions would come from operations. Tables DR-133a, DR-133b and DR-133c present the daily and annual criteria pollutant operations emissions and annual greenhouse gas operations emissions estimated for the alternative 300MW project, respectively.

As this alternative project would be 40 percent of the proposed project (300 MW vs. 750 MW), the roster of on-site operations equipment would be reduced to approximately 40 percent of the proposed project. However, some of the vehicles, such as the security or visitor vehicles would not expect to be reduced to 40% as these vehicles would be required regardless of the size of the facility.

It is expected that a similar number of off-site delivery vehicles would be required regardless of the size of the facility. There would be a reduction in staff vehicles, but probably not to 40%, thus a conservative assumption is made that there would only be a 50% reduction in operations staff due to the smaller project. Thus, 50 staff vehicles travel to the site (off-site travel) and are on-site each day instead of 100.

Only two other vehicle classes are changed due to the smaller sized facility. The number of Washing Vehicles and LRU Maintenance Trucks are both reduced to 40% of the proposed project. These vehicles are tasked with cleaning and maintaining the SunCatchers on-site and significantly fewer would be needed with a smaller facility. A reduction in the number of lifts would also occur.

Since the 300 MW site would be significantly smaller in size than the 750 MW site (approximately 2,577 acres vs. approximately 6,222 acres), the security vehicles would travel fewer miles on-site. The on-site miles driven daily were reduced 50%, even though the 300 MW site would be much smaller than the 750 MW site (approximately 40% of the full site). All other vehicles are assumed to travel the same on-site distances on a daily basis.

Table DR-133a
Estimated Daily Maximum Operational Emissions of Criteria Pollutants from the 300 MW Alternative (lbs/day)

Activity	PM_{10}	$PM_{2.5}$	CO	ROC	NO_x	SO_x
On-Site Operational Emissions						
On-Site Combustion Emissions						
Diesel Generator	0.01	0.01	0.07	0.03	0.85	0.02
Maintenance & Security Vehicles and Equipment	0.08	0.07	42.38	5.41	5.87	0.02
Worker Vehicles	0.02	0.01	3.44	0.32	0.32	0.00
Visitor Cars and Delivery Trucks	0.06	0.06	1.00	0.26	1.06	0.00
Subtotal of On-site Combustion Emissions	0.17	0.15	46.89	6.02	8.10	0.04
On-Site Fugitive Emissions						
Diesel Generator						
Gasoline Tank				3.91		
Maintenance & Security Vehicles and Equipment	45.69	6.77				
Worker Vehicles	1.17	0.13				
Visitor Cars and Delivery Trucks	6.85	1.02				
Subtotal of On-Site Fugitive Emissions	53.72	7.92	0.00	3.91	0.00	0.00
Subtotal of On-Site Emissions	53.89	8.07	46.89	9.93	8.10	0.04
Off-Site On-Road Emissions						
Off-Site Combustion Emissions						
Worker Vehicles	0.13	0.07	23.78	0.95	2.79	0.02
Visitor Cars and Delivery Trucks	0.20	0.16	5.71	0.40	5.62	0.01
Subtotal of Off-Site Combustion Emissions	0.34	0.23	29.48	1.35	8.42	0.02
Off-Site Paved Road Fugitive Emissions						
Worker Vehicles	4.87	0.13				
Visitor Cars and Delivery Trucks	12.91	1.77				
Subtotal of Off-Site Fugitive Emissions	17.79	1.90				
Subtotal of Off-Site Emissions	18.13	2.14	29.48	1.35	8.42	0.02
Total Maximum Emissions	72.01	10.21	76.37	11.28	16.52	0.07

Notes:

Some numbers have been rounded; therefore, discrepancies in tables may occur.

Table DR-133b
Estimated Annual Operational Emissions of Criteria Pollutants from the 300 MW Alternative (tons/year)

Activity	PM_{10}	$PM_{2.5}$	CO	ROC	NO_x	SO_x
On-Site Operational Emissions						
On-Site Combustion Emissions						
Diesel Generator	0.0003	0.0003	0.0019	0.0007	0.0221	0.0006
Maintenance & Security Vehicles and Equipment	0.01	0.01	7.63	0.97	1.06	0.00
Worker Vehicles	0.00	0.00	0.62	0.06	0.06	0.00
Visitor Cars and Delivery Trucks	0.00	0.00	0.09	0.01	0.04	0.00
Subtotal of On-site Combustion Emissions	0.02	0.02	8.34	1.05	1.17	0.00
On-Site Fugitive Emissions						
Diesel Generator						
Gasoline Tank				0.71		
Maintenance & Security Vehicles and Equipment	8.22	1.22				
Worker Vehicles	0.21	0.02				
Visitor Cars and Delivery Trucks	0.22	0.03				
Subtotal of On-Site Fugitive Emissions	8.66	1.27	0.00	0.71	0.00	0.00
Subtotal of On-Site Emissions	8.68	1.29	8.34	1.76	1.17	0.00
Off-Site On-Road Emissions						
Off-Site Combustion Emissions						
Worker Vehicles	0.02	0.01	4.28	0.17	0.50	0.00
Visitor Cars and Delivery Trucks	0.01	0.01	0.65	0.03	0.23	0.00
Subtotal of Off-Site Combustion Emissions	0.03	0.02	4.93	0.20	0.73	0.00
Off-Site Paved Road Fugitive Emissions						
Worker Vehicles	0.88	0.02				
Visitor Cars and Delivery Trucks	0.48	0.05				
Subtotal of Off-Site Fugitive Emissions	1.35	0.08				
Subtotal of Off-Site Emissions	1.39	0.10	4.93	0.20	0.73	0.00
Total Maximum Emissions	10.06	1.39	13.27	1.96	1.90	0.01

Notes:

Some numbers have been rounded; therefore, discrepancies in tables may occur.

Table DR-133c
Estimated Annual Operational Emissions of Greenhouse Gases from the 300 MW Alternative (metric tonnes/year)

Activity	CO_2	CH_4	N_2O	SF_6	CO_2e
On-Site Operational Emissions					
On-Site Combustion Emissions					
Diesel Generator	2.64	0.00	0.00		2.65
Maintenance & Security Vehicles and Equipment	373.00	0.19	0.04		389.42
Worker Vehicles	49.40	0.00	0.00		50.35
Visitor Cars and Delivery Trucks	8.55	0.00	0.00		8.68
Subtotal of On-site Combustion Emissions	433.59	0.20	0.04		451.10
On-Site Fugitive Emissions					
Potential sulfur hexafluoride (SF_6) emissions leakage emissions from proposed circuit breakers and other transmissions system equipment				0.01	271.83
Subtotal of On-Site Fugitive Emissions				0.01	271.83
Subtotal of On-Site Emissions	433.59	0.20	0.04	0.01	722.94
Off-Site On-Road Emissions					
Off-Site Combustion Emissions					
Worker Vehicles	296.51	0.04	0.04		309.17
Visitor Cars and Delivery Trucks	52.89	0.01	0.01		54.84
Subtotal of Off-Site Combustion Emissions	349.40	0.04	0.04		364.01
Subtotal of Off-Site Emissions	349.40	0.04	0.04		364.01
Total Maximum Emissions	782.99	0.24	0.09	0.01	1,086.95

Notes:

Some numbers have been rounded; therefore, discrepancies in tables may occur.

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TECHNICAL AREA: ALTERNATIVES

Data Request 134: Please provide the following information for each of the following three sites: the South of Hwy SR 98 Alternative site, the Mesquite Lake Alternative, and the Border Lands Alternative:

- **Biological Resources:** One of the site selection criteria for the proposed SES Solar Two site was to avoid highly pristine or biologically sensitive areas. In order to assess this criterion for the alternative sites, please provide the results of the CNDDB search for the South of Hwy SR 98 site, the Mesquite Lake Alternative, and the Border Lands Alternative.
- **Cultural Resources**: Due to the extensive cultural resources present at the proposed SES Solar Two site, alternative sites are being sought that may impact fewer cultural sites while still achieving the required site criteria. Please provide an Information Center search (Class I) for recorded sites identified within the potential South of Hwy SR 98 site, the Mesquite Lake Alternative, and the Border Lands Alternative.

Response: **Biological Resources**

Figures showing the results of the CNDDB query are attached. Also attached are the GAP Analysis vegetation maps for each alternative site.

Border Lands Alternative

The primary land cover of this alternative is active agricultural lands. Burrowing owl is known to occur in the vicinity. Extensive flat-tailed horned lizard habitat occurs about 1 mile west of the site. Rare plants known from the immediate vicinity include annual rock-nettle (*Eucnide rupestris;* CNPS List 2), hairy stickleaf (*Mentzelia hirsutissima;* CNPS List 2), Thurber's pilostyles (*Pilostyles thurberi*; CNPS List 4), and California satintail *(Imperata brevifolia*; CNPS List 2*).* A major drainage is apparent in the eastern portion of this alternative. Please see Figures 134-1 and 134-2, provided behind this response as attachments BIO-2 and BIO-3, respectively.

Mesquite Lake Alternative

The primary land cover of this alternative site is active and inactive agricultural lands, with some apparent desert scrub and arid riparian habitats. No sensitive species sightings occur within the immediate vicinity. Burrowing owl is likely to be present. A major drainage passes through the site. Please see Figures 134-3 and 134-4, provided behind this response as attachments BIO-4 and BIO-5, respectively.

South of Hwy SR-98 Alternative (Figures 134-5, 134-6)

The primary land cover of this alternative is desert scrub, dunes and arid wetlands dominated by arrow weed (*Pluchea sericea)* and salt cedar (*Tamarix* sp.). Seepage from the All American Canal influences the local vegetation cover. The current vegetation cover will likely change over time since this canal was recently concrete-lined to conserve water. Portions of this site have been

disturbed due to the canal lining project. Please see Figures 134-5 and 134-6, provided behind this response as attachments BIO-6 and BIO-7, respectively.

Yuma clapper rail (*Rallus longirostris yumanensis*), an endangered species, and Yuma hispid cotton rat **(***Sigmodon hispidus eremicus; CSC*) are documented within and adjacent to this site*.* Flat-tailed horned lizard habitat occurs within a portion of the site and north of SR 98. Rare plants known from the immediate vicinity include sand food (*Pholisma sonorae;* CNPS List 1B*)* and giant Spanish-needle (*Palafoxia arida* var. *gigantea*; CNPS 1B).

Cultural Resources:

A self-directed Class I record search and literature review was conducted at the South Coastal Information Center (SCIC) at San Diego State University (SDSU) for the three Solar 2 alternative site locations. The SCIC is the repository for recorded site information for both San Diego and Imperial Counties. The Imperial Valley College Museum (IVCM) Southeast Information Center (SEIC) formerly housed all Imperial County records, but that facility was closed in October 2008, and the information was transferred to the SCIC.

The majority of Imperial County information at SCIC has not yet been computerized, so a self-directed record search and literature review of the paper copies of the Imperial County records was conducted by URS archaeologist Kaja Laustsen on May 20 and 21, 2009, under the direction of SCIC staff. The results of the record search are provided below. Confidential record search results and maps/literature review are provided in a separate filing to this report, made under a confidential cover.

Alternative #1 is the South of Hwy SR 98 Alternative, located to the southeast of the City of El Centro, with its southern boundary coterminous with the U.S./ Mexico border.

Alternative #2 is the Mesquite Lake Alternative, a rectangular-shaped parcel located northwest of the City of El Centro.

Alternative #3 is the Border Lands Alternative, located southwest of the City of El Centro and consisting of several discontinuous parcels of land. Figures 1 through 5 show the specific parcels and boundaries.

Due to the acreage involved of the alternative sites and the potential for a large amount of data to be collected, the record check and literature review focused on data located within the boundaries of each alternative site. Record searches were not conducted for any distance extending outside project boundaries. This allowed for a more complete accounting of previously recorded resources within the boundaries of each alternative.

Information on previously recorded sites in the Project Area for the South of Hwy. SR 98 Alternative, Alternative #1, is provided in Table DR 134-1 below:

Table DR 134-1
Previously Recorded Sites in the Project Area
CEC Alternative Site #1, South of Hwy. SR 98 Alternative

Midway Wells Quadrangle		
Trinomial	**Site Type**	**Artifact Summary**
IMP-7130H	Historic – All American Canal	None
IMP-8909	Site form missing	Unknown
IMP-3127	Ceramic	Pot scatter 20 sherds; not relocated in 2003
IMP-853	Temporary camp	3 cleared circles
IMP-873	Trail	Exact location unknown
IMP-8490	Ceramics	Pot drop of 22 black mesa buff sherds
IMP-8969	Historic	Refuse dump with household wares, food remains, burned materials
IMP-1031	Lithic Scatter	Anvil, hammer, 48 pieces of quartz
IMP-3798	Lithic	Single tool; could not be relocated in 2003
IMP-3799	Lithic Scatter	1 flake, 1 core; could not be relocated in 2003
P-13-008935	Ceramic	1 Tumco buffware sherd
IMP-3056	Ceramics	6 potsherds; could not be relocated in 2003
IMP-974	Temporary camp	Random tools, including hammers, choppers, axe, scraper
IMP-630/656	Site form missing	Unknown
IMP-3801H	Historic	Debris scatter of 1920-1930 age range; could not be relocated in 2003
IMP-3802	Ceramic	Pottery scatter; could not be relocated in 2003
IMP-3803	Lithic	Core which could not be relocated in 2003
IMP-3804	Historic	Isolated glass insulator; could not be relocated in 2003
IMP-3800	Lithic	Isolated basalt core
IMP-786	Milling station	Bedrock milling with pottery, tools, flakes, hammerstones, manos, fire pits
IMP-530	Ceramic & lithic	530, 531, 532 subsumed under 529; ceramics and manos
IMP-8934	Site form missing	Unknown

Table DR 134-1
Previously Recorded Sites in the Project Area
CEC Alternative Site #1, South of Hwy. SR 98 Alternative
(Continued)

Midway Wells Quadrangle		
Trinomial	**Site Type**	**Artifact Summary**
IMP-3129	Ceramic	5 Salton buffware sherds; could not be relocated in 2003
IMP-3130	Ceramic	2 Colorado buffware sherds
IMP-3649H	Historic	Communication site that could not be relocated in 2003
IMP-3317	Site form missing	Unknown
IMP-1390	Ceramic	Potsherds that could not be relocated in 2003
IMP-1391	Ceramic	Potsherds that could not be relocated in 2003
IMP-3125	Lithic Scatter	Could not be relocated in 2003
IMP-3048	Ceramic	8 potsherds
IMP-3049	Lithic	Isolated chert flake
IMP-4243	Lithics	Isolates flakes
IMP-3126	Ceramics	20 potsherds
IMP-3805	Ceramic	Isolated rim sherd not relocated in 2003
IMP-1392	Ceramics	3 potsherds
IMP-1393	Ceramics	Potdrop that could not be relocated in 2003
IMP-3052	Ceramics	28 potsherds that could not be relocated in 2003
IMP-3053	Trail and Ceramics	Prehistoric trail and scattered sherds; could not be relocated in 2003
IMP-3054	Ceramics	A total of 38 potsherds that could not be relocated in 2003
IMP-3055	Trail and Ceramics	1500' long trail segment and scattered potsherds that could not be relocated in 2003
IMP-3049	Lithic	Isolated chert flake
IMP-3124	Ceramics	Isolated potsherd scatter that could not be relocated in 2003
IMP-3123	Ceramics	Isolated potsherd scatter that could not be relocated in 2003
IMP-1394	Ceramic	Isolated potsherd that could not be relocated in 2003
IMP-4238	Ceramics	30 buffware potsherds that could not be relocated in 2003

Table DR 134-1
Previously Recorded Sites in the Project Area
CEC Alternative Site #1, South of Hwy. SR 98 Alternative
(Continued)

Midway Wells Quadrangle		
Trinomial	**Site Type**	**Artifact Summary**
IMP-4239	Ceramics	Potdrop of 74 sherds that could not be relocated in 2003
IMP-4240	Ceramic	Isolate that could not be relocated in 2003
IMP-4241	Lithic	Isolated scraper that could not be relocated in 2003
P13-008519/IMP-7950H	Historic – Experimental Farm #1	Building foundation & trees
IMP-4242	Ceramics	6 potsherds that could not be relocated in 2003
IMP-829	Unknown	Sites 719, 720, 828, & 829 have been subsumed under site IMP-718
IMP-8334	Ceramic	60 Tumco buff sherds
IMP-530/656	Unknown	Sites 530, 531, and 532 subsumed under IMP-529
IMP-233	Trail	None
IMP-1031	Site form missing	Unknown

Source: Solar Two Project Team, 2009.

As can be seen in Table DR 134-1, a total of 51 previously recorded cultural resource sites have been identified within the South of Hwy. SR 98 Alternative. These include five (5) historic sites, twenty-four (24) ceramic sites, two (2) temporary camps, one (1) trail, ten (10) lithic scatters, one (1) milling station, one (1) combination of ceramics and lithics, two (2) trails and ceramics, one (1) unknown origin, and four (4) sites located on the map but with site forms missing. Lithic scatters did not include temporally diagnostic artifacts or features. Ceramics could not be attributed to specific, identifiable, temporal or cultural affiliation beyond association with the Late Prehistoric.

Information on previously recorded sites in the Project Area for the Mesquite Lake Alternative, Alternative #2, is provided in Table DR 134-2 below:

Table DR 134-2
Previously Recorded Sites in the Project Area
CEC Alternative Site #2, Mesquite Lake Alternative

Midway Wells Quadrangle		
Trinomial	**Site Type**	**Artifact Summary**
IMP-4678	Site form missing	Unknown
IMP-1003	Lithics	Cores and flakes
IMP-670/831/370	Temporary camp	Cleared area; stone tools, ceramics, manos
IMP-295	Ceramics	Isolated ceramic scatter
IMP-301	Temporary campsite	Midden, bird & fish bone, artifact scatters
IMP-8682	Historic	Southern Pacific Railroad
IMP-87	Cave site	170 potsherds
IMP-88	Cave site	5 potsherds & yucca cordage
IMP-2881	Lithic	Single artifact blank
IMP-1030	Historic	Irrigation canals
IMP-177	Trails, lithics, sleeping circles	Tools, sherds, lithics
IMP-301	Temporary campsite	Midden, fish & bird bone, artifact scatters
IMP-441	Historic wagon road	None

Source: Solar Two Project Team, 2009.

As can be seen in Table DR 134-2, a total of 13 previously recorded cultural resource sites have been identified within the Mesquite Lake Alternative. These include two (2) lithic scatters, three (3) temporary campsites, one (1) ceramic scatter, three (3) historic sites, two (2) cave sites, one (1) combination trail, lithic scatter, and sleeping circles, and one (1) site located on the map but with the site form missing. Lithic scatters did not include temporally diagnostic artifacts or features. Ceramics could not be attributed to specific, identifiable, temporal or cultural affiliation beyond association with the Late Prehistoric.

Information on previously recorded sites in the Project Area for the Border Lands Alternative, Alternative #3, is provided in Table DR 134-3 below:

Table DR 134-3
Previously Recorded Sites in the Project Area
CEC Alternative Site #3, Border Lands Alternative

Midway Wells Quadrangle		
Trinomial	**Site Type**	**Artifact Summary**
Plaster City Quadrangle		
P-13-009541	Lithic scatter	1 volcanic debitage
IMP-3400H	Historic	Wagon road
P-13-009542	Lithic scatter	1 fine grained debitage
P-13-009543	Lithic scatter	1 volcanic debitage
IMP-2481	Lithic	1 metate fragment
IMP-1413	Lithics	5 lithic reduction loci with flakes, cores, hammerstone
Mount Signal Quadrangle		
IMP-301	Temporary campsite	Midden, bird & fish bone, artifact scatters
IMP-8923	Historic	Irrigation canal
P-13-008983	Historic	Wormwood Canal built around 1911
IMP-698/708	Lithic scatter	Chopper, flakes, cores, scrapers, knife
IMP-7661	Site form missing	Unknown
IMP-1045/170	Temporary camp	Lithic scatter, stone hearth, ceramics, scrapers, manos
IMP-408	Prehistoric house sites	Flakes and debitage
IMP-1057	Site form missing	Unknown

Source: Solar Two Project Team, 2009.

As can be seen in Table DR 134-3, a total of 14 previously recorded cultural resource sites have been identified within the Border Lands Alternative. These include six (6) lithic scatters, three (3) historic sites, two (2) temporary camps, one (1) prehistoric sleeping circle site, and two (2) sites located on the map but with the site forms missing. Lithic scatters did not include temporally diagnostic artifacts or features. Ceramics could not be attributed to specific, identifiable, temporal or cultural affiliation beyond association with the Late Prehistoric.

In addition, research was conducted on previously conducted survey work and/or archaeological excavations that had been conducted within or adjacent to the boundaries of all three CEC suggested alternatives. The records searches identified 30 records/reports related to cultural resources investigations previously conducted. These reports are listed in Table DR 134-4, Previous Surveys within the Project Area. A very limited amount of the alternative sites had been surveyed.

Table DR 134-4
Previous Surveys within the Project Area

N.A.D.B. #	Project Name	Prepared By	Prepared For	Date Submitted
110003	An Archaeological Survey of the Proposed Right-of-Way of the Realignment of the Coachella Canal	Daniel A. Bell Joan R. Smith	National Park Service	April & September 1974
110087	Archaeological Examinations of Two Geothermal Test Wells Near Brawley	Jay von Werlhof Sherilee von Werlhof	V.T.N. Consolidated, Inc.	Unknown
110088	Archaeological Examinations of Two Geothermal Test Drill Sites Near El Centro, California	Jay von Werlhof Sherilee von Werlhof	V.T.N. Consolidated, Inc.	Unknown
110077	Archaeological Investigations of Holly Sugar Tract	Jay von Werlhof Karen Smith Gail Egolf	T.R.W. Incorporated	May 1979
1100233	Cultural Resources Study of a Proposed Electric Transmission Line From Jade to the Sand Hills, Imperial Valley, California	Carol J. Walker, Charles S. Bull, Jay von Werlhof	San Diego Gas & Electric	13 February 1981
1100295	South Brawley Prospect Geothermal Overlay Zone PEIR	Westec Services	County of Imperial	April 1983
1100301	Appendix B Cultural Resources Inventory for Thirty Proposed Asset Management Parcels in Imperial Valley, California	Patrick Welch	Unknown	July 1983
1100310	Southwest Powerlink Cultural Resources Management Plan Volume III-B	Jan Townsend, WIRTH Environmental Services	San Diego Gas & Electric	March 1984
1100311	Southwest Powerlink Cultural Resources Management Plan Volume II	Jan Townsend, WIRTH Environmental Services	San Diego Gas & Electric	March 1984

Table DR 134-4
Previous Surveys within the Project Area
(Continued)

N.A.D.B. #	Project Name	Prepared By	Prepared For	Date Submitted
1100314	Volume III Data Recovery on the Mountain Springs (Jade) to the Sand Hills Segment- Southwest Powerlink Project	M. Steven Shackley, WIRTH Environmental Services	San Diego Gas & Electric	September 1983
1100315	Volume IV Data Recovery on the Mountain Springs (Jade) to the Sand Hills Segment-Southwest Powerlink Project	M. Steven Shackley, WIRTH Environmental Services	San Diego Gas & Electric	April 1984
1100316	Volume II –Appendixes Data Recovery on the Mountain Spring (Jade) to Sand Hills Segment, Southwest Powerlink Project	M. Steven Shackley, WIRTH Environmental Services	San Diego Gas & Electric	April 1984
1100370	Cultural Resource Report Merrill Contractor's Gravel Pit	Bureau of Land Management	Bureau of Land Management	February 1987
1100408	Cultural Resource Study of the Imperial County Prison Alternatives	Andrew Pignola	California Department of Corrections	October 1988
1100530	Cultural Resources Inventory & Evaluation of the C-Line Pole Replacement Project	ASM Affiliates	Imperial Irrigation District	April 1998
1100630	California Desert Fish Farm Prehistoric and Historic Survey	Jay von Werlhof	Unknown	February 1998
1100656	Cultural Resources Inventory & Evaluation of the C-Line Pole Replacement Project	ASM Affiliates	Imperial Irrigation District	July 1998
1100670	Historic Property Survey Report for the Imperial 111 Highway Project	Caltrans	Caltrans	September 1994

Table DR 134-4
Previous Surveys within the Project Area
(Continued)

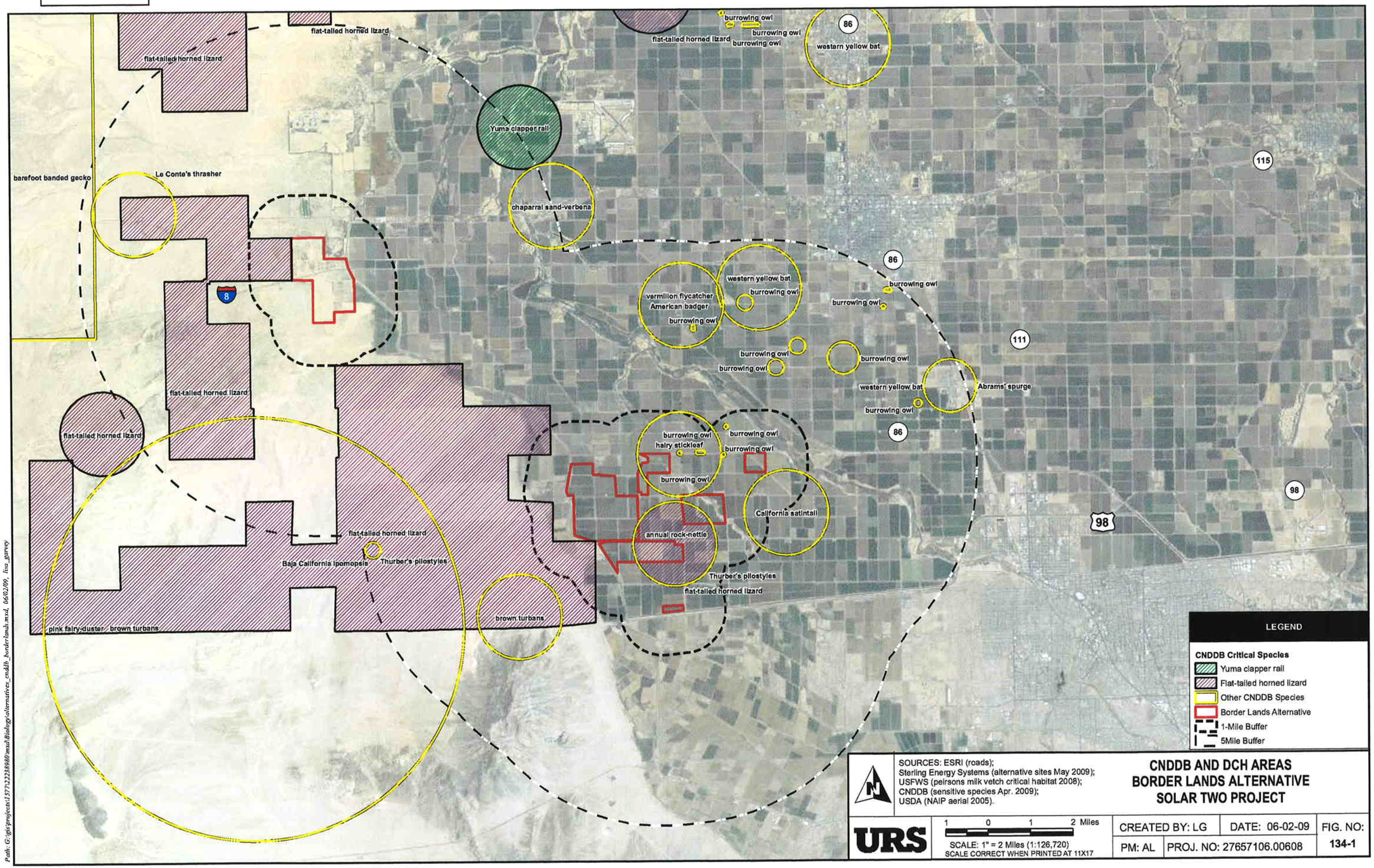
N.A.D.B. #	Project Name	Prepared By	Prepared For	Date Submitted
1100698	Historical Architectural Survey Report Pavement Rehabilitation & Shoulder, Bridge, Culvert Widening Project	Caltrans	Caltrans	July 1999
1100708	First Addendum Archaeological Survey Report for Pavement Rehabilitation and Shoulder/Bridge Widening Project	Caltrans	Caltrans	March 1999
1100829	All-American Canal Historic Properties Inventory & Evaluation	ASM Affiliates	Imperial Irrigation District	July 2001
1100831	Historic Architectural Survey Road for Road Widening Project & Two Frontage Roads	Caltrans	Caltrans	July 1994
1100853	NEPA 2000-55, CA-42103 Hunter's Alien Waters	Unknown	USDI, BLM, El Centro Field Office	7 March 2001
1100873	NEPA 2001-51, CA Hunter's Alien Waters FY2001	Unknown	USDI, BLM, El Centro Field Office	18 October 2001
1100974	Class I Cultural Resources Inventory for the All-American Canal Lining Project	ASM Affiliates	Imperial Irrigation District	September 2004
1100984	Proposed Cellular Phone Communications Tower & Facility, Evan Hughes Highway, Plaster City, California	Unknown	Unknown	18 April 2005
1101030	Cultural Resource Survey for the Calexico Property	Gallegos & Associates	P & D Environmental	October 2004
1101031	Archaeological Survey of a Cellular Tower Location at Brunt's Corner	EDAW, Inc.	AEI Consultants	November 2004

Table DR 134-4
Previous Surveys within the Project Area
(Continued)

N.A.D.B. #	Project Name	Prepared By	Prepared For	Date Submitted
1101045	Supplemental Historic Property Report	Caltrans	Federal Highway Administration	July 1999
CA-670-2007-93/ CA 47740-01	Proposed Geotechnical Investigations for The Stirling Energy Systems Solar Two Site Imperial County, CA	URS Corporation Denver, CO	El Centro Field Office BLM 1661 South Fourth Street El Centro, CA 92243	
	San Diego Gas & Electric Company's Sunrise Powerlink Project	SDG&E, San Diego, CA	El Centro Field Office BLM 1661 South Fourth Street El Centro, CA 92243	July 2008

Source: Solar Two Project Team, 2009.

BIO-2



SOURCES: ESRI (roads);
Sterling Energy Systems (alternative sites May 2009);
USFWS (peirsons milk vetch critical habitat 2008);
CNDDB (sensitive speces Apr. 2009);
USDA (NAIP aerial 2005).

CNDDB AND DCH AREAS
BORDER LANDS ALTERNATIVE
SOLAR TWO PROJECT

URS

1 0 1 2 Miles

SCALE: 1" = 2 Miles (1:126,720)
SCALE CORRECT WHEN PRINTED AT 11X17

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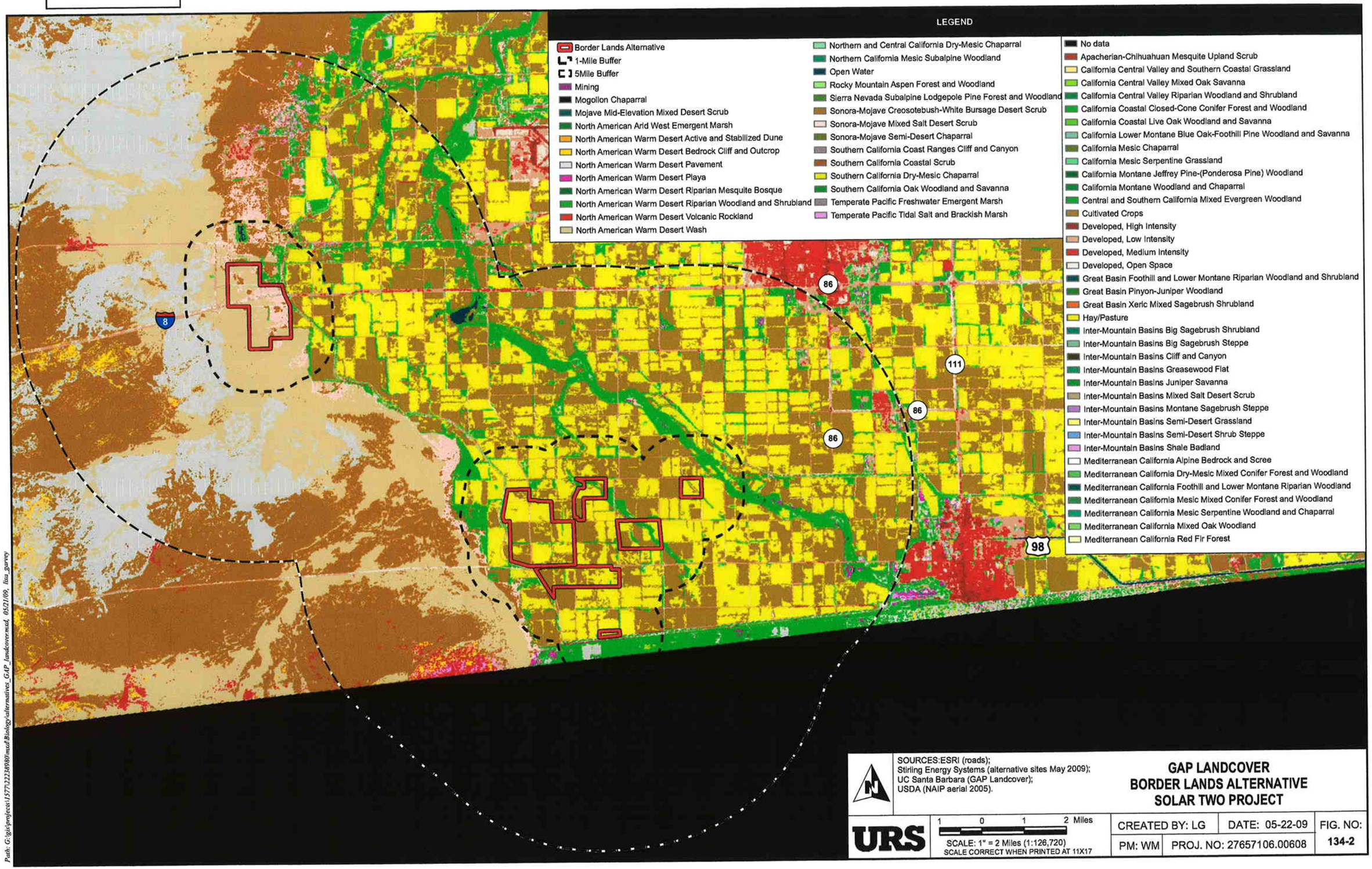
BIO-3



SOURCES:ESRI (roads);
Stirling Energy Systems (alternative sites May 2009);
UC Santa Barbara (GAP Landcover);
USDA (NAIP aerial 2005).

GAP LANDCOVER
BORDER LANDS ALTERNATIVE
SOLAR TWO PROJECT

URS

1 0 1 2 Miles

SCALE: 1" = 2 Miles (1:126,720)
SCALE CORRECT WHEN PRINTED AT 11X17

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BIO-4

78
86
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78
111
78
86
115
111
86
86

western yellow bat
Crissal thrasher
Abrams' spurge
Gila woodpecker
flat-tailed horned lizard
chaparral sand-verbena
flat-tailed horned lizard
Yuma clapper rail
flat-tailed horned lizard
burrowing owl
burrowing owl
burrowing owl
western yellow bat
Yuma clapper rail
chaparral sand-verbena
vermilion flycatcher
American badger
western yellow bat

LEGEND

CNDDB Critical Species
- Yuma clapper rail
- Flat-tailed horned lizard
- Other CNDDB Species

Critical Habitat
- Peirsons Milk-Vetch
- Mesquite Lake Alternative
- 1-Mile Buffer
- 5Mile Buffer

SOURCES: ESRI (roads);
Sterling Energy Systems (alternative sites May 2009);
USFWS (peirsons milk vetch critical habitat 2008);
CNDDB (sensitive species Apr. 2009);
USDA (NAIP aerial 2005).

CNDDB AND DCH AREAS
MESQUITE LAKE ALTERNATIVE
SOLAR TWO PROJECT

URS

1 0 1 2 Miles

SCALE: 1" = 2 Miles (1:126,720)
SCALE CORRECT WHEN PRINTED AT 11X17

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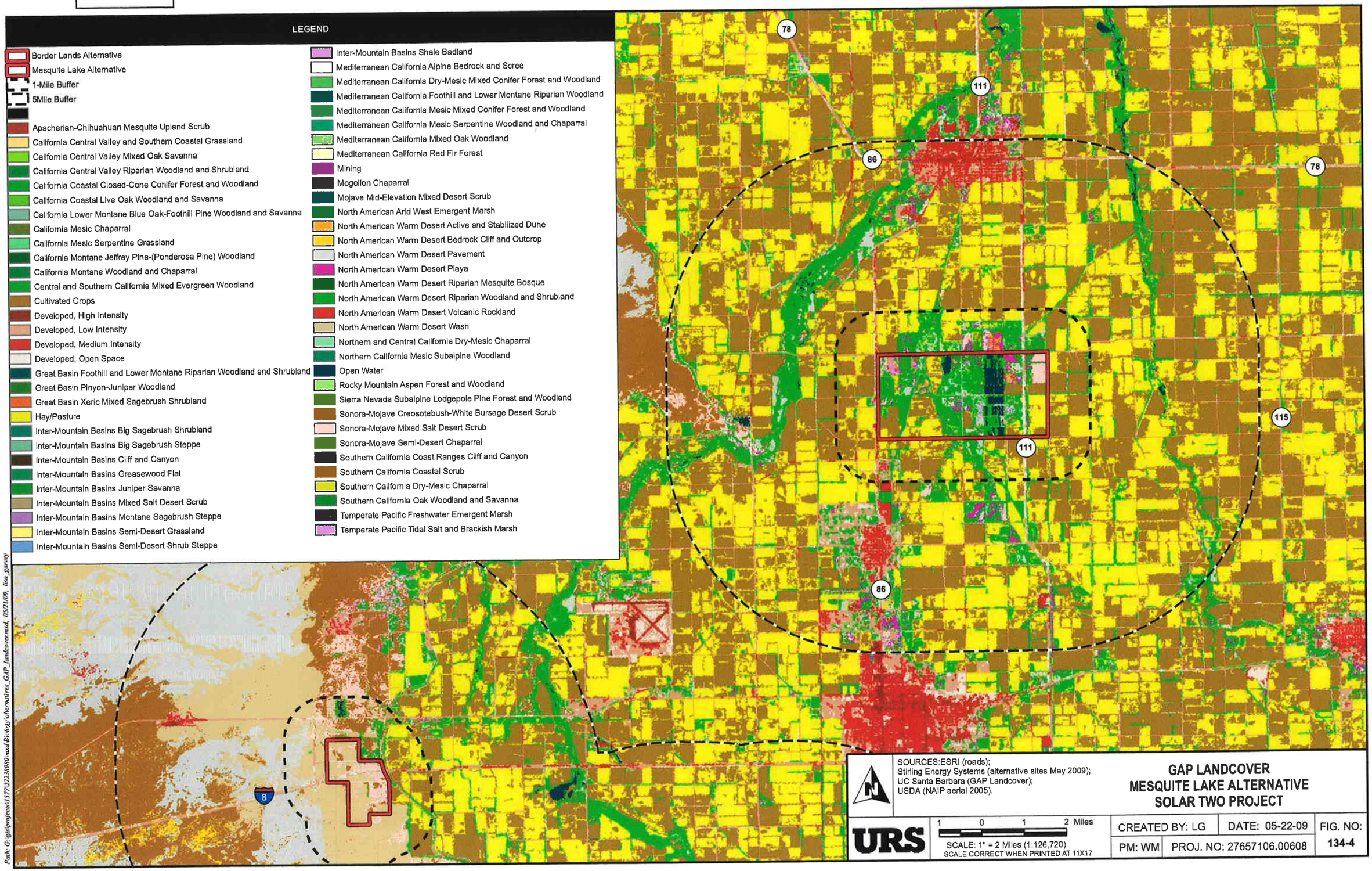
BIO-5



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SOURCES:ESRI (roads);
Stirling Energy Systems (alternative sites May 2009);
UC Santa Barbara (GAP Landcover);
USDA (NAIP aerial 2005).

GAP LANDCOVER
MESQUITE LAKE ALTERNATIVE
SOLAR TWO PROJECT

URS

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SCALE: 1" = 2 Miles (1:126,720)
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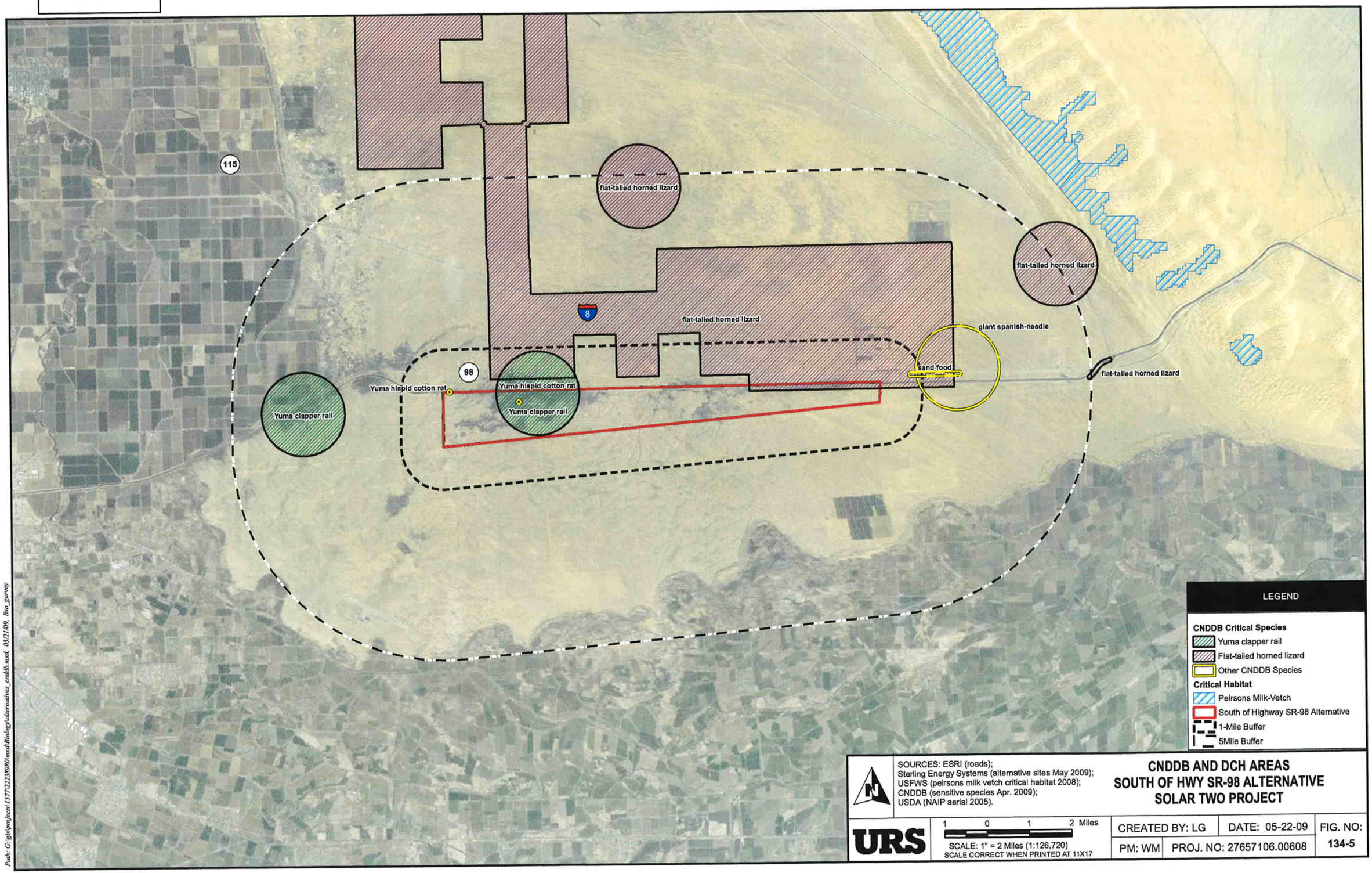
BIO-6



SOURCES: ESRI (roads);
Sterling Energy Systems (alternative sites May 2009);
USFWS (peirsons milk vetch critical habitat 2008);
CNDDB (sensitive species Apr. 2009);
USDA (NAIP aerial 2005).

CNDDB AND DCH AREAS
SOUTH OF HWY SR-98 ALTERNATIVE
SOLAR TWO PROJECT

URS

1 0 1 2 Miles
SCALE: 1" = 2 Miles (1:126,720)
SCALE CORRECT WHEN PRINTED AT 11X17

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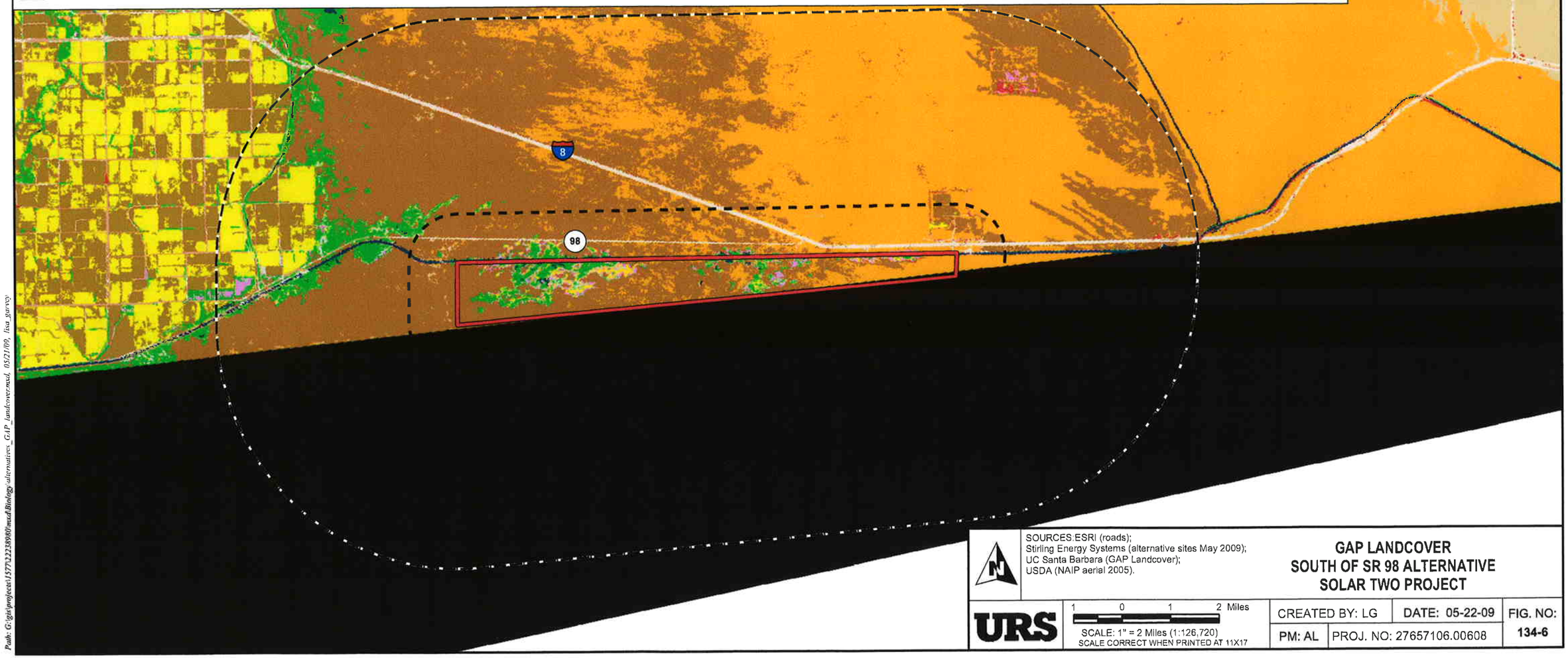
BIO-7

LEGEND

- South of Highway SR-98 Alternative
- 1-Mile Buffer
- 5Mile Buffer
- Apacherian-Chihuahuan Mesquite Upland Scrub
- California Central Valley and Southern Coastal Grassland
- California Central Valley Mixed Oak Savanna
- California Central Valley Riparian Woodland and Shrubland
- California Coastal Closed-Cone Conifer Forest and Woodland
- California Coastal Live Oak Woodland and Savanna
- California Lower Montane Blue Oak-Foothill Pine Woodland and Savanna
- California Mesic Chaparral
- California Mesic Serpentine Grassland
- California Montane Jeffrey Pine-(Ponderosa Pine) Woodland
- California Montane Woodland and Chaparral
- Central and Southern California Mixed Evergreen Woodland
- Cultivated Crops
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland
- Great Basin Pinyon-Juniper Woodland
- Great Basin Xeric Mixed Sagebrush Shrubland
- Hay/Pasture
- Inter-Mountain Basins Big Sagebrush Shrubland
- Inter-Mountain Basins Big Sagebrush Steppe
- Inter-Mountain Basins Cliff and Canyon
- Inter-Mountain Basins Greasewood Flat
- Inter-Mountain Basins Juniper Savanna
- Inter-Mountain Basins Mixed Salt Desert Scrub
- Inter-Mountain Basins Montane Sagebrush Steppe
- Inter-Mountain Basins Semi-Desert Grassland
- Inter-Mountain Basins Semi-Desert Shrub Steppe
- Inter-Mountain Basins Shale Badland
- Mediterranean California Alpine Bedrock and Scree
- Mediterranean California Dry-Mesic Mixed Conifer Forest and Woodland
- Mediterranean California Foothill and Lower Montane Riparian Woodland
- Mediterranean California Mesic Mixed Conifer Forest and Woodland
- Mediterranean California Mesic Serpentine Woodland and Chaparral
- Mediterranean California Mixed Oak Woodland
- Mediterranean California Red Fir Forest
- Mining
- Mogollon Chaparral
- Mojave Mid-Elevation Mixed Desert Scrub
- North American Arid West Emergent Marsh
- North American Warm Desert Active and Stabilized Dune
- North American Warm Desert Bedrock Cliff and Outcrop
- North American Warm Desert Pavement
- North American Warm Desert Playa
- North American Warm Desert Riparian Mesquite Bosque
- North American Warm Desert Riparian Woodland and Shrubland
- North American Warm Desert Volcanic Rockland
- North American Warm Desert Wash
- Northern and Central California Dry-Mesic Chaparral
- Northern California Mesic Subalpine Woodland
- Open Water
- Rocky Mountain Aspen Forest and Woodland
- Sierra Nevada Subalpine Lodgepole Pine Forest and Woodland
- Sonora-Mojave Creosotebush-White Bursage Desert Scrub
- Sonora-Mojave Mixed Salt Desert Scrub
- Sonora-Mojave Semi-Desert Chaparral
- Southern California Coast Ranges Cliff and Canyon
- Southern California Coastal Scrub
- Southern California Dry-Mesic Chaparral
- Southern California Oak Woodland and Savanna
- Temperate Pacific Freshwater Emergent Marsh
- Temperate Pacific Tidal Salt and Brackish Marsh



SOURCES:ESRI (roads);
Stirling Energy Systems (alternative sites May 2009);
UC Santa Barbara (GAP Landcover);
USDA (NAIP aerial 2005).

GAP LANDCOVER
SOUTH OF SR 98 ALTERNATIVE
SOLAR TWO PROJECT

URS

1 0 1 2 Miles

SCALE: 1" = 2 Miles (1:126,720)
SCALE CORRECT WHEN PRINTED AT 11X17

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SES Solar Two
In Response to CEC and BLM Data Requests
Set 2, Part 1
Data Requests 128-141
08-AFC-5

TECHNICAL AREA: LAND USE

Data Request 135: Please verify with the county whether or not the proposed project is in compliance with the LUO and provide the county's response with regard to their ability to issue a CUP (but for the Energy Commission's authority).

Response: According to Title 2 Chapter 3, Section 90203.10, when an applicant proposes a use that is not specifically authorized or listed as a use or conditional use in the specific zone, he/she may apply for a determination of similar use to the Planning Commission. A request for a "similar use" determination is possible in the case of a proposed use that is similar to an existing approved use within that zone.

Per conversation with James Minnick of the Planning and Building Division of Imperial County, based on this ordinance, the County would be able to issue a CUP to the Solar Two Project (but for the Energy Commission's authority) in compliance with the LUO.

TECHNICAL AREA: LAND USE

Data Request 136: Please verify whether construction of this pipeline would occur in the area proposed in AFC Figure 5.9-2.

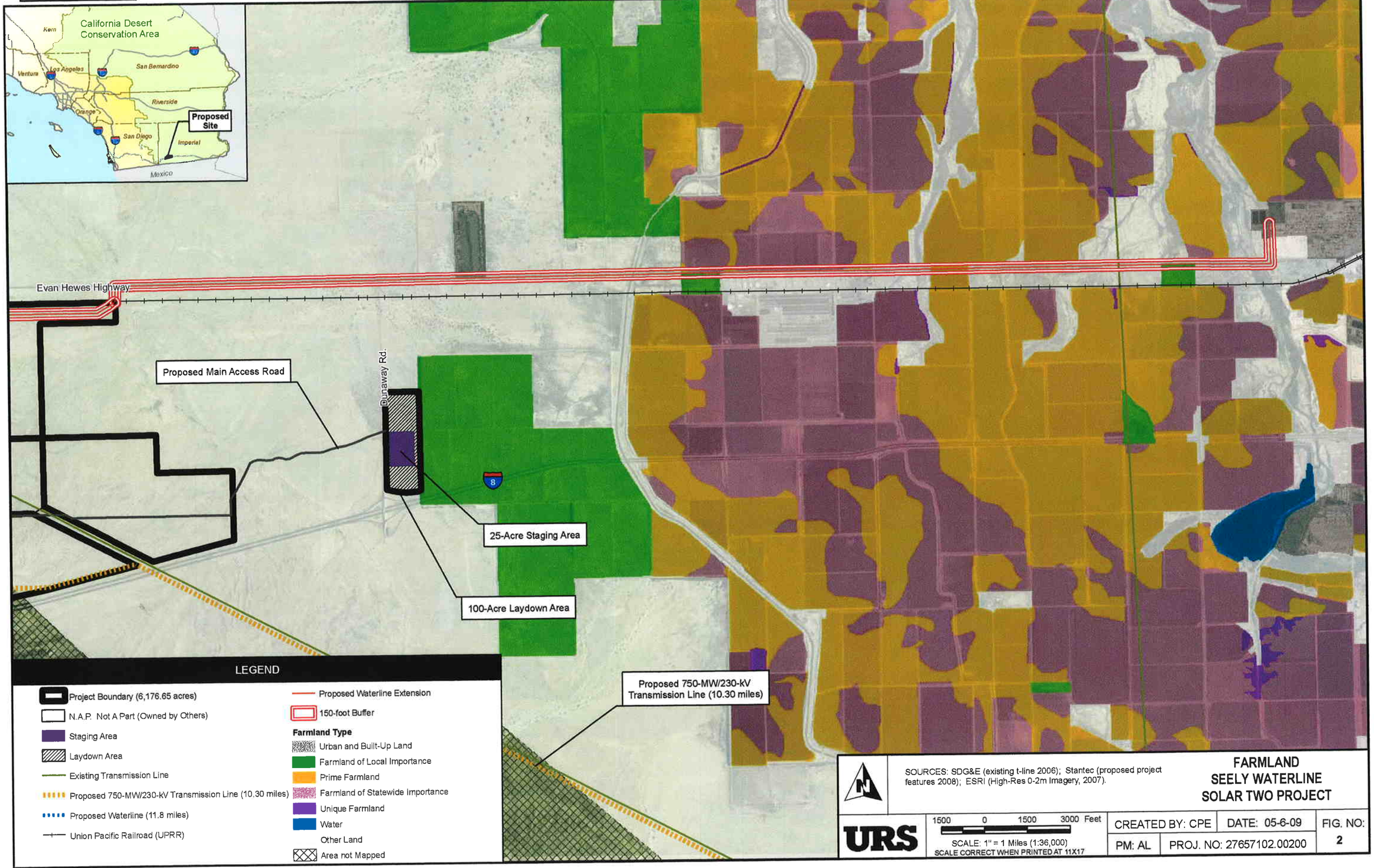
Response: The construction of the pipeline as shown in Figure 5.9-2 has been updated to use reclaimed water from the Seeley Wastewater Treatment Plant. The Applicant is scheduled to docket a supplemental filing (Q2 2009) to include a description of the new water source which will include a description and figures of the new waterline location.

TECHNICAL AREA: LAND USE

Data Request 137: If construction of the pipeline would occur within an Imperial County agricultural zone, please provide a LORS compliance analysis and the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP) land use designation for the area of impact.

Response: Attachment LU-1 shows the updated water line overlain on Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP) soil data. There are no Williamson Act Parcels located along the water line alignment. Some parcels along the waterline are zoned for agricultural use by the County of Imperial. However, only temporary impacts to agriculture are anticipated since the waterline will be placed underground and current land uses will be restored after construction. Agricultural land uses at the site of the water line installation will not change. Any permits required would be ministerial in nature and do not involve the conversion of agricultural land. The construction of the pipeline will comply with all LORS.

LU-1



SOURCES: SDG&E (existing t-line 2006); Stantec (proposed project features 2008); ESRI (High-Res 0-2m Imagery, 2007).

FARMLAND
SEELY WATERLINE
SOLAR TWO PROJECT

URS

1500 0 1500 3000 Feet

SCALE: 1" = 1 Miles (1:36,000)

SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: CPE	DATE: 05-6-09	FIG. NO: 2
PM: AL	PROJ. NO: 27657102.00200	

Path: G:\gis\projects\1577\22236980\mxd\waterline_farmland.mxd, 05/06/09, camille_lill

SES Solar Two
In Response to CEC and BLM Data Requests
Set 2, Part 1
Data Requests 128-141
08-AFC-5

TECHNICAL AREA: NOISE AND VIBRATION

Data Request 138: Please provide descriptions of the grouping of "receivers" located northwest of the western project boundary, including ambient noise values and distances from the project boundary and noise-producing project features.

Response: As background, the five noise receivers located approximately 3,300 feet northwest of the project's western boundary (identified on Figure 5.12-1 of the AFC) were considered and modeled as part of the noise evaluation completed for the AFC. A description of these receivers is included on page 5.12-4 (Section 5.12.1.1), paragraph 3:

"Trailer residences are located as close as approximately 3,200 feet northwest of the northwest corner of the Project property line along Painted Gorge Road. These trailers, estimated to number as many as 30, are arranged in clusters of various sizes and are located behind a tall ridge that totally occludes sight lines between these residences and the Project. The trailers are individual noise-sensitive receivers; however, given that the clusters share the commonality of distance to the Project, each cluster is modeled as one receiver in the prediction model."

The closest of these receivers to the Project (described in the AFC as "1510 Painted Gorge Road") is located approximately 3,200 feet perpendicular to the Project's northwest boundary. The nearest SunCatcher is therefore likely to be about 3,300 feet away from this receiver. The Main Services Complex and proposed Substation, as shown on Figure 5.12-1 of the AFC, are both at least 17,500 feet to the East of this receiver.

On the basis of comparable conditions, such as similar exposure to ambient noise sources such as military and commercial aircraft overflights, and distant road traffic on I-8 and Evan Hewes Highway, the ambient noise values for 1510 Painted Gorge Road are considered comparable to what was measured at the residential receiver "ML1" (426 Evan Hewes Highway) as noted in Table 5.12-8 of the AFC.

TECHNICAL AREA: NOISE AND VIBRATION

Data Request 139: Please provide an estimate of project construction noise and operating noise at these receptors.

Response: Predicted project construction noise and operating noise at the closest of these receptors to the Project is shown in Tables 5.12-5 and 5.12-8 in the Project AFC and are included again here for your convenience.

Table 5.12-5
Estimated Construction Noise from Nearest 18-Megawatt Block to West Receiver
(1510 Painted Gorge Road)

Equipment Description	Distance to Receiver (feet)	Predicted Sound (dBA) from Quantity of Equipment During Indicated Month			
		1	2	3	4
Power line constructor trencher	3,300	50	0	0	0
Backhoe	3,300	50	0	0	0
Compactor	3,300	50	0	0	0
Cable/rigging truck	3,300	53	0	0	0
Flatbed truck with boom	3,300	54	0	0	0
Pickup truck	3,300	51	0	0	0
Dozer	3,300	53	0	0	0
Grader	3,300	52	0	0	0
Loader	3,300	53	0	0	0
Backhoe	3,300	50	0	0	0
Dump truck	3,300	53	0	0	0
Compactor	3,300	50	0	0	0
Vibratory machine	3,300	0	46	0	0
Fuel/service truck	3,300	0	52	0	0
Flatbed truck with boom	3,300	0	59	0	0
Pickup truck	3,300	0	56	0	0
Crane	3,300	0	58	0	0
Flatbed truck with boom	3,300	0	0	54	0
Maxi sneeker	3,300	0	0	49	0
Backhoe	3,300	0	0	50	0
Maxi sneeker	3,300	0	0	56	0

Table 5.12-5
Estimated Construction Noise from Nearest 18-Megawatt Block to West Receiver
(1510 Painted Gorge Road)
(Continued)

Equipment Description	Distance to Receiver (feet)	Predicted Sound (dBA) from Quantity of Equipment During Indicated Month			
		1	2	3	4
Flatbed truck with boom	3,300	0	0	61	0
Backhoe	3,300	0	0	57	0
Skid steer	3,300	0	0	53	0
Telehandler	3,300	0	0	0	56
Field service truck	3,300	0	0	0	62
Crane	3,300	0	0	0	56
Pickup truck	3,300	0	0	0	57
Track transporter	3,300	0	0	0	57
Grader	3,300	0	52	52	52
Compactor	3,300	0	50	50	50
Aggregate		63	64	65	66

Source: SES Solar Two, LLC, 2008.
Note:
dBA = A-weighted decibel

Table 5.12-8
Calculated Operation Levels at Existing Residences

Noise-Sensitive Receiver	Distance to NSR (feet)/ Direction	Existing Noise Level (dBA)			Future Noise Level (dBA)		
		L_{eq} (Day)	L_{eq} (Night)	CNEL	Additional CNEL	Total CNEL	Increase
ML5 Imperial Lakes, 2828 Evan Hewes Highway	10,466/ Northeast	57	51	60	48	60	0
ML1[1] 426 Evan Hewes Highway/1510 Painted Gorge Road	3,300/ Northwest	51	42	51	52	55	+ 4

Source: URS Corporation, 2008.

Notes:

[1] Existing noise measurement data based on measurement at an acoustically representative location (426 Evan Hewes Road) near the closest noise-sensitive receiver (1510 Painted Gorge Road). Daytime and nighttime levels extracted from the corresponding intervals of the long-term measurement at the representative location.

< = less than
\+ = positive
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibel
L_{eq} = equivalent sound level
NSR = Noise-Sensitive Receiver

SES Solar Two
In Response to CEC and BLM Data Requests
Set 2, Part 1
Data Requests 128-141
08-AFC-5

TECHNICAL AREA: TRAFFIC AND TRANSPORTATION

Data Request 140: Please provide a quantitative description of the change in the number construction vehicles to the site. Please breakdown by delivery trucks, employee trucks, buses that would transport employees onto the site, and heavy vehicles and trucks.

Response: The construction traffic data provided in the AFC was preliminary, since that time, significant refinement of the estimated construction vehicle numbers has occurred. Table DR-140 summarizes the number of construction vehicles coming to the Solar Two site. As shown in Table DR-140, the number of all vehicle types as changed.

During peak workload time periods, there will be six buses that will each make up to two trips delivering workers from the laydown area to the site.

The peak number of construction personnel is 731 expected in month 7. The worst-case assumption used in the emission calculations and presented below was that all these 731 individuals traveled to the site in private vehicles. Each vehicle was assumed to carry 1.5 individuals per vehicle, giving a maximum 487 commuting vehicles traveling daily to the site.

Delivery truck and heavy truck numbers are reduced from the initial estimate partly because it is assumed that much of the material needed on a daily basis will be stored at the Main Services Complex (MSC) and can be delivered to the worksite via on-site vehicles. Also there will be no soil import or export needed during construction. The pedestals, mirrors, metal supports, engines, drives and control systems will all be delivered on-site by transport trucks coming from outside Imperial County. The general materials and concrete trucks will most likely come from El Centro or elsewhere in Imperial County.

Table DR-140
Offsite Construction Vehicle Schedule

Vehicle Type	Average Daily Number of Vehicles	Peak Daily Number of Vehicles
Construction Personnel Buses	4	6
Construction Personnel Vehicles	240	487
Concrete Truck	0.3	5
General Materials Delivery Trucks	0.5	3
SunCatcher Delivery Trucks		
SunCatcher Pedestals	0.6	3
Stirling Engines	5	5
SunCatcher Metal Supports	10	10
SunCatcher Mirrors	6	6
Electrical and Control Systems	2	2
Azimuth and Elevation Drive	2	2
Totals	270	529

TECHNICAL AREA: TRAFFIC AND TRANSPORTATION

Data Request 141: Please provide confirmation on whether any deliveries will be made via rail and how many trucks will be taken off the roadway due to the change in mode of transportation.

Response: At this time Union Pacific Railroad is not able to deliver material to the site at the quantity and delivery rate required for an economical development of the site due to the railroad's delivery restrictions on container handling. Currently, containers are the only way SES parts can be shipped in a timely and economically manner from the Midwest to Los Angeles, CA.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
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1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
For the SES SOLAR TWO PROJECT

Docket No. 08-AFC-5

PROOF OF SERVICE
(Revised 5/26/09)

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DECLARATION OF SERVICE

I, Angela Leiba, declare that on June 5, 2009, I served and filed copies of the attached Responses to Data Requests 128-141. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:
[www.energy.ca.gov/sitingcases/solartwo]. The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

_X___ sent electronically to all email addresses on the Proof of Service list;

_X___by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

__X__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

_____depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-5
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

Original Signed By:
Angela Leiba