



455 Capitol Mall Suite 350
Sacramento CA 95814
Tel • 916.441.6575
Fax • 916.441.6553

California Energy Commission DOCKETED 09-AFC-7C
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California Energy Commission
Dockets Unit
1516 Ninth Street
Sacramento, CA 95814-5512

**Subject: PSEGS SUMMARY OF SURVEY FOR JURISDICTIONAL STATE WATERS
PALEN SOLAR ELECTRIC GENERATING SYSTEM
DOCKET NO. (09-AFC-7C)**

Enclosed for filing with the California Energy Commission is the electronic version of **PSEGS SUMMARY OF SURVEY FOR JURISDICTIONAL STATE WATERS**, for the Palen Solar Electric Generating System (09-AFC-7C).

Sincerely,

Marie Fleming

Alice E. Karl, Ph.D.
P.O. Box 74006
Davis, CA 95617

5 June 2013

Ms. Ann Crisp
California Energy Commission
1516 9th St.
Sacramento, CA 95814-5512

Re: Palen Solar Electric Generating System (PSEGS), Summary of Survey for Jurisdictional State Waters

Dear Ms. Crisp,

This letter transmits a summary of the methods and results of the supplemental survey for State Waters for the PSEGS Modified Linear Facilities. A jurisdictional delineation was prepared for the entire project site in 2009 (AECOM 2009). The current survey only addresses the new and altered linear features, specifically the gen-tie extension and the additional natural gas pipeline, to supplement the existing delineation.

Methods for Delineating State Waters on the PSEGS Modified Linear Facilities

Prior to delineating the potential jurisdictional State Waters on the new and altered linear features, the 2009 State Waters Jurisdictional Delineation for PSPP (AECOM 2009) and newer guidance from the CEC (Vyverberg 2010) were reviewed to ensure that the 2013 PSEGS surveys incorporated the more recent recognition of hydrological conditions that are specific to the arid southwest and was also consistent with the previous, approved delineation for PSPP. The surveyor for the 2013 PSEGS State Waters assessment, Dr. Alice Karl, also brought to the assessment over three decades of experience examining and analyzing factors associated with geomorphology and hydrology in the southwestern deserts as they relate to wildlife. Given that wildlife values associated with streams are the basis of the 1602 permit, this experience is assumed to be beneficial for assessing State Waters. Table 1 provides a matrix that defines the channel types present on the PSEGS new and altered linear features, in the context of the earlier delineation and the more current CEC guidance. Those hydrological features, as they occur on the PSEGS Modified Linear Facilities, are more thoroughly described below:

Primary Channel – Distinct, arboreal channel in which one of the dominant species is a riparian tree species (typically ironwood [*Olneya tesota*] on the PSEGS Modified Linear Facilities, but occasionally palo verde [*Parkinsonia florida*]); other dominant species are primarily upland species (creosote bush [*Larrea tridentata*], white bursage [*Ambrosia dumosa*]) (Photograph 2). Other wash-dependent species (e.g., cheesebush [*Ambrosia salsa*], desert lavender [*Hyptis emoryi*], chuckwalla bush [*Bebbia juncea*], belloperone [*Justicia californica*], catclaw acacia [*Senegalia greggii*]) may be present but are generally only sparsely present except in deep, well-developed washes (Photograph 1). Primary channels are usually, but not necessarily, broad and/or incised.

Table 1. A comparison of the PSEGS 2013 channel designation with those of Vyverberg (2010) and the PSPP jurisdictional delineation (AECOM 2009).

Jurisdictional State Waters Category	PSEGS 2013 Designation	Analogous Vyverberg Designation	PSPP 2009 Designation	
Desert Dry Wash Woodland	<i>Primary channel</i>	<i>Single-thread channel</i>	<i>Vegetated ephemeral wash (i.e., with wash-dependent vegetation)</i>	Primary wash
	<i>Secondary channel</i>	<i>Single-thread or discontinuous channel</i>		Secondary wash
	<i>Riparian interfluves</i> are a feature of larger and deeper channels that do not occur in this part of PSEGS; there, they are considered an integral part individual channel morphology rather than a discrete channel feature	<i>Riparian interfluves</i> are part of a larger, compound channel, not occurring in this portion of PSEGS		<i>Riparian interfluve</i>
	<i>Sheet flood</i> - a discrete hydrological feature replete with highly braided primary and secondary channels, discontinuous channels, and rilled to hydrologically altered surfaces between those channels	<i>Sheet flood</i>	As a unit, <i>sheet flood</i> was not included as a State Water; individual channels in the sheet flood areas were assessed for inclusion as a State Water	
Unvegetated Ephemeral Dry Wash	U_H - Single-thread or discontinuous channel with upland vegetation, but no or only rare wash-dependent vegetation	<i>Discontinuous channel</i>	<i>Unvegetated ephemeral wash (no or only occasional wash-dependent vegetation)</i>	
	U_L -Single-thread or discontinuous channel, with a low density of upland vegetation and no or very rare wash-dependent vegetation	<i>Discontinuous channel</i>	Not included as a State Water	
	<i>Swale</i>	<i>Discontinuous channel</i>	Not included as a State Water	

Secondary Channel –At PSEGS, these channels are typically, narrow, shallow, single-thread and often discontinuous channels with scattered to occasional riparian trees; there

are few individuals of other wash-dependent species. Upland species dominate the shrub layer. (See Photographs 3 and 4).

Sheet or Sheet Flood – These are hydrologically dynamic zones where water has obviously flowed overland, both in and out of channels, during intensive storm events. These zones comprise a highly braided system of single-thread and discontinuous channels - including both Desert Dry Wash Woodland (DDWW) (Photographs 5 and 6) and “unvegetated” ephemeral washes (see below) - and interfluvial spaces where gravels have been rilled by the action of flowing water (Photograph 7). Sheet zones are considered a unit, rather than a series of discrete individual channels, because internal channel morphologies are subject to rapid change and because the entire zone is important for seed and sediment transport.

Desert Dry Wash Woodland – DDWW includes both individual arboreal washes (*sensu* Holland [1986]; e.g., Photograph 1) and actual woodland. The latter is a subset of sheet flood described above, in which riparian trees (typically ironwood at PSEGS) are scattered throughout the sheet zone (Photographs 5 and 6). While common along the edges of primary and secondary washes, the trees are not always confined to distinct channels in sheet flood zones. Cheesebush is the most common riparian shrub species in the sheet flood DDWW at the PSEGS Modified Linear Facilities.

“Unvegetated” Ephemeral Wash (U_H) – These are primarily discontinuous channels, but may be single thread for part of their reaches. These washes are not actually unvegetated and, in fact, upland vegetation reaches a higher density there than outside of the channels, as a result of the higher water availability (Photograph 8). This higher density of shrub-layer species provides greater cover and sequestering/nesting opportunities for wildlife, as well as increased foraging opportunities due to the trapping of sediment and seeds, resulting in a higher density and diversity of understory plants. Wash-dependent vegetation, typically small ironwood trees or shrubs, may be occasionally present. These channels may or may not have distinct beds and banks.

“Unvegetated” Ephemeral Wash, Low Shrub Density (U_L) – These are the same as U_H, except that shrub-layer density is low; individuals of riparian species are rare (Photograph 9).

Swale – Swales are typically discontinuous, very shallow depressions less than approximately 5 cm deep that are either completely isolated or ultimately connect to a channel. On the PSEGS Modified Linear Facilities, they often arise on desert pavement patches. Vegetation is variable, ranging from herbaceous species only, to scattered, primarily upland, shrubs (Photograph 8).

To quantify Waters of the State on the Modified Linear Facilities, both edges of each linear right-of-way (ROW; Figure 1) were walked for their entire lengths, to precisely map and describe all channels. Waypoints were taken for each channel that crossed the ROW boundaries, typically

at both sides of the channel where it crossed the ROW boundary. Waypoints were taken at the outer, upper edge of each channel to be both conservation-oriented and account for the three-meter accuracy of the Global Positioning System (GPS) unit (Garmin 76CSx). For very narrow channels (less than approximately a meter wide, one waypoint was sometimes taken for the channel, rather than two. The following variables were measured and described for each channel crossed:

- Channel type (see Table 1)
- Channel width, depth and substrate
- Shrub, perennial grass, and tree species present, and relative abundance of each (i.e., dominant, common or occasional)
- Presence of wash-dependent vegetation
- Height of tree species, where present

All channels were mapped to show channel direction and continuity, where present, from ROW edge to edge.

To calculate acreages of State Waters, the Universal Transverse Mercator (UTM) locations for each waypoint and channel type were mapped using Global Information System (GIS). The channels were then fully delineated internally in the narrow ROWs using the field maps and data and aerial photography. In all cases, the edges of channels or sheet areas were mapped conservatively (i.e., conservation-oriented). For instance, where a sheet area that crossed the ROW was composed primarily of unvegetated washes, it was mapped as DDWW if the area was clearly part of a larger DDWW system upslope or down. The percent cover of riparian vegetation in DDWW was conservatively assumed to be comparable to the higher quality wash in the southwestern portion of the solar facility, mapped in 2009 for the PSPP jurisdictional delineation (AECOM 2009).

Summary of State Waters on the PSEGS Modified Linear Facilities

A total of 13.88 acres of State Waters was delineated on the PSEGS Modified Linear Facilities (Table 2). DDWW and Unvegetated Ephemeral Washes totaled 7.44 and 6.44 acres, respectively, which is 4.44 and 6.44 acres, respectively, more than the original estimate provided in the response to Data Request 5 (Centerline 2013). These increases were due to the more recent recognition of hydrological conditions and stream processes that are specific to the arid southwest and important for wildlife values.

Table 2. Acreage of State Waters on PSEGS Modified Linear Facilities, and Changes from Acreage Reported in DR-5.

Linear Facility	State Waters Type	Acres	Acreage Estimate d for DR-5 ¹	Additional Acreage for Compensation
Gen-Tie	Desert Dry Wash Woodland	6.19	2.2	3.99
	Unvegetated Ephemeral Wash	5.97	0	5.97
	Non-Waters (Sonoran Creosote Bush Scrub)	4.82		
	Total Mapped Vegetation Acres	16.98		
	Gen-tie corridor within I-10 ROW	0.66		
	Gen-tie corridor within Red Bluff Substation	1.34		
	Total Acres in gen-tie corridor	18.98²	18.92	
Gas Pipeline	Desert Dry Wash Woodland	1.25	0.8	0.45
	Unvegetated Ephemeral Wash	0.47	0	0.47
	Non-Waters (Sonoran Creosote Bush Scrub)	1.5	2.42	
	Total Mapped Vegetation Acres	3.22		
	Gas line corridor within I-10 ROW	0.34		
	Total Acres in gas line corridor	3.56	3.6	
Total in corridor, outside I-10 ROW or Red Bluff Substation	Desert Dry Wash Woodland	7.44	3.0	4.44
	Unvegetated Ephemeral Wash	6.44	0	6.44
	Total State Waters	13.88	3.0	10.88

1. In DR-5, acreage for the gen-tie was not calculated to be more than the permitted gen-tie. That acreage is included here.

2. Includes 0.06 acres mapped inside the permitted gen-tie corridor (See Figure 2.1-1).

Maps of the State Waters are provided in Figure 1. Attachment 1 provides the original data sheets for the State Waters assessment.

LITERATURE CITED

AECOM (EDAW). 2009. Palen Solar Power Project Biological Jurisdictional Delineation Report for Regulated Waters of the United States and State. Riverside County, California. Submitted to Solar Millennium, LLC, Berkeley, CA and Chevron Energy Solutions, San Francisco, CA. 116 pp.

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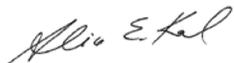
Centerline, LLC. 2013. Palen Solar Holdings, LLC's response to CEC Staff Data Request 1 (1-18). Palen Solar Electric Generating System Docket No. 09-AFC-7C. Filed with the CEC on 25 March 2013.

Holland, R. 1986. Preliminary descriptions of the terrestrial natural communities of California. California Department of Fish and Game, Nongame Heritage Program, Sacramento, CA. 155 pp.

Vyverberg, K. 2010. A review of stream processes and forms in dryland watersheds. California Department of Fish and Game, Sacramento, CA. 36 pp.

Please feel free to contact me if you have further questions regarding these data. I can be reached at (530) 304-4121 or heliophile@mindspring.com

Respectfully,



Alice E. Karl, Ph.D.

Attachments:

Figure 1. Location of the PSEGS Modified Linear Facilities Surveyed in 2013.

Figure 2. Maps of Jurisdictional State Waters on the PSEGS Modified Linear Facilities
Photographs. Representative Channel Types

Attachment 1. Field Data Sheets: 2013 State Waters Assessment on the PSEGS Modified Linear
Facilities

Figures

Figure 1. PSEGS and the Modified Linear Facilities Surveyed in 2013

Figure 2. Maps of Jurisdictional State Waters on the PSEGS Modified Linear Facilities

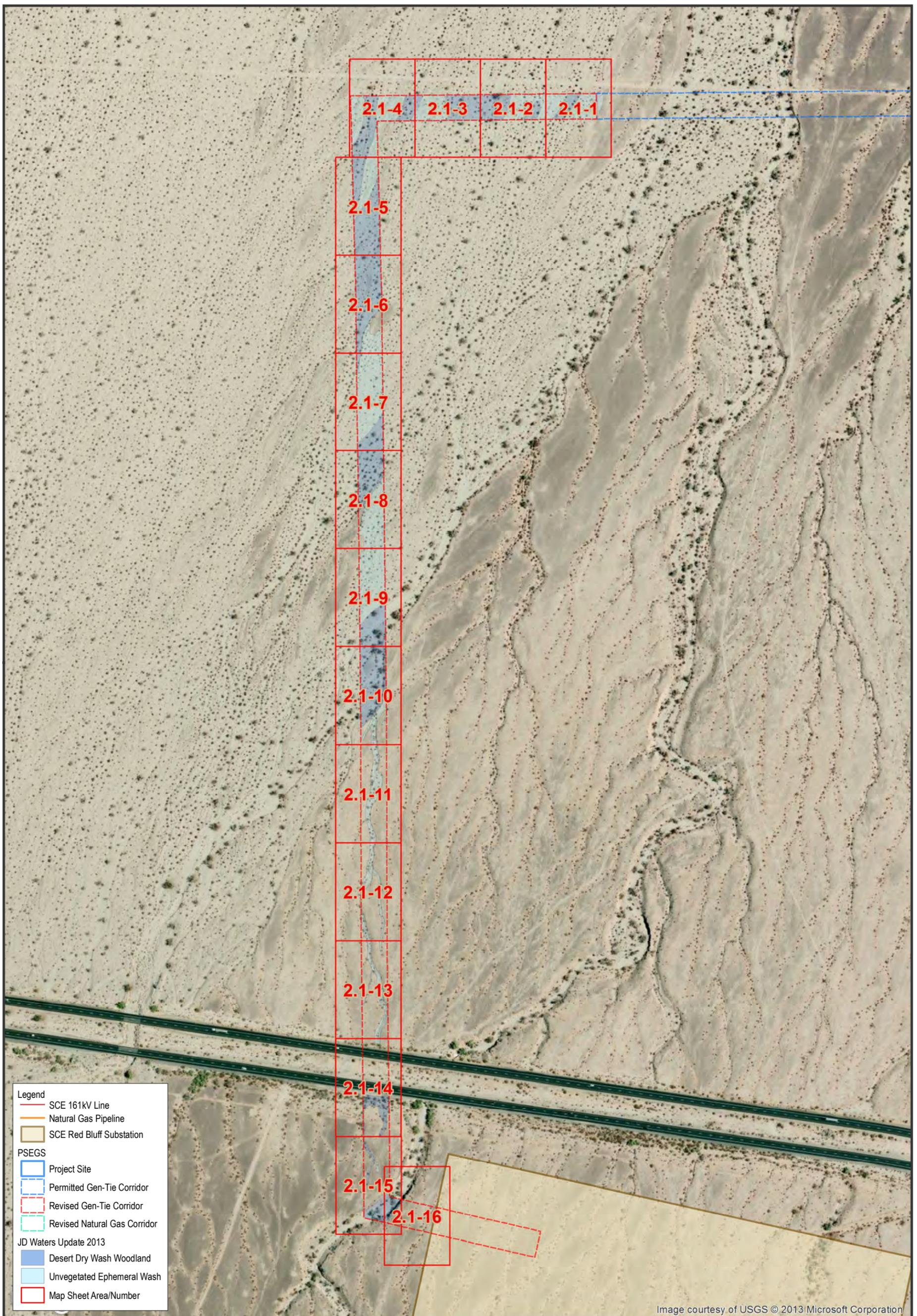


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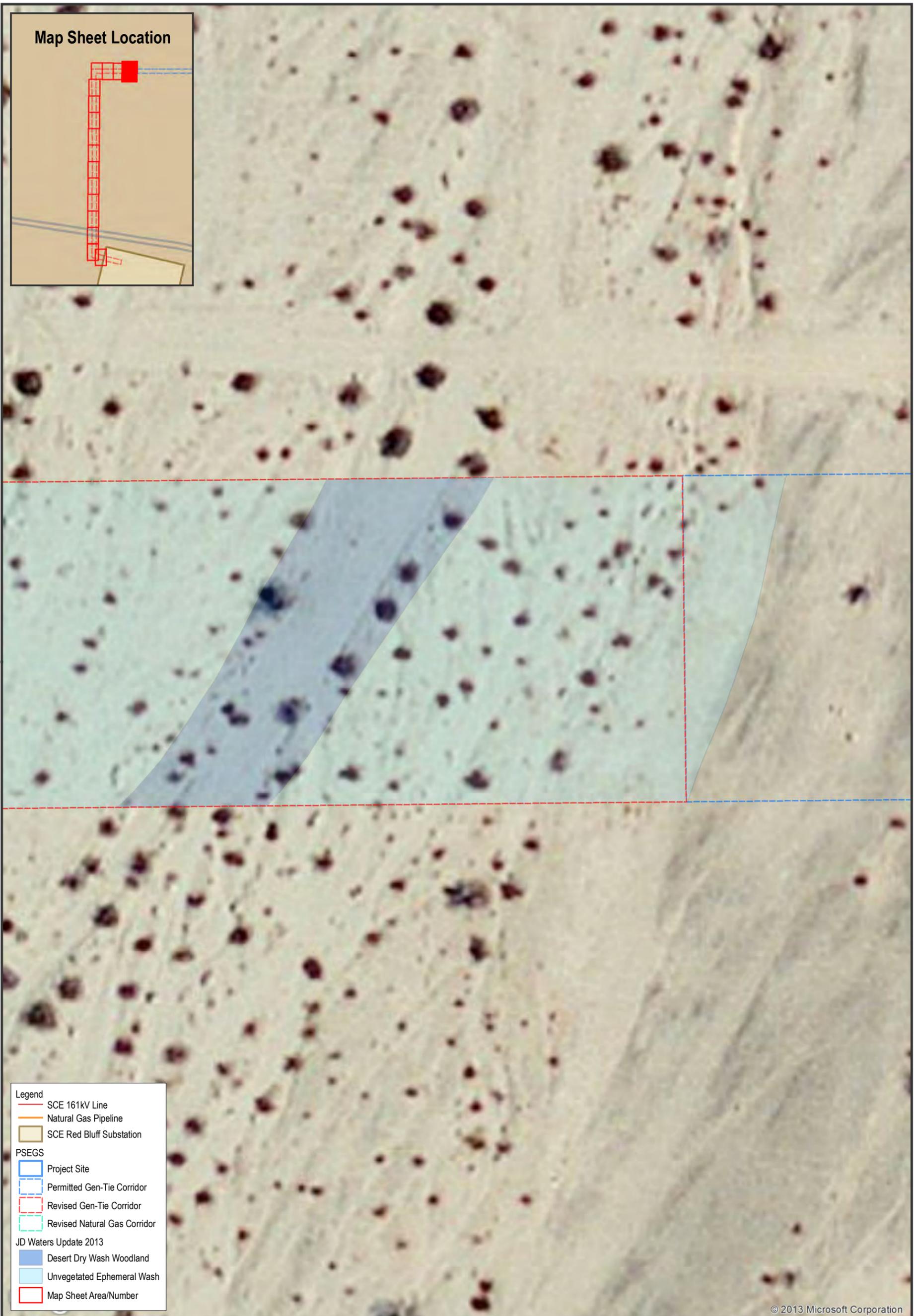
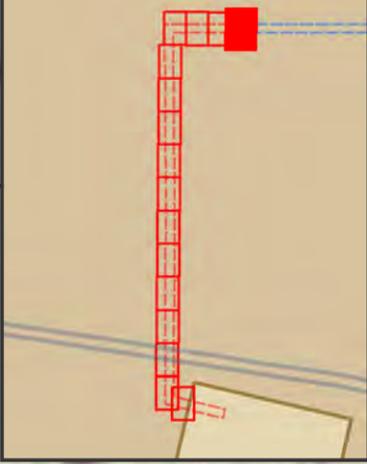


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Project:	Palen Solar	Figure No: 2.1
Date:	Jun 03, 2013	
Revision:	C-1000	
Prepared By:	NS	

Map Sheet Location



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
 - SCE Red Bluff Substation
 - PSEGS**
 - Project Site
 - Permitted Gen-Tie Corridor
 - Revised Gen-Tie Corridor
 - Revised Natural Gas Corridor
 - JD Waters Update 2013**
 - Desert Dry Wash Woodland
 - Unvegetated Ephemeral Wash
 - Map Sheet Area/Number

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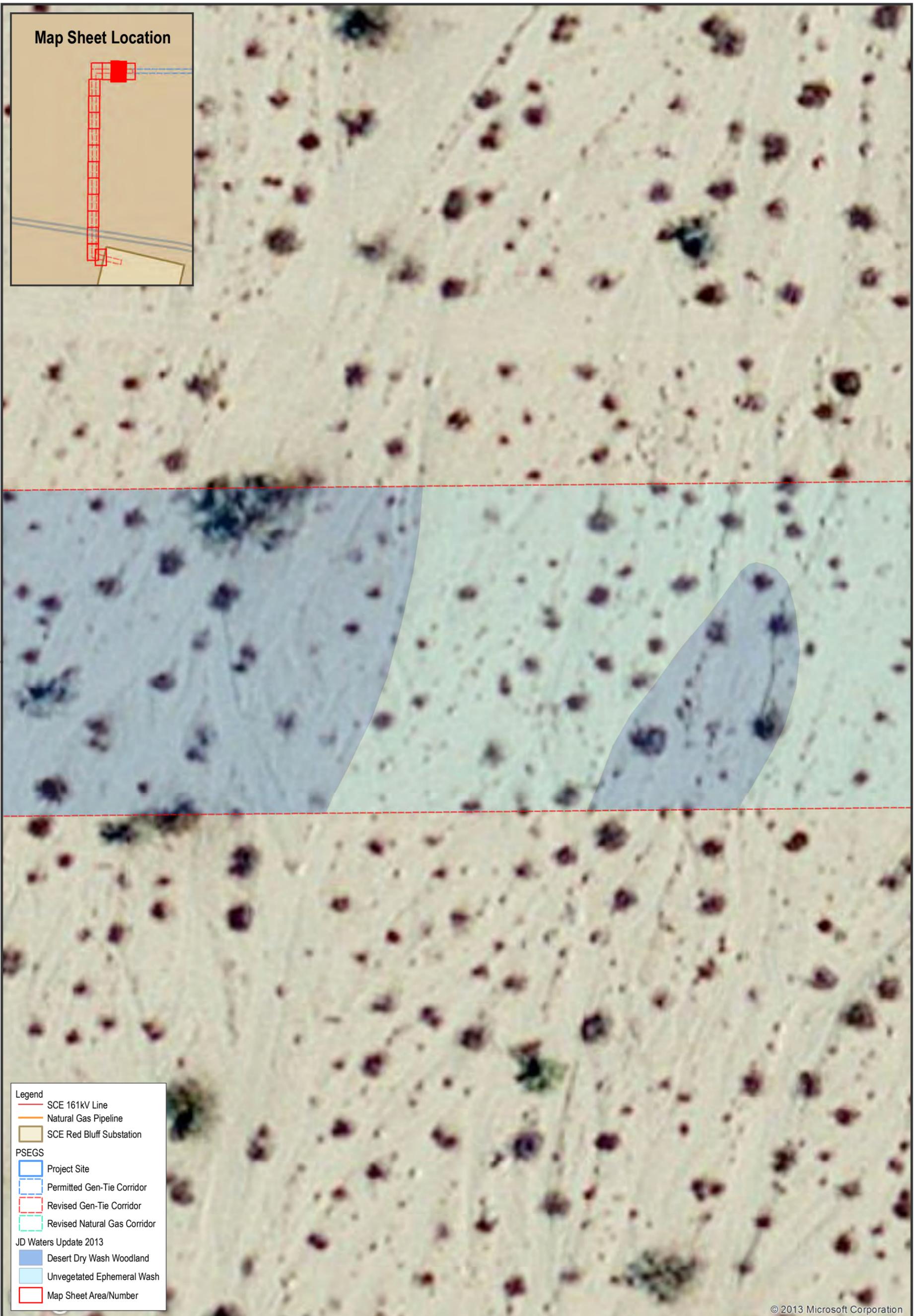
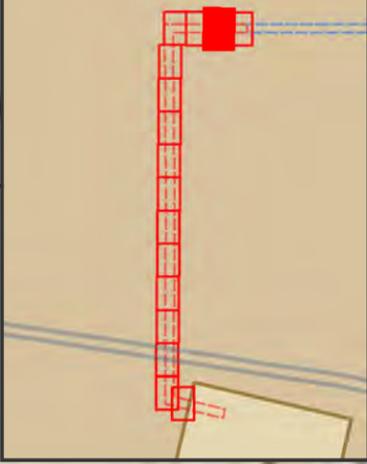
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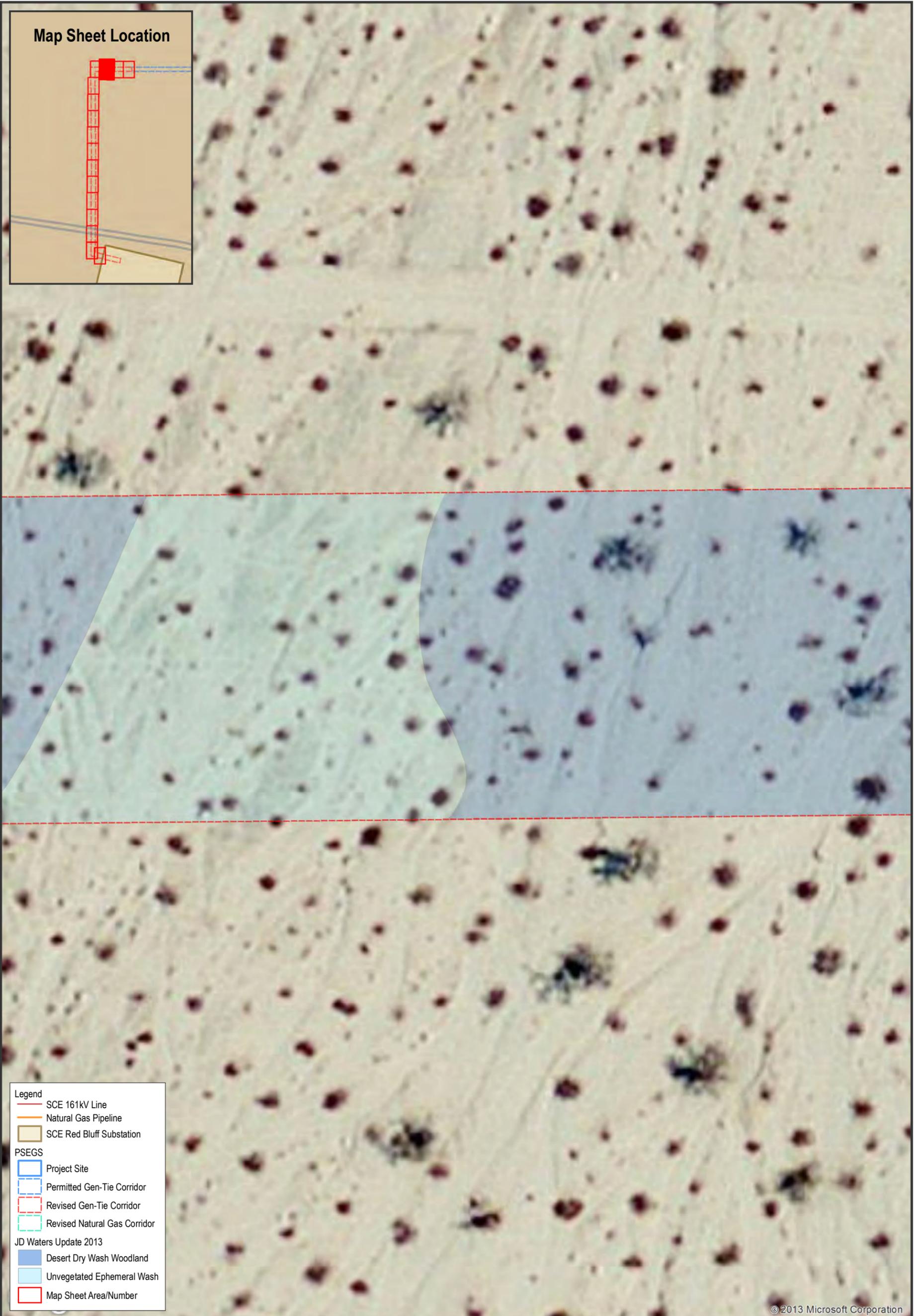
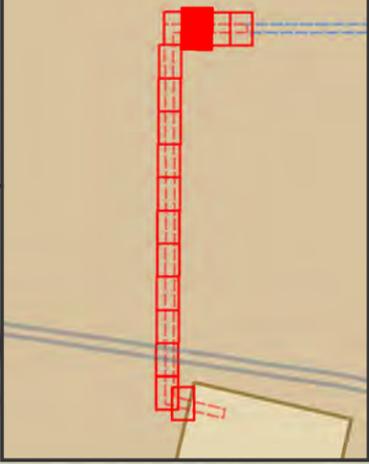
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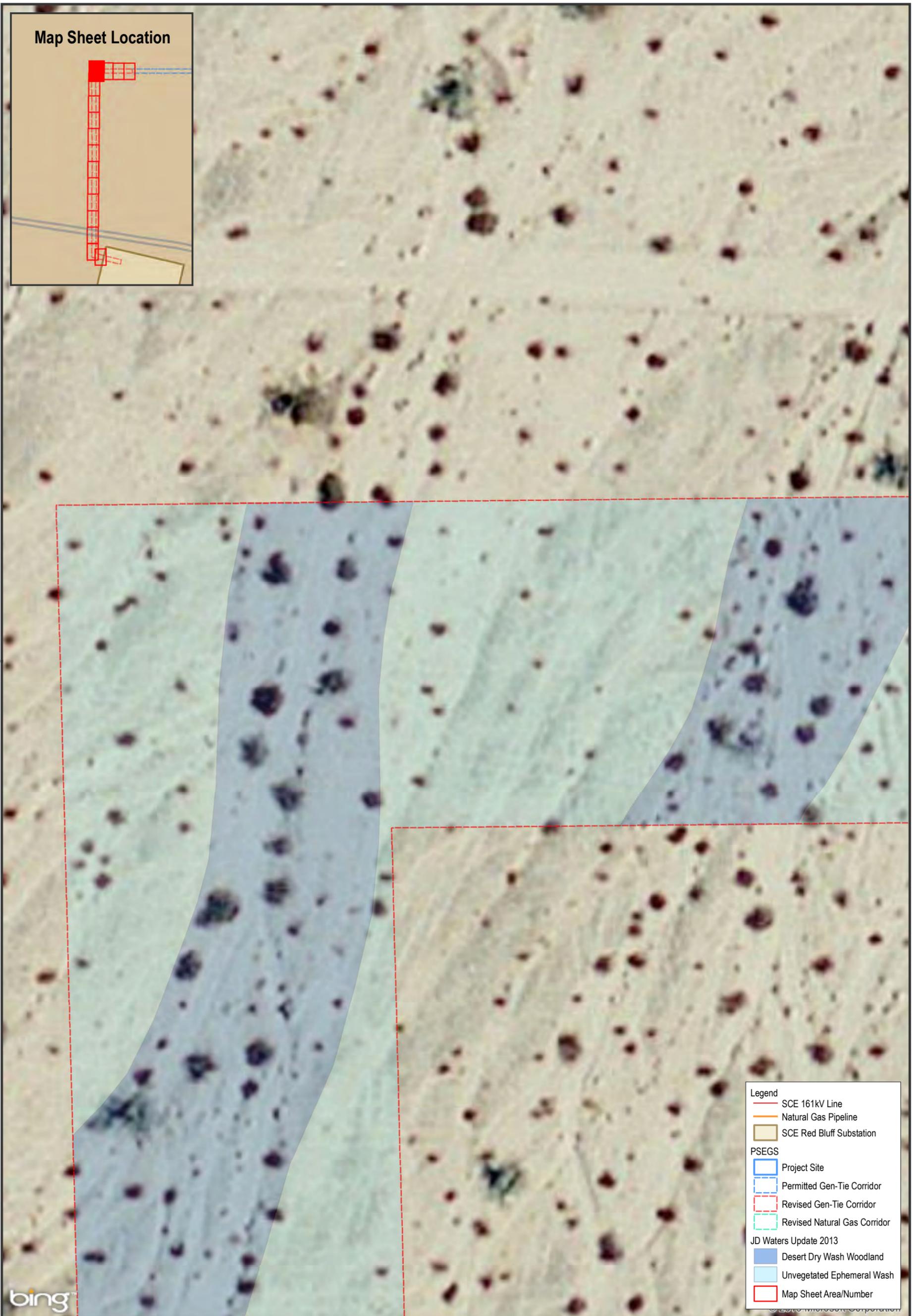
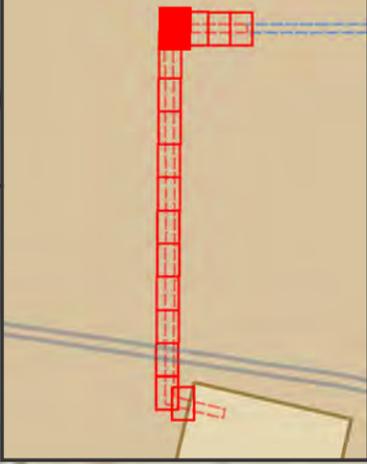
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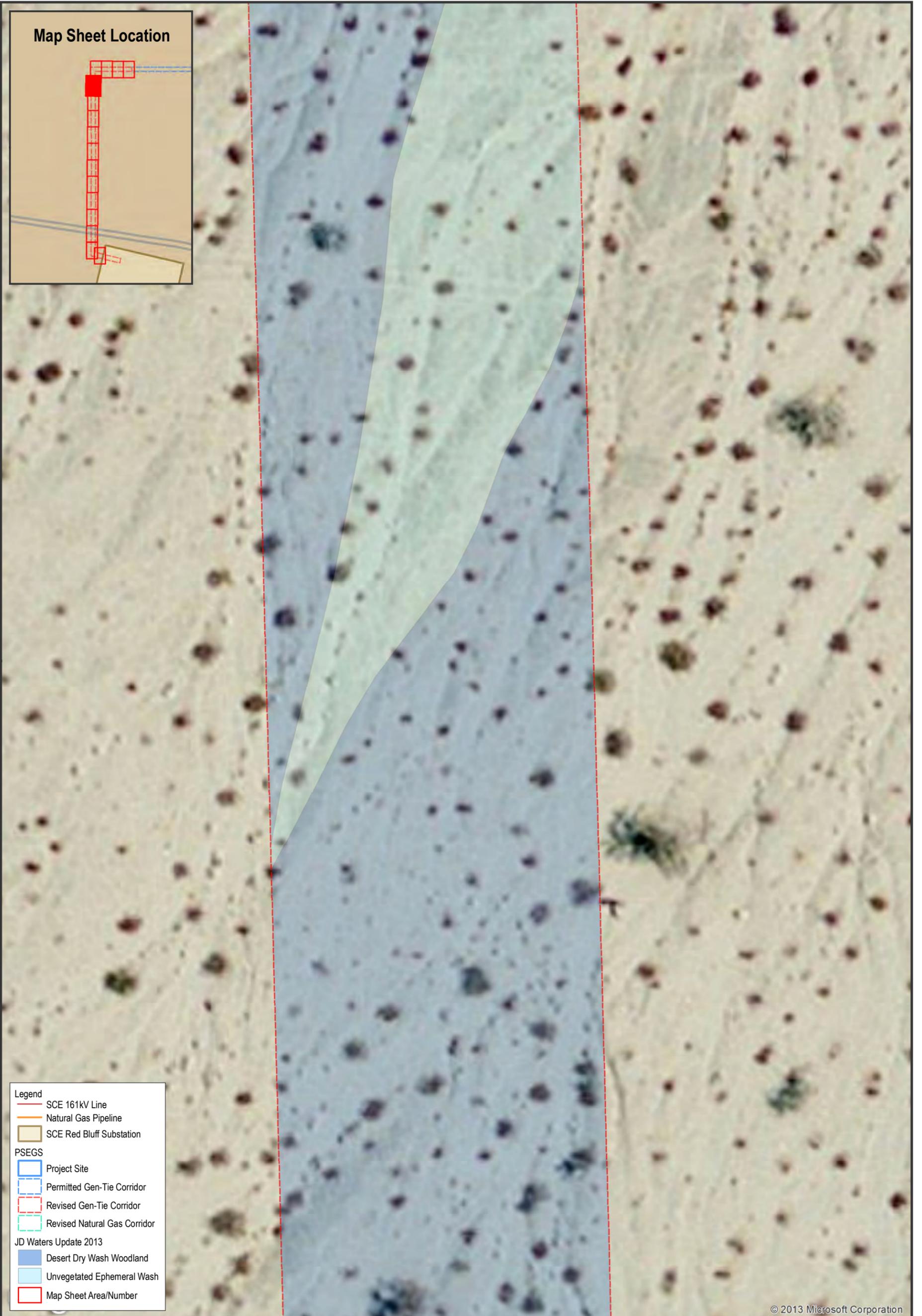
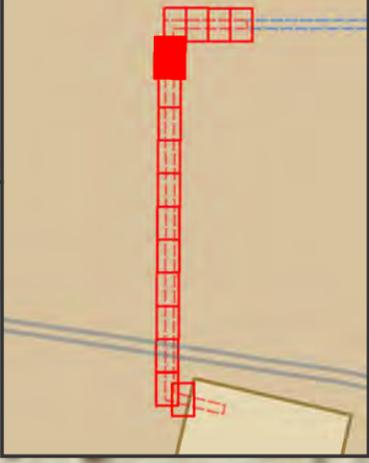


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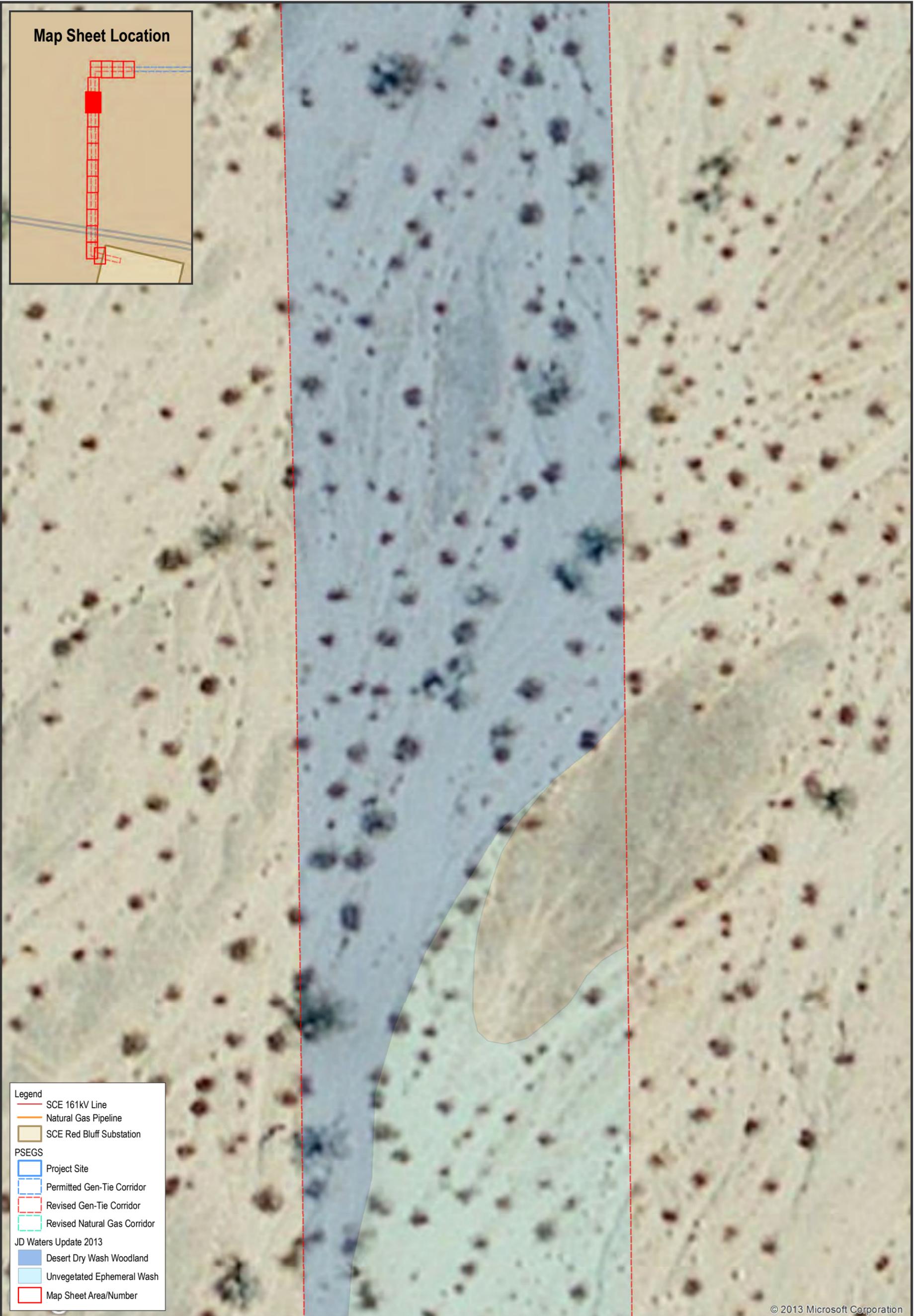
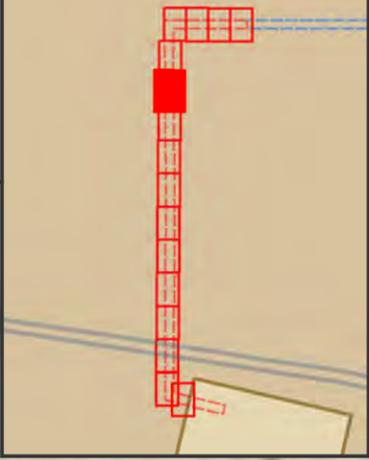


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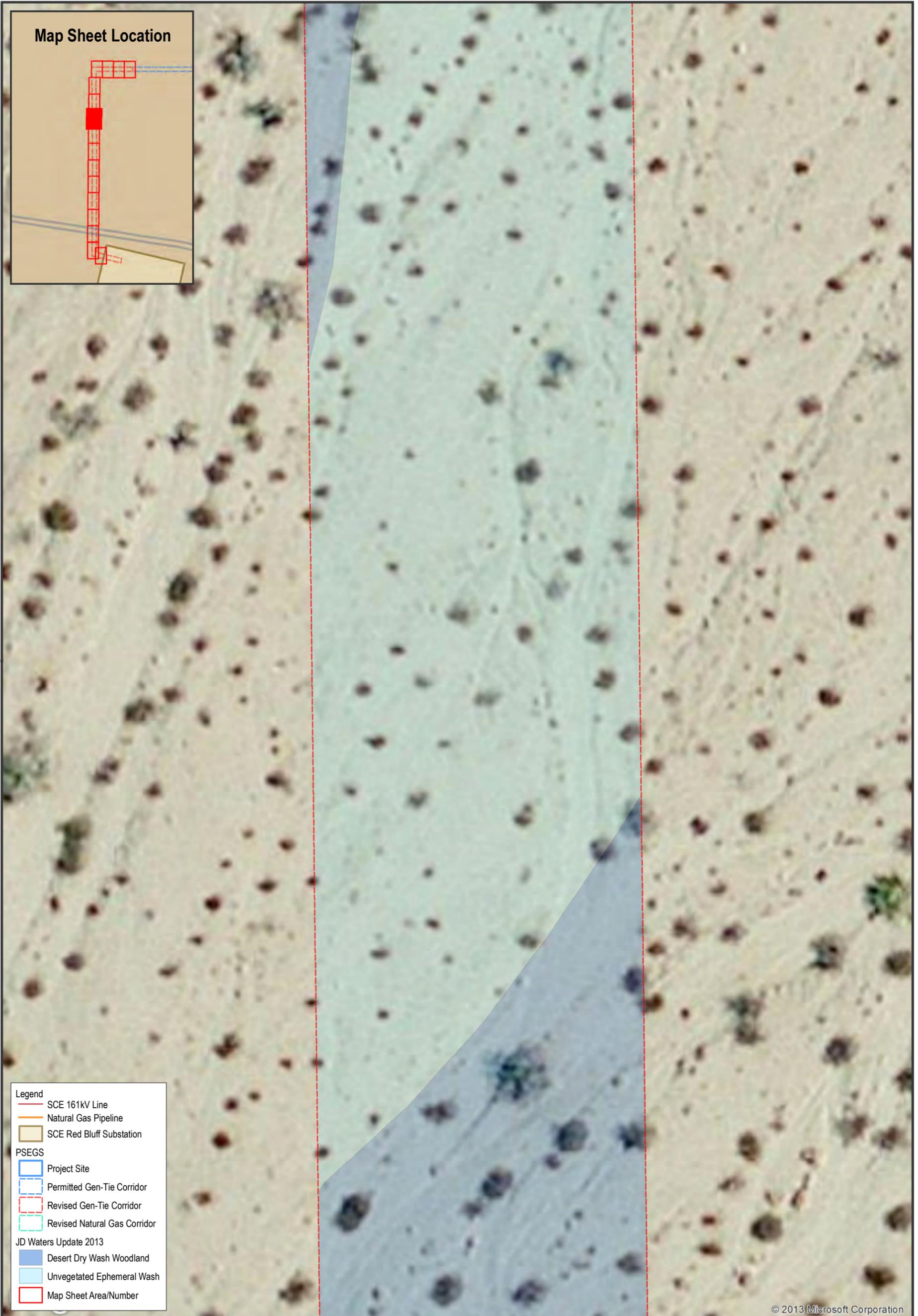
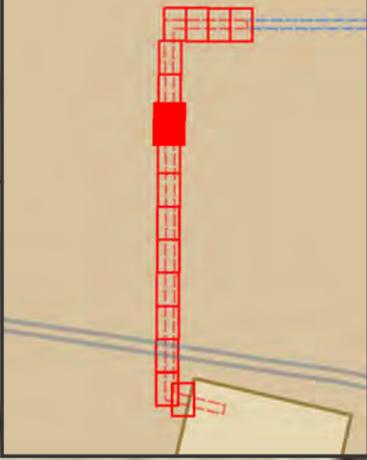
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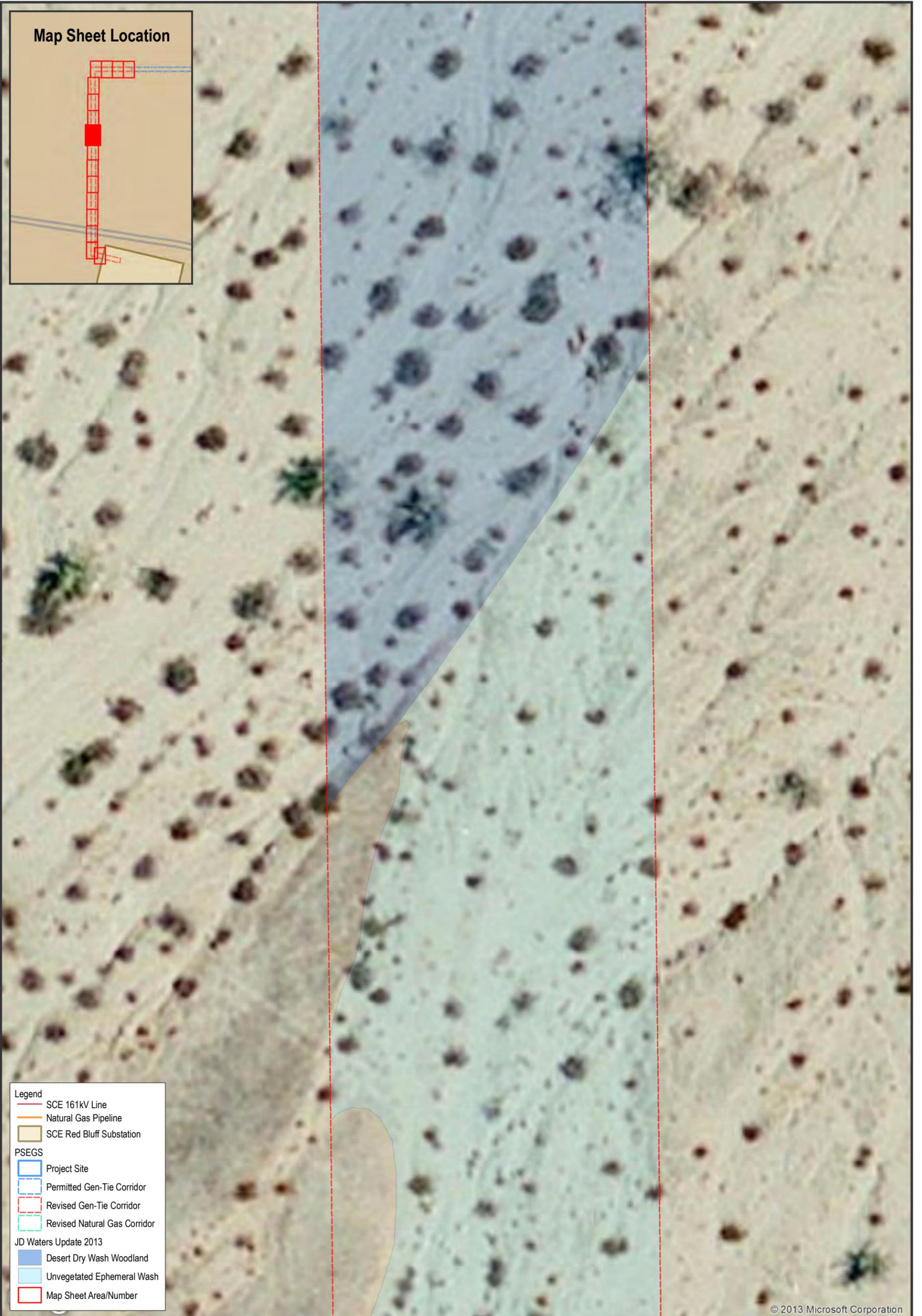
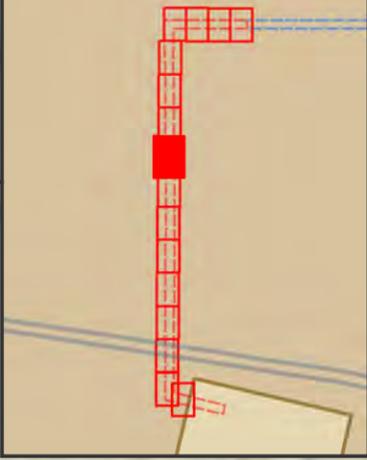
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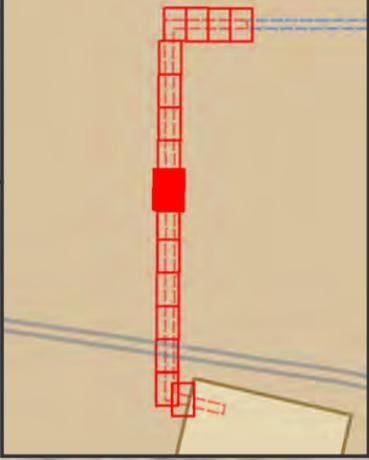
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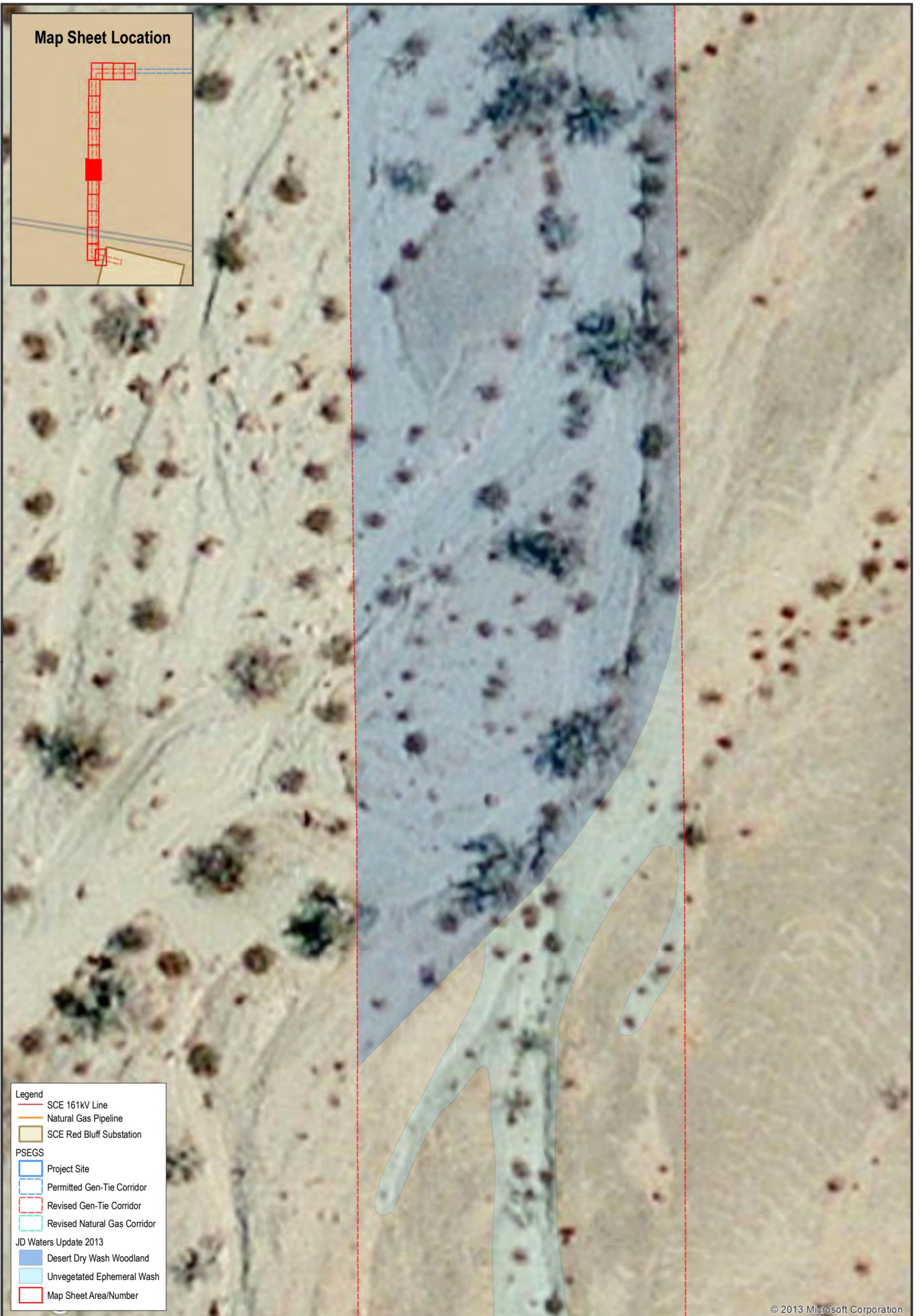
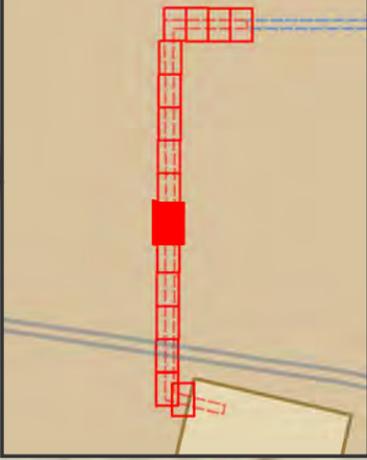
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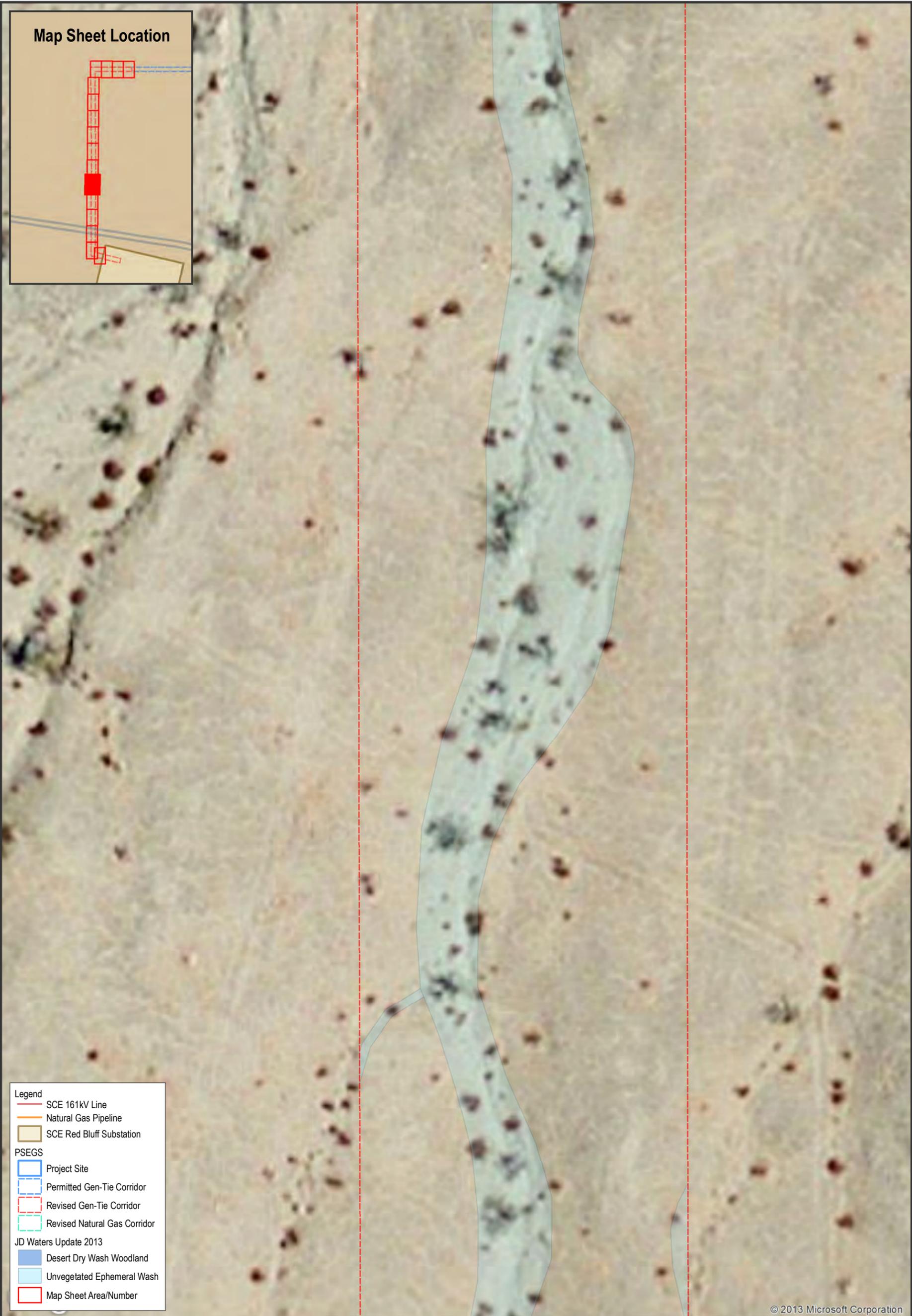
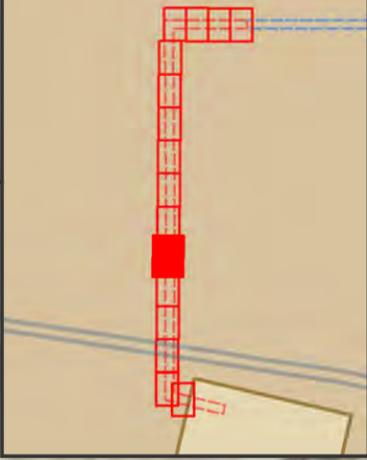
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Project:	Palen Solar	
Date:	Jun 03, 2013	Figure No: 2.1-10
Revision:	C-1000	
Prepared By:	NS	

Map Sheet Location



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
 - SCE Red Bluff Substation
- PSEGS**
- Project Site
 - Permitted Gen-Tie Corridor
 - Revised Gen-Tie Corridor
 - Revised Natural Gas Corridor
- JD Waters Update 2013**
- Desert Dry Wash Woodland
 - Unvegetated Ephemeral Wash
 - Map Sheet Area/Number

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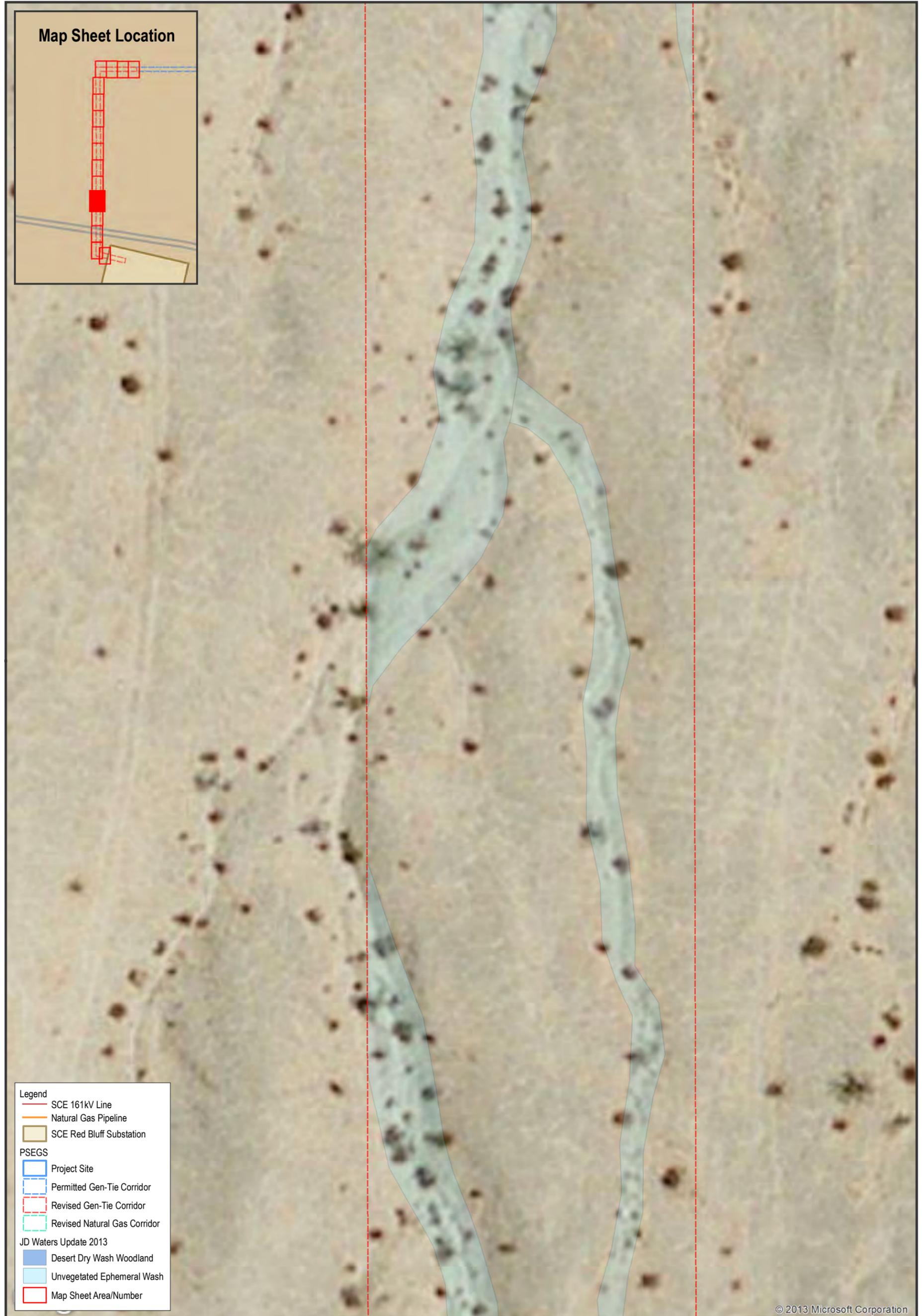
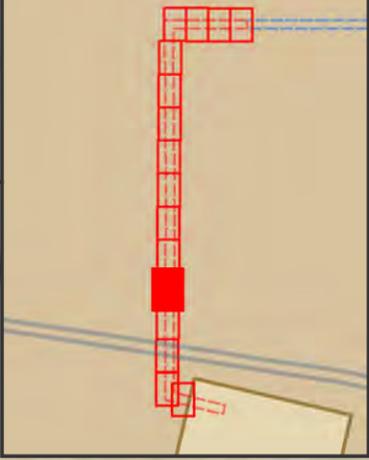
Scale: 1:400



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Project:	Palen Solar	Figure No: 2.1-11
Date:	Jun 03, 2013	
Revision:	C-1000	
Prepared By:	NS	

Map Sheet Location



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
 - SCE Red Bluff Substation
- PSEGS**
- Project Site
 - Permitted Gen-Tie Corridor
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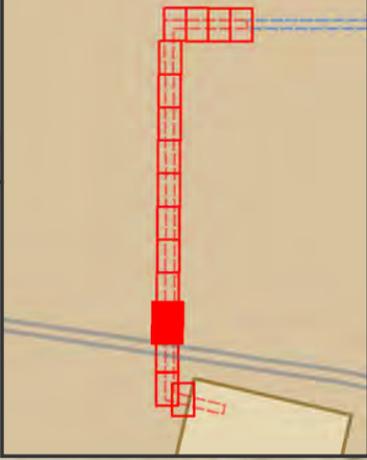
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0 25 50 Feet

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Project:	Palen Solar	Figure No: 2.1-12
Date:	Jun 03, 2013	
Revision:	C-1000	
Prepared By:	NS	

Map Sheet Location



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
 - SCE Red Bluff Substation
- PSEGS**
- Project Site
 - Permitted Gen-Tie Corridor
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- Desert Dry Wash Woodland
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Project:	Palen Solar	Figure No: 2.1-13
Date:	Jun 03, 2013	
Revision:	C-1000	
Prepared By:	NS	



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
 - SCE Red Bluff Substation
- PSEGS**
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 - Permitted Gen-Tie Corridor
 - Revised Gen-Tie Corridor
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- Desert Dry Wash Woodland
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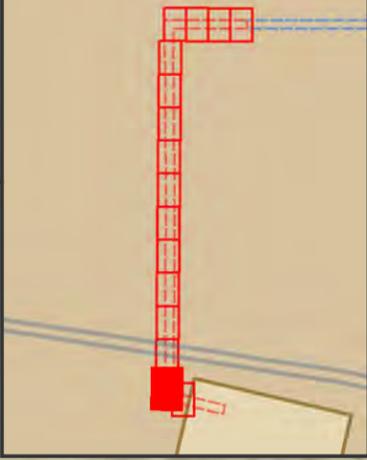


Scale: 1:400
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Project:	Palen Solar	
Date:	Jun 03, 2013	Figure No: 2.1-14
Revision:	C-1000	
Prepared By:	NS	

Map Sheet Location



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
 - SCE Red Bluff Substation
- PSEGS**
- Project Site
 - Permitted Gen-Tie Corridor
 - Revised Gen-Tie Corridor
 - Revised Natural Gas Corridor
- JD Waters Update 2013**
- Desert Dry Wash Woodland
 - Unvegetated Ephemeral Wash
 - Map Sheet Area/Number

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Project:	Palen Solar	Figure No: 2.1-15
Date:	Jun 03, 2013	
Revision:	C-1000	
Prepared By:	NS	



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Project:	Palen Solar	Figure No: 2.1-16
Date:	Jun 03, 2013	
Revision:	C-1000	
Prepared By:	NS	

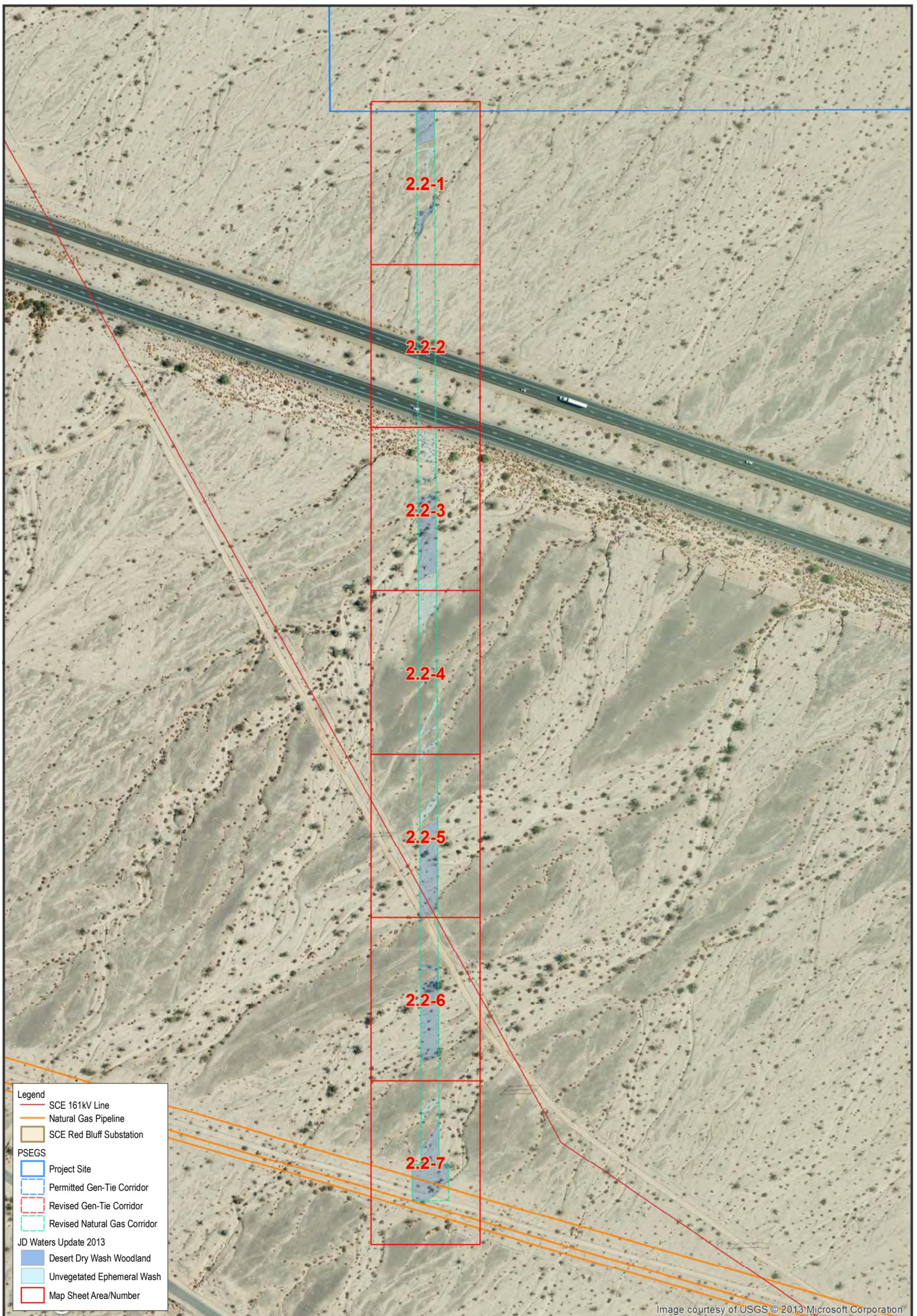


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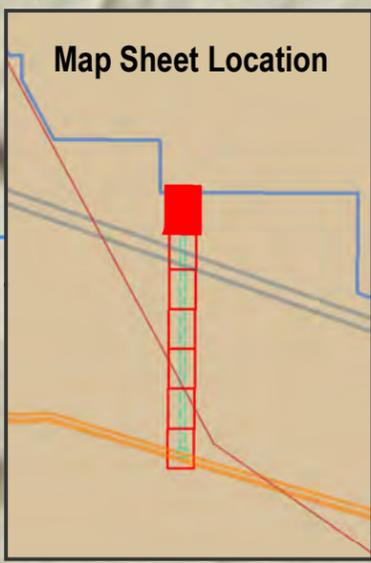


Scale: 1:3,000

0 190 380 Feet

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no representation is made concerning the accuracy of the data.

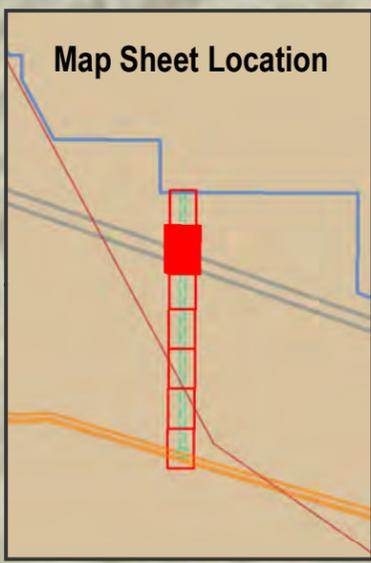
Project:	Palen Solar	Figure No: 2.2
Date:	Jun 03, 2013	
Revision:	C-1000	
Prepared By:	NS	



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
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- PSEGS**
- Project Site
 - Permitted Gen-Tie Corridor
 - Revised Gen-Tie Corridor
 - Revised Natural Gas Corridor
- JD Waters Update 2013**
- Desert Dry Wash Woodland
 - Unvegetated Ephemeral Wash
 - Map Sheet Area/Number

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	 <p>Scale: 1:400 0 25 50 Feet Scale correct when printed at 11x17 This map is for planning purposes only. The information herein was compiled from multiple sources and is considered to be reliable, however no representation is made concerning the accuracy of the data.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Project:</td> <td>Palen Solar</td> <td rowspan="3" style="text-align: center; vertical-align: middle;">Figure No: 2.2-1</td> </tr> <tr> <td>Date:</td> <td>Jun 03, 2013</td> </tr> <tr> <td>Revision:</td> <td>C-1000</td> </tr> <tr> <td>Prepared By:</td> <td>NS</td> <td></td> </tr> </table>	Project:	Palen Solar	Figure No: 2.2-1	Date:	Jun 03, 2013	Revision:	C-1000	Prepared By:	NS
Project:	Palen Solar	Figure No: 2.2-1									
Date:	Jun 03, 2013										
Revision:	C-1000										
Prepared By:	NS										



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
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- Project Site
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 - Revised Gen-Tie Corridor
 - Revised Natural Gas Corridor
- JD Waters Update 2013**
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Scale: 1:400

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Project:	Palen Solar	Figure No: 2.2-2
Date:	Jun 03, 2013	
Revision:	C-1000	
Prepared By:	NS	



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
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 - Revised Natural Gas Corridor
- JD Waters Update 2013**
- Desert Dry Wash Woodland
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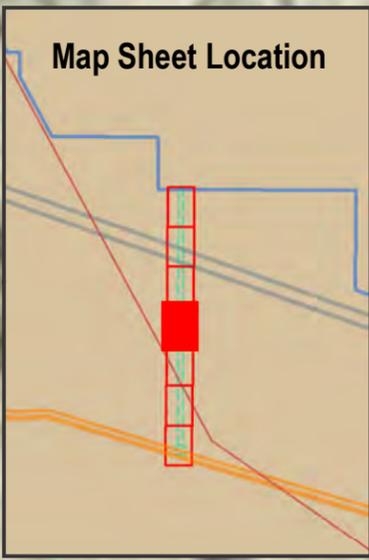
2013 State Jurisdictional Waters Update of PSEGS Modified Linears



Scale: 1:400
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Project:	Palen Solar	
Date:	Jun 03, 2013	Figure No: 2.2-3
Revision:	C-1000	
Prepared By:	NS	



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
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- PSEGS**
- Project Site
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 - Revised Gen-Tie Corridor
 - Revised Natural Gas Corridor
- JD Waters Update 2013**
- Desert Dry Wash Woodland
 - Unvegetated Ephemeral Wash
 - Map Sheet Area/Number

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	 <p>Scale: 1:400</p>  <p>Scale correct when printed at 11x17 This map is for planning purposes only. The information herein was compiled from multiple sources and is considered to be reliable, however no representation is made concerning the accuracy of the data.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Project:</td> <td colspan="2">Palen Solar</td> </tr> <tr> <td>Date:</td> <td>Jun 03, 2013</td> <td rowspan="2" style="text-align: center; vertical-align: middle;">Figure No: 2.2-4</td> </tr> <tr> <td>Revision:</td> <td>C-1000</td> </tr> <tr> <td>Prepared By:</td> <td colspan="2">NS</td> </tr> </table>	Project:	Palen Solar		Date:	Jun 03, 2013	Figure No: 2.2-4	Revision:	C-1000	Prepared By:	NS
Project:	Palen Solar											
Date:	Jun 03, 2013	Figure No: 2.2-4										
Revision:	C-1000											
Prepared By:	NS											



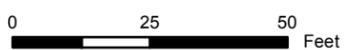
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Project:	Palen Solar	
Date:	Jun 03, 2013	Figure No: 2.2-5
Revision:	C-1000	
Prepared By:	NS	



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
 - SCE Red Bluff Substation
- PSEGS**
- Project Site
 - Permitted Gen-Tie Corridor
 - Revised Gen-Tie Corridor
 - Revised Natural Gas Corridor
- JD Waters Update 2013**
- Desert Dry Wash Woodland
 - Unvegetated Ephemeral Wash
 - Map Sheet Area/Number

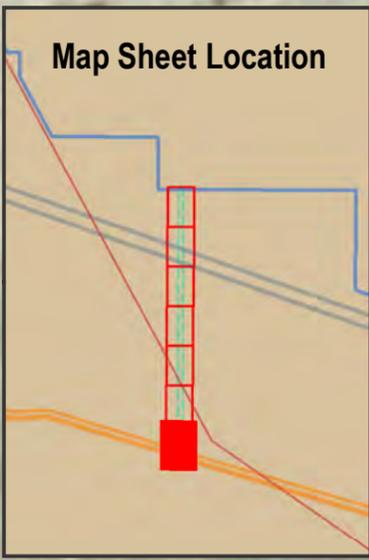
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	Project:	Palen Solar	Figure No: 2.2-6
	Date:	Jun 03, 2013	
Revision:	C-1000		
Prepared By:	NS		



- Legend**
- SCE 161kV Line
 - Natural Gas Pipeline
 - SCE Red Bluff Substation
- PSEGS**
- Project Site
 - Permitted Gen-Tie Corridor
 - Revised Gen-Tie Corridor
 - Revised Natural Gas Corridor
- JD Waters Update 2013**
- Desert Dry Wash Woodland
 - Unvegetated Ephemeral Wash
 - Map Sheet Area/Number

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	 <p>Scale: 1:400 0 25 50 Feet</p> <p><small>Scale correct when printed at 11x17 This map is for planning purposes only. The information herein was compiled from multiple sources and is considered to be reliable, however no representation is made concerning the accuracy of the data.</small></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Project:</td> <td>Palen Solar</td> </tr> <tr> <td>Date:</td> <td>Jun 03, 2013</td> </tr> <tr> <td>Revision:</td> <td>C-1000</td> </tr> <tr> <td>Prepared By:</td> <td>NS</td> </tr> </table>	Project:	Palen Solar	Date:	Jun 03, 2013	Revision:	C-1000	Prepared By:	NS
Project:	Palen Solar									
Date:	Jun 03, 2013									
Revision:	C-1000									
Prepared By:	NS									

Photographs

Representative Photographs of the Channel Types at PSEGS

Primary Channels:



Photograph 1. A primary channel and DDWW. This channel is several meters deep, is a main tributary, and has multiple wash-dependent tree and shrub species.



Photograph 2. Another example of a primary wash and DDWW at PSEGS. This channel has a distinct bed and bank, even though shallow, two wash-dependent species and is dominated by a riparian tree species (*Olneya tesota*).

Secondary Channels:



Photograph 3. Small, shallowly incised wash dominated by upland vegetation, but ironwood trees, albeit stunted, are common. This wash was categorized as DDWW because of the number of trees, although it is of marginal quality.



Photograph 4. Very shallow wash dominated by upland shrubs. This wash is not DDWW at this point.. Upslope, this wash diminished completely (discontinuous channel). Downslope it ultimately became more defined and ironwood became common (DDWW downslope).

Sheet Flood:



Photograph 5. DDWW sheet flood. This is a matrix of braided discontinuous and single-thread channels, some of which are secondary and primary channels. Note the scattered ironwood trees and the gravel rills that indicate water flow.



Photograph 6. DDWW sheet flood on the gas pipeline ROW, north of I-10. Note the many dead and dying ironwood trees resulting from the severing of this sheet flow by the freeway.



Photograph 7. Sheet flood with only upland species. This sheet has unvegetated ephemeral washes, discontinuous channels and gravel rills indicating water flow throughout the sheet matrix.

Unvegetated Ephemeral Wash:



Photograph 8. A U_H channel, with high density of shrubs, all upland species. This channel began as a swale upslope on the desert pavement. Note the secondary wash in the right side of the photograph.



Photograph 9. A U_L channel, with low density of shrubs, all upland species. This is a discontinuous channel.

Attachment 1

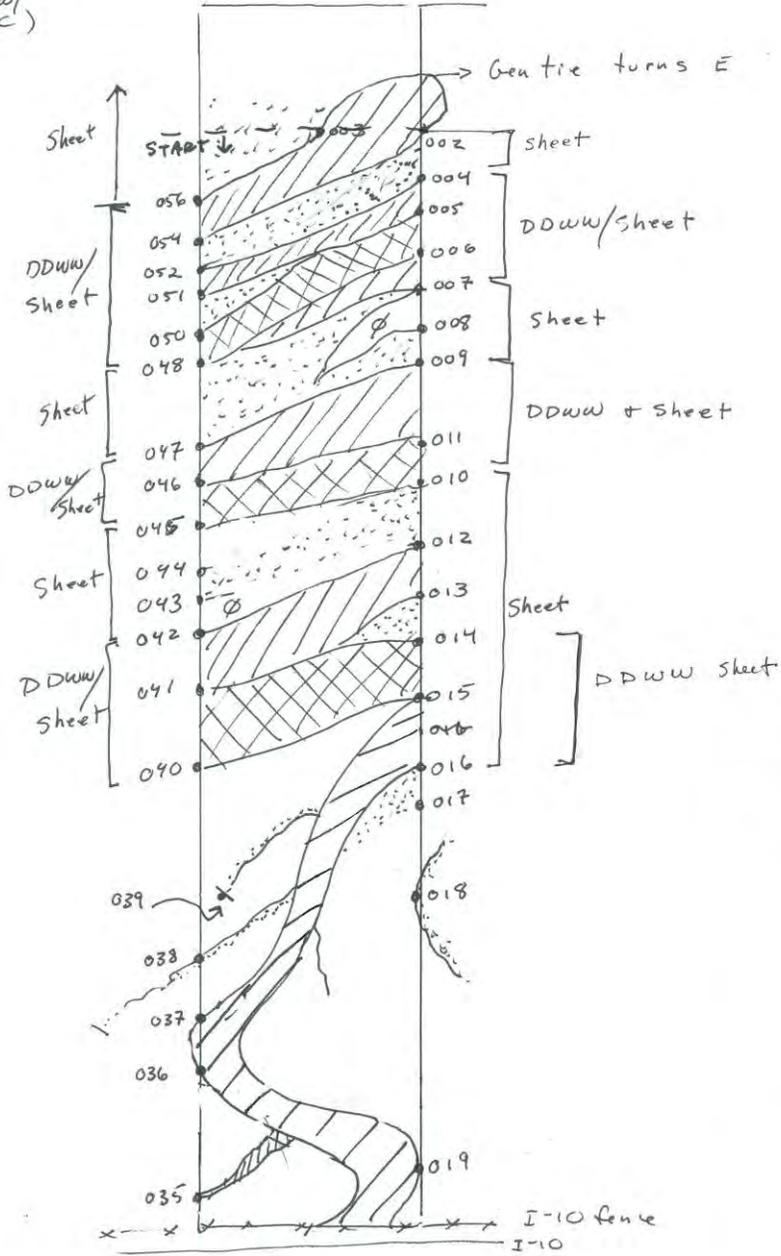
Field Data Sheets: 2013 State Waters Assessment on the PSEGS Modified Linear Facilities

DATE 24 April 2013

LOCATION IN SITE Gen tie N of I-10 (N-S portion)

LEGEND:

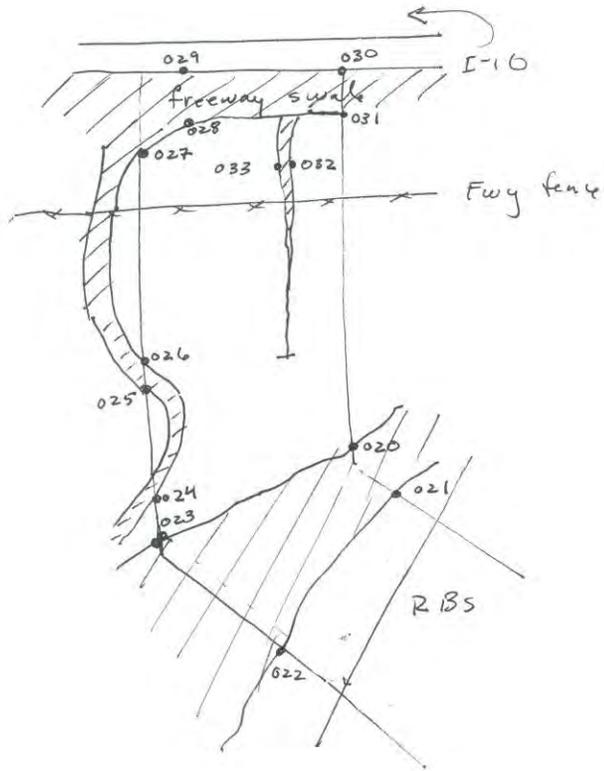
-  - U_L
-  - 2° (usually w/ U_L + DC)
-  - 1°



DATE 24 April 2013

LOCATION IN SITE Gen tie So of I-10

LEGEND:



Date: 24 April 2013
 Project Part: Gentle, N-S portion

Project: Palen SEGS

Page 3/11

Waypoint I.D.	UTMs		Type	Channel Depth (cm)	Substrate	Tree/Shrub Layer Vegetation			Tree/Shrub Height	Other Observations
	Easting	Northing				Dominants	Common	Occasional		
002	0655971	3731871	2° w/ UL + DC	4-8	Coarse sand	LATR AMDU	OLTE		OLTE - 18-25'	
003	0655952	3731779								
004	0655972	3731781	2° w/ UL + DC	8	Coarse sand	LATR AMDU	OLTE		OLTE - 25-30'	
005	0655977	3731663		9						
005	"	"	1°	9	Coarse sand	LATR AMDU	OLTE		OLTE - 25-30'	
006	0655975	3731629								
006	"	"	2° w/ UL + DC	8-9	Sand + light gravel	LATR AMDU	OLTE		OLTE - 22'	
007	0655978	3731517								
008	0655979	3731492	UL (mostly)	7-8	Sand gravel rills	LATR AMDU				
009	0655981	3731369								
009	"	"	2° w/UL + DC + small 1° washes	9-10	Sand, gravel rills	LATR AMDU	HYSA OLTE		OLTE - 20-22'	
011	0655982	3731308								
011	"	"	2°	9-10	Sand gravel rills	LATR AMDU	OLTE		OLTE - 20-25'	
010	0655984	3731287								
010	"	"	UL	7		LATR AMDU				Shrubs are small + sparse
012	0655984	3731222								
012	"	"	2°	16	Coarse sand	LATR AMDU	OLTE		OLTE - <20'	
013	0655988	3731219								
013	"	"	UL	7	Coarse sand	LATR AMDU				sparse shrubs
014	0655985	3731102								
014	"	"	1°	52-60	Sand w/scatt. cobbles + gravel	OLTE HYSA	LATR AMDU		OLTE - 20-25'	
015	0655988	3731104								
015	"	"	2°	7	Sand	LATR AMDU	OLTE		OLTE 9-10'	~280 cm wide
016	0655990	3730963								
016	"	"	UL	7	Sand	LATR AMDU				sparse
017	0655991	3730946								
018	0655992	3730788	UL	19	Sand + gravel	LATR		OLTE (downy)	OLTE - 515'	1.5 m wide channel, barely touches ROW
019	0655993	3730508	2° + UL	110	Sand + gravel	LATR	AMDU			Near I-10 only is LATR/AMDU. Downslope are small OLTE; 6m wide
020	0655993	3730277								
020	"	"	1°	6-7m	Gravel + cobbles over sand	CEFL ACGR	OLTE HYSA			
021	0656019	3730270								
022	0655991	3730239								Same wash as 020 → 021 but other side of ROW
023	0655962	3730254								

So side of I-10

Date: 29 April 2013
 Project Part: Beattie, N-S portion

Project: Palen SEGS

Page 1/4

Waypoint I.D.	UTMs		Type	Channel Depth (cm)	Substrate	Tree/Shrub Layer Vegetation			Tree/Shrub Height	Other Observations		
	Easting	Northing				Dominants	Common	Occasional				
024	0655970	3730303	2°	3	coarse sand	LATR	KZER		OLTE - 9-12'	Wash is 4m wide		
025	0655964	3730346						OLTE				
026	0655964	3730353				All is same wash						
027	0655969	3730393	1°		30% cobbles and gravel over sand; occ. small boulders	CEFL	OLTE		CEFL - 20-25'	This is the freeway swale		
028	0655976	3730418						LATR	HYSA			
029	0655972	3730405										
030	0656001	3730415									OLTE - 15-20'	
031	0655999	3730397	2°		Sand & gravel	LATR	HYSA		Trees <10'	Ends upslope, in ROW		
032	0655999	3730385						CEFL				
033	0655985	3730395				OLTE						
035	0655960	3730545	2° + DC	3	sand + gravel	LATR			OLTE - 5-9'	< 1m wide		
036	0655957	3730646	2°	<1m	sand gravel	LATR	OLTE	OLTE	OLTE - <10'	Same as wash w/ WPT19		
037	0655976	3730713					AMDU					
038	0655953	3730787	UL	3	sand	LATR	AMDU	KZER	HYSA	Ends off ROW to W; 1m wide		
039	0655958	3730906	UL	7			AMDU			90 cm wide. AMDU is sparse		
040	0655951	3730920	1°							See 014-015 main wash		
041	0655951	3731074										
042	0655947	3731157	2°							See 012-013		
043	0655947	3731194	UL	3-6	Sand	LATR						
044	0655945	3731202										
045	0655945	3731229	2°							See 010-011		
046	0655948	3731281										
047	0655943	3731324	UL							See 008-009		
048	0655942	3731407										
050	0655940	3731507	UL	4-6	Sand	LATR						
051	0655942	3731547										
052	0655941	3731572	UL + DC							See 004-005		
054	0655941	3731640										
056	0655937	3731744	2°							See 002-003		

South of I-10

West side of ROW

delete 49

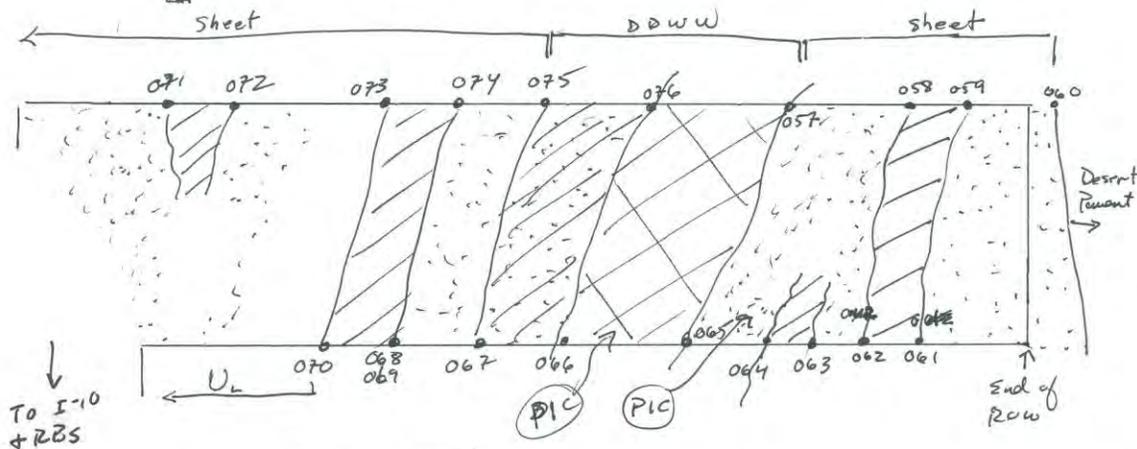
note - no 053 deleted
 Note: no 055

DATE 24 April 2013

LOCATION IN SITE Gen tie Na of I-10; E-W portion

LEGEND:

-  - Desert pavement U_L
-  - 2° wash
-  - 1° and 2° washes



Descriptions mainly disc. channels (DC)

057 = U_L sheet. Depth: 4-10cm Floor - Coarse sand
 ↓ LATR w/ ENFA, AMDU, H4SA; rare OLTE w/ rilled gravels

058-059 = 2° channel. Floor - Coarse sand w/ some rilled gravel
 LATR w/ OLTE (OLTE → 18')

059-060 = U_L sheet

061-062 = 2° channel (see 058 → 059)

062-063 = U_L sheet (see 057 → 058)

063-064 = 2° channel; H4SA codom, OLTE snaps
 * Photo NOTE - Most of the trees are upslope in better 2° channels

064-065 = U_L sheet (see 057 → 058)

065-066 = 1° + 2° washes coalesce into a 1° wash; broadly mixed distinct washes
 * Photo Note - Pic says 2° but it's 1° here. Sandy.

066-067 = Many fewer trees than to east and washes are poorly defined; much disc. channels w/ trees not in channels. Runnels are sandy, to 4cm deep, < 1 to 3m wide.
 LATR w/ AMDU; scattered OLTE (25-30' tall)

067-069 = U_L sheet

069-070 = 2° channel (see 061-062)

070 - west end = U_L sheet

071-072 = 2° channel, narrow. Floor - Sand w/ rilled gravel. LATR w/ AMDU + H4SA; occa. OLTE (→ 25-30' tall)

UTMS

057	0656154	3731821
058	0656239	3731824
059	0656256	3731819
060	0656294	3731828
061	0656233	3731788
062	0656217	3731788
063	0656194	3731789
064	0656178	3731789
065	0656150	3731790
066	0656104	3731787
067	0656071	3731786
068 (069)	0656022	3731788
(069)	0656019	3731786
070	0655999	3731785
071	0655956	3731819
072	0655975	3731817
073	06556013	3731820
074	0656037	3731820
075	0656068	3731823
076	0656126	3731824

DATE 30 April 2013

LOCATION IN SITE Gas Line - So of I-10

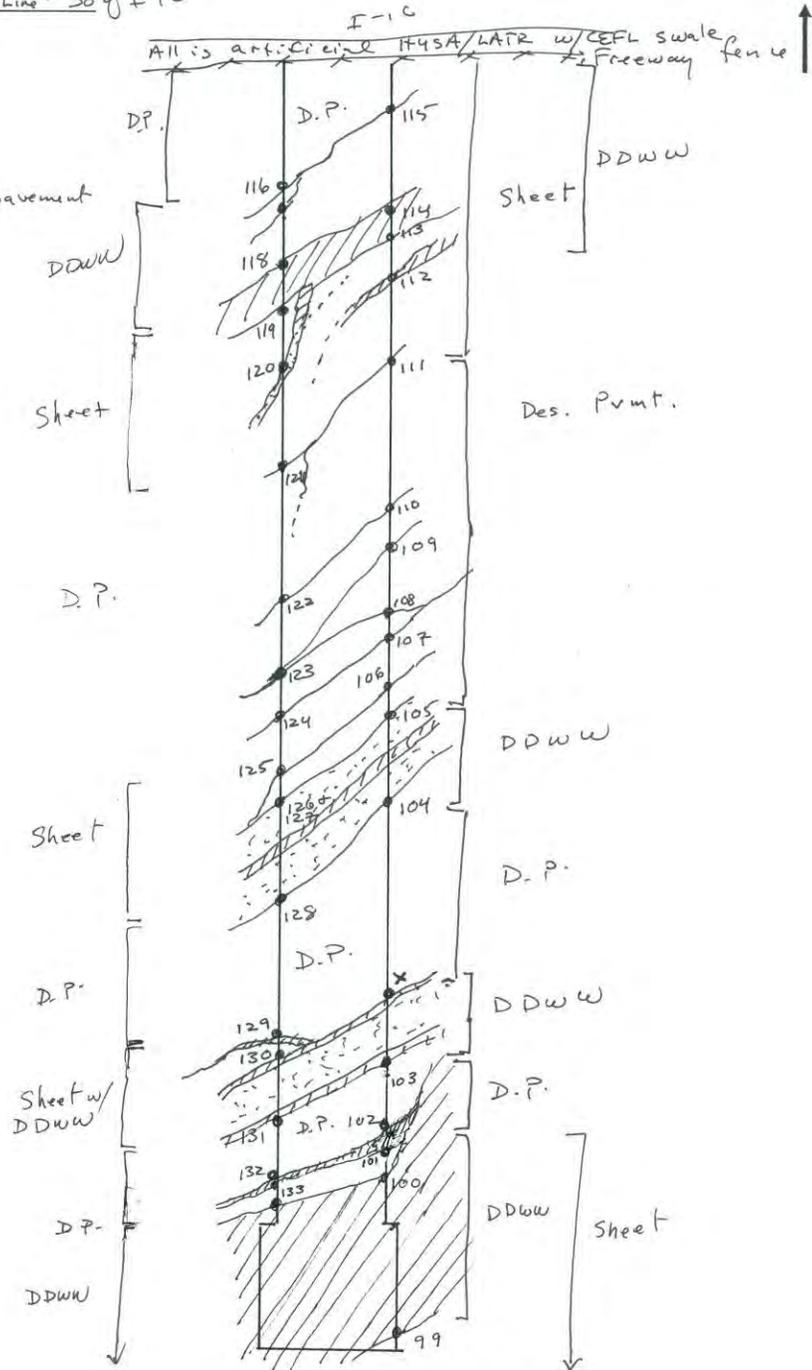
LEGEND:

UL

2°

1°

DP = Desert pavement



Date: 30 April 2013
 Project Part: Gas Line - S. of F-10

Project: Palen SEGS

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Waypoint I.D.	UTMs		Type	Channel Depth	Substrate	Tree/Shrub Layer Vegetation			Tree/Shrub Height	Other Observations
	Easting	Northing				Dominants	Common	Occasional		
99	0664968	3726941	2°, but large wash	1m	Sandy w/ gravel bars	OLTE			OLTE - →25'	
100	0664961	3726941	2°			LATR				
101	0664962	3726907	2°	2m	Sandy	LATR		OLTE	OLTE - ≤10'	Meets main channel (99-100) 4m floor (wide) 11m top edge's
102	0664962	3727016	2°							
103	0664966	3727057	Densely filled sheet, all DC and UL exc. both edges are distinct channels		Sandy filled gravels	LATR		AMDU		Sparse LATR (L & C) 2m
X	0664951	3727123	The 2 channels in this sheet (103→X)	2°	Sand w/ gravel & cobbles	OLTE			OLTE - 25-30' LATR 4m	Floors are 0.5-3m wide
104	0664968	3727194	UL + DC w/ 2° channels Same as 103 -			LATR				
105	0664962	3727254	X above w/ 1 main channel			LATR		AMDU		Sparse
			The main channel in 104→105	2°	0.4m	LATR			OLTE - 25-30'	
106	0664959	3727271	2°	4-30 cm	Sandy	LATR		OLTE	OLTE - ≤10'	
107	0664959	3727314	2°	4-30 cm	Sandy	LATR		OLTE	OLTE - ≤10'	
108	0664957	3727325	UL	3cm	Sandy	LATR		OLTE (upslope)	stunted	UL downslope (more LATR) Floor - 1.2 m wide
109	0664955	3727312	UL	3 cm	Sand	LATR		OLTE upslope	stunted	UL downslope (more LATR) Floor - 1.2 m wide
110	0664958	3727300	UL (DC upslope)	4-20 cm	Gravel over sand	LATR				UL downslope (LATR) Floor - 40 cm wide
111	0664954	3727420	Sheet - many DC + UL							
113	0664959	3727420	DC + UL							
112	0664954	3727460	2°	0.4-0.6	sand, gravel	OLTE + LATR			OLTE are small	Floor - 1 m wide
113	see above		1°	0.6	sand	OLTE	LATR	AMDU	OLTE - 30'	3m wide (floor)
114	0664955	3727501						H45A		
115	0664953	3727519	2°	1-1.8m	Sandy w/ gravel	OLTE	LATR	ACGR (rare)	OLTE - 10-15' + scrubby	Floor - 1 m wide Channel - 4 m wide
116	0664938	3727515	See	115						Connects to waypt 115
117	0664940	3727504	2°	30cm	sand w/ gravel	LATR		OLTE	OLTE scrubby	Connects to 116 → 115 wash
118	0664940	3727487								Connects to 113 → 114
119	0664940	3727478								

E side of Row

Row E side ↑ W side ↓

Date: 30 April 2013
 Project Part: Gas Line - So. of I-10

Project: Palen SEGS

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Waypoint I.D.	UTMs		Type	Channel Depth	Substrate	Tree/Shrub Layer Vegetation			Tree/Shrub Height	Other Observations
	Easting	Northing				Dominants	Common	Occasional		
120	0664940	3727471	U _h	0.3m	sand	LATR				2° wash ~ 200m upslope, LATR's sparse
121	0664943	3727406	U _h ; edge of sheet	~30 cm	sand	LATR				Channel is is 4m wide Connects to 111 spans LATR
122	0664943	3727361	See	110						Connects to 110
123	0664943	3727319	See	108 + 109						Connects to 108 + 109
124	0664942	3727299	See	107						Connects to 107
125	0664943	3727251	See	106						Connects to 106
(127 =) 126	0664943	3727239	See	104 - 105						Same sheet wash as 104-105
128	0664942	3727163								
129	0664946	3727126	DC but ~ 2° runnel	2cm	sand	OLTE, LATR, AMDU		NYSA	OLTE - 10'	Flan is <1 → 2m wide
130	0664946	3727119	See	103	- X					Same sheet as 103 → X
131	0664946	3727043								
132	0664942	3727001	2° wash ind.p.	1.8m	sand	LATR	OLTE		OLTE - small <10'	Flan - 0.5m wide
133	0664949	3726973	2°	-	connects to	100				See 99-100

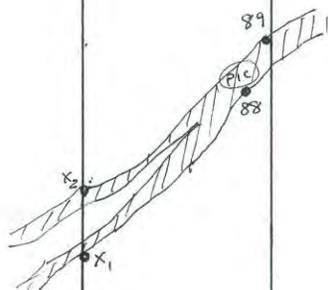
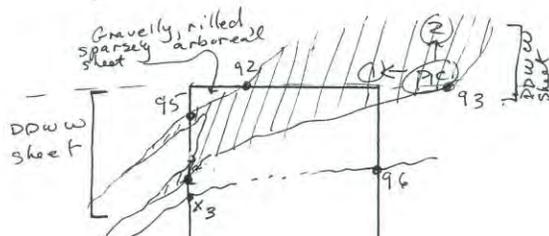
DATE 29 Apr 2013

LOCATION IN SITE Gas line No. of I-10

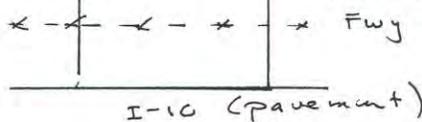
LEGEND:

Note See IT. date sheets for more photos

Main X Solar Site Boundary



← Old sheet thru well-developed, but highly disrupted (by runnels) d.p. Now inactive due to severing of flow by I-10. Very sparse WTR (<12 cont) and small (≤0.6m)





**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV**

**PALEN SOLAR ELECTRIC
GENERATING SYSTEM AMENDMENT**

**Docket No. 09-AFC-7C
PROOF OF SERVICE
(Revised 05/23/2013)**

SERVICE LIST:

APPLICANT

Palen Solar Holdings, LLC
Clay Jensen
410 South Rampart Blvd., Suite 390
Las Vegas, NV 89145
cjensen@brightsourceenergy.com

Palen Solar Holdings, LLC
Charlie Turlinski
1999 Harrison Street, Suite 2150
Oakland, CA 94612
cturlinski@brightsourceenergy.com

Palen Solar Holdings, LLC
*Amanda McCoy
1999 Harrison Street, Suite 2150
Oakland, CA 94612
amccoy@brightsourceenergy.com

APPLICANT'S CONSULTANT

Centerline
Andrea Grenier
1420 E. Roseville Parkway
Suite 140-377
Roseville, CA 95661
andrea@agrenier.com

APPLICANT'S COUNSEL

Scott Galati, Esq.
Marie Fleming
Galati/Blek, LLP
455 Capitol Mall, Suite 350
Sacramento, CA 95814
sgalati@gb-llp.com
mfleming@gb-llp.com

INTERESTED AGENCY

California ISO
e-recipient@caiso.com

County of Riverside
Office of Riverside County Counsel
Tiffany North
3960 Orange Street, Suite 500
Riverside, CA 92501
tnorth@co.riverside.ca.us

INTERVENORS

Center for Biological Diversity
Lisa T. Belenky, Senior Attorney
351 California St., Suite 600
San Francisco, CA 94104
lbelenky@biologicaldiversity.org

Center for Biological Diversity
Ileene Anderson
Public Lands Desert Director
PMB 447, 8033 Sunset Boulevard
Los Angeles, CA 90046
ianderson@biologicaldiversity.org

Basin and Range Watch
Kevin Emmerich
Laura Cunningham
P.O. Box 153
Baker, CA 92309
atomictoadranch@netzero.net
bluerockiguana@hughes.net

Californians for Renewable Energy
Alfredo Acosta Figueroa
424 North Carlton Avenue
Blythe, CA 92225
lacunadeaztlan@aol.com

California Unions for Reliable Energy
Tanya A. Gulesserian
Elizabeth Klebaner
Adams Broadwell Joseph & Cardoza
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
tgulesserian@adamsbroadwell.com
eklebaner@adamsbroadwell.com

Hildeberto Sanchez, Eddie Simmons,
and Laborers' International Union of
North America, Local Union No. 1184
c/o Richard T. Drury
Christina M. Caro
Lozeau|Drury LLP
410 12th Street, Suite 250
Oakland, CA 94607
richard@lozeaudrury.com
christina@lozeaudrury.com

ENERGY COMMISSION STAFF

Christine Stora
Project Manager
christine.stora@energy.ca.gov

Jennifer Martin-Gallardo
Staff Counsel
jennifer.martin-gallardo@energy.ca.gov

**ENERGY COMMISSION –
PUBLIC ADVISER**

Blake Roberts
Assistant Public Adviser
publicadviser@energy.ca.gov

*Indicates change

COMMISSION DOCKET UNIT

California Energy Commission
Docket Unit
Attn: Docket No. 09-AFC-7C
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.ca.gov

**OTHER ENERGY COMMISSION
PARTICIPANTS (LISTED FOR
CONVENIENCE ONLY):**

*After docketing, the Docket Unit
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KAREN DOUGLAS
Commissioner and Presiding Member

DAVID HOCHSCHILD
Commissioner and Associate
Member

Kenneth Celli
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Galen Lemei
Adviser to Presiding Member

Jennifer Nelson
Adviser to Presiding Member

Gabe Taylor
Adviser to Associate Member

Eileen Allen
Commissioners' Technical
Adviser for Facility Siting

DECLARATION OF SERVICE

I, Marie Fleming, declare that on June 5, 2013, I served and filed copies of the attached PSEGS Summary of Survey for Jurisdictional State Waters, dated June 5, 2013. This document is accompanied by the most recent Proof of Service, which I copied from the web page for this project at: <http://www.energy.ca.gov/sitingcases/palen/compliance/>.

The document has been sent to the other persons on the Service List above in the following manner:

(Check one)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the U.S. mail with first class postage to those parties noted above as "hard copy required";
OR

Instead of e-mailing the document, I personally delivered it or deposited it in the U.S. mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: June 5, 2013



Marie Fleming