Pacific Gas and Electric Company

Topock Compressor Station
Soil Investigation Project

Partially Recirculated Draft EIR

SCH# 2012111079

Prepared for:
California Department of Toxic Substances Control

April 2015

Pacific Gas and Electric Company

Topock Compressor Station
Soil Investigation Project

Partially Recirculated Draft EIR

SCH# 2012111079

Prepared for:
California Department of Toxic Substances Control

April 2015

TABLE OF CONTENTS

PG&E Topock Compressor Station
Soil Investigation Project Partially Recirculated Draft EIR

Page

Figures

Tables

CHAPTER 1
Introduction

This document is a recirculated section of the Pacific Gas and Electric Company (PG&E) Topock Compressor Station Soil Investigation Project (Project) draft environmental impact report (DEIR) (herein referred to as the Partially Recirculated DEIR) (SCH No. 2012111079). As lead agency, the Department of Toxic Substances Control (DTSC) has exercised its discretion to afford trustee and responsible agencies, Native American Tribes, and the general public with an opportunity to review the additional information provided herein and gathered after circulation of the DEIR. Specifically, DTSC is recirculating the entire Biological Resources section of the DEIR to ensure meaningful opportunity for review and comment on the additional biological information to be included in the final environmental impact report (FEIR), and to ensure such input is incorporated into the decision-making process. Modifications to the Biological Resources section resulted primarily from new information and surveys related to several bat species, conducted, in part, in response to comments on the DEIR from the California Department of Fish and Wildlife (CDFW) and additional information discovered during the environmental impact report (EIR) process regarding Nelson's bighorn sheep.

1.1 Project Overview

Past activities at the Topock Compressor Station (Station) have resulted in the release of chemicals of potential concern (COPCs) into soil and groundwater. Under certain exposure conditions, these COPCs are harmful to human health and the environment. The primary and fundamental objective of the proposed Project is to gather sufficient soil samples to be able to reliably characterize the nature and extent of soil and sediment contamination within the Project Site.

The EIR addresses the potential environmental effects of actions associated with implementation of soil investigation activities in and around the Station as described in the *Soil Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Work Plan*, including the potential for bench scale tests, pilot studies, and geotechnical evaluations that may be needed to support a future *Soil Corrective Measures Study/Feasibility Study*, and potential plant or other biota sampling activities to support an ecological risk assessment. Bench scale tests and pilot studies, geotechnical evaluations, and plant and biota samples may be implemented after soil sampling analysis is completed to evaluate potential soil remedy options if remedial action is determined to be necessary.

1.2 Environmental Review

1.2.1 Background

The California Environmental Quality Act (CEQA) generally requires that before a lead public agency renders a discretionary approval of a project that may result in significant adverse environmental effects on the environment, an EIR must be prepared that identifies and fully considers the potentially significant adverse effects. The EIR is a public information document for use by governmental agencies and the public to identify and evaluate potential environmental consequences of a proposed project, to recommend mitigation measures to lessen or eliminate significant adverse impacts, and to examine feasible alternatives to the project. The information contained in the EIR is reviewed and considered by the governing agency prior to the ultimate decision to approve or modify the proposed project.

On November 28, 2012, DTSC sent a Notice of Preparation (NOP) to responsible and trustee agencies, federal agencies, Native American Tribes, and interested members of the public. The purpose of the notice was to solicit information, guidance, and recommendations regarding the scope, focus, and content of the DEIR. The NOP public comment period concluded on January 14, 2013, providing a 45-day comment period. In response to a request for additional time, DTSC extended the comment period to January 18, 2013, yielding an ultimate comment period of 49 days.

Three public scoping meetings were held during the 49-day public comment period on the NOP. These meetings occurred on December 11, 12, and 13, 2012. In addition to the NOP scoping meetings, an extensive communication program was conducted with Native American Tribes that included formal meetings with Native American Tribal councils, informal meetings and field visits with cultural resources personnel and Native American Tribal representatives, and solicitation of written comments. Information obtained through the scoping meetings and the subsequent communication program was incorporated into the DEIR.

On July 7, 2014, DTSC released a DEIR for public review and comment on the proposed Soil Investigation Project. After specific requests were received from commenting parties, DTSC extended the mandated 45-day public review period from August 21, 2014, to September 5, 2014, for a total of 60 days.

Two public meetings were held during the public review period on the DEIR to provide an opportunity for public comment. These meetings took place on July 22, 2014, in Needles, California, and July 23, 2014, in Golden Shores, Arizona.

1.2.2 Recirculation of the Biological Resources Section of the DEIR

This document is a recirculated section of the Soil Investigation Project DEIR originally circulated in July 2014. As lead agency, the DTSC is exercising its discretion by affording agencies and the general public an opportunity to review additional information incorporated into

the DEIR subsequent to the original public review period. DTSC is recirculating the Biological Resources section of the DEIR to ensure agency and public input is incorporated into the decision-making process. The additional information and modifications to the Biological Resources section resulted primarily from a bat habitat assessment conducted in January 2015 which identified potential suitable roosting habitat for Townsend's big-eared bat, named by the California Fish and Game Commission as a candidate for protection as an endangered species under the state's Endangered Species Act (2013), and evidence of pallid bat and other bats designated as species of special concern within the Project Site. In addition, the occurrence of Nelson's bighorn sheep, a Fully Protected species under the state's Endangered Species Act, was also documented on the Project Site (2015). The recirculated Biological Resources section therefore evaluates the potential environmental impacts of the Project associated with bats and Nelson's bighorn sheep, and identifies feasible mitigation measures to ensure impacts would be mitigated to a less than significant level. Additional modifications to the Biological Resources section have been made in response to comments received on the DEIR through the public review process, including from CDFW.

Public notice and circulation of a Recirculated DEIR is subject to the same notice and consultation requirements that applied to the original DEIR, per CEQA Guidelines Sections 15086 and 15087. If the revision to the EIR is limited to a few chapters or portions of the EIR, the lead agency need only recirculate the chapters or portions that have been modified (CEQA Guidelines Section 15088.5(c)). Consistent with the CEQA Guidelines, since the incorporation of new additional substantive information is limited to the Biological Resources section of the DEIR, DTSC has elected to recirculate only that section. All revisions to the Biological Resources section are shown in strikeout (~~strikeout~~; for text deletions) and underline (<u>underline</u>; for text additions).

1.2.3 Public Review of the Partially Recirculated DEIR

Notice and the opportunity for consultation regarding the information contained within this Partially Recirculated DEIR section is being provided pursuant to Public Resources Code Sections 21092.1 and 21092, and CEQA Guidelines Sections 15088.5(d), 15087, and 15086. In accordance with CEQA Guidelines Section 15088.5(f)(2), DTSC requests that reviewers limit the scope of their comments to those portions of the recirculated Biological Resources section shown in strikeout and underline. In addition to providing responses to comments previously received on the DEIR in the FEIR, DTSC intends to respond only to new comments raised in response to the new additional information provided in this Recirculated DEIR section. Commenters are therefore encouraged to limit their comments accordingly.

This recirculated section of the DEIR, as well as the original DEIR (July 2014) and all appendices, supporting materials and references, can be found at the Project websites (www.dtsc-topock.com and www.dtsc.ca.gov) and the following locations:

Needles Branch Library
1111 Bailey Avenue
Needles, CA 92363

Colorado River Indian Tribes Library
Second Avenue and Mohave Road
Parker, AZ 85344

Chemehuevi Indian Reservation Environmental Protection Office
2000 Chemehuevi Trail
Havasu Lake, CA 92363

Parker Public Library
1001 Navajo Avenue
Parker, AZ 85344

Golden Shores/Topock Station Library
13136 South Golden Shores Parkway
Topock, AZ 86436

Lake Havasu City Library
1770 McCulloch Boulevard
Lake Havasu City, AZ 86403

California Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630

Please submit your written comments on the recirculated Biological Resources section of the DEIR, with the subject line "Topock Recirculated DEIR Comments," postmarked or emailed no later than June 1, 2015, to:

Aaron Yue
Project Manager
California Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630
aaron.yue@dtsc.ca.gov
Phone: 714-484-5439
Fax No.: 714-484-5329

1.3 Organization and Content of the Partially Recirculated DEIR

This Partially Recirculated DEIR begins with this Introduction (Chapter 1), which provides a Project overview, background, and description of the environmental review process for the recirculation of the Biological Resources section of the DEIR.

Chapter 2 of this Partially Recirculated DEIR includes the following recirculated section of the DEIR:

- Section 4.3, "Biological Resources"

In accordance with 15088.5(g) of the CEQA Guidelines, the revisions made to the previously circulated DEIR are summarized below:

Section 4.3, "Biological Resources": This section is revised to include new information related to the identification of potential roosting habitat for the Townsend's big-eared bat on the Project

Site as a result of a bat habitat assessment conducted in January 2015 by PG&E's biologist. PG&E has also provided information documenting the occurrence of Nelson's bighorn sheep on the Project Site, which has required clarification of impacts to that species through inclusion of an impact statement and mitigation measures not previously identified in the original DEIR. Additional modifications in the Biological Resources section have been made in response to comments received on the DEIR through the public review process.

CHAPTER 2
Revised DEIR Biological Resources Section

This chapter presents DTSC's revisions to the Biological Resources section of the Soil Investigation Project DEIR (Section 4.3). The revised Biological Resources section evaluates the potential environmental impacts of the Project associated with bats and Nelson's bighorn sheep, and identifies feasible mitigation measures to ensure impacts would be mitigated to a less than significant level. Additional modifications to the Biological Resources section have been made in response to comments received on the DEIR through the public review process. New text added to the Biological Resources section of the DEIR is shown as underlined text. Text that has been deleted from the Biological Resources section of the DEIR is shown as ~~strikethrough~~ text.

This page left intentionally blank

4.3 Biological Resources

This section provides a discussion of terrestrial and aquatic biological resources at the Pacific Gas and Electric Company (PG&E) Topock Compressor Station Soil Investigation Project (Project) Site and surrounding areas; describes the applicable federal, state, regional, and local regulations and policies related to biological resources; and analyzes the potential temporary, short-term, and long-term impacts of the proposed Project on terrestrial and aquatic biological resources.

The information presented in this section is based on the results of biological studies conducted in support of the Project between 2004 and 2013. The information reviewed includes documents that discuss biological resources in the region, including the *Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Actions* (PBA) (CH2M HILL 2007a, included as **Appendix D-1** to this draft environmental impact report [DEIR]), numerous baseline biological reports as cited below, and annual survey reports for presence or absence of the southwestern willow flycatcher (*Empidonax traillii extimus*) and desert tortoise (*Gopherus agassizii*) (CH2M HILL 2004a-e; 2005a; GANDA 2005a, 2005b, 2006a, 2006b, 2007, 2008a, 2008b, 2009a, 2009b, 2010, 2012; and WSA 2013), as well as Yuma clapper rail (*Rallus longirostris yumanensis*) and California black rail (*Laterallus jamaicensis coturniculus*) (KBS 2012), among others.

4.3.1 Existing Setting

4.3.1.1 Project Setting

The Project Site is located at the boundary of two desert systems: Mojave and Colorado. The terrain at the Project Site includes sparsely vegetated desert, unvegetated desert pavement, numerous shallow to deep ephemeral washes, and gently rolling hills. The base of the Chemehuevi Mountains is located at the southeastern edge of the Project Site. The elevation within the Project Site ranges from roughly 400 to 600 feet above mean sea level (amsl). Industrial development occurs throughout the Project Site and includes the PG&E Topock Compressor Station (Station), the Interim Measure 3 (IM-3) Treatment Facility, paved and unpaved access roads, four evaporation ponds, a rock quarry, two water tanks, historic U.S. Highway ("Route") 66, numerous groundwater wells, and six natural gas pipelines that run partially above and partially below ground. Interstate 40 (I-40) and the Burlington Northern Santa Fe Railway (BNSF) cross the Project Site in an east-west direction.

The Colorado River borders the eastern portion of the Project Site. West of the Colorado River, the topography is abrupt, rising from around 450 feet amsl at the river to over 1,200 feet amsl within 1 mile to the south and southwest. Slopes encountered west of the Colorado River reflect a series of ancient river terraces (CH2M HILL 2007a:4-1-4-3, included as Appendix D-1 to this DEIR).

Lower Colorado River

Starting in the 1930s, federal actions in the region consisted of the construction of several dams, including the Hoover Dam, Davis Dam and Parker Dam. Construction of the Hoover Dam,

located 108 miles upstream of Topock, was completed in 1936. Completion of the Davis Dam, located 41 miles upstream of Topock, occurred in 1951. Completion of the Parker Dam, located 42 miles downstream of Topock, occurred in 1938. The changes that resulted from dam construction to the natural river flows substantially altered available fish habitats and reduced the river's ability to meander and create or destroy backwaters and marshes. Alleviating the threat of floods also allowed for conversion of riparian areas to agricultural uses.

The accumulation of sediment in the river channel from Topock to Needles increased rapidly after the completion of Parker Dam. By 1944, the aggradation of the river channel caused elevated groundwater levels and flooding in low-lying areas. In response to this condition, the U.S. Bureau of Reclamation (BOR) conducted dredging of the river channel to maintain channel geometry. According to Metzger and Loeltz (1973) (as cited in CH2M HILL 2013), the substantial dredging and channel improvement work in Mohave Valley was completed by July 1960. As part of the channel improvements conducted by BOR, riprap embankments were added to stabilize the shoreline on the Arizona side, immediately east and northeast of the Station. Historical aerial photographs for the Project Site (CH2M HILL 2013) provide information on the general time frames and locations of dredging, as evidenced by the extensive sand dune areas present in the historical photographs on both the western and eastern shorelines of the Colorado River (CH2M HILL 2009:Appendix A1). BOR's damming and channelization of the Colorado River have substantially altered aquatic, marsh, and riparian habitats associated with the river. As part of the mitigation for the various river control projects, BOR has agreed to improve backwater and marsh areas, including enhancing areas such as the Topock Marsh (CH2M HILL 2007a:3-25).The portion of the Colorado River that is adjacent to the Project Site is approximately 700 to 900 feet wide and 8 to 15 feet deep. The adjacent Colorado River floodplain averages about 500 feet in width but narrows at the Topock Gorge, which is approximately 4 miles south of the Project Site (CH2M HILL 2007a:3-2).

Topock Marsh

The 4,000-acre Topock Marsh is managed by the U.S. Fish and Wildlife Service (USFWS) as part of the Havasu National Wildlife Refuge (HNWR). The marsh was created as mitigation for prior impacts on the Colorado River and was developed within a historical river meander in 1966, when a dike outlet structure was constructed. Presently, the marsh represents more than 40 percent of the remaining backwaters of the Colorado River. The marsh serves as a critical resting place for migratory waterfowl and a home to resident songbirds, water birds, and other wildlife (USFWS 2008).

Water levels in the marsh are manipulated through closing and opening the gates at the South Dike outlet structure. Levels are increased during the early spring to benefit the nesting southwestern willow flycatcher and then slowly drawn down over the fall to maximize the availability of submerged aquatic vegetation for water birds (USFWS 2008).

4.3.1.2 General Biological Resources

Regional and local settings for terrestrial biological resources were developed primarily from existing documents, including information from *the Resource Conservation and Recovery Act*

(RCRA) Facility Investigation/Remedial Investigation (RFI/RI) (Volumes 1 and 2) (CH2M HILL 2007b, 2009) and the biological surveys conducted at the Project Site by CH2M HILL and Garcia and Associates (GANDA), who were contracted by PG&E to conduct various environmental services throughout the Project Site. Reconnaissance and targeted surveys conducted by CH2M HILL were primarily to facilitate implementation of the existing IM-3. The CH2M HILL and GANDA survey areas included lands in both California and Arizona. Before conducting surveys, CH2M HILL performed background research of databases, literature, and technical reports and consulted with the agencies or firms regarding federally listed species in the area, including the U.S. Bureau of Land Management (BLM), BOR, USFWS, California Department of Fish and Wildlife (CDFW),[1] Arizona Game and Fish Department, and Steven W. Carothers and Associates for guidance on listed species. Several sensitive biological resources were identified as potentially occurring in the Project Site, including wetlands, waters of the United States, waters of the state, and federally listed wildlife species.

Surveys for federally listed wildlife species potentially occurring within the Project Site were implemented following USFWS standard protocols and included surveys for the southwestern willow flycatcher and the desert tortoise (GANDA 2007, 2008a, 2008b, 2009a, 2009b, 2010, 2012). As directed by USFWS, surveys for Yuma clapper rail and fish species were not conducted as part of this Project so that there would not be a duplication of USFWS HNWR survey efforts for these species (CH2M HILL 2007a:5-1, included as Appendix D-1 to this DEIR). USFWS provided data from its annual clapper rail survey efforts to CH2M HILL for incorporation into the PBA and other project-related documents.

Biological resource surveys conducted on behalf of PG&E were performed within a 1,528-acre area originally delineated by the BLM to facilitate a cultural resources assessment for the Project. Since completion of the biological surveys, the Project Site boundaries have been revised based on updated information regarding the actual extent of the area needed for soil investigation activity.

As previously mentioned, information on general biological resources and special-status species was developed from the following existing documents and a reconnaissance-level survey:

- Final Biological Resources Investigations for Interim Measures No. 3: Topock Compressor Station Expanded Groundwater Extraction and Treatment System and addendums (CH2M HILL 2004a-e);
- Biological Resources Survey Report for the Area of Potential Effect (APE) Topock Compressor Station Expanded Groundwater Extraction and Treatment System (CH2M HILL 2005b);
- Final Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Actions (CH2M HILL 2007a, included as Appendix D-1 to this DEIR);

[1] The California Department of Fish and Game (CDFG) changed its name on January 1, 2013, to the California Department of Fish and Wildlife (CDFW). In this document, references to literature published by CDFW prior to January 1, 2013, are cited as "CDFG." The agency is otherwise referred to by its new name, CDFW.

- Southwestern Willow Flycatcher Presence/Absence Surveys for the PG&E Compressor Station Expanded Groundwater Extraction and Treatment System (GANDA 2005a, 2006a, 2007, 2008b, 2009a, 2010, 2012);
- 2012 Focused Survey Results for the Yuma Clapper Rail and the California Black Rail at the Pacific Gas and Electric Groundwater Remediation Project Site (KBS 2012);
- Desert Tortoise Presence/Absence Surveys for the PG&E Compressor Station Expanded Groundwater Extraction and Treatment System (CH2M HILL 2004a-e; GANDA 2005b, 2006b, 2008a, 2009b; WSA 2013);
- Topock Groundwater Remediation Project Floristic Survey Report (CH2M HILL and GANDA 2013a);
- Topock Groundwater Remediation Project Revised Floristic Survey Report (CH2M HILL and GANDA 2013b);
- USFWS species list for the HNWR (USFWS 2007 and 2008); and
- Wetlands and Waters of the United States, Delineation for the Topock Compressor Station Groundwater Remediation Project, San Bernardino County, California (Document ID: PGE20130822A) (CH2M HILL 2013, included as **Appendix D-2** to this DEIR).

Vegetation and Habitat

Terrestrial habitats within the Project Site are typical of Mojave Desert uplands, the dominant habitat within the Project Site being creosote bush (*Larrea tridentata*) scrub. Other terrestrial habitats within the Project Site include tamarisk (*Tamarix ramosissima; T. aphylla*) thicket, arrow weed (*Pluchea sericea*) thicket, blue palo verde (*Parkinsonia florida*) woodland, catclaw acacia (*Senegalia greggii*) thorn scrub, foothill palo verde (*Parkinsonia microphylla*) scrub, quailbush scrub, allscale (*Atriplex polycarpa*) scrub, and western honey mesquite (*Prosopis glandulosa* var. *torreyana*) bosque, as well as areas that have been landscaped and developed. **Table 4.3-1** lists the approximate acreages of each habitat type within the Project Site. These acreages were calculated through a Geographic Information System (GIS) analysis in which the Project Site boundaries were laid over the vegetation community data layer from the *Topock Groundwater Remediation Project Floristic Survey Report* (CH2M HILL and GANDA 2013). This original vegetation community data layer was delineated in the field by CH2M Hill to support the environmental analysis of the Groundwater Remediation Project. The acreages in Table 4.3-1 differ from those reported in the *Topock Groundwater Remediation Project Floristic Survey Report* (CH2M HILL and GANDA 2013) because the current Project Site is smaller than that of the Groundwater Remediation Project.

TABLE 4.3-1
HABITAT TYPES IN THE PROJECT SITE

Habitat Type	Approximate Acreage
Creosote Bush Scrub	68.9
Tamarisk Thicket	6.6
Arrow Weed Thicket	0.4
Blue Palo Verde Woodland	9.8
Catclaw Acacia Thorn Scrub	0.3
Foothill Palo Verde Scrub	1.5
Allscale Scrub	1.5
Western Honey Mesquite Bosque	0.3
Tamarisk Thicket/Mesquite Bosque	1.0
Tamarisk Thicket/Mesquite Bosque/Blue Palo Verde Woodland	0.1
Common Reed Marshes	2.6
Open Water	0.2
Landscaped	0.1
Developed	35.2
GRAND TOTAL	**128.5**

SOURCES: CH2M HILL and GANDA 2013ab; Parus 2014.

Creosote Bush Scrub

The most common and widespread plant community in the Project Site is creosote bush scrub. This vegetation type is characterized by widely spaced creosote bush with associated species such as white bursage (*Ambrosia dumosa*), white rhatany (*Krameria bicolor*), brittlebush (*Encelia farinosa*), beavertail cactus (*Opuntia basilaris* var. *basilaris*), and silver cholla (*Cylindropuntia echinocarpa*) (CH2M HILL and GANDA 2013ab). Creosote bush scrub occurs throughout the dissected alluvial terraces in the Project Site and comprises 68.9 acres of the Project Site (**Figures 4.3-1** through **4.3-1d**).

Tamarisk Thicket

Tamarisk thicket is found primarily along the low sandy terraces adjacent to the Colorado River and near the terminus of the larger ephemeral washes such as Bat Cave Wash (Figures 4.3-1 through 4.3-1d). Vegetation is characterized by open to dense stands of the non-native and invasive salt cedar and/or athel tamarisk. In many locations salt cedar or athel tamarisk occur as monotypic stands; in other areas associated trees and shrubs include western honey mesquite, screwbean mesquite, blue palo verde, and arrow weed. Herbaceous vegetation is absent within dense thickets of salt cedar and athel tamarisk, but scattered herbaceous species such as fanleaf crinklemat (*Tiquilia plicata*), Spanish needle (*Palafoxia arida*), and *Cryptantha* spp. are often present in the openings between the trees in some areas (CH2M HILL and GANDA 2013ab). Tamarisk thicket comprises 6.6 acres of the Project Site; tamarisk thicket/mesquite bosque comprises 1.0 acre of the Project Site; and tamarisk thicket/mesquite bosque/blue palo verde woodland comprises 0.1 acre of the Project Site (Figures 4.3-1 through 4.3-1d).

Arrow Weed Thicket

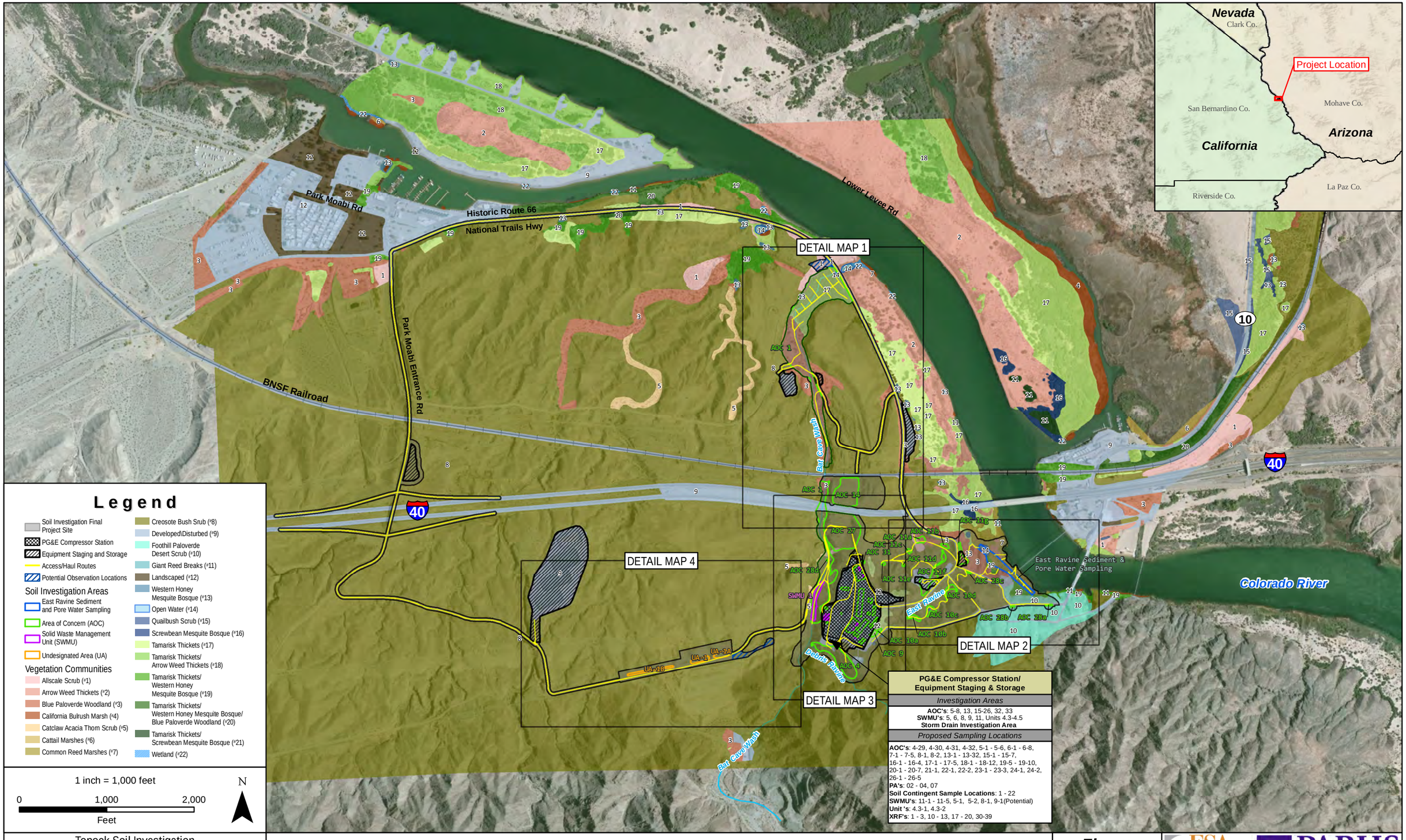
Arrow weed thicket is found on the low sandy terraces along the Colorado River (Figures 4.3-1 through 4.3-1d). Arrow weed is the sole dominant shrub species with individuals widely scattered or aggregated into dense, nearly impenetrable stands. It is most common along the western shore of the Colorado Rover between Bat Cave Wash and I-40, and often intermixes with tamarisk thickets and mesquite bosque. Associated species include salt cedar, smoke tree (*Psorothamnus spinosus*), western honey mesquite, brittlebush, and desert broom (*Baccharis sarothroides*). Scattered herbaceous vegetation in the more open areas includes fanleaf crinklemat, Spanish needle, *Cryptantha* spp., and Mediterranean grass (*Schismus barbatus*) (CH2M HILL and GANDA 2013ab). Arrow weed thicket comprises 0.4 acre of the Project Site (Figures 4.3-1 through 4.3-1d).

Blue Palo Verde Woodland

Blue palo verde woodland occurs along the edges and throughout the channel bottoms of the larger ephemeral washes in the dissected alluvial terraces south of the Colorado River (Figures 4.3-1 through 4.3-1d). Total vegetation cover is generally low, but species diversity is relatively high, especially in the larger washes, as compared to the other vegetation types in the Project Site. Blue palo verde is the dominant tree with scattered individuals of salt cedar, athel tamarisk, and smoke tree also present in some areas. Associated shrubs include catclaw acacia, Anderson's desert thorn (*Lycium andersonii*), brittlebush, sweetbush (*Bebbia juncea* var. *aspera*), cheesebush (*Hymenoclea salsola*), climbing milkweed (*Funastrum hirtellum*), desert lavender (*Hyptis emoryi*), white bursage, white rhatany, and creosote bush. Common herbaceous species include small-seeded spurge (*Chamaesyce polycarpa*.), small-flowered California poppy (*Eschscholzia minutiflora*), Emory rock daisy (*Perityle emoryi*), Spanish needle, and Arizona lupine (*Lupinus arizonicus*) (CH2M HILL and GANDA 2013ab). Blue palo verde woodland comprises 9.8 acres of the Project Site (Figures 4.3-1 through 4.3-1d).

Catclaw Acacia Thorn Scrub

In the Project Site catclaw acacia thorn scrub is limited to the bottoms of moderate-sized ephemeral washes in the dissected terraces south of the National Trails Highway. This vegetation type is characterized by widely scattered shrubs dominated by catclaw acacia. Common associated species include Anderson's desert thorn, brittlebush, sweetbush, cheesebush, desert lavender, white bursage, white rhatany, and creosote bush. Herbaceous species include small-seeded spurge, Arizona lupine, and Spanish needle (CH2M HILL and GANDA 2013ab). Catclaw acacia thorn scrub comprises 0.3 acre of the Project Site (Figures 4.3-1 through 4.3-1d).



Legend

- Soil Investigation Final Project Site
- PG&E Compressor Station
- Equipment Staging and Storage
- Access/Haul Routes
- Potential Observation Locations

Soil Investigation Areas

- East Ravine Sediment and Pore Water Sampling
- Area of Concern (AOC)
- Solid Waste Management Unit (SWMU)
- Undesignated Area (UA)

Vegetation Communities

- Allscale Scrub (*1)
- Arrow Weed Thickets (*2)
- Blue Paloverde Woodland (*3)
- California Bulrush Marsh (*4)
- Catclaw Acacia Thorn Scrub (*5)
- Cattail Marshes (*6)
- Common Reed Marshes (*7)
- Creosote Bush Srub (*8)
- Developed\Disturbed (*9)
- Foothill Paloverde Desert Scrub (*10)
- Giant Reed Breaks (*11)
- Landscaped (*12)
- Western Honey Mesquite Bosque (*13)
- Open Water (*14)
- Quailbush Scrub (*15)
- Screwbean Mesquite Bosque (*16)
- Tamarisk Thickets (*17)
- Tamarisk Thickets/ Arrow Weed Thickets (*18)
- Tamarisk Thickets/ Western Honey Mesquite Bosque (*19)
- Tamarisk Thickets/ Western Honey Mesquite Bosque/ Blue Paloverde Woodland (*20)
- Tamarisk Thickets/ Screwbean Mesquite Bosque (*21)
- Wetland (*22)

1 inch = 1,000 feet

0 1,000 2,000

Feet

N

PG&E Compressor Station/ Equipment Staging & Storage

Investigation Areas

AOC's: 5-8, 13, 15-26, 32, 33
SWMU's: 5, 6, 8, 9, 11, Units 4.3-4.5
Storm Drain Investigation Area

Proposed Sampling Locations

AOC's: 4-29, 4-30, 4-31, 4-32, 5-1 - 5-6, 6-1 - 6-8, 7-1 - 7-5, 8-1, 8-2, 13-1 - 13-32, 15-1 - 15-7, 16-1 - 16-4, 17-1 - 17-5, 18-1 - 18-12, 19-5 - 19-10, 20-1 - 20-7, 21-1, 22-1, 22-2, 23-1 - 23-3, 24-1, 24-2, 26-1 - 26-5
PA's: 02 - 04, 07
Soil Contingent Sample Locations: 1 - 22
SWMU's: 11-1 - 11-5, 5-1, 5-2, 8-1, 9-1(Potential)
Unit 's: 4.3-1, 4.3-2
XRF's: 1 - 3, 10 - 13, 17 - 20, 30-39

Topock Soil Investigation Project EIR

Created By Parus Consulting, Inc.
Map Creation Date: 11/14/2014 Background Source: ESRI Aerial

Soil Investigation Areas Vegetation Communities: Overview

Figure 4.3-1

ESA

PARUS CONSULTING, INC.

AOC1-BCW30
AOC1-BCW26
AOC1-BCW29
AOC1-BCW21
AOC1-BCW25
AOC1-BCW20
AOC1-BCW28
AOC1-BCW17
AOC1-BCW24
AOC1-BCW16
AOC1-BCW27
AOC1-BCW14
AOC1-BCW23
AOC1-BCW22
AOC1-BCW12
AOC1-BCW10
AOC1-BCW18
AOC1-BCW19
AOC1-BCW15
AOC1-BCW13
AOC1-BCW9
AOC1-BCW11
AOC1-BCW8
AOC1-BCW7
AOC 1
Bat Cave Wash
National Trails Hwy
Historic Route 66
BNSF Railroad
AOC1-6d
AOC14-17
AOC14-16
AOC 14
AOC14-15
AOC14-14
AOC1-T5d
AOC 27
40

Legend

Soil Investigation Final Project Site
Equipment Staging and Storage
Access/Haul Routes
Potential Observation Locations

Proposed Sample Locations
Pore Water Sample
Proposed Soil Sample
Soil Gas Sample
Metals Sample (using X-Ray Fluorescence)

Proposed Sampling Method
Hand Tools
(Estimated 1-foot disturbance diameter)
(*Note: Impact Area Shown Not to Scale)
Excavator
(Estimated 30-feet disturbance diameter)
Hydrovac
(Estimated 40-feet disturbance diameter)
Rotosonic
(Estimated 50-feet disturbance diameter)

Soil Investigation Areas
East Ravine Sediment and Pore Water Sampling
Area of Concern (AOC)
Solid Waste Management Unit (SWMU)
Undesignated Area (UA)

Vegetation Communities
Allscale Scrub (#1)
Arrow Weed Thickets (#2)
Blue Paloverde Woodland (#3)
California Bulrush Marsh (#4)
Catclaw Acacia Thorn Scrub (#5)
Cattail Marshes (#6)
Common Reed Marshes (#7)
Creosote Bush Srub (#8)
Developed\Disturbed (#9)
Foothill Paloverde Desert Scrub (#10)
Giant Reed Breaks (#11)
Landscaped (#12)
Western Honey Mesquite Bosque (#13)
Open Water (#14)
Quailbush Scrub (#15)
Screwbean Mesquite Bosque (#16)
Tamarisk Thickets (#17)
Tamarisk Thickets/ Arrow Weed Thickets (#18)
Tamarisk Thickets/ Western Honey Mesquite Bosque (#19)
Tamarisk Thickets/ Western Honey Mesquite Bosque/ Blue Paloverde Woodland (#20)
Tamarisk Thickets/ Screwbean Mesquite Bosque (#21)
Wetland (#22)

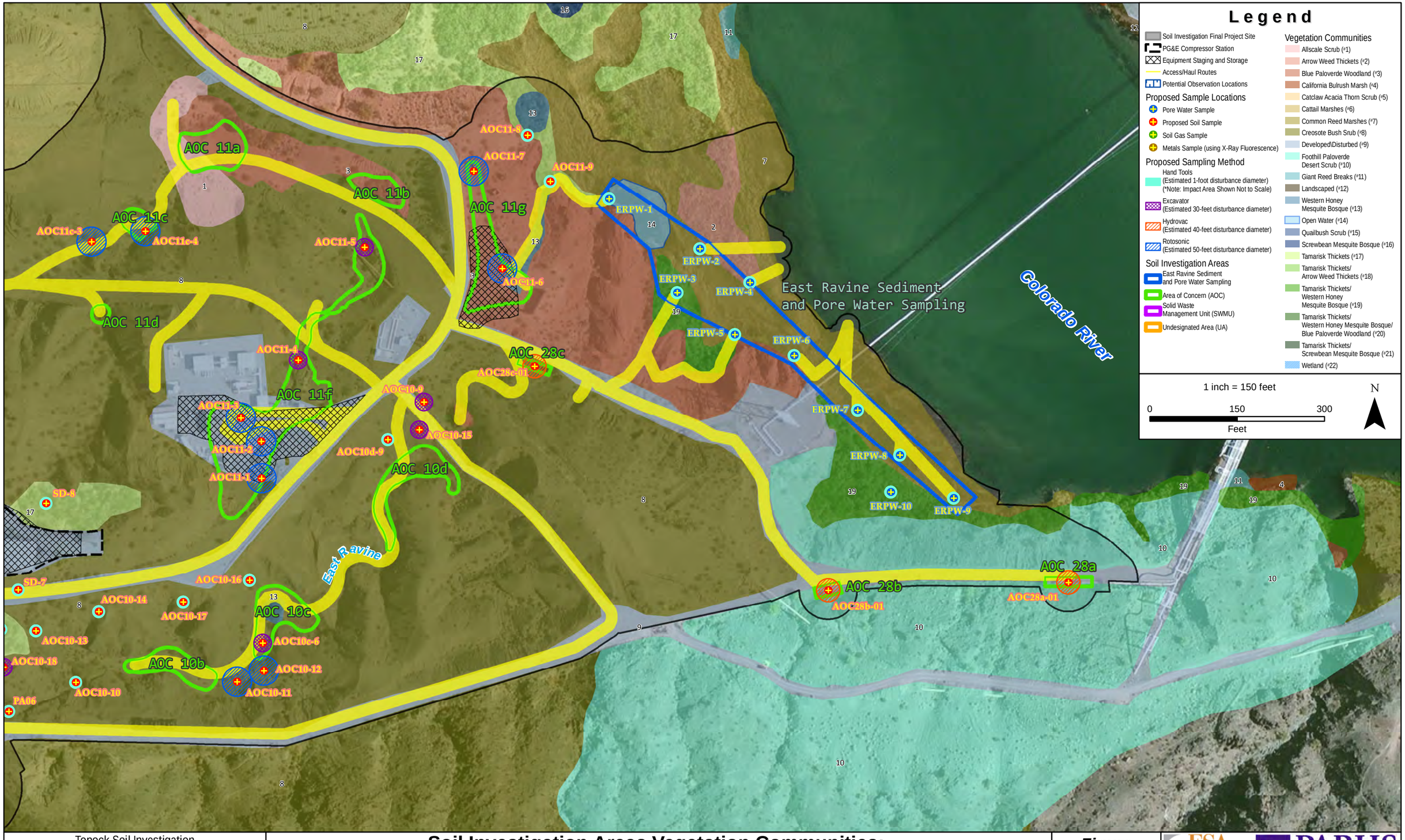
1 inch = 200 feet
0 200 400
Feet
N

Topock Soil Investigation Project EIR
Created By Parus Consulting, Inc.
Map Creation Date: 11/14/2014
Background Source: ESRI Aerial

Soil Investigation Areas
Vegetation Communities: Detail Map 1

Figure 4.3-1a

ESA
PARUS CONSULTING, INC.



Legend

- Soil Investigation Final Project Site
- PG&E Compressor Station
- Equipment Staging and Storage
- Access/Haul Routes
- Potential Observation Locations

Proposed Sample Locations

- Pore Water Sample
- Proposed Soil Sample
- Soil Gas Sample
- Metals Sample (using X-Ray Fluorescence)

Proposed Sampling Method

- Hand Tools (Estimated 1-foot disturbance diameter) (*Note: Impact Area Shown Not to Scale)
- Excavator (Estimated 30-feet disturbance diameter)
- Hydrovac (Estimated 40-feet disturbance diameter)
- Rotosonic (Estimated 50-feet disturbance diameter)

Soil Investigation Areas

- East Ravine Sediment and Pore Water Sampling
- Area of Concern (AOC)
- Solid Waste Management Unit (SWMU)
- Undesignated Area (UA)

Vegetation Communities

- Allscale Scrub (#1)
- Arrow Weed Thickets (#2)
- Blue Paloverde Woodland (#3)
- California Bulrush Marsh (#4)
- Catclaw Acacia Thorn Scrub (#5)
- Cattail Marshes (#6)
- Common Reed Marshes (#7)
- Creosote Bush Srub (#8)
- Developed\Disturbed (#9)
- Foothill Paloverde Desert Scrub (#10)
- Giant Reed Breaks (#11)
- Landscaped (#12)
- Western Honey Mesquite Bosque (#13)
- Open Water (#14)
- Quailbush Scrub (#15)
- Screwbean Mesquite Bosque (#16)
- Tamarisk Thickets (#17)
- Tamarisk Thickets/ Arrow Weed Thickets (#18)
- Tamarisk Thickets/ Western Honey Mesquite Bosque (#19)
- Tamarisk Thickets/ Western Honey Mesquite Bosque/ Blue Paloverde Woodland (#20)
- Tamarisk Thickets/ Screwbean Mesquite Bosque (#21)
- Wetland (#22)

1 inch = 150 feet

0 150 300

Feet

N

Topock Soil Investigation Project EIR

Created By Parus Consulting, Inc.

Map Creation Date: 11/14/2014 Background Source: ESRI Aerial

Soil Investigation Areas Vegetation Communities: Detail Map 2

Figure 4.3-1b

ESA

PARUS CONSULTING, INC.

Legend

- Soil Investigation Final Project Site
- PG&E Compressor Station
- Equipment Staging and Storage
- Access/Haul Routes
- Potential Observation Locations

Proposed Sample Locations

- Pore Water Sample
- Proposed Soil Sample
- Soil Gas Sample
- Metals Sample (using X-Ray Fluorescence)

Proposed Sampling Method

- Hand Tools (Estimated 1-foot disturbance diameter) (*Note: Impact Area Shown Not to Scale)
- Excavator (Estimated 30-feet disturbance diameter)
- Hydrovac (Estimated 40-feet disturbance diameter)
- Rotosonic (Estimated 50-feet disturbance diameter)

Soil Investigation Areas

- East Ravine Sediment and Pore Water Sampling
- Area of Concern (AOC)
- Solid Waste Management Unit (SWMU)
- Undesignated Area (UA)

Vegetation Communities

- Allscale Scrub (#1)
- Arrow Weed Thickets (#2)
- Blue Paloverde Woodland (#3)
- California Bulrush Marsh (#4)
- Catclaw Acacia Thorn Scrub (#5)
- Cattail Marshes (#6)
- Common Reed Marshes (#7)
- Creosote Bush Scrub (#8)
- Developed\Disturbed (#9)
- Foothill Paloverde Desert Scrub (#10)
- Giant Reed Breaks (#11)
- Landscaped (#12)
- Western Honey Mesquite Bosque (#13)
- Open Water (#14)
- Quailbush Scrub (#15)
- Screwbean Mesquite Bosque (#16)
- Tamarisk Thickets (#17)
- Tamarisk Thickets/Arrow Weed Thickets (#18)
- Tamarisk Thickets/Western Honey Mesquite Bosque (#19)
- Tamarisk Thickets/Western Honey Mesquite Bosque/ Blue Paloverde Woodland (#20)
- Tamarisk Thickets/Screwbean Mesquite Bosque (#21)
- Wetland (#22)

1 inch = 150 feet

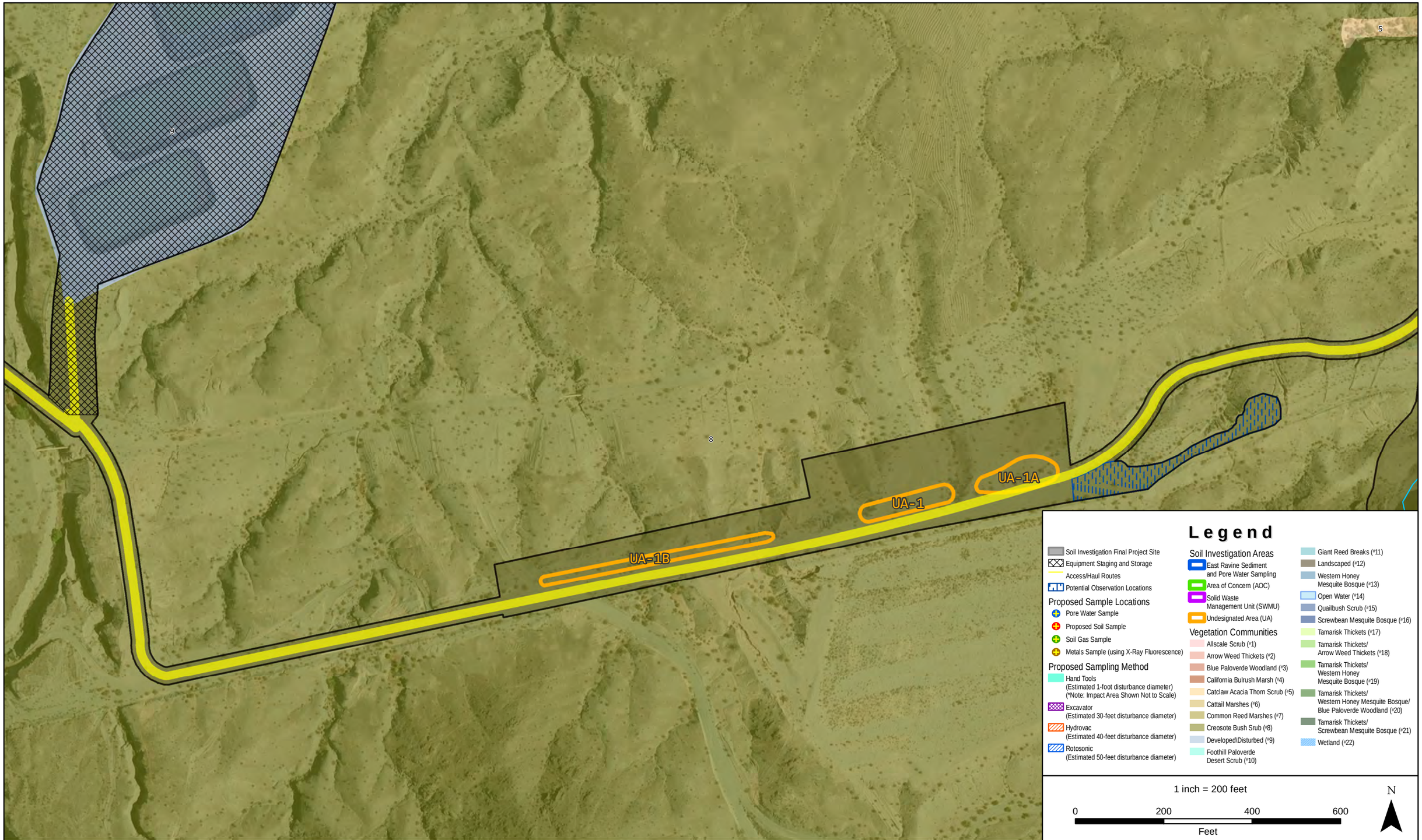
0 150 300

Feet

N

AOC 14 AOC14-15 AOC14-14 AOC 1 AOC1-T5d AOC27-14 AOC27-13 AOC27-8 AOC27-7 AOC27-6 AOC27-20 AOC27-21 AOC27-27 AOC27-28 AOC27-9 AOC27-10 AOC27-11 AOC27-15 AOC27-16 AOC27-23 AOC27-24 AOC27-12 AOC27-17 AOC27-18 AOC27-1 AOC27-2 AOC27-19 AOC27-5 AOC27-25 AOC27-26 AOC27-22 AOC27-3 AOC27-4 AOC27-29 AOC27-30 AOC27-36 AOC 27 AOC27-32 AOC27-31 AOC27-39 AOC27-38 AOC27-45 AOC27-37 AOC27-44 AOC27-49 AOC27-33 AOC27-34 AOC27-35 AOC27-40 AOC27-41 AOC27-46 AOC27-42 AOC27-47 AOC27-48 AOC27-43 AOC1-T2f AOC11c-3 XRF-14 XRF-15 AOC 31 PA08 PA01 XRF-9 XRF-8 XRF-7 XRF-6 XRF-5 XRF-4 AOC11e-5 AOC 11e AOC 11d AOC11e-4 AOC11e-6 AOC11e-3 SD-13 SD-12 SD-11 SD-10 SD-9 SD-8 AOC28d-01 AOC 28d SD-14 AOC1-T1e AOC1-T1f SWMU1-21 SWMU1-20 SD-15 AOC1-3 AOC1-1 AOC1-4 SWMU1-19 AOC1-2 SD-16 SD-17 XRF-16 SWMU1-25 SD-7 SD-6 AOC10-14 XRF-29 SD-5 AOC10-13 XRF-28 AOC10-18 SWMU1-22 SWMU1-18 SWMU1-23 SWMU1-24 SWMU 1 XRF-27 SD-4 SD-3 AOC10-10 PA06 XRF-26 SD-2 AOC10a-3 XRF-25 AOC 10a AOC10a-2 AOC 9 AOC9-17 AOC9-18 AOC9-19 AOC9-16 AOC9-15 AOC9-20 SD-1 XRF-24 XRF-23 XRF-22 PA05 SD-19 SD-18 AOC4-BCW1 AOC4-BCW2 AOC4-BCW3 AOC4-BCW4 AOC4-BCW5 AOC4-BCW6 AOC4-18 AOC4-17 AOC4-23 AOC4-24 XRF-21 AOC4-25 AOC4-26 AOC 4 AOC4-27 AOC4-28 AOC4-19 AOC4-21 AOC4-20 AOC4-22 40 Bat Cave Wash Debris Ravine

Topock Soil Investigation Project EIR Created By Parus Consulting, Inc. Map Creation Date: 11/14/2014 Background Source: ESRI Aerial	**Soil Investigation Areas Vegetation Communities: Detail Map 3**	***Figure 4.3-1c***	ESA PARUS CONSULTING, INC.



Legend

Soil Investigation Final Project Site
Equipment Staging and Storage
Access/Haul Routes
Potential Observation Locations

Proposed Sample Locations
Pore Water Sample
Proposed Soil Sample
Soil Gas Sample
Metals Sample (using X-Ray Fluorescence)

Proposed Sampling Method
Hand Tools
(Estimated 1-foot disturbance diameter)
(*Note: Impact Area Shown Not to Scale)
Excavator
(Estimated 30-feet disturbance diameter)
Hydrovac
(Estimated 40-feet disturbance diameter)
Rotosonic
(Estimated 50-feet disturbance diameter)

Soil Investigation Areas
East Ravine Sediment and Pore Water Sampling
Area of Concern (AOC)
Solid Waste Management Unit (SWMU)
Undesignated Area (UA)

Vegetation Communities
Allscale Scrub (#1)
Arrow Weed Thickets (#2)
Blue Paloverde Woodland (#3)
California Bulrush Marsh (#4)
Catclaw Acacia Thorn Scrub (#5)
Cattail Marshes (#6)
Common Reed Marshes (#7)
Creosote Bush Srub (#8)
Developed\Disturbed (#9)
Foothill Paloverde Desert Scrub (#10)
Giant Reed Breaks (#11)
Landscaped (#12)
Western Honey Mesquite Bosque (#13)
Open Water (#14)
Quailbush Scrub (#15)
Screwbean Mesquite Bosque (#16)
Tamarisk Thickets (#17)
Tamarisk Thickets/ Arrow Weed Thickets (#18)
Tamarisk Thickets/ Western Honey Mesquite Bosque (#19)
Tamarisk Thickets/ Western Honey Mesquite Bosque/ Blue Paloverde Woodland (#20)
Tamarisk Thickets/ Screwbean Mesquite Bosque (#21)
Wetland (#22)

1 inch = 200 feet

0 200 400 600

Feet

N

Topock Soil Investigation Project EIR

Created By Parus Consulting, Inc.

Map Creation Date: 11/14/2014 Background Source: ESRI Aerial

Soil Investigation Areas Vegetation Communities: Detail Map 4

Figure 4.3-1d

ESA

PARUS CONSULTING, INC.

This page left intentionally blank

Foothill Palo Verde Scrub

Foothill palo verde scrub is restricted to a small area east of the compressor station along the slopes of the Chemehuevi Mountains (Figures 4.3-1 through 4.3-1d). Vegetation in this area is characterized by scattered foothill palo verde. Associated species in this area include creosote bush, pygmy-cedar (*Peucephyllum schottii*), brittlebush, white rhatany, beavertail cactus, buckhorn cholla (*Cylindropuntia acanthocarpa*), California barrel cactus (*Ferocactus cylindraceus* var. *cylindraceus*), and inflated desert trumpet (*Eriogonum inflatum* var. *inflatum*) (CH2M HILL and GANDA 2013ab). Foothill palo verde scrub comprises 1.5 acres of the Project Site (Figures 4.3-1 through 4.3-1d).

Allscale Scrub

Allscale scrub is dominated by cattle saltbush (*Atriplex polycarpa*) and is the most common alkaline tolerant shrubland alliance in the Project Site. In the Project Site, allscale scrub is most common along the National Trails Highway (CH2M HILL and GANDA 2013ab). Allscale scrub comprises 1.5 acres of the Project Site (Figures 4.3-1 through 4.3-1d).

Western Honey Mesquite Bosque

Western honey mesquite bosque is mostly found on the low sandy terraces along the Colorado River, where it occurs intermixed with tamarisk thickets (Figures 4.3-1 through 4.3-1d) (CH2M HILL and GANDA 2013ab). Western honey mesquite bosque comprises 0.3 acre of the Project Site (Figures 4.3-1 through 4.3-1d).

Common Reed Marshes

Along the Colorado River and its inlets are patches of wetlands with various marsh plants forming adjacent but somewhat drier common reed (*Phragmites australis*) marshes. The common reed marshes are concentrated and most extensive along the edges of the low terraces next to the Colorado River south of I-40. It is likely that the common reed species in the Project Site is an invasive, non-indigenous form of *Phragmites australis* (CH2M HILL and GANDA 2013ab). Common reed marsh comprises 2.6 acres of the Project Site (Figures 4.3-1 through 4.3-1d).

Open Water

Open water includes the unvegetated, fully inundated portions of the Colorado River that fall within the boundaries of the Project Site (Figures 4.3-1 through 4.3-1d). Open water comprises 0.2 acre of the Project Site.

Landscaped Areas

Landscaped areas include those areas planted with non-native, ornamental species within or near developed areas. Common species found within the vegetation community include Mexican fan palm (*Washingtonia robusta*) and oleander (*Nerium oleander*) (CH2M HILL and GANDA 2013ab). Landscaped areas comprise 0.1 acre of the Project Site (Figures 4.3-1 through 4.3-1d).

Developed Areas

Developed areas within the Project Site include I-40, BNSF, dirt access roads, and the facilities and infrastructure associated with the Station (CH2M HILL; GANDA 2013ab). Developed areas comprise 35.2 acres of the Project Site (Figures 4.3-1 through 4.3-1d).

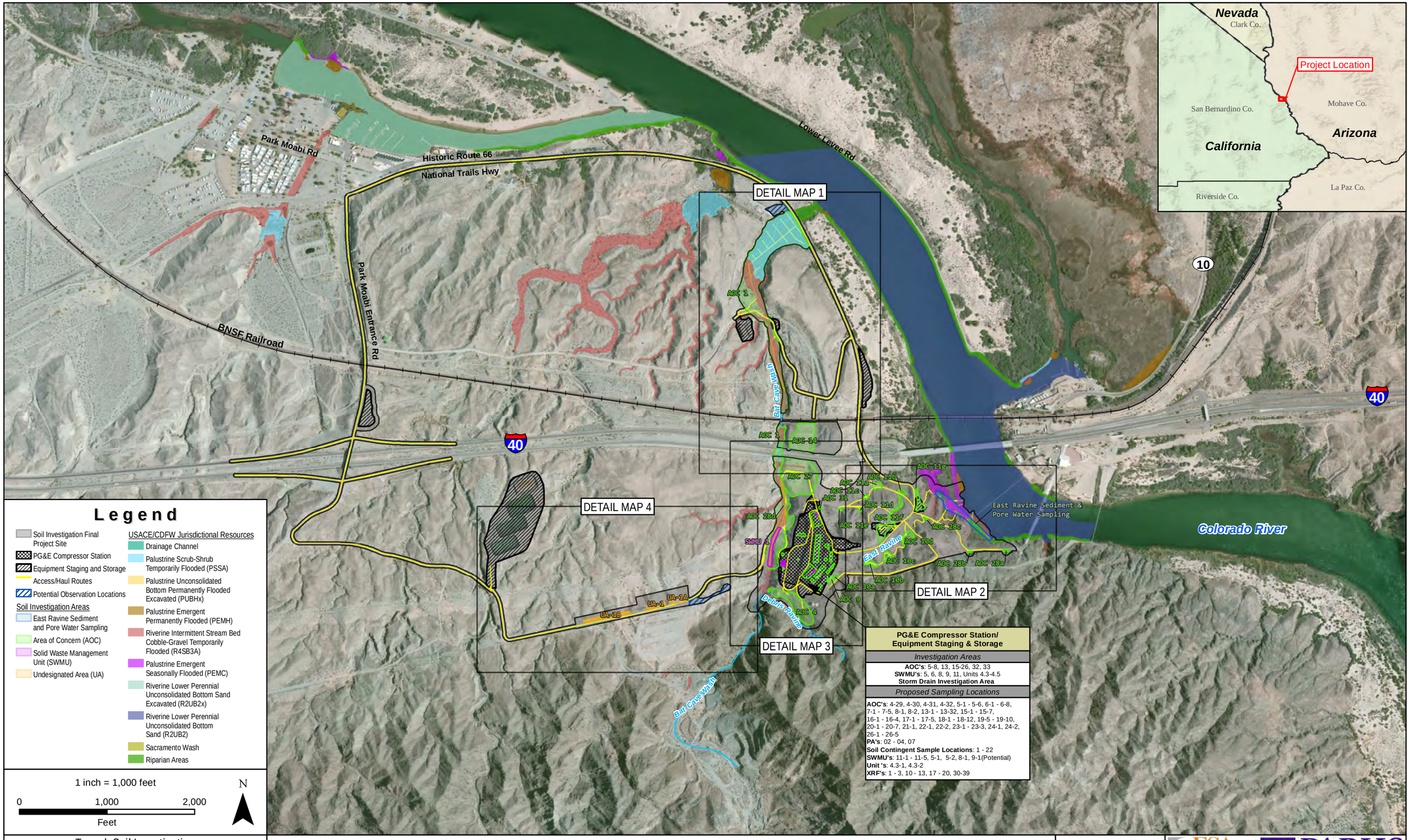
4.3.1.3 Jurisdictional Resources

CH2M Hill wetland ecologists conducted wetland delineations within the Project Site in February and December 2012. The results of the delineations are included as Appendix D-2 to this DEIR and are summarized in the following pages.

Several jurisdictional wetlands and other waters under the jurisdiction of the U.S. Army Corps of Engineers (USACE), CDFW, and the Regional Water Quality Control Board (RWQCB) were identified along the Colorado River (**Figures 4.3-2 through 4.3-2d**) and throughout the Project Site. Jurisdictional wetlands identified during the delineation include palustrine scrub-shrub wetlands associated with ephemeral washes (PSSA); palustrine emergent, permanently flooded wetlands (PEMH); and palustrine emergent, seasonally flooded wetlands (PEMC). Other waters identified during the delineation include non-wetland riverine features such as the Colorado River itself and the ephemeral desert drainages that traverse the Project Site (riverine intermittent bed cobble-gravel, temporarily flooded) (CH2M Hill 2013).

It is assumed that the resources mapped within the Project Site in Figures 4.3-2 through 4.3-2d are considered jurisdictional under Section 404 of the Clean Water Act (CWA) and therefore also qualify for jurisdiction under Section 401 of the CWA administered by the RWQCB, and Section 1600 of the California Fish and Game Code administered by CDFW (CH2M Hill 2013). An additional 0.4 acre of riparian vegetation was mapped along the fringes of these resources, which only fall under the jurisdiction of CDFW. **Table 4.3-2** lists the acreages for resources that would be subject to state and/or federal jurisdiction. These acreages were calculated through a GIS analysis in which the Project Site boundaries were laid over the jurisdictional resources data layer from the *Wetlands and Waters of the United States, Delineation for the Topock Compressor Station Groundwater Remediation Project, San Bernardino County, California* (CH2M HILL 2013). This original jurisdictional data layer was delineated in the field by CH2M Hill to support the environmental analysis of the Groundwater Remediation Project. The acreages in Table 4.3-2 differ from those reported in the *Wetlands and Waters of the United States, Delineation Report* (CH2M HILL 2013) because the current Project Site is smaller than that of the Groundwater Remediation Project.

As previously discussed, wetland vegetation within the Project Site consists primarily of common reed. Several of these wetland patches are located at the confluence of Bat Cave Wash and below the I-40 overcrossing. A number of intermittent drainages mapped on-site were found to connect to the Colorado River (Figures 4.3-2 through 4.3-2d). Near their confluence with the Colorado River, these drainages include tamarisk, catclaw acacia, honey mesquite, and screwbean mesquite.



Topock Soil Investigation Project EIR

Created By Parus Consulting, Inc.
Map Creation Date: 11/14/2014 Background Source: ESRI Aerial

Soil Investigation Project Site Wetlands: Overview

Figure 4.3-2

ESA

PARUS CONSULTING, INC.

AOC1-BCW30
AOC1-BCW26
AOC1-BCW29
AOC1-BCW21
AOC1-BCW25
AOC1-BCW20
AOC1-BCW28
AOC1-BCW17
AOC1-BCW24
AOC1-BCW16
AOC1-BCW27
AOC1-BCW14
AOC1-BCW23
AOC1-BCW22
AOC1-BCW12
AOC1-BCW10
AOC1-BCW18
AOC1-BCW19
AOC1-BCW15
AOC1-BCW13
AOC1-BCW9
AOC1-BCW11
AOC1-BCW8
AOC1-BCW7
AOC1-6d
AOC14-17
AOC14-16
AOC14-15
AOC14-14
AOC1-T5d
AOC 1
AOC 14
AOC 27
Bat Cave Wash
National Trails Hwy
Historic Route 66
BNSF Railroad
40

Legend

Soil Investigation Final Project Site
Equipment Staging and Storage
Access/Haul Routes
Potential Observation Locations

Proposed Sample Locations
- Pore Water Sample
- Proposed Soil Sample
- Soil Gas Sample
- Metals Sample (using X-Ray Fluorescence)

Proposed Sampling Method
- Hand Tools (Estimated 1-foot disturbance diameter) (*Note: Impact Area Shown Not to Scale)
- Excavator (Estimated 30-feet disturbance diameter)
- Hydrovac (Estimated 40-feet disturbance diameter)
- Rotosonic (Estimated 50-feet disturbance diameter)

Soil Investigation Areas
- East Ravine Sediment and Pore Water Sampling
- Area of Concern (AOC)
- Solid Waste Management Unit (SWMU)
- Undesignated Area (UA)

USACE/CDFW Jurisdictional Resources
- Drainage Channel
- Palustrine Scrub-Shrub Temporarily Flooded (PSSA)
- Palustrine Unconsolidated Bottom Permanently Flooded Excavated (PUBHx)
- Palustrine Emergent Permanently Flooded (PEMH)
- Riverine Intermittent Stream Bed Cobble-Gravel Temporarily Flooded (R4SB3A)
- Palustrine Emergent Seasonally Flooded (PEMC)
- Riverine Lower Perennial Unconsolidated Bottom Sand Excavated (R2UB2x)
- Riverine Lower Perennial Unconsolidated Bottom Sand (R2UB2)
- Sacramento Wash
- Riparian Areas

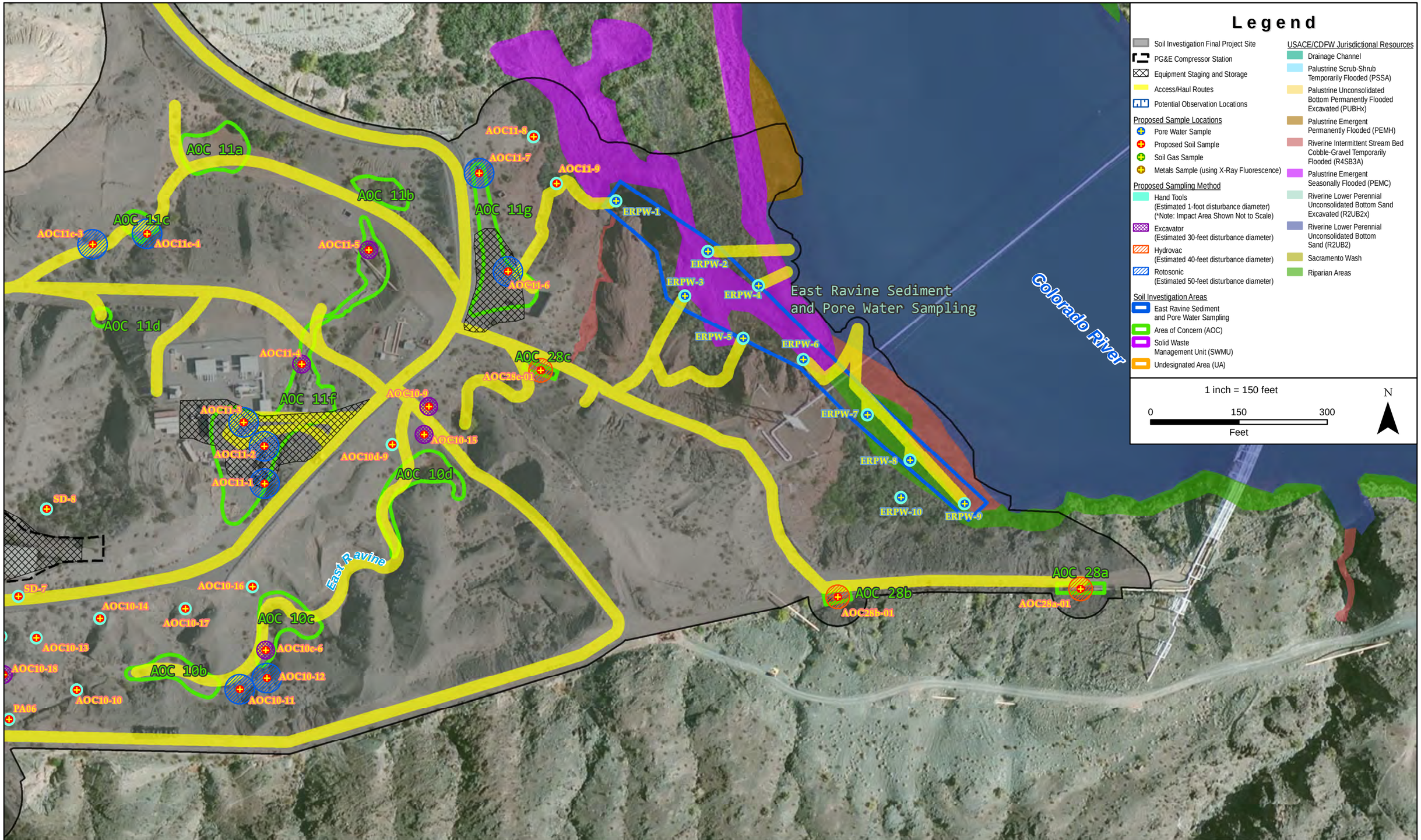
1 inch = 200 feet
0 200 400
Feet
N

Topock Soil Investigation Project EIR
Created By Parus Consulting, Inc.
Map Creation Date: 11/14/2014
Background Source: ESRI Aerial

Soil Investigation Areas Wetlands: Detail Map 1

Figure 4.3-2a

ESA
PARUS CONSULTING, INC.



Legend

- Soil Investigation Final Project Site
- PG&E Compressor Station
- Equipment Staging and Storage
- Access/Haul Routes
- Potential Observation Locations

Proposed Sample Locations

- Pore Water Sample
- Proposed Soil Sample
- Soil Gas Sample
- Metals Sample (using X-Ray Fluorescence)

Proposed Sampling Method

- Hand Tools (Estimated 1-foot disturbance diameter) (*Note: Impact Area Shown Not to Scale)
- Excavator (Estimated 30-feet disturbance diameter)
- Hydrovac (Estimated 40-feet disturbance diameter)
- Rotosonic (Estimated 50-feet disturbance diameter)

Soil Investigation Areas

- East Ravine Sediment and Pore Water Sampling
- Area of Concern (AOC)
- Solid Waste Management Unit (SWMU)
- Undesignated Area (UA)

USACE/CDFW Jurisdictional Resources

- Drainage Channel
- Palustrine Scrub-Shrub Temporarily Flooded (PSSA)
- Palustrine Unconsolidated Bottom Permanently Flooded Excavated (PUBHx)
- Palustrine Emergent Permanently Flooded (PEMH)
- Riverine Intermittent Stream Bed Cobble-Gravel Temporarily Flooded (R4SB3A)
- Palustrine Emergent Seasonally Flooded (PEMC)
- Riverine Lower Perennial Unconsolidated Bottom Sand Excavated (R2UB2x)
- Riverine Lower Perennial Unconsolidated Bottom Sand (R2UB2)
- Sacramento Wash
- Riparian Areas

1 inch = 150 feet

0 150 300

Feet

N

Topock Soil Investigation
Project EIR
Created By Parus Consulting, Inc.
Map Creation Date: 11/14/2014 Background Source: ESRI Aerial

Soil Investigation Areas Wetlands: Detail Map 2

Figure 4.3-2b

ESA

PARUS CONSULTING, INC.

Legend

- Soil Investigation Final Project Site
- PG&E Compressor Station
- Equipment Staging and Storage
- Access/Haul Routes
- Potential Observation Locations

Proposed Sample Locations

- Pore Water Sample
- Proposed Soil Sample
- Soil Gas Sample
- Metals Sample (using X-Ray Fluorescence)

Proposed Sampling Method

- Hand Tools (Estimated 1-foot disturbance diameter) (*Note: Impact Area Shown Not to Scale)
- Excavator (Estimated 30-feet disturbance diameter)
- Hydrovac (Estimated 40-feet disturbance diameter)
- Rotosonic (Estimated 50-feet disturbance diameter)

Soil Investigation Areas

- East Ravine Sediment and Pore Water Sampling
- Area of Concern (AOC)
- Solid Waste Management Unit (SWMU)
- Undesignated Area (UA)

USACE/CDFW Jurisdictional Resources

- Drainage Channel
- Palustrine Scrub-Shrub Temporarily Flooded (PSSA)
- Palustrine Unconsolidated Bottom Permanently Flooded Excavated (PUBHx)
- Palustrine Emergent Permanently Flooded (PEMH)
- Riverine Intermittent Stream Bed Cobble-Gravel Temporarily Flooded (R4SB3A)
- Palustrine Emergent Seasonally Flooded (PEMC)
- Riverine Lower Perennial Unconsolidated Bottom Excavated (R2UB2x)
- Riverine Lower Perennial Unconsolidated Bottom Sand (R2UB2)
- Sacramento Wash
- Riparian Areas

1 inch = 150 feet

0 150 300

Feet

N

AOC 14 AOC 1 AOC 27 AOC 28d AOC 31 AOC 11e AOC 11d AOC 10a AOC 9 AOC 4 SWMU 1

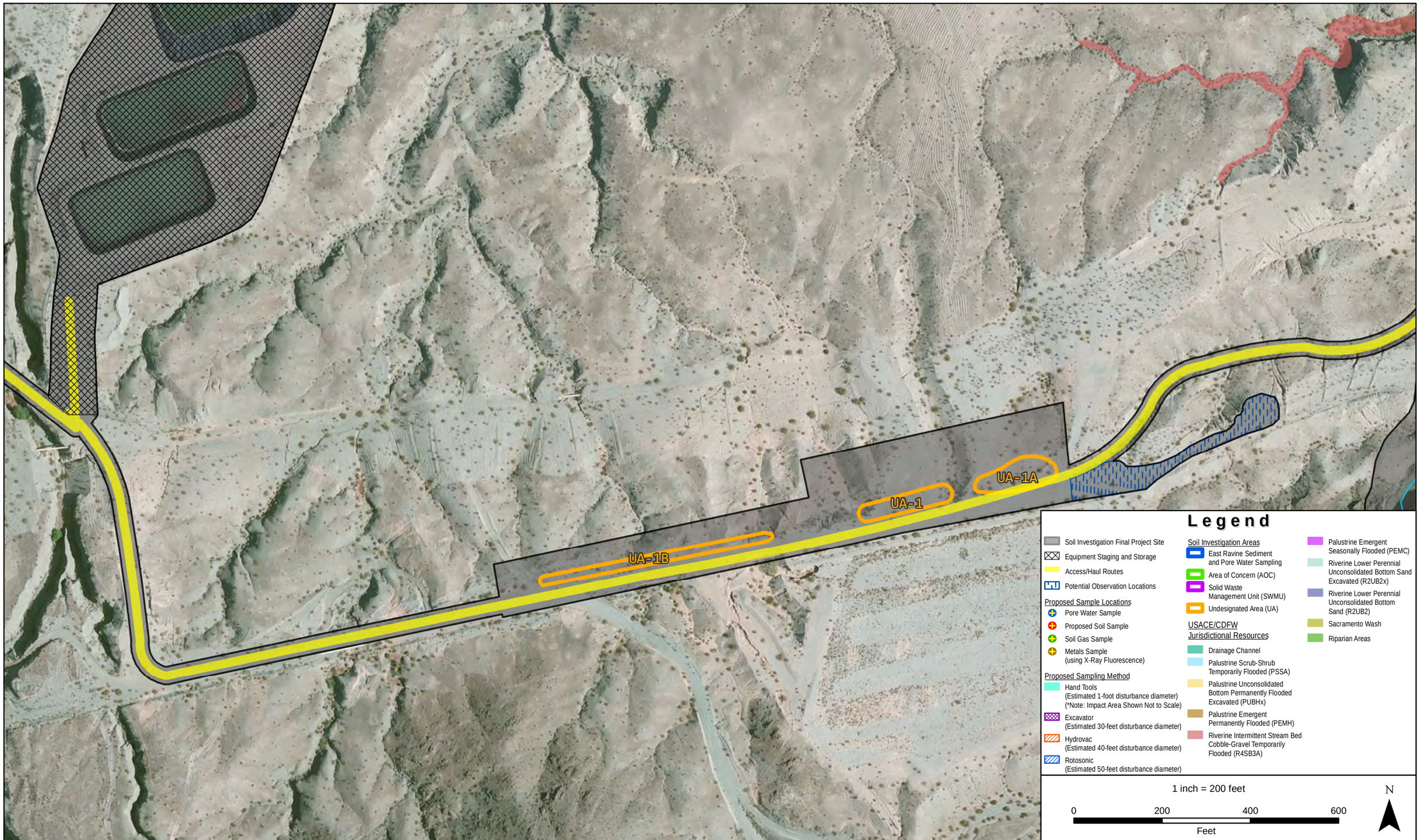
AOC14-15 AOC14-14 AOC1-T5d AOC27-14 AOC27-13 AOC27-8 AOC27-7 AOC27-6 AOC27-20 AOC27-21 AOC27-27 AOC27-28 AOC27-33 AOC27-34 AOC27-35 AOC27-40 AOC27-41 AOC27-46 AOC27-9 AOC27-15 AOC27-10 AOC27-11 AOC27-23 AOC27-16 AOC27-24 AOC27-12 AOC27-17 AOC27-1 AOC27-18 AOC27-2 AOC27-19 AOC27-5 AOC27-25 AOC27-26 AOC27-22 AOC27-3 AOC27-4 AOC27-29 AOC27-30 AOC27-36 AOC27-32 AOC27-31 AOC27-39 AOC27-38 AOC27-45 AOC27-37 AOC27-44 AOC27-49 AOC27-43 AOC27-42 AOC27-47 AOC27-48 AOC1-T2f AOC28d-01 SD-14 AOC1-T1e AOC1-T1f SWMU1-21 SWMU1-20 SD-15 AOC1-3 AOC1-1 AOC1-4 SWMU1-19 AOC1-2 SD-16 SD-17 XRF-16 SWMU1-25 SWMU1-22 SWMU1-18 SWMU1-23 SWMU1-24 SD-19 SD-18 AOC4-BCW1 AOC4-BCW2 AOC4-BCW3 AOC4-BCW4 AOC4-BCW5 AOC4-BCW6 AOC4-18 AOC4-17 AOC4-23 AOC4-24 AOC4-25 AOC4-26 AOC4-27 AOC4-28 AOC4-19 AOC4-21 AOC4-20 AOC4-22 XRF-14 XRF-15 PA01 PA08 XRF-9 XRF-8 XRF-7 AOC11e-3 XRF-6 XRF-5 XRF-4 SD-11 SD-12 SD-10 SD-9 SD-8 AOC11e-5 AOC11e-4 AOC11e-6 SD-13 SD-7 SD-6 XRF-29 SD-5 XRF-28 XRF-27 SD-4 SD-3 XRF-26 SD-2 XRF-25 AOC9-17 AOC9-18 AOC9-19 XRF-24 XRF-23 XRF-22 SD-1 AOC9-16 AOC9-15 AOC9-20 PA05 XRF-21 AOC11c-3 AOC10-14 AOC10-13 AOC10-18 AOC10-10 PA06 AOC10a-3 AOC10a-2

40

Bat Cave Wash

Debris Ravine

Topock Soil Investigation Project EIR Created By Parus Consulting, Inc. Map Creation Date: 11/14/2014 Background Source: ESRI Aerial	**Soil Investigation Areas Wetlands: Detail Map 3**	*Figure 4.3-2c*	ESA PARUS CONSULTING, INC.



Topock Soil Investigation
Project EIR
Created By Parus Consulting, Inc.
Map Creation Date: 11/14/2014 Background Source: ESRI Aerial

Soil Investigation Areas Wetlands: Detail Map 4

Figure 4.3-2d

ESA

PARUS CONSULTING, INC.

This page left intentionally blank

TABLE 4.3-2
JURISDICTIONAL (USACE/CDFW/RWQCB) RESOURCES IN THE PROJECT SITE

Jurisdictional Habitat	Approximate Acreage
USACE/CDFW Jurisdictional Habitats	
Palustrine scrub-shrub wetlands associated with ephemeral washes (PSSA)	4.9
Riverine Intermittent Stream Bed Cobble-Gravel Temporarily Flooded (R4SB3A)	4.7
Palustrine, emergent, permanently flooded wetlands (PEMH, R4SB3A)	0.6
Palustrine emergent, seasonally flooded wetlands (PEMC)	1.3
~~Ephemeral washes~~	~~6.6~~
Colorado River (R2UB2)	0.2
~~Riparian habitat~~	~~0.4~~
CDFW Only Jurisdictional Habitats	
Riparian habitat	0.4
GRAND TOTAL	**12.1** ~~**14.0**~~

SOURCE: CH2M HILL 2013; Parus 2014.

4.3.1.4 Wildlife

The diversity and abundance of wildlife species encountered are influenced by the proximity of the Project Site to the creosote-dominated desert and the Topock Marsh, a large wetland with abundant wildlife (GANDA 2012). Avian species commonly associated with the river include American coot (*Fulica americana*), mallard (*Anas platyrhynchos*), pied-billed grebe (*Podilymbus podiceps*), great egret (*Casmerodius albus*), great blue heron (*Ardea herodias*), northern rough-winged swallow (*Stegidopteryx serripennis*), and belted kingfisher (*Ceryle alcyon*). Other avian species found in the upland areas include red-tailed hawk (*Buteo jamencensis*), Gambel's quail (*Callipepla gambelii*), mourning dove (*Zenaida macroura*), white-winged dove (*Zenaida asiatica*), common raven (*Corvus corax*), song sparrow (*Melospiza melodia*), Canyon wren (*Catherpes mexicanus*), brewer's blackbird (*Euphagus cyanocephalus*), great-tailed grackle (*Quiscalus mexicanus*), turkey vulture (*Cathartes aura*), greater roadrunner (*Geococcyx californianus*), lesser nighthawk (*Chordeiles acutipennis*), rock dove (*Columba livia*), verdin (*Auriparus flaviceps*), and black-tailed gnatcatcher (*Polioptila melanura*) (AECOM 2011; GANDA 2012).

Observations during the 2012 avian surveys also included detections of Yuma clapper rail (*Rallus longirostris yumanensis*), Arizona Bell's vireo (*Vireo bellii arizonae*), brownheaded cowbird (*Molothrus ater*), and a great blue heron nest (GANDA 2012).

Mammals that may occur in or near the Project Site include deer mouse (*Peromyscus maniculatus*), Merriam kangaroo rat (*Dipodomys merriami*), whitetail antelope squirrel (*Ammospermophilus leucurus*), desert woodrat (*Neotoma lepida*), California ground squirrel (*Spermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), Audubon's cottontail (*Sylvilagus audubonii*), black-tailed hare (*Lepus californicus*), coyote (*Canis latrans*), desert kit fox (*Vulpes macrotis*), American badger (*Taxidea taxus*), bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), beaver (*Castor canadensis*), raccoon (*Procyon lotor*), burro (*Equus asinus*), and bighorn sheep (*Ovis canadensis nelsoni*) (AECOM 2011; GANDA 2012). Bat species with a potential to occur on the Project site include Yuma myotis (*Myotis yumanensis*), California myotis (*Myotis californicus*), cave myotis (*Myotis vellifer*), Arizona myotis (*Myotis occultus*), western canyon bat (*Parastrellus hesperus*), pallid bat (*Antrozous pallidus*), Mexican free-tailed bat (*Tadarida brasiliensis*), big brown bat (*Eptesicus fuscus*), western red bat (*Lasiurus blossevillii*), southern yellow bat (*Lasiurus xanthinus*), hoary bat (*Lasiurus cinereus*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), big free-tailed bat (*Nyctinomops macrotis*), western mastiff bat (*Eumops perotis*), California leaf-nosed bat (*Macrotus californicus*), and Townsend's big-eared bat (*Corynorhinus townsendii*) (PG&E 2015a).

Reptiles that may occur in the area include chuckwalla (*Sauromalus obesus*), side-blotched lizard (*Uta stansburiana*), western whiptail lizard (*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus draconoides*), desert iguana (*Dipsosaurus dorsalis*), coachwhip (*Masticophis flagellum*), gopher snake (*Pituophis melanoleucus*), and western diamondback rattlesnake (*Crotalus atrox*) (AECOM 2011; GANDA 2012).

4.3.1.5 Aquatic Wildlife

The Colorado River flows southeast between California and Arizona and provides the primary aquatic habitat within the Project Site. The aquatic habitat of the Colorado River supports several game fish species, including striped bass (*Morone saxatillis*), largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), white crappie (*Pomoxis annularis*), flathead catfish (*Pylodictis olivaris*), and channel catfish (*Ictalurus punctatus*) (AECOM 2011). During an instream habitat typing survey conducted in 2012, it was noted that isolated pockets of gravel, cobble, or sandy substrates with minimal current scour occur along the western banks of the Colorado River that could be used as spawning habitat or possibly as larval rearing areas for many fish species (although less likely for rearing, due to the dominant fast flows and relatively small size of these sites). Some of these pocket areas, in back eddies and the lee of outcrops, were observed to have active fish nests. For these small-sized potential spawning areas, the more sandy areas to the north near Bat Cave Wash had the least favorable habitat potential. The small areas of potential cobble/gravel spawning or rearing habitat observed in the south included areas of favorable water depth (1 to 2 m) for spawning (CH2M HILL 2012).

4.3.1.6 Sensitive Biological Resources

Special-Status Species

For purposes of this evaluation, "special-status" species are plants and animals that are legally protected or otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations, including:

- Plant and wildlife species that are listed under the federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA) as rare, threatened, or endangered;
- Plant and wildlife species considered candidates for listing or proposed for listing under FESA or CESA;
- Wildlife species identified by CDFW as fully protected and/or species of special concern;
- Plants considered by the California Native Plant Society (CNPS) to be rare, threatened, or endangered (i.e., CNPS California Rare Plant Rank [CRPR] Lists 1A, 1B, and 2 species are recognized by the CDFW as potentially qualifying for listing, and therefore California Department of Toxic Substances Control (DTSC) considers these species as sensitive for purposes of this DEIR); and
- Plants and animals covered by the Lower Colorado River Multi-Species Conservation Program (LCR MSCP).

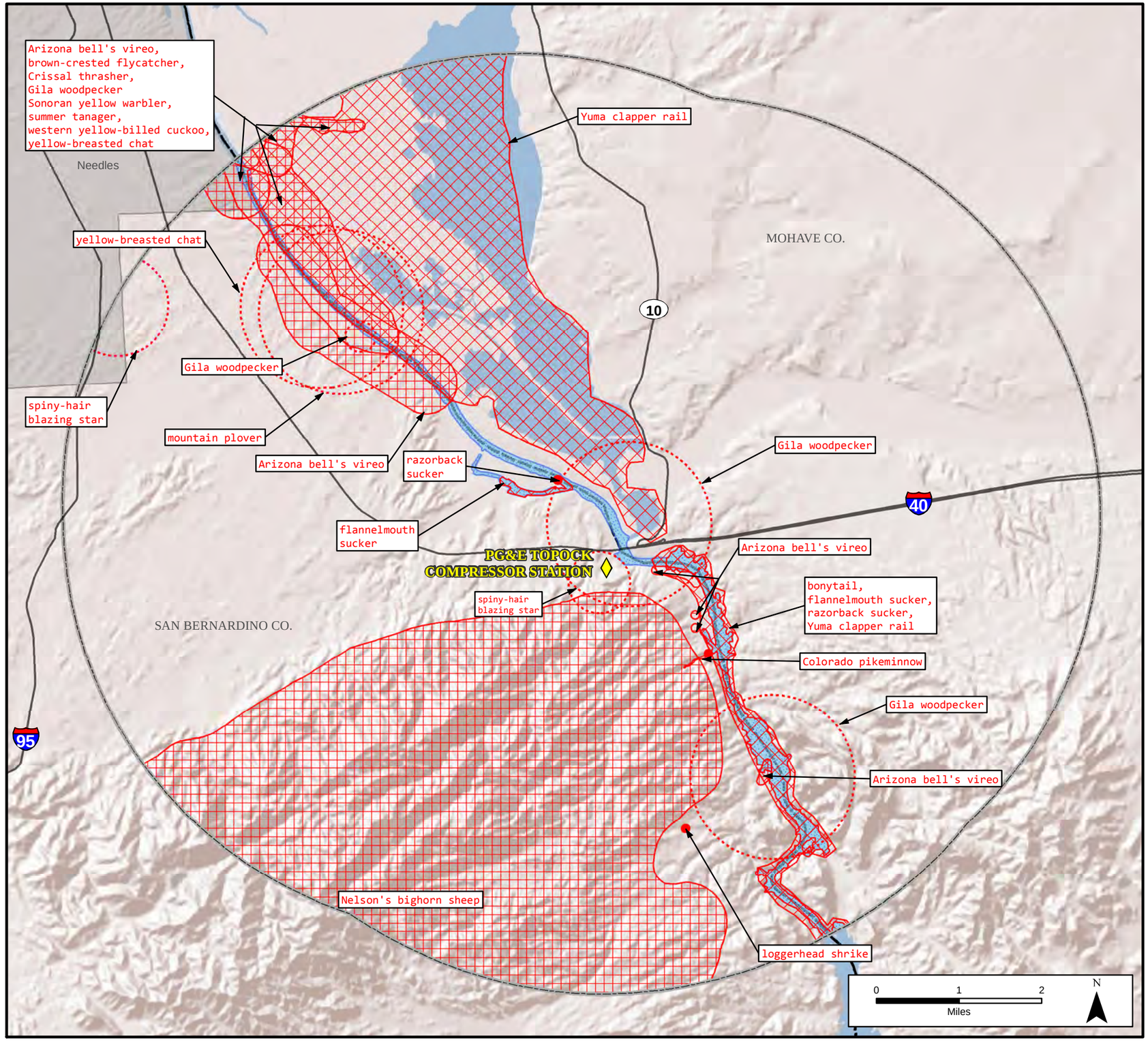
CDFW applies the term "California Species of Special Concern" to animals that are not listed under FESA or CESA but that are nonetheless declining at a rate that could result in listing, or that historically existed in low numbers and currently face known threats to their persistence. Both USFWS and CDFW use CNPS designations when they consider formal species protection under FESA and CESA.

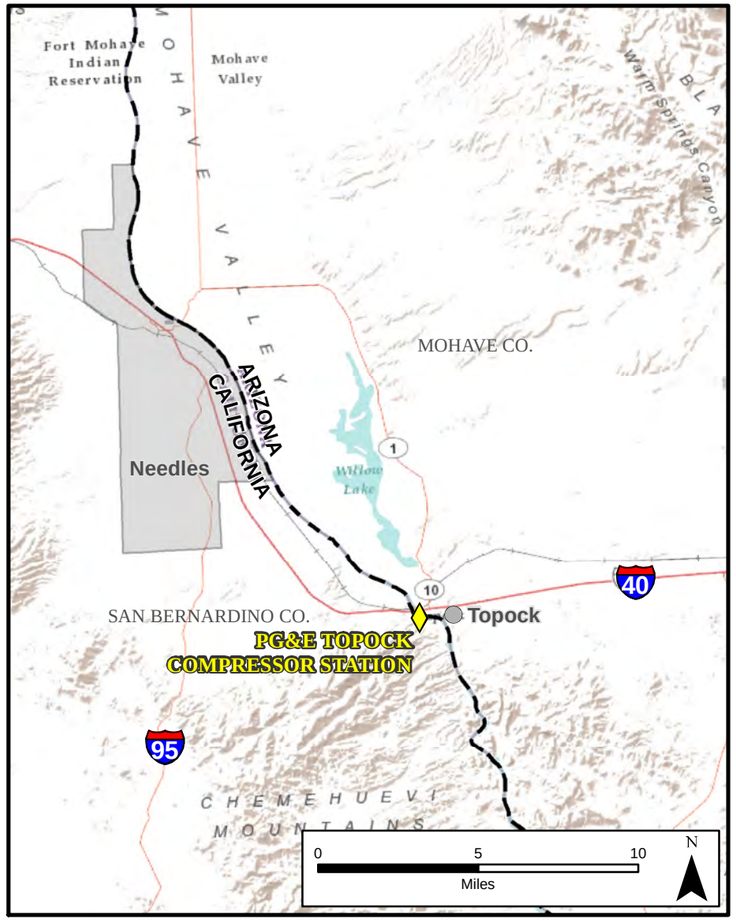
The California Natural Diversity Database (CNDDB) (2013), CNPS (2013), and targeted species surveys conducted by CH2M HILL and GANDA from 2004 to 2013 were used as the primary sources to identify previously reported occurrences of special-status species in the Project vicinity (**Figures 4.3-3** and **4.3-4** through **4.3-4c**). Species identified by the LCR MSCP (BOR 2004a: Table 1-2, page 1-10) as having potentially suitable habitat within this reach of the Colorado River were also included in the species list. Topographic quadrangles included in the CNDDB query were Needles NW, Needles NE, Needles, Needles SW, Whale Mountain, Topock, Chemehuevi Peak, and Castle Rock. Although the CNDDB is a useful tool for tracking occurrences of special-status species, it contains only those records that have been reported to CDFW. Therefore, special-status species that have not been reported to the CNDDB may occur at the Project Site.

Thirty-three special-status fish and wildlife species, one insect, and eight special-status plant species were evaluated for their potential to occur in the Project Site (CH2M HILL 2004a-e; 2005a; GANDA 2005a, 2005b, 2006a, 2006b, 2007, 2008a, 2008b, 2009a, 2009b, 2010, 2012; WSA 2013; CH2M HILL & GANDA 2013ab; CNDDB 2013; CNPS 2013). The regulatory status and habitat association are summarized for each species in **Table 4.3-3**.

Four of the eight plant species were either observed in or near the Project Site or determined to have potential to occur in the Project Site, and are further discussed below. The remaining four plant species included in Table 4.3-3 are not addressed further in this section because the Project Site does not support the habitats in which they occur or the Project is outside of the elevation range for the species.

Sixteen of the 33 fish and wildlife species were determined to have potential to occur in the Project Site during at least part of the year, and are further discussed below. The remaining 17 animal species and the one insect included in Table 4.3-3 are not addressed further in this section because the Project Site either does not support the habitats in which they occur or is outside of the species' range.





Legend

Project Site 5 Mile Buffer

State Boundary

City Boundary

Special Status Species

- *Animal- Accuracy Class 1*
- *Animal- Accuracy Class 2*
- *Animal- Accuracy Class 3*
- *Animal- Accuracy Class 4*
- *Critical Habitat for Bonytail Chub*

CNDDB Accuracy Class Information

Class 1: *Reported occurrence is a point; location considered accurate to within the minimum mappable unit of 80 meters.*

Class 2: *Reported location is an area with defined boundaries.*

Class 3: *Reported location is a non-specific area; buffer added to represent degree of uncertainty in reported location.*

Class 4: *Reported location considered accurate within the radius shown.*

Soil Investigation Areas: *Known Locations of Special-Status Species*

Figure 4.3-3

ESA

PARUS CONSULTING, INC.

Topock Soils Study Project EIR

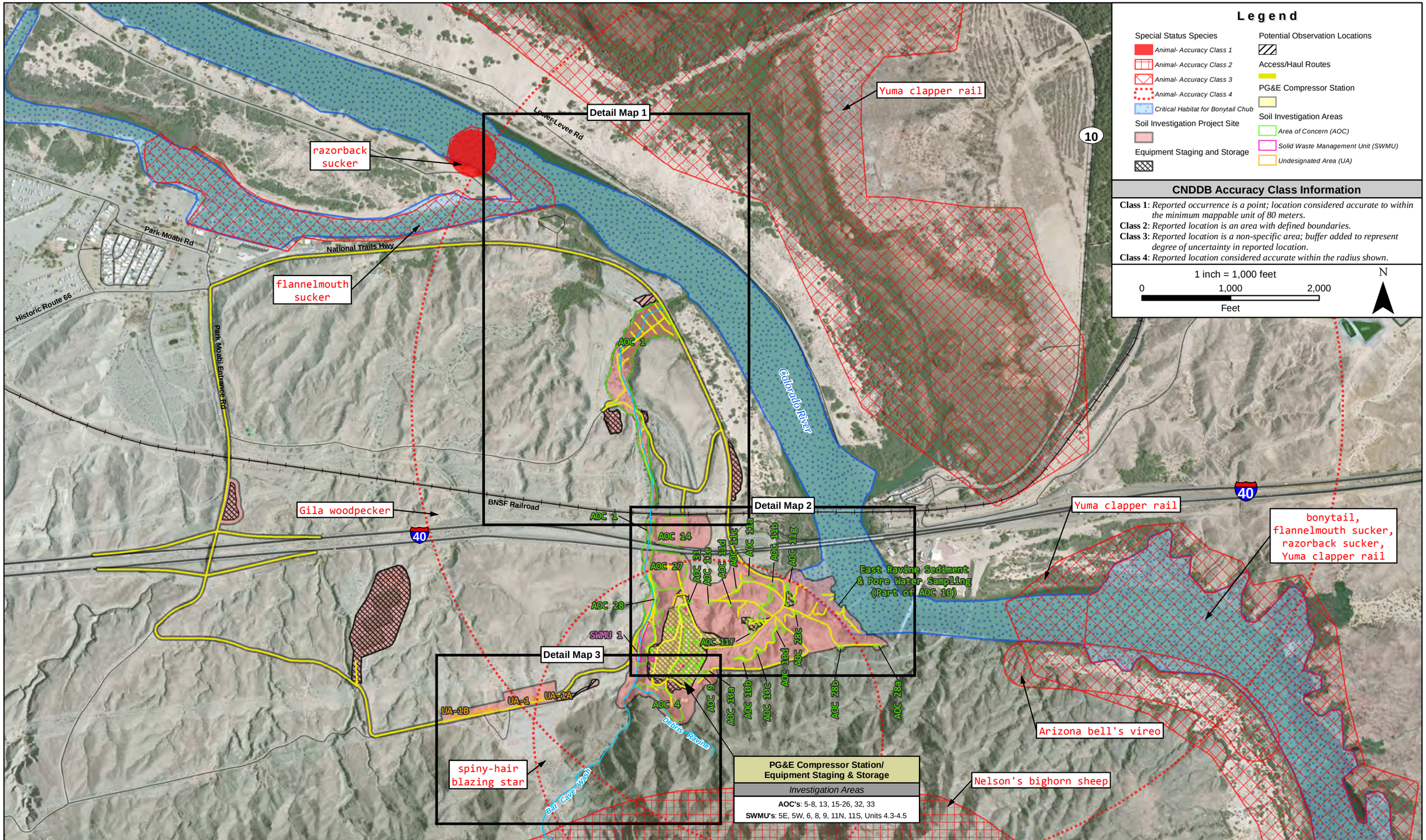
Created By Parus Consulting, Inc.

Map Creation Date: 11/14/2014

Sources:

Background: ESRI Shaded Relief, ESRI Topographic

Data: CNDDB 2013; USFWS Critical Habitat 2012



Topock Soils Study Project EIR

Sources: ESRI Aerial; CNDDB 2013; USFWS Critical Habitat 2012
Created By Parus Consulting, Inc.
Map Creation Date: 11/14/2014

Soil Investigation Areas Special-Status Species: *Overview*

Figure 4.3-4

ESA PARUS CONSULTING, INC.

Gila woodpecker

razorback sucker

Lower Levee Rd

Yuma clapper rail

flannelmouth sucker

Historic Route 66
National Trails Hwy

AOC1-BCW25
AOC1-BCW30
AOC1-BCW26
AOC1-BCW29
AOC1-BCW21
AOC1-BCW28
AOC1-BCW20
AOC1-BCW24
AOC1-BCW17
AOC1-BCW27
AOC1-BCW16
AOC1-BCW23
AOC1-BCW14
AOC1-BCW22
AOC1-BCW12
AOC1-BCW18
AOC1-BCW10
AOC1-BCW19
AOC1-BCW9
AOC1-BCW15
AOC1-BCW13
AOC1-BCW11
AOC1-BCW8

Bat Cave Wash

AOC 1

AOC1-BCW7

BNSF Railroad

AOC1-6d
AOC 1
AOC14-4
AOC 14

Legend

Special Status Species
- Animal- Accuracy Class 1
- Animal- Accuracy Class 2
- Animal- Accuracy Class 3
- Animal- Accuracy Class 4
- Critical Habitat for Bonytail Chub

Soil Investigation Project Site

Equipment Staging and Storage

Potential Observation Locations

Access/Haul Routes

Soil Investigation Areas
- Area of Concern (AOC)
- Solid Waste Management Unit (SWMU)
- Undesignated Area (UA)

Proposed Soil Sample Locations
- Pore Water Sample
- Proposed Soil Sample
- Soil Gas Sample
- XRF

CNDDB Accuracy Class Information

Class 1: *Reported occurrence is a point; location considered accurate to within the minimum mappable unit of 80 meters.*
Class 2: *Reported location is an area with defined boundaries.*
Class 3: *Reported location is a non-specific area; buffer added to represent degree of uncertainty in reported location.*
Class 4: *Reported location considered accurate within the radius shown.*

1 inch = 300 feet

0 300 400 800

Feet

N

Topock Soils Study Project EIR

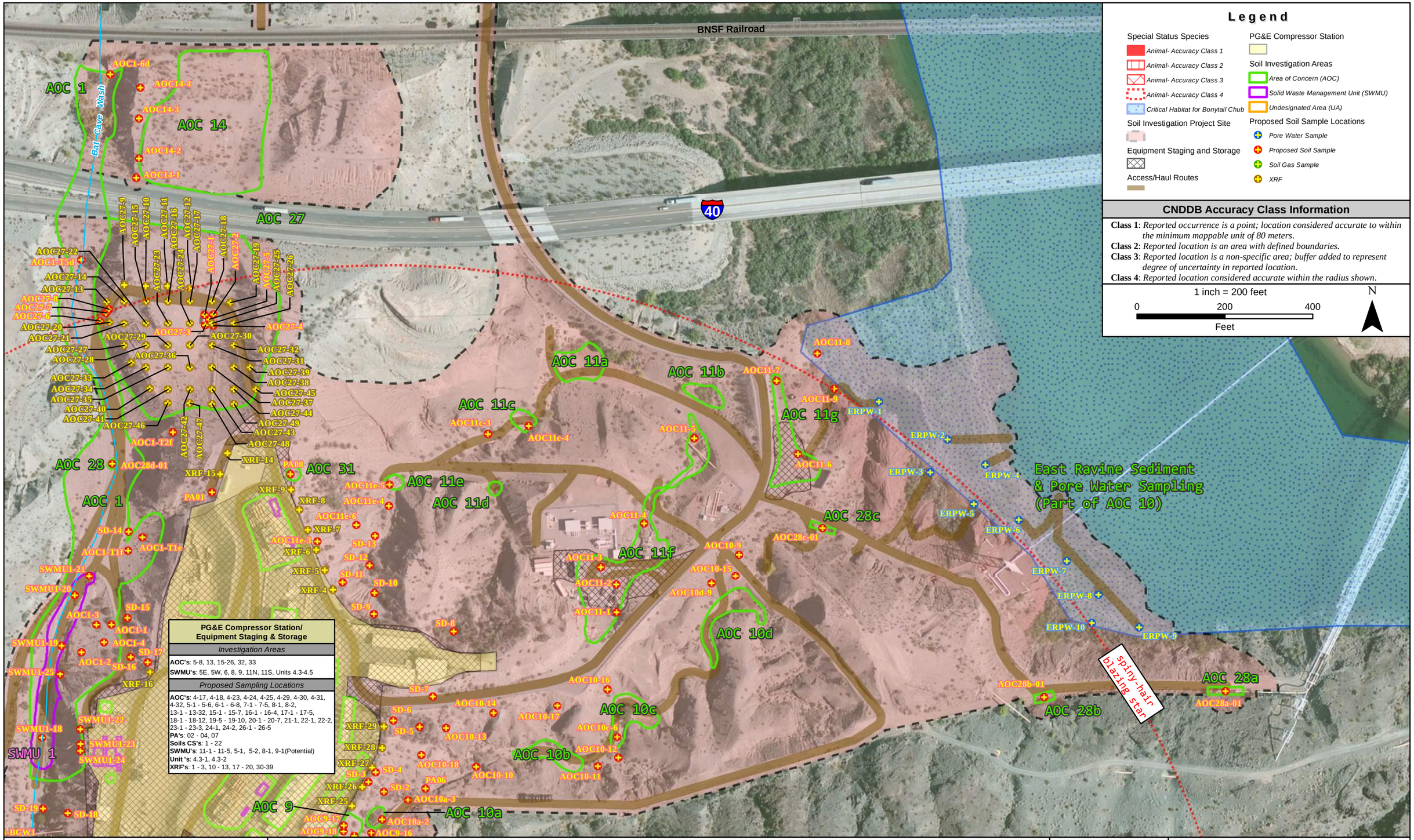
Sources: ESRI Aerial; CNDDB 2013; USFWS 2012
Created By Parus Consulting, Inc.
Map Creation Date: 4/2/2015

Soil Investigation Areas Special-Status Species: *Detail Map 1*

Figure 4.3-4a

ESA

PARUS CONSULTING, INC.



Topock Soils Study Project EIR

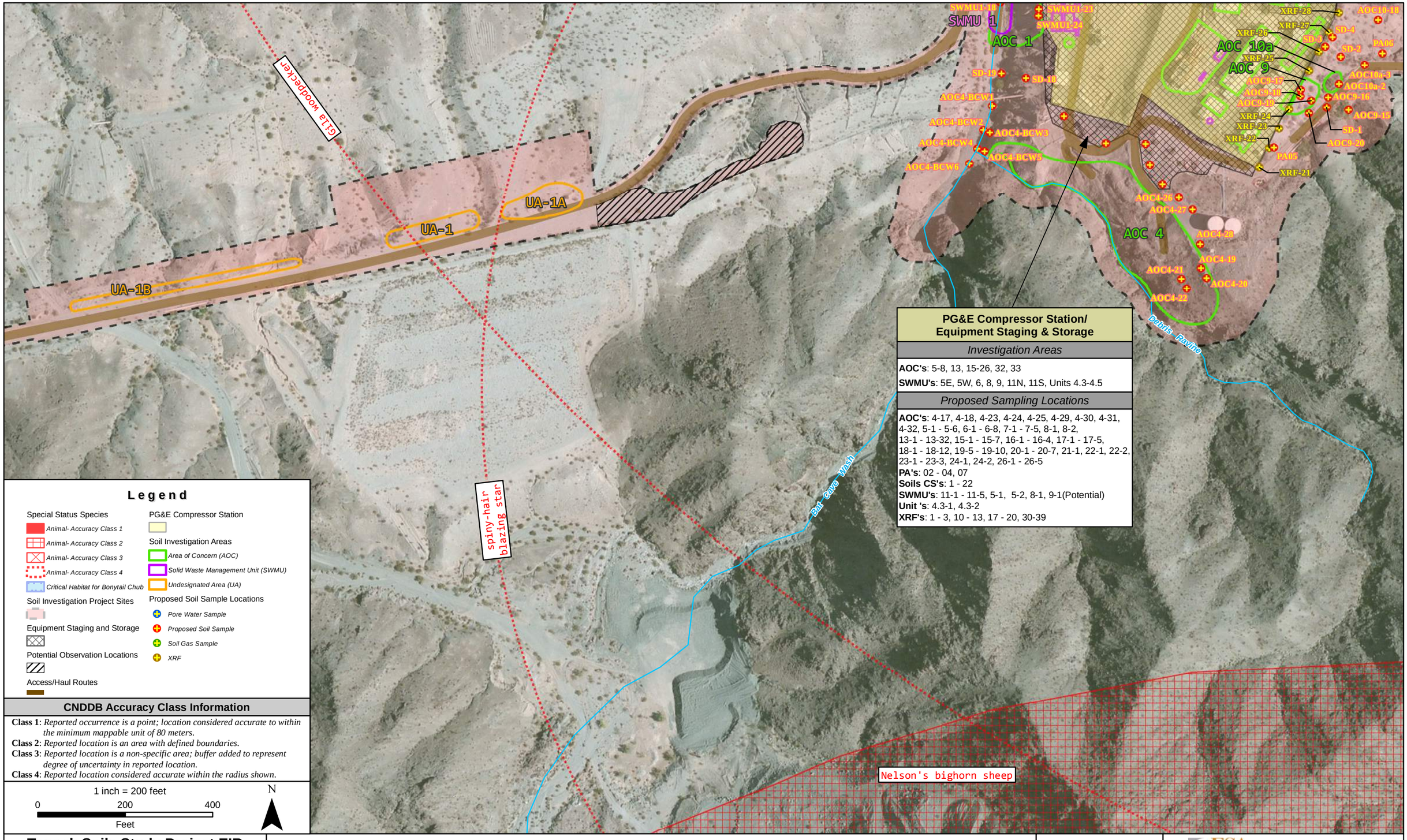
Sources: ESRI Aerial; CNDDB 2013; USFWS Critical Habitat 2012
Created By Parus Consulting, Inc.
Map Creation Date: 4/2/2015

Soil Investigation Areas Special-Status Species: *Detail Map 2*

Figure 4.3-4b

ESA

PARUS CONSULTING, INC.



PG&E Compressor Station/ Equipment Staging & Storage

Investigation Areas

AOC's: 5-8, 13, 15-26, 32, 33
SWMU's: 5E, 5W, 6, 8, 9, 11N, 11S, Units 4.3-4.5

Proposed Sampling Locations

AOC's: 4-17, 4-18, 4-23, 4-24, 4-25, 4-29, 4-30, 4-31, 4-32, 5-1 - 5-6, 6-1 - 6-8, 7-1 - 7-5, 8-1, 8-2, 13-1 - 13-32, 15-1 - 15-7, 16-1 - 16-4, 17-1 - 17-5, 18-1 - 18-12, 19-5 - 19-10, 20-1 - 20-7, 21-1, 22-1, 22-2, 23-1 - 23-3, 24-1, 24-2, 26-1 - 26-5
PA's: 02 - 04, 07
Soils CS's: 1 - 22
SWMU's: 11-1 - 11-5, 5-1, 5-2, 8-1, 9-1(Potential)
Unit 's: 4.3-1, 4.3-2
XRF's: 1 - 3, 10 - 13, 17 - 20, 30-39

Legend

Special Status Species
- *Animal- Accuracy Class 1*
- *Animal- Accuracy Class 2*
- *Animal- Accuracy Class 3*
- *Animal- Accuracy Class 4*
- *Critical Habitat for Bonytail Chub*

Soil Investigation Project Sites

Equipment Staging and Storage

Potential Observation Locations

Access/Haul Routes

PG&E Compressor Station

Soil Investigation Areas
- *Area of Concern (AOC)*
- *Solid Waste Management Unit (SWMU)*
- *Undesignated Area (UA)*

Proposed Soil Sample Locations
- *Pore Water Sample*
- *Proposed Soil Sample*
- *Soil Gas Sample*
- *XRF*

CNDDB Accuracy Class Information

Class 1: *Reported occurrence is a point; location considered accurate to within the minimum mappable unit of 80 meters.*
Class 2: *Reported location is an area with defined boundaries.*
Class 3: *Reported location is a non-specific area; buffer added to represent degree of uncertainty in reported location.*
Class 4: *Reported location considered accurate within the radius shown.*

1 inch = 200 feet
0 200 400
Feet

N

Topock Soils Study Project EIR

Sources: ESRI Aerial; CNDDB 2013; USFWS Critical Habitat 2012
Created By Parus Consulting, Inc.
Map Creation Date: 4/2/2015

Soil Investigation Areas Special-Status Species: *Detail Map 3*

Figure 4.3-4c

ESA

PARUS CONSULTING, INC.

This page left intentionally blank

TABLE 4.3-3
SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT SITE

Species	Status[1]	Habitat	Potential for Occurrence[2]
Plants			
Small-flowered androstephium *Androstephium breviflorum*	CRPR 2.2	Perennial bulbiferous herb that occurs in Mojavean desert scrub; widely scattered in stabilized to semi-stabilized sandy areas in valleys from 220 – 800 meters in elevation. Blooms from March - April.	**Could occur**; although small-flowered androstephium is considered a special-status plant in California (CRPR List 2.2), this plant was found only during the 2012 floristic survey in Arizona (east side of the Oatman-Topock Highway, north of the BNSF railroad tracks), where it is not considered a special-status plant (CH2M HILL and GANDA 2013ab). Though suitable habitat is present within the current Project Site, the species was not observed during the various biological surveys referenced in this document.
Gravel milk-vetch *Astragalus sabulonum*	CRPR 2.2	Annual/perennial herb that occurs in desert dunes, Mojavean Desert scrub and Sonoran Desert scrub in sandy sometimes gravelly soils. Can be found in flats, washes or roadsides from 60 to 930 meters in elevation. Blooms from February–June.	**Could occur**; although gravel milk-vetch is considered a special-status plant in California (CRPR List 2.2), this plant was found only during the 2012 floristic survey in Arizona, where it is not considered a special-status plant (CH2M HILL and GANDA 2013ab). Though suitable habitat is present within the current Project Site, the species was not observed during the various biological surveys referenced in this document.
Emory's crucifixion-thorn *Castela emoryi*	CRPR 2.3	Perennial deciduous shrub that occurs in Mojavean desert scrub, playas, and Sonoran desert scrub from 90 to 670 meters in elevation. Blooming period range is April–September.	**Unlikely to occur**; the species was not observed within the Project Site during the various biological surveys referenced in this document, including the 2012 floristic survey. The nearest record occurs near Chemehuevi Wash 19 miles southeast of Topock (CH2M HILL & GANDA 2011).
Mousetail suncup *Chylismia arenaria* ssp. *arenaria*	CRPR 2.2	Perennial herb found in Mojave desert scrub on rocky slopes and canyon walls; may also be found in washes from 70 to 915 meters in elevation. Blooming period range is January–May.	**Present**. Four individuals found along the steep, nearly vertical rocky slopes in or near Bat Cave Wash during the 2012 floristic survey (CH2M HILL and GANDA 2013ab).
Glandular ditaxis *Ditaxis claryana*	CRPR 2.2	Perennial herb typically found in Mojavean desert scrub and Sonoran desert scrub from 0 to 465 meters in elevation. Blooming period range is October–March.	**Unlikely to occur**; though suitable habitat exists, the species was not observed during the various biological surveys referenced in this document, including the 2012 floristic survey (CH2M HILL & GANDA 2011).
Spiny-hair blazing star *Mentzelia tricuspis*	CRPR 2.1	Annual herb found along sandy, gravelly slopes and washes within Mojavean desert scrub. Occurs from 150 – 1280 meters in elevation and blooms between March and May.	**Could occur**; although spiny-haired blazing star is considered a special-status plant in California (CRPR List 2.1), this plant was found only during the 2012 floristic survey in Arizona (below the BNSF railroad tracks), where it is not considered a special-status plant (CH2M HILL and GANDA 2013ab). Though suitable habitat is present within the current Project Site, the species was not observed during the various biological surveys referenced in this document.

TABLE 4.3-3
SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT SITE

Species	Status[1]	Habitat	Potential for Occurrence[2]
Arizona pholistoma *Pholistoma auritum* var. *arizonicum*	CRPR 2.3	Annual herb found within Mojavean desert scrub from 275 to 835 meters in elevation. Blooming period occurs in March.	**Unlikely to occur**; though suitable habitat is present, the species was not observed during the various biological surveys referenced in this document and the nearest known occurrence is 15 miles northwest of the Project Site in the Dead Mountains (CH2M HILL & GANDA 2011).
Narrow-leaved psorothamnus *Psorothamnus fremontii* var. *attenuatus*	CRPR 2.3	Perennial shrub found in Sonoran desert scrub on granitic or volcanic soils. Occurs from 335 to 915 meters in elevation and blooms in April.	**Unlikely to occur**; though suitable habitat is present, the species was not observed during the various biological surveys referenced in this document. Furthermore the species is only known to occur in the Whipple Mountains approximately 30 miles south of Project Site (CH2M HILL & GANDA 2011).
Invertebrates			
MacNeill's sootywing skipper *Hesperopsis gracielae*	LCR MSCP	This small skipper is found along the Colorado River. Only known larval host plant is the quail bush (*Atriplex lentiformus*), which occurs along the subriparian edge of the river. Nectar plants include honey mesquite, alfalfa, and tamarisk.	**Could occur**; its host plant, the quail bush, occurs in low densities within the Site and nectaring sources are present along the Colorado River. No CNDDB occurrences have been recorded near the Project Site (CNDDB 2013). The nearest record in California was documented near Blythe (BOR 1996: Chapter 4, Table 15).
Fish			
Colorado Pikeminnow *Ptychocheilus lucius*	Fed: E State: E	Historically widespread in the Colorado River; now native populations restricted to the upper basin.	**Unlikely to occur**; extirpated from Lower Colorado.
Bonytail chub *Gila elegans*	Fed: E State: E LCR MSCP	Within the lower Colorado River system, occupies reach from Davis Dam to Lake Havasu and artificial impoundments.	~~**Known to occur**~~ **Present**; the Lower Colorado River supports the largest remaining population of bonytail chub. Has been documented near Park Moabi (CH2M HILL 2007a:5-24, included as Appendix D-1 to this DEIR).
Humpback chub *Gila cypha*	Fed: E LCR MSCP	Historically, inhabited canyons of the Colorado River and four tributaries: the Green, Yampa, White, and Little Colorado Rivers in canyons with swift currents and whitewater.	**Unlikely to occur**; river alterations have dwindled the populations to a handful of sites, none of which are in the Lower Colorado River.
Razorback sucker *Xyrauchen texanus*	Fed: E State: E/FP LCR MSCP	A variety of riverine habitat types from mainstem channels to slow backwaters of medium and large streams, sometimes around cover elements. In impoundments prefers depths of 1 meter or more over sand, mud, or gravel substrates.	~~**Known to occur**~~ **Present**; documented occurrences at Park Moabi Lagoon and Topock Marina; documented near Needles in Colorado River (CNDDB 2013).
Flannelmouth sucker *Catostomus latipinnis*	LCR MSCP	Uses backwaters for juvenile rearing and main channel habitats for spawning and adult rearing.	~~**Known to occur**~~ **Present**; river and backwaters provide habitat. CNDDB records indicated flannelmouth sucker in the lagoon at Park Moabi (CNDDB 2013).

TABLE 4.3-3
SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT SITE

Species	Status[1]	Habitat	Potential for Occurrence[2]
Reptiles			
Desert tortoise *Gopherus agassizii*	Fed: T LCR MSCP	The desert tortoise is widely distributed throughout the Mojave, Sonoran, and Colorado Deserts. The Mojave population of desert tortoise prefers open valleys containing creosote bush scrub, avoiding steep rocky sites. The species also requires friable soils for burrow and nest construction.	**Could occur**; the Project Site contains marginal habitat, and targeted surveys conducted 2004–2013 have not encountered a live desert tortoise (CH2M HILL 2004:5-3, GANDA 2008a:4, 2009b).
Flat-tailed horned lizard *Phrynosoma mcalli*	State: CSC LCR MSCP	This lizard is restricted to areas of fine sand and sparse vegetation in desert scrub, wash, succulent shrub, and alkali scrub and is probably most abundant in areas of creosote bush.	**Unlikely to occur**; the Project Site contains marginally suitable but highly fragmented/disturbed habitat with little suitable soil substrate. No CNDDB accounts for this species within 25 miles of Project Site (CNDDB 2013).
Amphibians			
Colorado River (Sonoran) toad *Bufo alvarius*	State: CSC LCR MSCP	Prefers damp areas near permanent springs or human-made watering holes, but may be found in arid grasslands and woodlands.	**Unlikely to occur**; this species is likely extirpated in California (CNDDB 2013).
Lowland leopard frog *Rana yavapaiensis*	LCR MSCP	This species inhabits slackwater aquatic habitats dominated by bulrushes, cattails, and riparian grasses near or under an overstory of Fremont's cottonwoods and willows.	**Unlikely to occur**; this species is presumed extirpated in California (CNDDB 2013).
Birds			
Burrowing owl *Athene cunicularia*	State: CSC	Burrow sites in open, dry annual or perennial grasslands, deserts, and scrublands with low-growing vegetation and burrowing mammal populations.	**Unlikely to occur**; the Project Site provides little suitable nesting habitat or suitable burrows/burrowing species. Known to occur near Needles (CNDDB 2013).
Yuma clapper rail *Rallus longirostris yumanensis*	Fed: E LCR MSCP	Only along the Lower Colorado River (from Topock Marsh southward) and around the Salton Sea. It occupies heavily vegetated freshwater.	**Could occur**; the Project Site adjacent to the river (AOC 10) provides suitable foraging and nesting habitat on the California side. This species has been documented in the Topock Marsh and the Topock Gorge in Arizona; however, it has not been documented on the California side of the River (CNDDB 2013; GANDA 2009a:6, 2010, and 2012).

TABLE 4.3-3
SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT SITE

Species	Status[1]	Habitat	Potential for Occurrence[2]
Southwestern willow flycatcher *Empidonax traillii extimus*	Fed: E LCR MSCP	Dense riparian habitats along streams, rivers, and other wetlands; breeds in stands of dense cottonwood, willow, and tamarisk thickets.	~~**Could**~~ **Likely to occur**; the Project Site provides suitable nesting and foraging habitat within the large stands of salt cedar along the banks of the Colorado River. This species has been documented in riparian areas around the Project Site, primarily at Topock Marsh, and has been detected near Park Moabi Lagoon (GANDA 2009a: Figure 5, page 7, 2010, and 2012); however, no nests or nesting behaviors have been observed. All observed individuals have been transient.
Western least bittern *Ixobrychus exilis hesperis*	State: CSC LCR MSCP	Freshwater marshes with dense vegetation.	**Could occur**; known to occur at Topock Marsh (BOR 2004a). Along the Lower Colorado River, documented occurrences are all in Arizona.
Yellow-breasted chat *Icteria virens*	State: CSC	Riparian areas with dense woody vegetation bordering open areas.	**Could occur**; known to occur near Needles and at Topock Marsh (CNDDB 2013).
California black rail *Laterallus jamaicensis corturniculus*	State: T and FP LCR MSCP	Habitat includes shallow freshwater and brackish marshes dominated by bulrush species.	**Could occur**; suitable foraging and nesting habitat occurs within the Topock Marsh and East Ravine (AOC 10), but no CNDDB records near area; documented at delta of Colorado River.
Elf owl *Micrathene whitneyi*	State: E LCR MSCP	Cottonwood willow riparian forests and other desert woodlands with snags.	**Unlikely to occur**; no suitable habitat occurs on-site. The cottonwood forests of Topock Marsh in Arizona provide the closest suitable habitat. Nearest record occurs north of Needles and south in the HNWR (CNDDB 2013).
Gilded flicker *Colaptes chrysoides*	State: E LCR MSCP	Cottonwood riparian forests, orchards, landscape trees, and mesquite stands are used for foraging, but are strongly associated with saguaros for nesting.	**Unlikely to occur**; no suitable nesting habitat occurs on-site. The cottonwood forests of Topock Marsh in Arizona provide the closest suitable foraging habitat. Nearest CNDDB record 50 river miles south.
Gila woodpecker *Melanerpes uropygialis*	State E LCR MSCP	Mature cottonwood riparian forests and mesquite groves with snags and large trees for nesting.	**Unlikely to occur**; documented near Needles, but Project Site provides little suitable nesting habitat and low-quality foraging habitat.
Summer tanager *Piranga rubra*	State: CSC	Strongly associated with cottonwood-willow forests.	**Unlikely to occur**; Project Site provides little suitable nesting habitat and low-quality foraging habitat. Documented near Needles (CNDDB 2013).
Vermilion flycatcher *Pyrocephalus rubinus*	State: CSC LCR MSCP	Nests in cottonwood or other large desert riparian trees. Forages in riparian, irrigated fields, pastures, or other open mesic sites.	**Unlikely to occur**; suitable habitat does not occur in the Project Site. Foraging habitat present along river but Project Site provides little suitable nesting habitat. Historic documentation near Needles (CNDDB 2013).
Brown-crested flycatcher *Myiarchus tyrannulus*	State: CSC	Occur in riparian woodland or forest dominated by cottonwoods and willows, usually in a climax stage; along the Colorado River, has also bred in residential areas with tall, planted trees. The presence of woodpeckers or other cavity-excavating species is important.	**Unlikely to occur**; suitable habitat does not occur in the Project Site, though foraging habitat does. Documented within HNWR near Needles (CNDDB 2013).

TABLE 4.3-3
SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT SITE

Species	Status[1]	Habitat	Potential for Occurrence[2]
Crissal thrasher *Toxostoma crissale*	State: CSC	Nests within desert riparian and wash habitats.	**Could occur**; documented along river on Arizona side near Needles and within HNWR (CNDDB 2013; GANDA 2008b:B-1, 2009, 2010, 2012), but Project Site provides little suitable nesting habitat.
Arizona Bell's vireo *Vireo bellii arizonae*	State: E LCR MSCP	Associated with willow thickets with baccharis.	**Could occur**; documented in Arizona near Needles and the Topock Marsh (CNDDB 2013; GANDA 2008b:5-1, 2009, 2010, 2012), but Project Site provides little suitable nesting habitat.
Sonoran yellow warbler *Dendroica petechia sonorana*	State: CSC LCR MSCP	Historically nests in riparian forests associated with open water but along the LCR; tamarisk is a habitat component.	**Could occur**; documented along river near Needles (CNDDB 2013), but Project Site provides little suitable nesting habitat.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	State: E Fed: C LCR MSCP	Riparian forest nester in flood bottoms of larger river systems. Requires multistory habitat for foraging.	**Could occur**; documented within the Topock Marsh, but the Project Site provides little suitable nesting and foraging habitat (CNDDB 2013; GANDA 2009a:6, 2010, and 2012).
Mountain plover *Charadrius montanus*	CSC	Winter in southern California and Arizona and inhabits sparsely covered chenopod scrub and valley and foothill grassland habitats.	**Unlikely to occur**; suitable habitat does not occur in the Project Site.
Loggerhead shrike *Lanius ludovicianus*	CSC	Nests in a variety of habitats, including broad-leaved upland forest, desert washes, Joshua tree woodland, Mojavean desert scrub, pinon and juniper woodlands, riparian woodland, and Sonoran desert scrub.	**Likely to occur**; the species was observed within the vicinity of the Project during several of the focused wildlife surveys (GANDA 2009ab, 2007). Potentially suitable habitat is available in the Project Site. Historic CNDDB record approximately 3 miles southeast of the Project Site (CNDDB 2013).
Mammals			
Pallid bat *Antrozous pallidus*	State: CSC	Occurs in a variety of sites; most common in open dry habitats. Roosts in undisturbed rocky sites.	~~**Could occur**~~ **Present**; potentially suitable habitat available in the Project Site. Historic CNDDB record near Needles (CNDDB 2013). This species was detected on the Project Site in January 2015 (PG&E 2015a).
Ring-tailed cat *Bassariscus astutus*	State: FP	Suitable habitat for ringtails consists of a mixture of forest and shrub land in close association with rocky areas or riparian habitats.	**Present.** An individual was observed within the Topock Station on October 25, 2007. A second ring-tailed cat sighting was made at the Station a few years later. No other ring-tailed cat sightings have been reported in the Project Site before or after these dates.
Colorado River cotton rat *Sigmodon arizonae plenus*	State: CSC LCR MSCP	Occupies narrow band of grassy, riparian, and cultivated vegetation along banks of Colorado River.	**Unlikely to occur**; little suitable habitat in area only documented CNDDB record is near Parker, more than 50 miles downriver (CNDDB 2013).

TABLE 4.3-3
SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT SITE

Species	Status[1]	Habitat	Potential for Occurrence[2]
Pale Townsend's big-eared bat *Corynorhinus townsendii pallescens*	State: ~~CSC~~ C LCR MSCP	Variety of habitats, including oak savanna, riparian, and grassland; roosts in mines, caves, and buildings.	**U~~nlikely to~~ Could occur**; potential suitable foraging and roosting habitat present on the steep slopes and cliffs on the Project Site (PG&E 2015a) ~~but marginally suitable roosting habitat present~~. No CNDDB records in area, but known to occur to the east of the Colorado River. Documented near Lake Mead and near Blythe (BOR 2008:316).
California leaf-nosed bat *Macrotus californicus*	State: CSC LCR MSCP	Habitat includes temperate deserts. Does not migrate or hibernate but finds warm daytime roosts in caves, mines, or buildings. Generally forages only 2 hours at night.	**~~Unlikely to~~ Could occur**; foraging habitat exists; however, few suitable roosting sites in the vicinity. Recorded in a mine near Lake Havasu (CNDDB 2013).
Southwestern river otter *Lontra canadensis sonora*	CSC	Habitat occurs within the Colorado River basin in flowing waters and riparian woodland.	**Unlikely to occur**; suitable habitat does not occur in the Project Site.
Nelson's bighorn sheep *Ovis canadensis nelsoni*	FP within the Western Mojave Plan	~~Lambing habitat occurs within the steep montane habitats, and foraging habitat extends to the lower elevation scrub vegetation communities~~. Commonly utilized habitats include alpine, alpine dwarf scrub, chaparral, chenopod scrub, Great Basin scrub, Mojavean desert scrub, montane dwarf scrub, pinon and juniper woodlands, riparian woodland, and Sonoran desert scrub. Foraging habitat extends to the lower elevation scrub vegetation communities. Nearby steep, rugged terrain is required for predator evasion and lambing.	**~~Could occur~~ Present**; suitable lambing habitat occurs in the mountains south of the Project Site, but not within the Project Site. Suitable foraging and movement habitat extends from the foothills of the mountains down into the floodplain and upland areas of the Project Site. Fort Mojave Indian Tribe members observed two adult and two juvenile sheep next to Maze Loci A during the annual prayer ceremony in June 2013. Also, Felton Bricker, Tribal Monitor, has reported observances of sheep in his monitoring logs during the AOC cleanup.
Cave myotis *Myotis vellifer*	CSC	Caves are the main roosts for this southwestern species, although it also uses mines, and occasionally buildings and bridges. It is primarily a "crevice dweller," preferring "crevices, pockets, and holes in the ceilings of its underground retreats." This species is also known to roost in barn swallow nests. Also forages over dense riparian vegetation and in drier desert washes.	**Could occur**; limited caves on the Project Site, but suitable roosting sites in Bat Cave Wash and on cliff crevices. No CNDDB records in area, but potential to occur near the Project Site (PG&E 2015a).

TABLE 4.3-3
SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT SITE

Species	Status[1]	Habitat	Potential for Occurrence[2]
Arizona myotis *Myotis occultus*	CSC	Commonly found in conifer forests in the 6,000 - 9,000 foot elevation range, although nursery colonies are found in much lower elevations (e.g., along the Colorado River in California). This species has been found using bridges and attics as maternity roosts, with colony size up to 800. They are known to forage in association with orchards, permanent water, and riparian vegetation, and at higher elevations over ponds in forest clearings.	**Could occur**; known to occur in lower elevations along the Colorado River which is immediately east of the Project Site. No CNDDB records in area, but potential to occur near the Project Site (PG&E 2015a).
Western red bat *Lasiurus blossevillii*	CSC	Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores). Roost sites are generally hidden from view from all directions except below; lack obstruction beneath, allowing the bat to drop downward for flight; lack lower perches that would allow visibility by predators; have dark ground cover to minimize solar reflection; have nearby vegetation to reduce wind and dust; and are generally located on the south or southwest side of a tree. This species may also occasionally use caves, as both dead and live red bats, including a pregnant female, have been collected from Carlsbad Caverns in New Mexico.	**Could occur**; potentially suitable roosting habitat occurs within Bat Cave Wash and cliff faces adjacent to the Colorado River. No CNDDB records in area, but potential to occur near the Project Site (PG&E 2015a).
Pocketed free-tailed bat *Nyctinomops femorosaccus*	CSC	Roosts primarily in crevices of rugged cliffs, high rocky outcrops and slopes. It has been found in a variety of plant associations, including desert shrub and pine-oak forests. The species may also roost in buildings, caves, and under roof tiles. This bat forages mainly on large moths, but its diet includes small moths and beetles, with small amounts of a variety of other insects.	**Could occur**; suitable foraging and roosting habitat present on the steep slopes and cliffs on the Project Site. No CNDDB records in area, but potential to occur near the Project Site (PG&E 2015a).

TABLE 4.3-3
SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT SITE

Species	Status[1]	Habitat	Potential for Occurrence[2]
Big free-tailed bat *Nyctinomops macrotis*	CSC	Inhabits rugged, rocky habitats in arid landscapes. It has been found in a variety of plant associations, including desert shrub, woodlands, and evergreen forests. It appears to be associated with lowlands, but has been documented at around 8,000 ft in New Mexico. It roosts mainly in the crevices of rocks in cliffs, as well as buildings, caves, and tree cavities. Maternity roosts have been documented in rock crevices and high site fidelity	**Could occur**; suitable foraging and roosting habitat present on the steep slopes and cliffs on the Project Site. No CNDDB records in area, but potential to occur near the Project Site (PG&E 2015a).
Western mastiff bat *Eumops perotis*	CSC	Primarily a cliff-dwelling species that forms maternity colonies of several dozen to several hundred under exfoliating rock slabs (e.g., granite, sandstone or columnar basalt). Maternity roosts of this species can contain males and females. Roosts are located high above the ground allowing a clear vertical drop of at least 3 meters. Forages in dry desert washes, floodplains and within a mix of vegetation.	**Could occur**; suitable foraging and roosting habitat present on the steep slopes and cliffs on the Project Site. No CNDDB records in area, but potential to occur near the Project Site (PG&E 2015a).

[1] **Legal Status Definitions**

U.S. Fish and Wildlife Service (USFWS) Federal Listing Categories

E = Endangered (legally protected)
T = Threatened (legally protected)
C = Candidate proposed for listing (legally protected)

California Department of Fish and Wildlife (CDFW) State Listing Categories

E = Endangered (legally protected)
T = Threatened (legally protected)
FP = Fully Protected (legally protected, no take allowed)
CSC = California Species of Concern (no formal protection)
C = Candidate proposed for listing (legally protected)

California Native Plant Society's Rare Plant Rank (CRPR) Categories

2 = Plant species considered rare or endangered in California but more common elsewhere (but not legally protected under the federal and California Endangered Species Acts
0.1- Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)
0.2 - Fairly threatened in California (20-80 percent occurrences threatened/moderate degree and immediacy of threat)
0.3 - Not very threatened in California (<20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

Lower Colorado River Multi-Species Conservation Program (LCR MSCP) species covered under the plan.

TABLE 4.3-3
SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT SITE

Species	Status[1]	Habitat	Potential for Occurrence [2]

[2] **Potential for Occurrence Definitions**
Unlikely to occur: Potentially suitable habitat present, but species unlikely to be present in the Project Site because of current status of the species and very restricted distribution.
Could occur: Suitable habitat is available in the Project Site; however, there are few or no other indicators that the species might be present.
Likely to occur: Habitat conditions, behavior of the species, known occurrences in the Project vicinity, or other factors indicate a relatively high likelihood that the species would occur in the Project Site.
~~*Known to occur*~~ *Present*: The species, or evidence of its presence, was observed in the Project Site during reconnaissance-level surveys or was reported by others.
Sources: CNDDB 2013, CNPS 2013, BOR 2004a.

Special-Status Plants

Small-Flowered Androstephium

Small-flowered androstephium (*Androstephium breviflorum*) is a special-status plant that was discovered during the 2012 floristic surveys for the Topock Groundwater Remediation Project. In California, the CNPS lists small-flowered androstephium as a CRPR 2.2 species. CRPR list 2 plants are considered to be rare in California, but are more common elsewhere in their distribution. This perennial bulbiferous herb can be found in Mojavean desert scrub, widely scattered in stabilized to semi-stabilized sandy areas in valleys from 220 to 800 meters in elevation. It blooms between March and April. This plant was found only during the 2012 floristic survey in Arizona (east side of the Oatman-Topock Highway, north of the BNSF railroad tracks), where it is not considered a special-status plant (CH2M HILL and GANDA 2013ab). Though suitable habitat is present within the current Project Site, the species was not observed during the various biological surveys referenced in this document.

Gravel Milk-Vetch

Gravel milk-vetch (*Astragalus sabulonum*) is a special-status plant that was discovered during the 2012 floristic surveys for the Topock Groundwater Remediation Project. In California, the CNPS lists spiny-haired blazing star as a CRPR 2.2 species. CRPR list 2 plants are considered to be rare in California, but are more common elsewhere in their distribution. This annual/perennial herb can be found in desert dunes, Mojavean Desert scrub, and Sonoran Desert scrub in sandy sometimes gravelly soils. It can be found in flats, washes, or roadsides from 60-930 meters in elevation and blooms from February through June. Though suitable habitat is present within the current Project Site, the species was not observed during the various biological surveys referenced in this document.

Spiny-Haired Blazing Star

Spiny-haired blazing star (*Mentzelia tricuspis*) is a special-status plant that was discovered during the 2012 floristic surveys for the Topock Groundwater Remediation Project. In California, the CNPS lists spiny-haired blazing star as a CRPR 2.3 species. CRPR list 2 plants are considered to be rare in California, but are more common elsewhere in their distribution. This annual herb can be found along sandy, gravelly slopes and washes within Mojavean desert scrub. It occurs from 150 to 1,280 meters in elevation and blooms between March and May. While suitable habitat for the species occurs within the washes of the current Project Site, the species was found only in Arizona, where it has no special status (CH2M HILL and GANDA 2013ab). No spiny-haired blazing stars were found within the current Project Site during the various biological surveys referenced in this document.

Mousetail Suncup

Mousetail suncup (*Chylismia arenaria* ssp. *arenaria*) is a CRPR list 2.2 species. This plant has been characterized as an annual or perennial herb (Baldwin et al. 2012), but in the Project Site it appears to be mostly perennial. This plant is known to flower between January and May. It occurs within Mojavean desert scrub and along rocky slopes and canyon walls, but may also be found in washes (PG&E 2015b).The species was found at three locations above Bat Cave Wash within the current Project Site during the 2012 floristic surveys for the Topock Groundwater Remediation

Project. The largest observed population consists of approximately nine plants ~~, whereas,~~ and is located on a vertical conglomerate wall. ~~t~~The other populations consist of single individuals, and are located on a conglomerate wall above the wash and on a granitic rock face at the end of the wash just east of the Project Site. This species was also observed on a bank outside of the Project Site in the railroad right-of-way (ROW), approximately 500 feet west of Area of Concern (AOC 1). These populations represent a significant range extension for the species as they are over 90 miles northeast of previously recorded populations in California (PG&E 2015b).

Special-Status Invertebrates

MacNeill's Sootywing Skipper

MacNeill's sootywing (*Hesperopsis gracielae*) is a small (wingspread 23 mm) skipper with dark brown-and-black mottled wings. MacNeill's sootywing is covered under the LCR MSCP but has no other legal designations. Skippers are butterflies with widely-spaced antennae that are usually hooked. MacNeill's sootywing is found along the Colorado River and is known to only occur in those areas that support large, dense stands of its larval host plant, the quail bush (*Atriplex lentiformis*), which occurs along the sub-riparian edge of the river. Once they hatch from the eggs oviposited by the adult skippers on the host plant, the larvae feed on the host plant until they are ready to pupate and transform into adults. As adults, MacNeill's sootywings require nectaring sources from other plants besides quail bush, including heliotrope (*Heliotropium* sp.), honey mesquite, alfalfa (*Medicago sativa*), and tamarisk. The species could occur along the banks of the Colorado River near East Ravine as its host plant, quail bush, occurs in low densities along with abundant nectaring sources (CH2M HILL & GANDA 2013). No CNDDB occurrences have been recorded near the Project Site (CNDDB 2013) and the species was not observed during the various biological surveys. The nearest record in California was documented near Blythe (BOR 1996: Chapter 4, Table 15).

Special-Status Wildlife

Southwestern Willow Flycatcher

The southwestern willow flycatcher is a federally listed and state-listed endangered species and is a covered species in the LCR MSCP. Several factors have caused the decline in its population. Extensive areas of suitable riparian habitat have been lost due to river regulation and channelization, agricultural and urban development, mining, road construction, and overgrazing, resulting in the displacement of native riparian vegetation and allowing invasive tamarisk to grow (CH2M HILL 2007a:5-2, included as Appendix D-1 to this DEIR). Additionally, habitat fragmentation is thought to increase nest parasitism from the cowbird (*Molothrus ater*). Despite the invasion of tamarisk, southwestern willow flycatcher nesting has been documented in tamarisk stands along the Colorado River (USFWS 2002a:13).

Management units and designated critical habitat for the southwestern willow flycatcher along the Colorado River is broken into segments, and the Hoover to Parker Management Unit includes the Project Site. The segment from Davis Dam to Parker Dam (including the HNWR) was identified as having features essential to the southwestern willow flycatcher and proposed as critical habitat. Six breeding sites are known from this segment, with the largest at Topock Marsh having 34 territories in 2004. As a result of the completion of the LCR MSCP, USFWS management of

HNWR for riparian habitat, and implementation of southwestern willow flycatcher management plans by the Chemehuevi and Fort Mohave Indian Tribe, this entire river segment was excluded from critical habitat designation. The closest designated critical habitat is located 50 miles east at Big Sandy River in Arizona.

GANDA has surveyed the Project Site annually for the presence of the southwestern willow flycatcher, following USFWS survey protocols, since 2005 (CH2M HILL 2005a, GANDA 2007, 2008b, 2009a, 2010, and 2012). In 2005, numerous fixed survey points were established at six sites (covering 80 acres), using USFWS protocols. These survey points encompass all potentially suitable habitats, namely tamarisk or other riparian thickets adjacent to open water, on both sides of the river. The largest site and the majority of the points are in the HNWR in Arizona, all of which lie beyond the Project Site in areas deemed to have the best potential for detecting the birds. The other six sites are located in California: one under I-40 and the railroad, one at the confluence of Bat Cave Wash and the Colorado River, and two at isolated wetlands and two sites in the Moabi Regional Park. Twelve call points were eliminated in 2008 because of vegetation (tamarisk) removal at Moabi Regional Park (GANDA 2008b:4-1).

In 2005, 2007, 2008, 2009, and 2012, biologists detected the bird, primarily by song, in various locations, but primarily in Arizona. No detections were made during the 2006 and 2010 surveys. All detections have been determined to be migratory or transient birds and no nests, or nesting activity, have been observed (GANDA 2009a:8). The first round of surveys in 2008 produced five southwestern willow flycatcher detections. Subsequent surveys did not detect the bird during the rest of the survey season (GANDA 2008b:5-1). Surveys conducted in 2009 detected one pair of southwestern willow flycatchers. It was determined that this detection was most likely of a transient pair because there were no additional detections during subsequent surveys. In 2010, two transient individuals were detected, one near the mouth of Bat Cave Wash and one in Arizona within the HNWR. Had these southwestern willow flycatchers been breeding in the area, additional detections would have been made during subsequent surveys as the pair of birds would have established a territory and proceeded with the nesting cycle (GANDA 2009a:8). Nesting territories do occur within the general area; documented nesting activities have been reported along the northeastern portion of Topock Marsh. This area supported 34 territories in 2004 and all nest locations are documented within tamarisk thickets (BOR 2008:28). The discerning feature between Topock Marsh territories and the Project Site is the lack of open water among large expanses of riparian habitat. The Project Site, while having tamarisk thickets, does so along a relatively narrow band of the floodplain, particularly near AOC 1 and AOC 10.

Mojave Desert Tortoise

The desert tortoise is a federally listed and state-listed threatened species and is a covered species in the LCR MSCP. The Project Site does not include designated critical habitat, and the nearest is located in the Chemehuevi Valley, 9 miles west of the Project Site. The decline in the desert tortoise population is primarily caused by habitat loss, degradation, and fragmentation resulting from increased human population and urbanization. The increase in urbanization, collection of tortoises for pets, overgrazing, landfills, predation, highway mortality, vandalism, agriculture, fire, drought, and off-road vehicle use all have contributed to the decline of the tortoise in the

wild. Another major cause of the tortoise decline in the western Mojave Desert was the introduction of an upper-respiratory tract disease into many of the wild populations (USFWS 1994a:i).

From 2004 through 2009, PG&E contracted with CH2M HILL and GANDA to perform USFWS protocol presence/absence surveys for the desert tortoise. Although the USFWS revised the desert tortoise survey protocol starting with the 2009 survey season, projects conducting repeated surveys that were initiated prior to 2009 were allowed to use the older protocols. No live desert tortoises were detected in the survey area; however, one desert tortoise carcass and four sets of highly deteriorated bone shell fragments were discovered during these surveys. None of these remains were discovered in proximity to the Project Site. The nearest occurrences include one set of deteriorated plastron fragments which were discovered approximately 500 feet west of AOC 11 in 2009, and a set of shell bone fragments which were discovered approximately 500 feet east of Bat Cave Wash (AOC 1) in 2004. Two sets of highly deteriorated bone shell fragments were located in ephemeral drainages, indicating that they may have washed in from outside the survey area during a rainstorm. This interpretation is based on the location of the finds, surrounding topography, and lack of any other sign of desert tortoise in the survey area (GANDA 2009b:6-9).

One set of remains discovered in 2004 was not rediscovered during the 2009 surveys, but all other previously discovered remains were found. The remains discovered since 2004 were all old, disarticulated, and weathered. GANDA estimated that the bones had been exposed (i.e., out on the ground) for at least 10 years, probably much longer, and that the remains predate the degraded habitat conditions currently observed on the survey area (GANDA 2009b:9). The desert tortoise carcass and four sets of highly deteriorated bone shell fragments may indicate historical use of the area; however, no live desert tortoises, scats, tracks, or other evidence of recent use was observed (CH2M HILL 2005b:9, 2007a:5-10, 5-11; GANDA 2008a:5, 2009b: 7-8). Limited burrows with entrances large enough to accommodate a desert tortoise were also observed during surveys. However, these burrows had no typical indicators of desert tortoise use and were likely created by burrowing mammal species (GANDA 2009b:7-8). The annual protocol level surveys conducted by GANDA between 2005 and 2009 indicated that the Project Site was not being actively used by desert tortoise. Historic use was identified, however, with the discovery of multiple desert tortoise bone shell fragments.

Based on the survey results, desert tortoises were concluded to be absent in the Project Site (CH2M HILL 2007a:5-11, included as Appendix D-1 to this DEIR, and GANDA 2009b:9-10). Despite the absence of live tortoise observations, there is a possibility that desert tortoises could enter the area from the west. However, the habitat on-site was deemed to be of poor quality, lacking annual vegetation for foraging and burrows for shelter. Other conditions contribute to poor habitat quality, such as steep rocky slopes and drainages, the Chemehuevi Mountains, and the Project Site being highly fragmented by pipeline corridors, unpaved roads, I-40, U.S. Highway 95, the railroad, and the Station (GANDA 2009b:9; CH2M HILL 2007a:5-13, included as Appendix D-1 to this DEIR).

Yuma Clapper Rail

The Yuma clapper rail is federally listed as endangered and state-listed as threatened and fully protected. It also is covered under the LCR MSCP. Critical habitat has not been designated for this species, but the HNWR is considered an important population area for the Yuma clapper rail (USFWS 2006:8-9). Yuma clapper rails prefer dense stands of emergent vegetation found in marsh habitats. Much of the decline of the species can be attributed to altered seasonal flow regimes and lost marsh habitat caused by the construction of dams and dredging on the Lower Colorado River. Additionally, mosquito-abatement programs and erosion-control efforts have reduced nesting habitat. Recent studies are also looking at selenium contamination as a potential cause of reduced reproductive success (USFWS 2006:11).

Most available habitat in the Project Site occurs in isolated patches scattered along the western shore of the Colorado River from Bat Cave Wash (AOC 1) south to East Ravine (AOC 10). Suitable habitat most notably occurs within the emergent wetland habitat near and within AOC 10. Before construction of the dams along the Lower Colorado River, few emergent wetlands occurred along the river because of spring high flows and flood events (BOR 2008:13). However, marsh habitats benefit from flushing events because those events reduce the buildup of dead plant materials, preventing the eventual conversion of the marsh to dry land. Dam-controlled rivers require active management to maintain the marshes in place of the natural cycle of river flows. Other threats to the species have included increased development along the Lower Colorado River near occupied habitats (USFWS 2006:6).

Several “call stations” have been surveyed annually for Yuma clapper rail by the USFWS along the South Dike (near the Topock Marina), which is located within the HNWR on the Arizona side of the river. Call stations or call points are fixed locations that are generally revisited annually to take a census of a particular species. In past years, this species has been detected south of the new South Dike and north of the Topock Marina (USFWS 2005:45). In 2005, seven Yuma clapper rails were detected along the South Dike transect in areas of dense emergent vegetation.

Additionally, several Yuma clapper rails were detected on the Arizona side of the Colorado River during the 2008, 2009, 2010, and 2012 southwestern willow flycatcher surveys. No reports of rails had been documented on the California side of the Colorado River near the Project Site through 2013 (CH2M HILL 2007a:5-15, included as Appendix D-1 to this DEIR; KBS 2013).

Other Special-Status Avian Species

Several bird species identified in Table 4.3-3 have the potential to nest in or adjacent to the Project Site. Species associated with riparian and other wetland habitats, such as the western least bittern (*Ixobrychus exilis hesperis*) and California black rail (*Laterallus jamaicensis corturniculus*), are most likely to nest in emergent wetlands along the Colorado River and Topock Marsh (Figures 4.3-1 - 4.3-1d). California black rail protocol surveys were conducted between March and May 2012 in areas near the Station. No California black rails were detected in the Project Site (KBS 2012).

Other birds, such as the Arizona Bell’s vireo (*Vireo bellii arizonae*), Sonoran yellow warbler (*Dendroica petechia sonorana*), yellow-breasted chat (*Icteria virens*), western yellow-billed

cuckoo (*Coccyzus americanus occidentalis*), and crissal thrasher (*Toxostoma crissale*), could nest in remnant riparian woodland and suitable trees outside the Project Site but within the HNWR. Loggerhead shrike (*Lanius ludovicianus*) could nest within the larger shrubs and trees on or near the Project Site.

Both California black rail and western least bittern have the potential to occur on the Arizona side of the Colorado River and near AOC 10, in areas of emergent wetland and freshwater marsh habitats containing dense cattails and bulrush stands. Their habitats are similar to that of the Yuma clapper rail, although the California black rail may prefer shallower marshy habitats. No California black rails have been detected during surveys and the CNDDB reports no occurrences of this rail within the Project Site; however, literature suggests that the species may occur within the HNWR (BOR 2008:137-138; CH2M HILL 2013) in Arizona. CNDDB records indicate western least bitterns occurring in the Topock Marsh, where they are suspected to nest (BOR 2008:127-128) and along the river north of the Project Site (CNDDB 2013).

The Arizona Bell's vireo has a limited distribution in California, occurring along the lower Colorado River. The species occurs primarily throughout Arizona, Utah, Nevada, and Sonora, Mexico. Early to mid-successional riparian habitat is typically used for nesting by the Bell's vireo because it supports the dense shrub cover required for nest concealment, as well as a structurally diverse canopy for foraging. Arizona Bell's vireos have been detected within the Topock Marsh in CNDDB records. Additionally, they have been detected during the Project-related surveys for southwestern willow flycatcher in Arizona; however, none were detected near the Project Site. Nesting was not confirmed but is possible due to the consistent detections throughout the breeding season (GANDA 2008b:5-1, 5-2, 2009a, 2010, 2012).

Sonoran yellow warblers typically nest in willow thickets with cottonwood overstory, and yellow-breasted chats typically nest in riparian habitats with a dense shrub layer. Yellow warblers are relatively uncommon along the Lower Colorado River and were once thought to have been extirpated as a breeder along the river. Recent breeding bird surveys have detected Sonoran yellow warblers at Topock Marsh; however, none have been detected near the Project Site (BOR 2008:226).

In desert areas of California, the yellow-breasted chat requires dense riparian thickets of willows, cottonwood, arrow weed, and tamarisk associated with rivers, swampy ground, and the borders of small ponds. Once thought to be a common breeder along the Colorado River, the yellow-breasted chat is now uncommon, like most other riparian-dependent species. Little documentation exists related to its breeding within the HNWR, but chats are documented in the CNDDB near Needles.

Western yellow-billed cuckoos are thought to require structurally complex riparian vegetation with tall trees and a dense woody vegetative understory (RHJV 2004:57). They breed in large blocks of riparian vegetation, particularly woodlands populated by cottonwoods and willows. Four sites within the HNWR were monitored for cuckoos in 2006 and 2007. Cuckoos were detected at three of the sites but were not confirmed as breeding in the HNWR (Johnson et al. 2008:17). Additionally, the 2008, 2009, and 2010 southwestern willow flycatcher surveys

detected cuckoos in the HNWR, indicating this species might also find foraging habitat in the riparian areas of AOC 1 and AOC 10, although nesting habitat does not exist in the Project Site.

The Project Site is within the westernmost extent of the range of the crissal thrasher. This species is present in most riparian woodlands, favoring those areas with sandy soils. Honey mesquite habitats support the largest populations throughout the year, and the bird is rarely found far away from dense cover, nesting usually in mesquite trees but also in tamarisk and quail bush (BOR 1996: Chapter 4, Section z). The Project Site provides marginally suitable habitat in California, particularly in the tamarisk thickets of Bat Cave Wash (AOC 1) and East Ravine (AOC 10). The species was documented north of the Project Site, along the river, during the southwestern willow flycatcher surveys of 2007, 2008, and 2009 (CNDDB 2013, GANDA 2007, 2008b, 2009a:B-1, 2010, 2012).

Loggerhead shrikes require open land with lookout perches for hunting, preferring areas with short vegetation such as pastures, lawns, and freshly-plowed fields throughout most of Mexico and the southern half of the United States. They nest in dense, brushy vegetation, either in hedgerows or isolated trees, adjacent to open foraging grounds. Shrikes will use a variety of vegetation communities, including broadleaved upland forest, desert washes, Joshua tree woodland, Mojavean desert scrub, pinon and juniper woodlands, riparian woodland, and Sonoran desert scrub. The species was observed within the vicinity of the Project Site during several of the focused wildlife surveys (GANDA 2009ab, 2007).

~~Special-Status Mammal Species~~ Ring-tailed Cat

An individual ring-tailed cat (*Bassariscus astutus*) was observed within the Station on October 25, 2007. A second ring-tailed cat sighting was made at the Station a few years later (PG&E 2014). No other ring-tailed cat sightings have been reported at the Project Site before or after these dates. The ring-tailed cat is a Fully Protected species in California. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation for the protection of livestock.

The ring-tailed cat is a slender procyonid with a tail that is often as long as the body. Body length ranges between 12 and 16 inches and the tail ranges between 12 and 17 inches. These nocturnal animals are primarily carnivorous, feeding mainly on rodents (woodrats and mice) and rabbits. Ring-tailed cats also feed on birds and eggs, reptiles, invertebrates, fruits, nuts, and some carrion (Taylor 1954, Trapp 1978). Ring-tailed cats forage on the ground, among rocks, and in trees. They are non-migratory and are active yearlong. Home range in California is estimated to vary from 44 to 515 hectares (Grinnell et al. 1937). Suitable habitat for ring-tailed cats consists of a mixture of forest and shrubland in close association with rocky areas or riparian habitats. They take cover in hollow trees, logs, snags, and cavities in talus and other rocky areas and recesses, and they nest in rock recesses, hollow trees, logs, snags, abandoned burrows, and woodrat nests. Young are often born in May and June (Walker et al. 1968), with one litter per year and an average of 3 young (range 1 to 5) per litter. The gestation period is from 40 to 50 days and

females may drive males away 3 to 4 days before giving birth. Ring-tailed cats are usually not found more than 0.6 mile from permanent water.

Special-Status Bats

~~One species of special-status bat has been documented near the Project Site. The pallid bat is a widely distributed species generally occurring in lower elevation sites, most often in dry rocky habitats. Little is known and scant documentation exists regarding the pallid bat within the Lower Colorado River. Bat surveys were not conducted as part of the Project and no documented surveys have been conducted in the HNWR. The river and the Topock Marsh could provide suitable foraging habitat for a number of migratory and resident bat species, and the rocks of Topock Gorge to the south of the Project Site may provide limited roost sites.~~

A number of special-status bat species have the potential to occur near the Project Site, as summarized in Table 4.3-3 due to the presence of suitable roosting and foraging habitat (PG&E 2015a). The Project Site is located adjacent to the Colorado River on undulating hillsides with several ephemeral drainages, rocky slopes, and cliff faces. The Project Site mostly contains bare rocky ground with scattered desert scrub vegetation. Stands of palo verde (*Parkinsonia* sp.) and salt cedar (*Tamarix* sp.) occur within washes and drainages on the Project Site, including the East Ravine and Bat Cave Wash. Wetland habitat occurs within Topock Marsh on the eastern boundary of the Project Site, outside of any proposed work areas. The drainages, rocky slopes, and cliff faces on and immediately adjacent to the Project Site, particularly within East Ravine and Bat Cave Wash, provide suitable roosting habitat for a number of special-status bat species known to occur in the area. Additionally, the desert scrub habitat, stands of trees, and channel bottom of the drainages provide suitable foraging habitat for special-status bat species known to occur in the area. The lack of riparian and woodland habitats on the Project Site, particularly adjacent to potential roost sites, reduces the quality of the habitat on the Site to support special-status bats because it limits the available foraging opportunities for bats. Potential roosting habitat also occurs within the rocks of Topock Gorge approximately 1 mile to the south of the Project Site.

A bat habitat assessment survey was conducted on the Project Site by Dr. Pat Brown, a biologist specializing in bats, on January 29 and 30, 2015 (PG&E 2015a). One of the special-status bat species identified in Table 4.3-3, the pallid bat (*Antrozous pallidus*), was detected on the Project Site during this survey using Anabat acoustic monitoring equipment. The pallid bat is a widely distributed species generally occurring in lower elevations, most often in dry rocky habitats, roosting in crevices in rocky outcrops and cliffs, caves, mines, trees, and structures, and foraging over grasslands and wooded areas gleaning insects from surfaces and capturing insects on the wing. Pallid bats form maternity roosts in day roost sites that protect bats from high temperatures. Maternity colonies form in early April and consist of a dozen to 100 individual bats. Little is known about pallid bat populations and use of the Project Site and scarce documentation exists regarding the pallid bat within the Lower Colorado River.

Although not detected during the bat habitat assessment survey, Townsend's big-eared bat (*Corynorhinus townsendii*) also has the potential to occur on the Project Site. The petition to list

Townsend's big-eared bat as a Candidate species for listing under the CESA was accepted in April 2013, and until a decision to list the species is finalized, this species is afforded protection by CDFW similar to other CESA listed (threatened or endangered) species (CDFW 2013a). Any potential Project-related impacts to this species would require consultation with CDFW before impacts occur. The January 2015 assessment of the Project Site identified potential suitable roosting and foraging habitat for the Townsend's big-eared bat within the rocky slopes and cliff faces along ephemeral drainage features, particularly those associated with Bat Cave Wash. Townsend's big-eared bat is a colonial species, with females aggregating in nursery sites in the early spring and giving birth to one young in the late spring or early summer (CDFG 1998). Maternity roosts stay intact until the young are independent in late summer or early fall. These bats demonstrate high site fidelity and will return to a roost multiple seasons. Townsend's big-eared bat generally roost in caves, but can also roost in man-made structures, buildings, and in the open hanging from walls and ceilings. They forage along streams and a variety of wooded habitats catching insects on the wing. No published information currently exists for the presence/absence of Townsend's big-eared bat on the Project Site or the immediate vicinity. However, through personal communication with Dr. Pat Brown during the January 2015 assessment, lactating female Townsend's big-eared bats were captured in July and August 2014 in mist-nets across the Colorado River in the HNWR (Brown 2015). This occurrence of the Townsend's big-eared bat is within 5 miles of the Project Site. Therefore, due to the availability of suitable habitat and the presence of the species in the vicinity of the Site, the Townsend's big-eared bat has the potential to occur at the Project Site.

Nelson's Bighorn Sheep

Habitat requirements for Nelson's bighorn sheep include mountainous terrain with areas of gentle terrain such as valley floors and alluvial fans that provide important linkages between adjacent mountainous regions. These gentle terrain areas also provide temporary access to resources such as forage and water, particularly in the drier summer months (PG&E 2015b). Steep, rugged terrain, also called escape terrain, is a crucial component of bighorn sheep habitat because bighorn sheep use running speed coupled with their climbing abilities to evade predators (PG&E 2015b). BLM research indicates that flight and cardiac response is activated within 50 to 100 meters (160 to 330 feet) of disturbance (BLM 2001). Males and females will also often occupy different habitats outside the breeding season. Females tend to choose steep, safe areas for bearing and initial rearing of lambs, while males occupy much flatter areas during the lamb-rearing season (BLM 2013). Nelson's bighorn sheep forages on a broad variety of plants species (at least 34 and up to 121 different species) including forbs, shrubs, new shoots from shrubs and trees, grasses, shrubs, and barrel cactus (PG&E 2015b).

Nelson's bighorn sheep ~~have a potential~~ are known to occur in the Project Site. Two adult and two juvenile Nelson's bighorn sheep were observed next to Maze Loci A during a FMIT annual prayer ceremony in June 2013. Also, a FMIT Tribal Monitor reported observances of sheep in monitoring logs during the Time Critical Removal Action at AOC 4. ~~Bighorn sheep prefer visually open habitat that is steep and rocky in mountainous terrain above the desert floor. They use their eyesight as the primary sense for detecting predators at sufficient distances to ensure adequate time to reach safe terrain. Males and females will also often occupy different habitats~~

~~outside the breeding season. Females tend to choose steep, safe areas for bearing and initial rearing of lambs, while males occupy much flatter areas during the lamb-rearing season (BLM 2013). Nelson's bighorn sheep and signs thereof (tracks, scat, etc.) were not observed within or near the Project Site during the various biological surveys; however, a~~ According to the CNDDB (2013), Nelson's bighorn sheep have been documented in the mountains south of the Project Site (Figures 4.3-3, 4.3-4 and 4.3-4c). The species may use the foothill portions of the Project Site for foraging and movement, but no lambing habitat occurs within the Project Site.

Special-Status Aquatic Species

Bonytail Chub

The bonytail chub is federally listed and state-listed as endangered and is covered under the LCR MSCP. Critical habitat in relation to the Project Site includes the Colorado River and the 100-year floodplain (Figures 4.3-3 and 4.3-4 through 4.3-4b), from Parker Dam to the northern boundary of the HNWR just south of Needles. The single major factor contributing to the decline of bonytail and other large-river fishes has been the construction of mainstem dams and the resultant cool tailwaters and reservoir habitats that replaced once-warm, riverine environments (USFWS 2002b:18-21, 2005:50).

The bonytail chub was once widely distributed throughout the Colorado River and its main tributaries. This species is found only in isolated populations through the historic range and in the lower basin, as well as in Lake Mohave, with possible individuals between Parker Dam and Davis Dam (USFWS 2005:50-51). The trend for the bonytail chub is for a continued rangewide decrease in wild populations caused by a lack of sufficient recruitment of young adults, along with the loss of old adults to natural mortality. The primary limiting factor for the bonytail chub appears to be nonnative fish predation of the early life stages (USFWS 2005:50-51). Extinction of this fish in the wild throughout its historic range is being forestalled by the stocking of subadult fish into the Upper Colorado River Basin and Lake Mohave and Lake Havasu in the Lower Colorado River (USFWS 2005:50-51). These stockings are intended to create populations of young adults that may be expected to persist for 40 to 50 years. The Lower Colorado River supports the largest remaining populations of bonytail chub. The populations consist primarily of subadults (CH2M HILL 2007a:5-23, 5-24; included as Appendix D-1 to this DEIR). The CNDDB and the PBA indicate reports of bonytail chub occurring in the river adjacent to the Project Site (Figures 4.3-3 and 4.3-4 through 4.3-4b).

Razorback Sucker

The razorback sucker is federally listed and state-listed as endangered, as well as state fully protected, and is covered under the LCR MSCP. As with the bonytail chub, dam construction and subsequent habitat degradation have led to the substantial decline of the razorback sucker. The trend for the razorback sucker is for a continued rangewide decrease in wild populations caused by a lack of sufficient recruitment of young adults, along with the loss of old adults to natural mortality. The primary limiting factor for the razorback sucker appears to be nonnative fish predation of the early life stages (USFWS 2005:56).

The razorback sucker is endemic to large rivers of the Colorado River Basin, from Wyoming to Mexico. Present distribution of natural populations is limited to Lake Mohave, Green River Basin, and the Upper Colorado River Basin. Presently, natural adult populations exist only in Lake Mohave, Lake Mead, and Lake Havasu. This species uses a variety of habitat types, from mainstem channels to slow backwaters of medium and large streams and rivers, sometimes around cover. In impoundments, they prefer depths of 1 meter or more over sand, mud, or gravel substrates (CH2M HILL 2007a:5-19, included as Appendix D-1 to this DEIR).

The Lower Colorado River supports the largest remaining populations of razorback sucker. The populations consist primarily of subadults as a result of the stocking efforts directed at forestalling extinction. In 2005, razorback suckers were documented near Needles. In 2006, 236 suckers were captured and released at that spawning site (CH2M HILL 2007a:56, included as Appendix D-1 to this DEIR). This species has been documented just downriver of the Project Site (CNDDB 2013) (see Figures 4.3-3, 4.3-4, and 4.3-4a).

Flannelmouth Sucker

The flannelmouth sucker is covered under the LCR MSCP but has no other legal designations. The flannelmouth sucker is native to the Colorado River system and was once considered extirpated from the Lower Colorado River; they were reintroduced in the late 1970s (Moyle 2002:179). Flannelmouth suckers are benthic (bottom-dwelling) fish that primarily eat algae, although invertebrates and many types of plant matter are also consumed. The flannelmouth sucker inhabits larger streams and rivers in all habitat types, including riffles, runs, eddies, and backwaters. The species spawns in streams over gravelly areas during spring and early summer. The CNDDB indicates flannelmouth suckers occurring in the Park Moabi Lagoon (CNDDB 2013) near the Project Site.

Sensitive Habitats

Sensitive habitats are those of special concern to resource agencies or that are afforded specific consideration through California Environmental Quality Act (CEQA), Section 1602 of the California Fish and Game Code, or Section 404 of the CWA, as discussed in Section 4.3.2, “Regulatory Background.”

A wetland delineation was completed in 2013 by CH2M Hill. The Colorado River is considered waters of the United States and subject to regulation under CWA Section 404. Other waters of the United States may also include ephemeral drainages if they are connected to waters of the United States (Colorado River), as shown in Figures 4.3-2 through 4.3-2d. Other permanently or seasonally wet habitats, such as those described in Section 4.3.1.3, would qualify as wetlands subject to Section 404 regulation. All of these aquatic habitats are also anticipated to qualify as waters of the state and regulation under the Porter-Cologne Water Quality Control Act. In addition, waterways and associated riparian habitats are likely subject to regulation under Section 1600 et seq. of the California Fish and Game Code.

Other habitats considered sensitive by CDFW include those identified as “rare and worthy of consideration” in natural communities recognized by the CNDDB. These sensitive communities

provide essential habitat to special-status species that are often restricted in distribution or decreasing throughout their range. ~~Wetsern~~ Western honey mesquite bosque is the only vegetation community within the Project Site that is considered sensitive by CDFW. It has a Global Rank of G3 and a State Rank of S2.1, meaning that this community is considered highly imperiled, as measured by rarity, trends, and threats (CNDDB 2013).

4.3.2 Regulatory Background

Biological resources in California are protected and/or regulated by a variety of federal and state laws and policies. Key regulatory and conservation planning issues applicable to the proposed Project are discussed below.

4.3.2.1 Federal

Federal Endangered Species Act

Pursuant to the FESA, generally, USFWS has regulatory authority over federally listed species. Under the FESA, a permit is required for any federal action that may result in "take" of a listed species. Section 9 of the FESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulations, take is further defined to include the modification or degradation of habitat where such activity results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 of the FESA outlines procedures for federal interagency cooperation to protect and conserve federally listed species and designated critical habitat. Critical habitat identifies specific areas that have the physical and biological features essential to the conservation of a listed species and that may require special management considerations or protection. Section 7(a)(2) requires federal agencies to consult with USFWS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroying or adversely modifying designated critical habitat.

For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek an incidental take permit under Section 10(a) of the FESA. Section 10(a) of FESA allows USFWS to permit the incidental take of listed species if such take is accompanied by a habitat conservation plan that ensures minimizing and mitigation of impacts associated with the take.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements domestically a series of international treaties that provide for migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds; the act provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird" (16 USC 703). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds,

nests, or eggs. The current list of species protected by the MBTA includes almost all bird species that are native to the United States. Permits for take of nongame migratory birds can be issued only for specific activities, such as scientific collection, rehabilitation, propagation, education, taxidermy, and protection of human health and safety and personal property.

Clean Water Act, Section 404

Section 404 of the CWA requires project proponents to obtain a permit from USACE before performing any activity that involves any discharge of dredged or fill material into waters of the United States. Waters of the United States include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Many surface waters and wetlands in California meet the criteria for waters of the United States.

Clean Water Act, Section 402

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, which is administered by the U.S. Environmental Protection Agency (USEPA). In California, the State Water Resources Control Board is authorized by USEPA to oversee the NPDES program through the RWQCB, in this case, the Colorado River (Region 7) RWQCB.

Clean Water Act, Section 401

CWA Section 401(a)(1) specifies that any applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters shall provide the federal licensing or permitting agency with a certification that any such discharge will not violate state water quality standards. The RWQCBs administer the Section 401 program with the intent of prescribing measures for projects that are necessary to avoid, minimize, and mitigate adverse effects on water quality and ecosystems.

Rivers and Harbors Appropriations Act, Section 10

Section 10 of the Rivers and Harbors Appropriations Act of 1899 relates to the protection of navigable water in the United States and regulates any construction affecting navigable waters and any obstruction, excavation, or filling. Section 10 requires permits for all structures, such as riprap, and activities, such as dredging, in navigable waters of the United States. Navigable waters are defined as those subject to the ebb and flow of the tide and susceptible to use in their natural condition or by reasonable improvements as means to transport interstate or foreign commerce. USACE grants or denies permits based on the effects on navigation. Most activities covered under this act are also covered under Section 404 of the CWA. All activities involving navigable waters of the United States require a Section 10 permit. Projects must obtain approval of plans for construction, dumping, and dredging. Agencies involved in the coordination of the Rivers and Harbors Appropriations Act include the U.S. Coast Guard, USACE, USEPA, and state and local agencies.

Federal Land Management Policy Act

Congress established the Federal Land Management Policy Act of 1976 to direct federal agencies to manage public lands in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values and that, where appropriate, will preserve and protect certain public lands in their natural condition, provide food and habitat for fish and wildlife and domestic animals, and provide for outdoor recreation and human occupancy and use.

U.S. Bureau of Land Management Resource Management Plan

The Project Site is located within the Beale Slough Riparian and Cultural Area of Critical Environmental Concern (ACEC). This ACEC was designated through the BLM Lake Havasu Field Office Record of Decision and Approved Resource Management Plan (BLM 2007). ACEC designations highlight areas where special management attention is needed to protect, and prevent irreparable damage to important historical, cultural, and scenic values, fish, or wildlife resources or other natural systems or processes; or to protect human life and safety from natural hazards (Section 202I(3) of the Federal Land Policy and Management Act of 1976). The Beale Slough ACEC has been designated to protect both cultural and natural resources. This large ACEC contains regional rare riparian resources and wildlife habitat at Beale Slough to the north of the Project Site and a cultural element on the Project Site (BLM 2007: 106, Map 28).

The Arizona BLM Lake Havasu Field Office administers portions of land adjacent to the Project Site. *The BLM Lake Havasu Resource Management Plan* (BLM 2007), which covers a portion of the Project Site, guides management of public lands and their resource values for multiple uses and sustained yield to ensure they are utilized in a manner that will best meet the present and future needs of the public. As required by the Federal Land Management Policy Act and current BLM policy, BLM established management directions for the balanced use of such renewable and nonrenewable resources as rangeland, wildlife, wilderness, recreation, cultural resources, and other natural, scenic, scientific, and historical values within the planning area.

U.S. Fish and Wildlife Service National Refuge System—Havasu National Wildlife Refuge

Established in 1941 with the signing of Executive Order 8647 by President Franklin D. Roosevelt, the HNWR encompasses 37,515 acres in California and Arizona. The majority of the HNWR is located in Arizona.

The overarching goal of the USFWS Refuge System is to conserve a diversity of fish, wildlife, plants, and their habitats for the benefit of current and future generations. By fulfilling this goal, the Refuge System can maintain the biological integrity, diversity, and environmental health of each refuge with a focus on native species and can contribute to the conservation, and, where appropriate, restoration of representative ecosystems and ecological processes in the United States. A variety of management plans are developed for refuges, which include habitat management plans, comprehensive conservations plans, and annual habitat management plans. These plans focus on maintaining the refuge system for the conservation of migratory birds, anadromous and inter-jurisdictional fish, and marine mammals. The HNWR is primarily managed

to maintain and enhance riparian and wetland habitat (USFWS 1994b:30) adjacent to the Colorado River. Refuges are also managed for recreation and public interaction. Refuges have regulations that limit or define the amount of recreation use in the refuge. Pertaining to the HNWR, regulations focus primarily on the types and timing of particular recreation uses. The *Lower Colorado River National Wildlife Refuges Comprehensive Management Plan* for HNWR offers guidance for managing habitat, fish, wildlife, and special-status species. The plan also delineates sensitive and important habitats, or areas of substantial biodiversity into Special Project and Protection Areas (USFWS 1994b).

4.3.2.2 State of California

California Endangered Species Act

Pursuant to CESA, a permit from CDFW is required for projects that could result in take of a plant or animal species that is state-listed as threatened or endangered. CESA defines "take" as an activity that would directly or indirectly kill an individual of a species. Authorization for take of state-listed species can be obtained through a California Fish and Wildlife Code Section 2080.1 consistency determination or a Section 2081 incidental take permit.

California Fish and Wildlife Code—Fully Protected Species

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Wildlife Code. These statutes prohibit take or possession of fully protected species and do not provide for authorization of incidental take of fully protected species. CDFW has informed nonfederal agencies and private parties that their actions must avoid take of any fully protected species.

California Fish and Wildlife Code Section 1602—Streambed Alteration

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by CDFW under Section 1602 of the California Fish and Wildlife Code. Under Section 1602, it is unlawful for any person, governmental agency, or public utility to do the following without first notifying CDFW:

- Substantially divert or obstruct the natural flow of, or substantially change or use any material from, the bed, channel, or bank of any river, stream, or lake; or
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

"Stream" is defined as a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that supports or has supported riparian vegetation. CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. A CDFW streambed alteration agreement must be obtained for any project that would result in an impact on a river, stream, or lake.

California Fish and Wildlife Code Sections 3503 and 3503.5—Protection of Bird Nests and Raptors

Section 3503 of the California Fish and Wildlife Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations of these codes include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Section 3503.5 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby soil investigation activities. This statute does not provide for the issuance of any type of incidental take permit.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, waters of the state fall under the jurisdiction of the appropriate RWQCB. The RWQCB must prepare and periodically update water quality control plans (basin plans). Each basin establishes numerical or narrative water quality objectives to protect established beneficial uses, which include wildlife, fisheries, and their habitats. Projects that affect wetlands or waters of the state must meet discharge requirements of the RWQCB, which may be issued in addition to a water quality certification or waiver under Section 401 of the CWA.

4.3.2.3 Local

Lower Colorado River Multi-Species Conservation Program

Implemented in 2005, the LCR MSCP is intended to balance the use of water resources in the Lower Basin of the Colorado River with the conservation of native species in compliance with the FESA. The LCR MSCP outlines a 50-year effort to conserve 26 federally listed and state-listed candidate and sensitive species along the Lower Colorado River, including birds, fish, small mammals, bats, reptiles, amphibians, insects, and plants. The program area covers more than 400 miles of the Lower Colorado River from Lake Mead to the southernmost border with Mexico, and includes Lakes Mead, Mohave, and Havasu, as well as the historic 100-year floodplain along the main stem of the Lower Colorado River. The LCR MSCP provides FESA compliance for current and future operations, including water diversions and hydroelectric power generation in this area.

The MSCP outlines general and species-specific measures to conserve species and their habitats. Primary components of the plan include native fish augmentation, species research, species and ecosystem monitoring, conservation area development, protection of existing habitat, and adaptive management.

Critical to the Lower Colorado River system are the unique habitats that support a huge number of resident and migratory species. Native riparian habitat has declined from historical acreage because of factors such as dam construction, river channelization, conversion to irrigated agriculture, urbanization, wildfire, and invasive species. In most areas along the Lower Colorado River, overbank flooding that native plant species need to reproduce no longer occurs. The LCR MSCP requires the creation and management of more than 8,100 acres of riparian, marsh, and

backwater habitat for the targeted species, including 5,940 acres of cottonwood/willow, 1,320 acres of honey mesquite, 512 acres of marsh, and 360 acres of backwaters.

County of San Bernardino 2007 General Plan

The *County of San Bernardino 2007 General Plan* outlines conservation and regulatory guidelines for natural resources. The Conservation Element of the plan provides direction regarding the conservation, development, and utilization of the San Bernardino County's natural resources. Its objective is to prevent wasteful exploitation, destruction, and neglect of resources. Sensitive biological features are floral or faunal species of rare and/or endangered status, depleted or declining species, and species and habitat types of unique or limited distribution, including alkali wet meadows, pebble plains, limestone substrate, walnut woodland, Joshua tree woodland, perennial springs, and riparian woodlands. The Conservation Element is oriented primarily toward natural resources (San Bernardino County 2007:V-1).

The Conservation Element includes regions within the County. The Project falls within the desert region habitat of the Conservation Element, covering roughly 93 percent of the County land area (San Bernardino County 2007:V-5).

Goals and policies of the conservation element include programs incorporating resource agencies and nonprofit conservation groups, as well as the application of technological tools such as Geographic Information Systems to assist in coordinating and implementing the conservation of sensitive biological features.

Pertinent goals and policies include:

GOAL CO 1: The County will maintain to the greatest extent possible natural resources that contribute to the quality of life within the County.

GOAL CO 2: The County will maintain and enhance biological diversity and healthy ecosystems throughout the County.

- **Policy CO 2.1:** The County will coordinate with state and federal agencies and departments to ensure that their programs to preserve rare and endangered species and protect areas of special habitat value, as well as conserve populations and habitats of commonly occurring species, are reflected in reviews and approvals of development programs.

GOAL D/CO 1: Preserve the unique environmental features and natural resources of the Desert Region, including native wildlife, vegetation, water and scenic vistas.

4.3.3 Environmental Impacts

4.3.3.1 Impact Methodology

Analysis of impacts on biological resources, including terrestrial and aquatic resources, was based on consideration of Project activities and the anticipated footprint of areas potentially disturbed,

existing habitat conditions at the Project Site, the known or presumed occurrence of special-status species at or near the Project Site, and coordination with the regulatory agencies (such as CDFW, USFWS, and USACE).

Impacts to vegetation communities and jurisdictional resources were quantified through a GIS analysis in which the proposed Project activities were laid over the vegetation community data layer from the *Topock Groundwater Remediation Project Floristic Survey Report* (CH2M HILL and GANDA 2013) and the jurisdictional resources data layer from the *Wetlands and Waters of the United States, Delineation for the Topock Compressor Station Groundwater Remediation Project, San Bernardino County, California* (CH2M HILL 2013). These original data layers were delineated in the field by CH2M Hill to support the environmental analysis of the Groundwater Remediation Project.

In terms of the Project activities considered, the Soil Work Plan (included as Appendix A to this DEIR) proposes soil sampling at a total of 292 locations with at least 876 individual samples (see Figures 3.2 through 3.6). Each work area was assigned an estimated impact area which included the required work zone needed for successful execution of the Project. Specific locations and number of samples collected at each location may vary based on access considerations, the results of field screening, and field observations. Further, because of unforeseen circumstances or data gaps, additional samples/sampling locations may be necessary. As part of this DEIR, therefore, a contingency of up to 25 percent additional sampling locations (i.e., up to 73 locations) is analyzed. These locations could occur anywhere within the Project Site, but would be conducted in the same manner as described in the Project Description (Chapter 3) and below in Section 4.3.3.3. In addition, the analysis considers the potential for impacts associated with bench scale tests, pilot studies, geotechnical evaluations, plant or other biota sampling, and related work area restoration activities that may be implemented as part of the Project (see Sections 3.5.3, 3.5.4, 3.5.5 and 3.5.6) if determined necessary.

Impacts to sensitive species were assessed in much the same way; through a GIS-based analysis comparing the locations of the various Project work areas with the species locations and their associated habitats.

4.3.3.2 Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the CEQA Guidelines. The proposed Project would cause a significant impact on biological resources if it would:

- have a substantial adverse effect on waters, riparian, or sensitive habitat protected by federal or state regulations, including federal wetlands (as defined by Section 404 of the CWA), riparian habitats, or other sensitive natural community identified in any local or regional plans, policies, or regulations, or by CDFW or USFWS;
- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;

- interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife species to drop below self-sustaining levels, reduce the number or restrict the range of a rare or endangered plant or animal; or
- conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, other approved local, regional, or state habitat conservation plans, or other local policies or ordinances protecting biological resources.

4.3.3.3 Impact Analysis

Sensitive Natural Communities

Western honey mesquite bosque is the only ~~No~~ natural community~~ies~~ or habitat~~s~~ identified as sensitive by local or regional plans, policies, or regulations, or by CDFW or USFWS that exists on the Project Site~~;~~. Soil sampling locations will avoid the western honey mesquite bosque natural communities that occur on the Project Site and, therefore, no impacts are anticipated to occur to this community.

Wetlands and Riparian Habitats

Soil Sampling

The Soil Work Plan (included as Appendix A to this DEIR) proposes soil sampling at a total of 292 locations with at least 876 individual samples (see Figures 3.2 through 3.6). A contingency of up to 25 percent additional sampling locations (i.e., up to 73 locations) is also analyzed. These locations could occur anywhere within the Project Site, but would be conducted in the same manner as described in the Project Description (Chapter 3) and would avoid known sensitive biological resources.

Some of the soil sampling activities are anticipated to occur in areas that qualify for USACE jurisdiction and are protected under Sections 401 and 404 of the CWA. Likewise, those areas that qualify for USACE jurisdiction also qualify for CDFW jurisdiction under Section 1600 of the Fish and Game Code. These impacting Project activities include the proposed soil sample locations within desert washes such as Bat Cave Wash (AOC 1), and the riparian habitats around the pore water sampling sites within or near East Ravine (AOC 10).

Impacts to jurisdictional resources as a result of soil samplings are anticipated to be temporary because of the following: (1) only pruning, trimming, or clearing of vegetation is proposed to access some of the sites and clear around the sample area; (2) as described in the Soil Work Plan, some of the salt cedar will be cut off at the base, but the roots of all vegetation will be left in place to allow for natural, rapid regrowth of vegetation; (3) complete removal of vegetation is not expected at any work areas; and (4) once soil sampling is complete, all Project equipment and materials will be removed from the work area and, if the area is not paved, the area will be raked/brushed to remove tire tracks. Because only trimming, pruning, or clearing may be needed to access some of the sites and clear around the sample areas, revegetation is expected to occur

within one to two growing seasons. Standard well and boring decommissioning procedures required by San Bernardino County and the California Department of Water Resources (DWR) (DWR 1991) would be followed for the decommissioning of all borings (Section 3.5.2.12). After sampling has been completed, boreholes would be grouted from the total depth to within 6 to 12 inches of the ground surface with a bentonite-cement grout installed continuously in one operation to effectively seal the hole. Native soil would be used to fill the top 6 to 12 inches.

Bench Scale Tests

Impacts to jurisdictional resources as a result of bench scale tests are anticipated to be less than significant as only three to five 5-gallon buckets of soil are to be removed by hand at three different locations of soil contamination, which will be determined by the results of soil sampling and sample analysis (as described in Chapter 3, "Project Description").

In Situ Soil Flushing and Soil Stabilization/Chemical Fixation Pilot Studies

As described in Chapter 3, "Project Description," there are currently no pilot studies planned; however, plausible areas where soil flushing and soil stabilization/chemical fixation pilot studies could potentially impact jurisdictional resources include Solid Waste Management Unit (SWMU) 1/AOC 1 – Bat Cave Wash. A plausible dimension of the pilot test area would be approximately 35 feet by 115 feet (0.1 acre) of temporary impact area. For the purposes of this DEIR, PG&E expects that pilot studies associated with SWMU 1/AOC 1would be located in the bottom of the Bat Cave Wash, in an area that is generally devoid of vegetation. All impacts are anticipated to be temporary (9 months) and once pilot studies are complete, infiltration galleries will be removed and backfilled with bentonite grout and, for the 12 inches closest to the surface, native material, and the pilot test area will be raked to reflect its original condition. Impacts to jurisdictional resources as a result of in situ soil flushing and soil stabilization/chemical fixation pilot studies would be less than significant.

Geotechnical Evaluations

As described in Chapter 3, "Project Description," it is anticipated that up to ~~three~~ eight geotechnical evaluations will be undertaken within or near AOCs that have steep slopes and where remediation is determined necessary. AOCs within or near significant slopes that also occur within or near jurisdictional resources include: SWMU 1/AOC 1 (Bat Cave Wash), AOC 4, and AOC 10d. Geotechnical borings would be drilled using a hollow-stem auger drill. Soil samples would be collected using the standard penetration test and modified California ring samplers for index properties, strength, and compaction characteristics. As described above for soil sampling, all impacts from geotechnical evaluations are anticipated to be temporary and once geotechnical evaluations are complete, all equipment will be removed, exploratory boreholes will be decommissioned and backfilled with native material, and the geotechnical evaluation area will be raked to reflect its original condition. Impacts to jurisdictional resources as a result of geotechnical evaluations would be less than significant.

Plant or other Biota Sampling

Impacts to jurisdictional resources as a result of plant or other biota sampling are anticipated to be less than significant. As described in the Project Description (Chapter 3), the tissue sampling

methods recommended would not require use of motorized equipment or removal of riparian vegetation or soil. Plant tissue samples would be collected using less invasive methods, for example by hand pruning without sacrificing individual plants. Tissue would be collected from as few plants as practical to provide a representative sample of diet concentrations in that specific sampling location. Tissue collection would focus on leafy vegetation rather than more intrusive seed collection, as allowed by study objectives. Pit traps for invertebrate sampling could be set where soil from a location is pushed aside to create a shallow pit (approximately 1 foot square by 1 foot deep) using a hand auger, shovel, or trowel. Once sampling is completed, the traps would be removed and soil would be pushed back to cover the shallow pits. As the soil investigation proceeds, additional data may identify additional key chemicals of potential ecological concern (COPECs) (e.g., dioxins/furans, PCBs, or other organic chemicals). If unacceptable risk is predicted for carnivorous receptors, a validation study may be required where small mammal tissue would need to be collected from the Project Site. Tissue would be collected using Sherman live or similar traps deployed on the ground surface. No impacts are anticipated to occur to jurisdictional resources as a result of biota tissue sampling.

Table 4.3-4 lists the estimated temporary impact acreages for each habitat type within the Project Site. **Table 4.3-5** lists the estimated temporary impact acreages to those areas that qualify for USACE/CDFW jurisdiction.

Invasive Species Recruitment

Invasive species recruitment within sensitive habitats may occur as a result of soil disturbance and tracking of seeds on vehicle tires and equipment associated with Project activities. Invasive species can out-compete native ones and severely degrade the quality of jurisdictional resources and habitat used by both common and special-status species. Implementation of the proposed Project could result in the disturbance to vegetation, constituting riparian habitat and other jurisdictional resources, and the potential for habitat degradation through the recruitment of invasive species. Because these areas are already dominated by aggressive, quick-growing invasive species (e.g., salt cedar), however, impacts to sensitive habitats as a result of high invasive species recruitment would be less than significant.

TABLE 4.3-4
ESTIMATED TEMPORARY IMPACTS TO HABITAT TYPES WITHIN THE PROJECT SITE

Habitat Type	Estimated Temporary Impacts within the Project Site (Acres)
Creosote Bush Scrub	Up to 20 acres
Tamarisk Thicket	Up to 32 acres
Arrow Weed Thicket	Up to 1 acre
Blue Palo Verde Woodland	Up to 2 acres
Catclaw Acacia Thorn Scrub	Up to 1 acre
Foothill Palo Verde Scrub	Up to 1 acre
Allscale Scrub	Up to 1 acre
Western Honey Mesquite Bosque	Up to 1 acre
Tamarisk Thicket/Mesquite Bosque	Up to 1 acre
Tamarisk Thicket/Mesquite Bosque/Blue Palo Verde Woodland	Up to 1 acre
Common Reed Marshes	Up to 1 acre
Landscaped	Up to 1 acre
Developed	Up to 11 acres
Total Estimated Acres	**Up to 74 acres**

SOURCES: CH2M HILL and GANDA 2013ab; Parus 2014.

TABLE 4.3-5
ESTIMATED TEMPORARY IMPACTS TO USACE/CDFW HABITATS WITHIN THE PROJECT SITE

Jurisdictional Habitat	Estimated Temporary Impacts within the Project Site (Acres)	25% Contingency for Unforeseen Impacts (Acres)	Total Estimated Temporary Impacts within the Project Site (Acres)
USACE/CDFW Jurisdictional Habitats			
Palustrine scrub-shrub temporarily flooded wetlands associated with ephemeral washes (PSSA)	2.1 ~~Up to 9 acres~~	0.53	Up to 2.6
Riverine Intermittent Stream Bed Cobble-Gravel Temporarily Flooded (R4SB3A)	2.5	0.63	Up to 3.1
Palustrine emergent, permanently flooded wetlands (PEMH, R4SB3A)	0.2 ~~Up to 1 acre~~	0.05	Up to 0.3
Palustrine, emergent, seasonally flooded wetlands (PEMC)	0.1 ~~Up to 2 acres~~	0.03	Up to 0.13
~~Ephemeral washes~~	~~Up to 11 acres~~		
Colorado River (R2UB2)	0.04 ~~Up to 1 acre~~	0.01	Up to 0.05
~~Riparian habitat~~	~~Up to 1 acre~~		
CDFW Only Jurisdictional Habitats			
Riparian habitat	0.2	0.05	Up to 0.3
Total Estimated Acres	**5.1 ~~Up to 25 acres~~**	**1.3**	**Up to 6.4**
SOURCES: CH2M HILL ~~and GANDA~~ 2013~~ab~~; Parus 2014.			

Regulatory Requirements and Avoidance Measures

On February 12, 2013, PG&E consulted with Mr. Gerardo Salas of USACE Los Angeles District in Los Angeles regarding the application of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 121(e)(1) permit exemption to the Topock remediation project. Under the CERCLA regulations, administered here by the U.S. Department of the Interior (DOI), PG&E would not be required to apply for or obtain federal, state, or local permits for impacts to jurisdictional wetlands and waters as long as the Project actions are implemented in compliance with the substantive elements of Section 404 of the Clean Water Act, as applicable. Through email correspondence between Mr. Salas and Environmental Science Associates on March 4, 2013, it was determined that in 2008, PG&E was cleared for CERCLA exemption per Nationwide Permit (NWP) 38. During a meeting between USACE and PG&E in February 2013, the USACE confirmed that consistent with NWP 38 and the USACE's 5-year NWP update in the spring of 2012, activities undertaken entirely on a CERCLA site by authority of CERCLA as approved or required by EPA are not required to obtain permits under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. Therefore, neither a 404 permit nor a 401 permit would be required for the proposed Project and no further USACE action is required (USACE 2013).

On December 11, 2012, PG&E consulted with CDFW District Regional Manager and his staff at the Blythe, California, office regarding the substantive requirements of the CDFW Section 1602 and the application of the CERCLA 121(e)(1) permit exemption to the Topock remediation project. On February 21, 2013, CDFW staff from the Blythe office conducted a field review of the Project. On March 6, 2013, the CDFW issued a letter to PG&E confirming that CERCLA 121(e)(1) applies to response actions conducted on-site at Topock, specifically to soil and groundwater investigation activities and to remedial actions at the Project Site (CDFW 2013b). As a result, no Lake or Streambed Alteration Agreement is required by CDFW. However, PG&E must still comply with avoidance and minimization measures (AMMs) attached to the March 6, 2013, letter and any additional mitigation measures in this DEIR. The AMMs that apply to the proposed Project are summarized below (note that one additional AMM was included in the CDFW letter that does not apply to the Soil Investigation Project; therefore, the numbering below does not exactly correspond with the original letter).

1. Formal environmental training will be provided for all on-site personnel prior to soil investigation activities. This training will include biological, environmental laws, and guidelines.
2. If required for species or habitat protection, a biological monitor will be on-site during all ground-disturbing activities.
3. No direct or indirect impacts shall occur to any State or federally listed threatened, endangered, or candidate species. Any and all impacts to these species are strictly prohibited and are punishable by Federal and State laws. If threatened, endangered or candidate species occur within the proposed work area or could be impacted by the proposed Project, PG&E shall obtain the required State and Federal threatened and endangered species permits or

comply with the substantive requirements of such laws, pursuant to CERCLA Section 121(e)(1).

4. No discharges to the CDFW Jurisdictional Washes or Colorado River shall occur without permits or compliance with the substantive requirements of applicable federal and state laws, pursuant to CERCLA Section 121 (e)(1).

5. Spoil sites shall not be located within the bed, bank, and channel of any watercourse, where spoil could be washed back into a stream, or where it will cover aquatic or riparian vegetation. Any materials placed in seasonally dry portions of a stream that could be washed downstream or could be deleterious to aquatic life shall be removed from the Project Site prior to inundation by high flows.

6. Structures and associated materials, including Project-related debris, not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.

7. All debris, bark, slash, sawdust, rubbish, silt, cement or concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances resulting from Project-related activities that could be hazardous to aquatic life or waters of the state, shall be prevented from contaminating the soil and/or entering the waters of the state and shall not be deposited within 150 feet of the high water mark, unless containerized. None of these materials shall be allowed to enter into or be placed within or where they may enter or be washed by rainfall or runoff into waters of the State. When soil investigation activities are completed, any excess materials or debris shall be removed from the work area.

8. Erosion control measures shall be implemented where necessary to reduce erosion and sedimentation in wetlands, waters of the United States, waters of the state, and habitat occupied by covered species and plant species when activities are the source of potential erosion impacts.

9. During soil investigation activities, the contractor shall not dump any litter or debris within the riparian/stream zone. All such debris and waste shall be removed daily and properly disposed of at an appropriate site.

10. PG&E shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws and it shall be the responsibility of PG&E to ensure compliance. The cleanup of all pollution spills shall begin immediately. PG&E shall notify CDFW immediately of any spills and shall consult with CDFW regarding cleanup procedures and requirements.

11. Spills and releases of materials shall be cleaned up immediately and thoroughly. Appropriate spill response equipment, including spill kits preloaded with absorbents in an over-pack drum (where feasible), will be provided at convenient locations throughout the Project Site. Spent absorbent material will be managed and disposed of in accordance with applicable regulations. In particular, absorbents used to clean spills of hazardous materials or waste will be managed as hazardous waste unless characterized as nonhazardous.

12. Trash and scrap receptacles shall be located throughout work areas, as necessary, to promote proper disposal of solid wastes. Receptacles shall be provided with lids or covers to prevent windblown litter.
13. Proper receptacles to dispose of hazardous wastes shall be provided at each work area.
14. Excess concrete will be collected and disposed of in designated concrete washout facilities.
15. Any sanitary and septic waste facilities provided during Project work will be located away from drainage courses and traffic areas. These facilities will be maintained regularly.
16. Staging/storage areas for equipment and materials shall be located outside of the Colorado River's bed, bank, and channel. No equipment maintenance shall be done within 150 feet of the Colorado River channel where petroleum products or other pollutants from the equipment may enter these areas under any flow.
17. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the Colorado River, shall be positioned over drip pans.
18. Vehicles shall not be driven or equipment operated in water-covered portions of the Colorado River or in wetted areas (including but not limited to ponded, flowing, or wetland areas) or where riparian vegetation may be destroyed, except as necessary to complete authorized work as described under the plan.
19. Any equipment or vehicles driven and/or operated within or adjacent to the Colorado River shall be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian and wetland habitat.
20. Project-related vehicle traffic and equipment storage shall be restricted to established roads, designated access roads, the working strip, storage areas, staging and parking areas, and other designated Project areas. All of these areas shall be clearly marked by posting signs.
21. All vehicles and equipment regularly entering and leaving work areas shall be cleaned to reduce material track-out.
22. Vehicles shall not exceed a speed limit of 15 mph in the ROWs or on unpaved roads within sensitive land-cover types.
23. All disturbed portions of the Colorado River shall be restored to as near original condition as possible, except as otherwise indicated to CDFW.
24. No vehicles shall be refueled within 100 feet of a wetland, stream, or other waterbody unless done within a constructed secondary containment area that includes, at a minimum, a perimeter berm and leakproof liner.
25. All equipment and vehicles will have federal- or state-approved spark arrestors. All vehicles will carry an approved fire extinguisher (or backpack pump filled with water) and a shovel.
26. The development of new access and ROW roads by PG&E and vegetation clearing and blading for temporary vehicle access shall be minimized.
27. Covered storage for materials, especially toxic or hazardous materials, shall be provided to prevent exposure of these materials to stormwater. Toxic or hazardous materials will be

stored or transferred on impervious surfaces that will provide secondary containment for spills. Vehicles and equipment used for material delivery and storage, as well as all contractor vehicles, shall be parked in designated areas.

28. Trash dumping, firearms, open fires (such as barbecues) not required by the activity, hunting, and pets will be prohibited in work activity sites.

29. The perimeter of the work area shall be adequately flagged to prevent damage to adjacent riparian and wetland habitats. The upstream and downstream limits of the work area, including all areas of impact to existing desert riparian habitat and "Environmentally Sensitive Areas," shall be identified with flagging or brightly colored mesh fencing or some other means readily conveyed to the equipment operators. These limits will be identified by a supervisor familiar with the terms of these AMMs, prior to the beginning of activities, and will be confined to the minimal area needed to accomplish the proposed work.

30. No herbicides shall be used on vegetation unless specifically authorized, in writing, by CDFW.

31. PG&E assumes responsibility for the restoration of any wildlife habitat that may be impaired or damaged, either directly or incidental to the Project, as a result of failure to properly implement or complete the listed mitigative features or from activities that were not included in PG&E's Notification.

32. All Project resident engineers, Project engineers, Project inspectors, and contractors and sub-contractors shall be provided with a copy of the AMMs, and shall abide by the terms and conditions of the AMMs.

33. PG&E shall notify CDFW, in writing, at least 5 days prior to initiation of construction activities and at least 5 days prior to completion of soil investigation activities. The notification shall be sent to: Department of Fish and Wildlife, Colorado River Program, P.O. 2160, Blythe, California 92226; FAX No. (760) 922-5638.

IMPACT BR-1 **Substantial Adverse Effects on Waters, Riparian, or Sensitive Habitats Protected by Federal or State Regulations.** *Implementation of the proposed Project could result in disturbance and/or removal of riparian vegetation, wetlands and other waters of the United States under U.S. Army Corps of Engineers and California Department of Fish and Wildlife jurisdiction along the Colorado River; specifically within Bat Cave Wash and East Ravine. This impact would be* ***significant****.*

Mitigation Measure BR-1: No-net-loss of Wetland, Riparian or other Sensitive Habitat Function or Value. The Project shall be implemented to avoid effects to the habitat values and functions of identified jurisdictional areas (i.e., floodplain and riparian areas, wetlands, and waters of the United States and habitats designated by CDFW as sensitive, including ephemeral washes and western honey mesquite bosque). Before undertaking ground-disturbing activities within East Ravine and Bat Cave Wash, a qualified biologist shall coordinate with PG&E to ensure that the footprints of investigation activities, including drill pads, staging areas, and access

routes, are designed to avoid disturbance to sensitive habitats ~~to the extent feasible~~. Where complete avoidance to sensitive habitat is not feasible DTSC shall be notified and Project activities shall be implemented to ensure no-net-loss of habitat value or function under the direction of a qualified biologist. The following avoidance measures shall be implemented when working in Bat Cave Wash and East Ravine:

a. No plants or vegetation shall be completely removed – only pruning, trimming, clearing, or similar approaches which allow the natural regrowth of the plant will be allowed;

b. Vegetation pruning, trimming, or clearing shall only occur to access investigation sites and clear around the sample areas where absolutely necessary;

c. The only vegetation to be cut off at the base (cleared rather than pruned or trimmed) will be salt cedar at the mouth of Bat Cave Wash. The roots of the salt cedar at the mouth of Bat Cave Wash will be left in place where possible to allow for natural, rapid regrowth of vegetation;

d. No more than 20 percent of the crown on all native trees, such as palo verde, shall be trimmed, and no main branches shall be trimmed. This is consistent with what is recommended by the International Society of Arboriculture (ISA 2011);

e. Cuttings from native trees would be chipped and left in place;

f. Complete removal of vegetation in any work area shall be prohibited; and

g. Project equipment and materials from work areas shall be completely removed and, if the area is not paved, it shall be raked/brushed to remove tire tracks.

"No net loss" shall be achieved through any combination of the following, in descending order of desirability: (1) avoidance; (2) where avoidance is not possible, minimization of impacts on the resource; or (3) 1:1 like kind habitat compensation, including use of a mitigation banking program that provides the opportunity to mitigate impacts to rare, threatened, and endangered species and /or the habitat which supports these species in wetland and riparian areas. A biological monitor shall be present for all vegetation trimming, pruning, and clearing to ensure the above measures are implemented and that vegetation is protected to the extent feasible.

Timing:	Specific impact identification and Project adjustments shall occur during Project planning and implementation.
Responsibility:	PG&E would be responsible for the implementation of these measures. DTSC would be responsible for ensuring compliance with input from the jurisdictional agencies.
Significance after Mitigation:	Avoidance of impacts to habitat function and value of wetlands, other waters of the U.S. and riparian habitat would occur through the reduction of vegetation removal and restoration as described

in Mitigation Measure BR-1. Using these measures, revegetation is expected to occur naturally within one to two growing seasons ensuring a no-net-loss of habitat value or function within this timeframe. This would reduce impacts on sensitive habitats to a **less than significant** level.

Special-Status Species

Disturbance of Special-Status Plants

Mousetail suncup is the only special-status plant species that occurs within the Project Site. There are no Project activities planned in areas where ~~M~~mousetail suncup is established as the species occupies steep vertical rock cliffs which are a highly unlikely site for soil sampling activities, bench scale tests, pilot studies, geotechnical evaluations and plant or other biota tissue sampling. As described in the Project Description (Chapter 3), no collection of special-status and culturally-sensitive plant species will be necessary for the tissue sampling activities. Therefore, this species is not anticipated to be impacted by Project activities.

IMPACT BR-2 **Impacts to Special-Status Plant Species.** *Implementation of the proposed Project would not affect special-status plants. Mousetail suncup is the only special-status plant species that was observed within the Project Site. However, there are no Project activities planned in areas where Mousetail suncup is established. For this reason, this impact would be* ***less than significant****. No mitigation would be required.*

For a discussion of impacts that may occur to indigenous plants of biological and cultural significance (identified in the Ethnobotany Survey Report included as **Appendix D-3** of this DEIR) and proposed mitigation measures, see Section 4.4, “Cultural Resources” (Section 4.4.3.3), specifically, Mitigation Measure CR-1e-4.

Disturbance of Special-Status Invertebrates

The Project Site provides suitable habitat containing the larval host plant (quail bush) and sufficient nectar-bearing sources for the MacNeill’s sootywing skipper. Although not observed during the various biological surveys, the species could occur along the banks of the Colorado River near the outlet of the East Ravine. Impacts to the species are anticipated to be less than significant as only pore water sampling is proposed at this location. Impacts associated with the pore water sampling will be minimal as all work will be completed by hand and access to each pore water sampling site will be by boat or by foot. Therefore, this impact would be less than significant.

No impacts are anticipated to occur to special-status invertebrates as a result of bench scale tests, pilot studies, geotechnical evaluations, or plant or other biota tissue sampling. Invertebrate tissue sampling is not anticipated to impact MacNeill’s sootywing skipper as the sampling is aimed at other ground-dwelling species subject to capture by pit fall trapping.

IMPACT BR-3 **Direct Disturbance of and Loss of Habitat for Special-Status Invertebrate Species.** *Implementation of the proposed Project could affect special status invertebrates, specifically the MacNeill's sootywing skipper, either directly or through habitat modifications. Impacts to MacNeill's sootywing skipper habitat at East Ravine would be minimal as all work will be completed by hand and access to each pore water sampling site would be by boat or by foot. This impact would be* ***less than significant****. No mitigation would be required.*

Disturbance of Special-Status Birds and Loss of Habitat

The Project Site provides foraging and/or nesting habitat for a variety of special-status bird species. Many of the special-status bird species listed in Table 4.3-3 have potential to nest in the Project Site, including the crissal thrasher, Sonoran yellow warbler, Arizona Bell's vireo, California black rail, Yuma clapper rail, western least bittern, and yellow-breasted chat. Soil sampling activities, bench scale tests, pilot studies, geotechnical evaluations and plant or other biota tissue sampling would result in temporary and short-term disturbance in the Project Site, which includes habitat for sensitive species. Clearing and drilling in upland areas could result in disturbance or loss of foraging and nesting habitat, and clearing of roads and staging areas could adversely affect other habitat areas. Because these Project-related effects would be temporary (see Section 3.5.8 of this DEIR) and limited (up to 74 acres) given the overall foraging habitat within the vicinity of the Project (i.e., expanses of desert scrub in all directions, riparian habitat in Topock Marsh and HWNR, etc.), this temporary loss of foraging habitat would not substantially affect any special-status birds. In addition, all of the proposed staging areas will be located in previously disturbed and existing operational areas to the extent feasible; thereby reducing impacts to nesting birds and their habitat.

Removal or disturbance of active nests and impacts to nesting habitat of both sensitive species and other common nesting birds could result during soil sampling activities, bench scale tests, pilot studies, geotechnical evaluations, and plant or other biota tissue sampling. Visual or noise disturbance of active nests could result in nest abandonment and loss for various special-status bird species. Loss of occupied habitat (including foraging and nesting habitat) and active nests of special-status birds could result in a substantial adverse effect on local populations of the affected species. While there are currently no regulations that identify noise thresholds for determining a significant impact on nesting birds, the USFWS has often used a noise level of 60 A-weighted decibels (dBA) at an energy-equivalent noise level (L_{eq}) (or ambient noise levels, whichever is loudest) at the outer edge of habitat for federally listed threatened or endangered species, as the point at which Project-related noise may affect a listed bird species.

Of particular note, Yuma clapper rails are known to inhabit portions of the Topock Marsh and Topock Gorge just north and east of the Project Site in Arizona (KBS 2012), and annual surveys conducted by USFWS biologists have indicated that both the Topock Marsh and the Topock Gorge support relatively steady populations (BOR 2008:9). Although no clapper rails have been detected near the Project Site during the most recent focused surveys conducted by Konecny Biological Services (KBS 2012), potentially suitable habitat occurs within the emergent freshwater marsh habitats scattered along the western shore of the Colorado River, most notably

near the East Ravine (AOC 10). Yuma clapper rails within the vicinity of Topock Marsh may occupy this habitat in subsequent breeding seasons. Soil and water sampling activities and access road improvements could occur within 300 feet of marsh habitat. If it is determined that Yuma clapper rail occupy this habitat during subsequent surveys by USFWS or during soil investigation activities, direct and indirect effects could occur, such as habitat loss, stranding of active nests (usually built at edge of water), and increasing predation and nest failure. Project-related disturbance from traffic or noise during the rail's breeding season could cause rails to have nest failures and/or abandon nesting territories. Direct and indirect effects could also occur to the other special-status bird species, such as the Arizona Bell's vireo and California black rail, other species shown in Table 4.3-3, and the nests of species covered under the federal Migratory Bird Treaty Act through habitat loss, impacts to nests, and traffic noise potentially resulting in nest abandonment.

IMPACT BR-4 **Direct Disturbance of and Loss of Habitat for Special-Status Bird Species.** *While the proposed Project could result in the temporary loss of foraging habitat for these species, the loss of foraging habitat would not substantially affect any special-status birds due to the abundance of foraging habitat in the vicinity of the Project Site. Implementation of the proposed Project could affect the active nests of special-status birds. In addition, visual or noise disturbance of active nests could result in nest abandonment and loss of sensitive bird species. This impact would be* ***significant****.*

Mitigation Measure BR-4: Disturbance of Special-Status Birds. The following measures shall be implemented to avoid impacts to active nests and nesting birds and to ensure compliance with the Migratory Bird Treaty Act and California Fish and Game Code:

a. ~~Where possible, v~~ Vegetation trimming, pruning, or clearing and other activities shall be timed to avoid the nesting season for special-status bird species that may be present (March 15 through September 30) except as provided for in item b, below.

b. If vegetation removal or other Project activities are necessary in vegetated areas between March 15 and September 30, DTSC shall be notified and focused surveys for active nests of special-status birds (including Arizona Bell's vireo, California black rail, Yuma clapper rails and other species identified in Table 4.3-3) shall be conducted no more than 72 hours before such activities begin. A qualified biologist shall conduct pre-investigation surveys to identify active nests that could be affected. The appropriate area to be surveyed and the timing of the survey may vary depending on the activity and species that could be affected and shall be determined by the qualified Project biologist. For the Yuma clapper rail, the pre-investigation surveys shall specifically identify habitat within 300 feet of investigation areas, in accordance with measures set forth in the Bird Avoidance and Minimization Plan (BIAMP) which was finalized on April 30, 2014 (CH2M HILL 2014).

c. The qualified Project biologist shall implement all of the avoidance and minimization measures that are outlined in the BIAMP (CH2M HILL 2014).

d. The biologist shall consult the BIAMP (CH2M HILL 2014) for required nesting bird avoidance buffers and requirements for the on-site biological monitor. Buffers vary depending on the species of bird, so the BIAMP (CH2M HILL 2014) should be consulted once a nest is identified.

Timing:	Before and during Project activities.
Responsibility:	PG&E would be responsible for the implementation of these measures. DTSC would be responsible for ensuring compliance.
Significance after Mitigation:	Conducting pre-investigation surveys for special-status birds and nesting birds and developing and following avoidance and minimization measures (including establishing buffers for active nests) as described in Mitigation Measure BR-4 would reduce the impact on nesting special-status birds to a **less than significant** level.

Disturbance of Desert Tortoise and Loss of Habitat

Desert tortoises may have historically used the Project Site, but no evidence of current use has been documented during the protocol-level surveys conducted yearly since 2004 (CH2M HILL 2005b:9, 2007a:5-10, 5-11, 2010b; GANDA 2008a:5, 2009b:7-8). The PBA stated that although it is possible that the desert tortoise could enter the Project Site from the west, the quality of the present creosote scrub habitat is poor, typically lacking annual vegetation for foraging and burrows for shelter (CH2M HILL 2007a:5-11 to 5-12, included as Appendix D-1 to this DEIR). The Project Site is also highly fragmented by steep rocky slopes of the Chemehuevi Mountains, deep drainages, pipelines, roads, and rail lines. These conditions make permanent occupation of the survey area unlikely. Removal of upland habitat through clearing to access and drill boreholes, reoccupy previously disturbed staging areas, and improve roadways during implementation of the proposed Project could result in disturbance and loss of marginal desert tortoise habitat, but these effects would be relatively minor in terms of potential acres disturbed. However, since there is a slight potential for the desert tortoise to enter the Project Site, the species could be directly impacted by the implementation of the Project.

IMPACT BR-5 **Direct Disturbance of and Loss of Habitat for Desert Tortoise.** *Implementation of the proposed Project could affect desert tortoises, either directly or through habitat modifications. This impact would be* ***significant****.*

Mitigation Measure BR-5: Disturbance of Desert Tortoise and Loss of Habitat. Consistent with the PBA and the USFWS letter concurring with the PBA, the following measures shall be implemented:

a. Before any ground-disturbing Project activities begin, a qualified desert tortoise biologist (i.e., an experienced tortoise expert whom USFWS would be confident in the evaluation and survey for the presence of the desert tortoise under the PBA) shall identify potential desert tortoise habitat in areas that could be affected by the Project activities. The qualified biologist

shall conduct a pre-investigation desert tortoise clearance survey prior to the start of investigative activities. They shall also conduct monitoring on a spot basis (1–2 days for a 2-week period) or as a result of a change in investigation boundaries or limits. PG&E will be notified at least 24 hours prior to the spot check.

b. PG&E shall designate a field contact representative (FCR) who will be responsible for ~~overseeing compliance with~~ proper execution of the mitigation measures. The FCR shall be trained by the qualified biologist and have authority to halt activities that are in violation of the mitigation measures/or pose a danger to listed species. The FCR will have a copy of the mitigation measures when work is being conducted on the Project ~~s~~Site. The FCR may be a project manager, PG&E representative, or biologist.

c. Prior to Project activities and immediately prior to the initiation of ground disturbance, a qualified desert tortoise biologist shall conduct worker awareness training for all PG&E employees and the contractors involved with the proposed Project.

d. The FCR will be on-site during all Project activities. The qualified biologist will examine work areas for desert tortoises and their sign (i.e., burrows, scat, tracks, remains, and pallets), ensuring 100 percent coverage of the area, and clear each area of activity prior to work initiation. Any desert tortoise burrows and pallets outside of, but near, the project footprint shall be flagged at that time so that they may be avoided during work activities. At conclusion of work activities, all flagging shall be removed. Should any live tortoises be found during the clearance survey, or if a tortoise moves into the work area, all work shall stop immediately and the animal shall be left to move out of the work area on its own accord. Tortoises shall not be handled. Encounters with desert live desert tortoises shall be reported to BLM Lake Havasu biologists. Information to be reported will include for each individual: the location (narrative, vegetation type, and maps) and date of observation; general conditions and health; any apparent injuries and state of healing; and diagnostic markings.

e. All workers shall be required to check under their equipment or vehicle before it is moved. If a desert tortoise is encountered under vehicles or equipment, the vehicle shall not be moved until the animal has voluntarily moved to another location or to a safe distance from the parked vehicle.

Timing:	Before and during Project activities.
Responsibility:	PG&E would be responsible for the implementation of these measures. DTSC would be responsible for ensuring compliance.
Significance after Mitigation:	Conducting pre-investigation surveys for desert tortoises, conducting worker awareness training, and conducting biological monitoring as described in Mitigation Measure BR-5 would reduce the impact on the species to a **less than significant** level.

Disturbance of Ring-Tailed Cat and Loss of Habitat

An individual ring-tailed cat was observed within the Station on October 25, 2007. A second ring-tailed cat sighting was made at the Station a few years later. Removal of habitat through clearing to access and drill samples, reoccupy previously disturbed staging areas, and improve roadways during implementation of the proposed Project could result in disturbance and loss of habitat for ring-tailed cats, but these effects would be relatively minor in terms of the potential acres disturbed. However, since there is a potential for the ring-tailed cat to nest on the Project Site, the species could be directly impacted by the implementation of the Project. Impacts to the species could include injury or death through direct contact with Project equipment, through collapse or damage of an active or occupied nest, or indirectly through nest abandonment as a result of nearby Project-related disturbances.

As the soil investigation proceeds, additional data may identify additional key COPECs (e.g., dioxins/furans, PCBs, or other organic chemicals). If unacceptable risk is predicted for carnivorous receptors, a validation study may be required where small mammal tissue would need to be collected from the Project Site; however, tissue would be collected using Sherman live or similar traps deployed on the ground surface, which are not large enough to capture ring-tailed cat. For this reason, no impacts would occur to ring-tailed cat from tissue sampling.

IMPACT BR-6 **Disturbance of Ring-Tailed Cat and Loss of Habitat.** *Implementation of the proposed Project could affect ring-tailed cat, either directly or through habitat modifications. This impact would be* ***significant****.*

Mitigation Measure BR-6: Disturbance of Ring-Tailed Cat and Loss of Habitat. The following measures shall be implemented:

a. Pre-investigation surveys for ring-tailed cats will be conducted by a qualified biologist prior to the start of investigation activities. No activities that will result in disturbance to nests or ring-tailed cats will proceed prior to completion of the surveys. If no active nests are found, no further action is needed. If a ring-tailed cat nest is present, ~~part b (below)~~ additional measures will be implemented as outlined below. The CDFW will also be notified of any active nests within the proposed disturbance zones.

b. ~~Ring-tailed cats are fully protected under Fish and Game Code Section 4700, as described above.~~ If an active ring-tailed cat nest is found, the Project shall be redesigned to avoid the loss of the site occupied by the nest if feasible. If the Project cannot be redesigned to avoid the nest, the CDFW will be contacted ~~for their input~~. If approved by the CDFW, demolition of the nest site will commence outside of the breeding season (February 1 to August 30) when the nest is vacated. If a non-breeding nest is found in a site scheduled to be removed, prior to disturbance, the CDFW will be notified to review and approve the proposed procedures to ensure that no take occurs as a result of the action. Sites with unoccupied nests that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow adult ring-tailed cats to escape during the darker hours.

Timing: Before and during Project activities.

Responsibility: PG&E would be responsible for the implementation of these measures. DTSC would be responsible for ensuring compliance.

Significance after Mitigation: Conducting pre-investigation surveys for ring-tailed cats and following avoidance and minimization measures as described in Mitigation Measure BR-6 would reduce the impact on the species to a **less than significant** level.

Disturbance of Nelson's Bighorn Sheep

The primary risk to Nelson's bighorn sheep is disturbance during soil investigation activities from noise or visual disruptions. Habitat loss is not expected as no lambing habitat occurs on-site and any vegetation community impacts within suitable foraging areas would be temporary.

There is evidence that human disturbance can alter habitat use and activity patterns of bighorn sheep, although the response to disturbance varies among individuals and with degree of previous exposure to human contact. Given the limited use of the Project Site by Nelson's bighorn sheep, potential disturbance could include disruption of the movement of sheep passing through the area from late October to mid-May. However, sightings near the Station indicate that sheep have already habituated to human activities in and around the Station, including operations and maintenance activities at the Station, vehicle traffic on roads, and the general presence of people in the area. There would be no permanent loss of habitat and Nelson's bighorn sheep are likely habituated to human activities in and around the Station. Implementation of Mitigation Measure BR-7 would ensure impacts from the Project would remain less than significant.

As the soil investigation proceeds, additional data may identify additional key COPECs (e.g., dioxins/furans, PCBs, or other organic chemicals). If unacceptable risk is predicted for carnivorous receptors, a validation study may be required where small mammal tissue would need to be collected from the Project Site. Tissue would be collected from smaller mammals using Sherman live or similar traps deployed on the ground surface if a validation study is required. These traps are not large enough to capture Nelson's bighorn sheep, and therefore no impacts would occur to Nelson's bighorn sheep from tissue sampling.

IMPACT BR-7 **Disturbance of Nelson's Bighorn Sheep.** *Implementation of the proposed Project may result in human disturbance that can alter habitat use and activity patterns of Nelson's bighorn sheep which are known to occur at the Project Site. This potential impact would be* ***significant****.*

Mitigation Measure BR-7: Disturbance of Nelson's Bighorn Sheep. If a bighorn sheep is found at the Project Site during soil investigation activities, work shall be halted in the vicinity of the sheep (within 250 feet of the sheep). Project activities can recommence after the animal moves away on its own.

Timing: During Project activities.

Responsibility: PG&E would be responsible for the implementation of these measures. DTSC would be responsible for ensuring compliance.

Significance after Mitigation: Following the avoidance measure for Nelson's bighorn sheep described in Mitigation Measure BR-7 would reduce the impact on the species to a **less than significant** level.

Disturbance or Loss of Special-status Bat Species

The primary risk to special-status bat species would be from potential Project-related disturbances to foraging habitat and active day and maternity roost sites during soil investigation activities. The operation of machinery in desert washes could disturb the vegetation that attracts insects for bats to prey on, thus impacting their foraging habitat. In addition, activities adjacent to slopes and cliff faces on the Project Site, which provide potential roosting habitat for bats, could result in disturbance to bats during the maternity roosting season of mid-March through August.

Project-related impacts to special-status bats would be considered significant if the action would result in the loss of a maternity roost or result in the greater population of the species to drop below self-sustaining levels. Townsend's big-eared bat is a candidate species for listing under the CESA, and as such, is afforded protection by CDFW similar to other CESA listed species. This protection is greater than that afforded to CSC species. Due to the sensitivity of the Townsend's big-eared bat, any Project-related impact to this species would be considered a significant impact. Although Townsend's big-eared bats have not been determined to be present at the Project Site, the potential for the occurrence of this species exists due to the presence of suitable habitat.

Foraging

Suitable foraging habitat for special-status bat species occurs in the bottoms of drainages and areas that contain scattered palo verde and ironwood trees on the Project Site, adjacent to proposed work areas. Special-status bats with a potential to occur on the Project Site generally forage over edge habitats along streams, grasslands, and within a variety of wooded habitats gleaning insects from surfaces and capturing insects on the wing. A bat habitat assessment survey was conducted on the Project Site by Dr. Pat Brown, a biologist specializing in bats, on January 29 and 30, 2015 and identified suitable foraging opportunities within the desert washes such as Bat Cave Wash and the East Ravine, as well as the Topock Marsh and areas adjacent to the Colorado River.

The proposed Project would remove some vegetation, primarily salt cedar at the mouth of Bat Cave Wash. Up to two acres of the vegetation in this area would be trimmed, pruned, or cleared using hand tools and a wood chipper. Complete vegetation removal is not anticipated in any work areas. Trimming, pruning, or clearing of vegetation may be needed to access some sites and clear around sample areas. No action would be taken to revegetate work areas, instead (as described in the Soil Work Plan) roots would be left in place to allow for regrowth, which includes the area at the mouth of Bat Cave Wash. Revegetation is expected to occur naturally and rapidly within one to two growing seasons based on past project experiences. As such, any potential impact to foraging habitat would be considered temporary.

The Project has also been designed to avoid work from dusk till dawn when bats are most active and foraging. Drilling would be limited to daytime hours. Daytime is generally defined as the time between sunrise and sunset when there is enough natural light to conduct Project activities without assisted lighting.

Project-related disturbance that results in the temporary loss of foraging habitat is not considered a significant impact to special-status bat species because the action will not result in injury or mortality to bats. Additionally, due to the amount of available foraging habitat in offsite areas surrounding the Project Site there are adequate alternative foraging opportunities for bat species known to occur in the area. The temporary effects to the vegetation that would be removed or trimmed would not be significant and would not cause any resident or migratory bat species to drop below self-sustaining levels. Because there would be no permanent loss of foraging habitat and bats are able to utilize adjacent offsite areas for foraging, impacts from the Project would be less than significant on bat foraging habitat.

Roosting

The special-status bat species with a potential to occur and known to occur on the Project Site generally roost (day roost) in crevices located in rocky outcrops and cliffs, caves, mines, trees, and structures such as buildings and bridges, hanging from walls and ceilings, and with an available drop off for flight. Day roosts may be used by bats during the day time for sleeping (torpor) and can consist of individuals, groups of males (bachelor roost), or a colony of bats.

The Project Site provides suitable roosting habitat for special-status bat species particularly within the crevices and small mammal burrows along cliff faces and slopes associated with the desert washes on the Site. At the time of the January 2015 bat habitat assessment, no roosting activity was observed on the Project Site, which is typical given the time of year, but suitable roosting habitat was observed on the Project Site that could support day roosting for special-status bats. Project activities are proposed primarily within upland areas and the channel bottom of desert washes; however some permanent roosting habitat loss may occur as a result of Project activities along slopes that contain rock crevices and cliff faces, as well as a temporary disturbance to vegetation, washes and slopes, as discussed in Chapter 3, “Project Description.” Project-related impacts to a day roost (bachelor roost) of a Townsend’s big-eared bat would be considered significant because potential impacts to a Candidate species that may result in injury or mortality require consultation with CDFW.

Maternity Roosting

Due to the presence of suitable roosting habitat and observed bat activity during the winter season, there is a potential for maternity roosting to occur on the Project Site. Maternity roosting habitat is similar to day roosting habitat, but a maternity roost contains one or several lactating female bats raising their young (pups). Maternity roosts are afforded additional protection because they are considered bat nursery sites that contains the next generation of bats (pups) that are unable to fly or feed themselves. Project activities that occur during the maternity roosting season of mid-March through August may result in potential direct and indirect impacts to a bat maternity roost.

Potential Project-related impacts to maternity roosting bats from increased human activity, noise and vibration can be considered a significant impact if the level of disturbance results in the abandonment of a maternity roost (CalTrans 2004). For example, Townsend's big-eared bats are very sensitive to site disturbance and entering a known maternity roost can result in females leaving the roost and abandoning their pups, thereby reducing population growth and propagation of subsequent generations. Project-related impacts, even indirect and temporary in nature, that results in the disturbance to a maternity roost for special-status bat species is considered a significant impact.

IMPACT BR-8 **Disturbance or Loss of Special-status Bat Species.** *Effects to special-status bat species (which includes the pallid bat, the Townsend's big-eared bat, and any other special-status bat species that may be found at the site) would be considered significant if project activities would result in the loss or abandonment of a maternity roost or nursery site, which could result in significant effects to the overall population of the species. The Project could result in disturbance to maternity roosts on the Project Site given the presence of potential maternity roosting habitat. Potential direct and indirect impacts to the maternity roost of any special-status bat species would be* ***significant****.*

Implementation of the proposed Project could also result in the disturbance of day roosts and other harassment, injury or mortality of individual Townsend's big-eared bats. Although Townsend's big-eared bats have not been detected at the Project Site, suitable habitat exists and this species has the potential to use the site for foraging and roosting. Due to their heightened sensitivity as a Candidate species under CESA (as of April 2013), any harassment, injury or mortality of individual Townsend's big-eared bats would be considered significant. The Project's potential to result in direct and indirect impacts to active Townsend's big-eared bat roosts and individuals would therefore be ***significant****.*

Mitigation Measure BR-8: Disturbance or Loss of Special-status Bat Species. The following measures shall be implemented to avoid impacts to active maternity roosts of special-status bat species during the maternity roosting season (mid-March through August) and direct harassment, injury or mortality to Townsend's big-eared bats, consistent with the California Fish and Game Code.

a. Implementation of soil investigation activities within suitable maternity roosting habitat for special-status bat species as shown in Figure 4.3-5 shall not occur during the maternity season (mid-March through August). However, if soil investigation activities critical to meeting the project objectives are determined necessary during the maternity season, a qualified biologist specializing in bats shall conduct a pre-investigation survey to identify active roosts. The pre-investigation survey shall occur no more than 7 days prior to initiation of the work. If an active maternity roost is found, a 50-foot exclusion zone shall be established around the maternity roost; no Project activities shall occur within the exclusion zone until it is determined that all bats (including pups) are able to

fly (are volant) and have left the roost (as determined by a qualified biologist specializing in bats) or when the maternity season has ended (August 31).

b. A focused bat survey shall be conducted in the spring of 2015. The focused bat survey shall include, at a minimum, the delineated avoidance area in Figure 4.3-5. The focused bat survey shall determine if active roosts are present on the site, particularly maternity roosts, which can be directly observed or ascertained from mist-netted lactating female bats.

c. Project activities occurring after February 2016 will require additional pre-investigation focused bat surveys, since changes in the presence or absence of Townsend's big-eared bats could occur. For all Project activities occurring after February 2016, a pre-investigation focused bat survey shall be required no more than 30 days prior to the start of Project field implementation to specifically determine if any Townsend's big-eared bats are present on or immediately adjacent to work areas. If Townsend's big-eared bats are found, Mitigation Measure BR-8d shall be required.

d. If Townsend's big-eared bat, a Candidate species under CESA, is observed or detected on the Project Site during the surveys described in Mitigation Measures BR-8a, BR-8b, or BR-8c the Project shall be modified, if necessary, with input from a qualified biologist specializing in bats, to avoid all potential harassment, impact or injury to this species. If the Project cannot be modified to avoid impacts to the Townsend's big-eared bat, removal or modification of roosts could occur if approved by CDFW and when the roost is vacant. Prior to disturbance of the roost, the CDFW will be notified to review and approve the proposed procedures (such as the use of exclusion devises or other roost modification) to ensure that no injury or impact occurs as a result of the action.

Timing: Before and during Project activities.

Responsibility: PG&E would be responsible for the implementation of these measures. DTSC would be responsible for ensuring compliance.

Significance after Mitigation: Conducting pre-investigation surveys for bats and following avoidance and minimization measures as described in Mitigation Measure BR-8 would reduce the impact on maternity roosts for special-status bat species and direct injury or mortality to Townsend's big-eared bat to a **less than significant** level.

This page left intentionally blank

Topock Soils Study Project EIR

Sources: ESRI Aerial; ESA
Created By Parus Consulting, Inc.
Map Creation Date: 4/8/2015

Bat Maternity Roosting Habitat Avoidance Area

Figure 4.3-5

ESA

PARUS CONSULTING, INC.

This page left intentionally blank

Aquatic Species

Project activities could result in increases in sediments, turbidity, and contaminants that could adversely affect fish and their habitat immediately adjacent to and downstream of the Project Site. Project activities conducted near the Colorado River, including drilling, clearing, grading, soil and water sampling and road improvements, would disturb soil that could enter water bodies and result in increased turbidity and sedimentation adjacent to and downstream of the disturbed areas.

The Project footprint would allow drilling and access routes near the river. Drilling and access road improvements would occur in Bat Cave Wash or other drainages, which could convey sediments or contaminants during a flash flood. Additionally, a pilot study for in- situ flushing and soil stabilization/ chemical fixation may be located in the bottom of the Bat Cave Wash, in an area that is generally devoid of vegetation. The pilot study would include the construction of either an infiltration gallery or injection well network for applying water. It should be noted, however, that National Trails Highway was built to cross Bat Cave Wash using an earthen berm with a brick culvert to allow for ample flow under the road during a storm event. ~~there is an existing earthen dam across Bat Cave Wash~~ Flow is constricted through this narrow opening which is filled with dense vegetation. The dense vegetation and restricted flow should prevent any sediment detached by Project activities from reaching the aquatic habitats in the Colorado River. ~~and other~~ Similar barriers that ~~a~~cross East Ravine ~~that~~ should also prevent any sediments detached by Project activities from reaching the aquatic habitats in the Colorado River.

Fish population levels and survival have been linked to levels of turbidity and siltation in a watershed. Prolonged exposure to high levels of suspended sediment could create a loss of visual capability in fish, leading to a reduction in feeding and growth rates; a thickening of the gill epithelia, potentially causing the loss of respiratory function; clogging and abrasion of gill filaments; and increases in stress levels, reducing the tolerance of fish to disease and toxicants.

Also, high levels of suspended sediments would cause the movement and redistribution of fish populations and could affect physical habitat. Once suspended sediment is deposited, it could reduce water depths in pools, decreasing the water's physical carrying capacity for juvenile and adult fish. Increased sediment loading could also degrade food-producing habitat downstream of the Project Site. Sediment loading could interfere with photosynthesis of aquatic flora and displace aquatic fauna.

Avoidance is the most common fish response to increases in turbidity and sedimentation for most species. However, certain species, including the razorback sucker, have evolved in riverine conditions with naturally high turbidity levels and, as a result, may be attracted to naturally high turbidity. Fish will not occupy areas unsuitable for survival unless they have no other option. Some fish, such as bluegill and bass species, will not spawn in excessively turbid water. Therefore, soil investigation activities could cause fish habitat to become limited if high turbidity caused by Project-related erosion were to preclude a species from occupying habitat required for specific life stages.

In addition, the potential exists for contaminants such as fuels, oils, and other petroleum products used in soil sampling activities and geotechnical evaluations, as well as chemicals used in the in situ pilot studies to be introduced into the water system directly (groundwater) or through surface runoff. Contaminants may be toxic to fish or may alter oxygen diffusion rates and cause acute and chronic toxicity to aquatic organisms, thereby reducing growth and survival.

Sedimentation and increased turbidity or other contamination could degrade water quality and adversely affect fish habitat and fish populations in the Colorado River, and could result in fish mortality through stranding during soil investigation activities. However, as discussed in Section 4.6.3.1 of this DEIR, the Soil Work Plan describes and references Standard Operating Procedures (SOPs) and Best Management Practices (BMPs) that have been developed during the previous investigations. Among other things, the SOPs and BMPs will reduce potential impacts to hydrology and water quality during the Project activities (see Section 4.6, "Hydrology and Water Quality"). In addition, PG&E will meet the substantive provisions of the state Construction General Permit (CGP) in accordance with the CERCLA exemption (see Section 2.3), and prepare and implement an erosion control plan as part of the Project. These provisions will become Conditions of Approval for the Project if it is approved and would reduce the potential for increased sedimentation and turbidity and the release of contaminants during Project activities to a less than significant level.

IMPACT BR-~~7~~9 **Fish Mortality, Interference with Spawning Habitat, and Other Adverse Aquatic Effects.** *Increased sedimentation and turbidity and the release of contaminants during Project activities could adversely affect fish habitat and movement in the Colorado River. This impact would be* ***less than significant****. No mitigation would be required.*

Regional and Local Plans

Regional and local plans include the LCR MSCP, *County of San Bernardino 2007 General Plan*, BLM *Lake Havasu Resource Management Plan*, and *Lower Colorado River National Wildlife Refuges Comprehensive Management Plan*.

The LCR MSCP focuses primarily on river flows including diversions, discharges, hydroelectric facilities, return flows, and water quality within the three states through which the river flows: Nevada, California, and Arizona. The Project would affect upland and potentially riparian habitat, but the overall scale of the proposed activities is small, given the landscape. Thus, the Project would likely have little effect on the attainment of the LCR MSCP goals and objectives, the conservation strategy of the LCR MSCP, or the viability of the covered species.

BLM's *Lake Havasu Land Management Plan* outlines guidance for managing habitat, fish, wildlife, and special-status species. The plan also requires BLM to protect water quality or other potentially harmful conditions for resident wildlife, fish, and human populations. The Project Site is located within an Area of Critical Environmental Concern (ACEC), designated the Beale Slough Riparian and Cultural ACEC. This area is designated to protect both cultural and natural resources. This large ACEC contains regional rare riparian resources and wildlife habitat at Beale

Slough to the north of the Project Site (BLM 2007:106, Map 28), but the Project Site contains the cultural element of the ACEC. Per BLM's *Lake Havasu Resource Management Plan*, the Beale Slough ACEC would be managed to protect and prevent irreparable damage to the relevant characteristics or important values:

Relevance

- Regional rare riparian resources and wildlife habitat.
- Significant cultural resources, cultural sites within part of a regional cultural complex.
- Place of traditional Native American importance.

Importance

- The area has regional importance as it was set in reserve to stop the gradual decline of aquatic and associated riparian and terrestrial habitat along the Colorado River.
- The area's fragile and irreplaceable prehistoric sites are eligible for inclusion on the NRHP.
- Ensure that the public will continue to have an opportunity to interact with the natural environment and cultural values of the area.
- This area was part of mitigation for the channelization by Reclamation in 1951 and identified by the LCRMSCP for its fish and wildlife values.

No conflicts with BLM's management plan or the ACEC management prescriptions described in the BLM's 2007 *Lake Havasu Resource Management Plan* are anticipated with implementation of the proposed Project. The proposed Project activities are ~~is~~ not ~~considered a~~ prohibited in the ACEC per the *Lake Havasu Resource Management Plan* and the Project activities would not cause irreparable damage to the ACEC's relevant characteristics or important values described above ~~degrade the biological resources element of the ACEC~~. In addition, ~~A~~actions associated with cleanup of the contaminated soil would not ~~conflict with management goals because these actions would~~ reduce the potential for long-term adverse effects on sensitive resources in the ACEC.

The *Lower Colorado River National Wildlife Refuges Comprehensive Management Plan* for HNWR offers guidance for managing habitat, fish, wildlife, and special-status species and is similar to the BLM plan in the protection of resident wildlife and fish. The plan also delineates sensitive and important habitats, or areas of substantial biodiversity into Special Project and Protection Areas (USFWS 1994b). These areas have defined management goals and objectives assigned to them within the plan. USFWS lands in the Project Site are not delineated into Special Project/Protection Areas and therefore do not have more specific management goals. The Project would not conflict the overall management goals of the HNWR and would not be a prohibited activity under the plan. The proposed Project is intended to clean up contaminated soil that may be harmful to biological resources in the future. Although the physical implementation of Project activities (i.e., drilling and clearing) may not be compatible with the purposes of the refuge, reducing the potential for long-term harm from contaminated soil would be compatible and could be permitted.

The goals and policies for the *County of San Bernardino 2007 General Plan* are not in conflict with implementation of the Project. The proposed Project would not affect substantial areas of habitat and would not substantially diminish habitat values because the Project would have a small overall footprint and would not occur within pristine habitat. Because of the relatively small area affected, the area disturbed by the proposed Project would not substantially diminish habitat values.

IMPACT BR-~~8~~10 **Consistency with Regional and Local Plans.** *Implementation of the proposed Project would not have substantial adverse effects on the viability of populations of species covered in the Lower Colorado River Multi-Species Conservation Program (LCR MSCP), the effectiveness of the LCR MSCP's conservation strategy, and attainment of the goals and objectives of the LCR MSCP. Additionally, the Project would not conflict with resource management goals of the USFWS, BLM, or DOI. This impact would be* ***less than significant****. No mitigation would be required.*

Wildlife Movement Corridors or Native Wildlife Nursery Sites

Wildlife movement corridors or linkages are a concern to local, state, and federal resource and conservation agencies because these corridors allow wildlife to move between adjoining open space areas that are becoming increasingly isolated as open space becomes increasingly fragmented from urbanization, rugged terrain, or changes in vegetation. However, corridors mitigate the effects of this fragmentation by (1) allowing wildlife to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk of catastrophic events (such as fire or disease) on population or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Noss 1983:704; Simberloff and Cox 1987:63-65).

Wildlife movement activities typically fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas, or individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). A wildlife corridor is defined as a piece of habitat, usually linear in nature that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

Within the aquatic environment of the river, the Project would not interfere with the upstream and downstream movement of any fish or wildlife species. In the terrestrial setting, the Project would not adversely interfere with any wildlife movement through the Project Site, or through the region. Project components such as bore holes, improvements to access roads, and staging areas would leave little to no obstacles that would present a barrier to wildlife movement. The

dispersed nature of the Project components would result in the Project Site retaining relatively large, contiguous, and intact areas of wildlife habitat within the Project Site, which would remain as viable areas for use by wildlife.

Native wildlife nursery sites are areas that a species specifically chooses for the purposes of breeding and/or rearing their offspring. These can include, but are not limited to, known breeding/nesting grounds for migratory birds, maternity roosting sites for bats (e.g., rock crevices, caves, large trees, bridges, and buildings), and spawning sites for fish species. The portion of the HNWR located north and east of the Project Site in Arizona, is the closest known nursery site for migratory birds and fish species (both common and special-status) to the Station (USFWS 2007 and 2008). The Project will not impact this portion of the HNWR. ~~Buildings associated with the Station and bridges that occur within and adjacent to the Project Site (I-40 and the BNSF railroad) could support maternity roosting site for bats; however, impacts from the Project are not anticipated to affect these structures.~~

The Project Site contains suitable bat maternity roosting areas, particularly within Bat Cave Wash and the East Ravine, for a number of common and special-status bat species known to occur on and in the vicinity of the Site. As currently designed, the proposed soil investigation activities that would occur within Bat Cave Wash and the East Ravine may result in impacts to active bat maternity roosts. A Project-related impact to a maternity roost containing a special-status bat species is considered a significant impact.

IMPACT BR-~~9~~11 **Substantial Interference with Fish or Wildlife Movement Corridors or Native Wildlife Nursery Sites.** *Implementation of the proposed Project would not substantially interfere with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors~~, or impede the use of native wildlife nursery sites~~. However, the Project could impede the use of bat maternity roosts, which are considered a type of native wildlife nursery site. Modifying, destroying or impeding the use of active maternity roosts of special-status bat species could result in substantial interference to the species reproduction and distribution. This impact would be* ~~**less than**~~ ***significant***~~. No mitigation would be required.~~

Mitigation Measure BR-11: Substantial Interference with Fish or Wildlife Movement Corridors or Native Wildlife Nursery Sites. Mitigation Measure BR-8 shall be implemented to address potential impacts to special-status bat maternity roosts.

Timing:	Before and during Project activities.
Responsibility:	PG&E would be responsible for the implementation of these measures. DTSC would be responsible for ensuring compliance.
Significance after Mitigation:	Conducting pre-investigation surveys for bats and following avoidance and minimization measures as described in Mitigation

Measure BR-8 would reduce the impact on maternity roosts for special-status bat species to a **less than significant** level.

References – Section 4.3, "Biological Resources"

AECOM. 2011 (January). *Final Environmental Impact Report for the Topock Compressor Station Groundwater Remediation Project (SCH #2008051003)*. January.

Baldwin, B. G., D. H. Goldman, D. J. Keil and R. Patterson (eds.). The Jepson Manual, 2nd ed. Univ. of California Press, Berkeley, California.

BOR. *See* U.S. Bureau of Reclamation.

BLM. *See* U.S. Bureau of Land Management.

Brown, Pat. 2015. Biologist Specializing in Bats. Phone conversation. February 3, 2015.

California Department of Fish and Wildlife (CDFW). 2013a. Letter from Chris Hayes/CDFW to Yvonne Meeks/PG&E. Subject: Confirmation of Application of the CERCLA 121(e)(1) Permit Exemption to Pacific Gas and Electric Company's Soil and Groundwater Investigation and Remediation Project. March 6.

———. 2013b (April). Memorandum: Petition from the Center for Biological Diversity to List the Townsend's Big-Eared Bat Under the California Endangered Species Act. April 25, 2013.

California Department of Water Resources (DWR). 1991 (January). Final Draft Bulletin 74-90, California Well Standards Water Wells; Monitoring Wells, Cathodic Protection Wells, Supplement to Bulletin 74-81, January 1990.

California Native Plant Society. 2013. Electronic Inventory of Rare and Endangered Vascular Plants of California. Available: <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi.>. Last updated February 18, 2013. Accessed February 2013.

California Natural Diversity Database. 2013 (February). Results of electronic record search. California Department of Fish and Game, Wildlife and Habitat Data Analysis Branch. Sacramento, CA.

CH2M HILL. 2004a (September). *Final Biological Resources Investigations for Interim Measures No. 3: Topock Compressor Station Expanded Groundwater Extraction and Treatment System San Bernardino County, California*. Oakland, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2004b (September). Addendum 1: Biological Survey Technical Memorandum for Interim Measures No. 3, Topock Compressor Station, Expanded Groundwater Extraction and Treatment System, San Bernardino County, California. Prepared for Mark Howell/Biologist, Bureau of Land Management Lake Havasu Field Office. September 30.

———. 2004c (October). Addendum 2: Biological Survey Technical Memorandum for Interim Measures No. 3, Topock Compressor Station, Expanded Groundwater Extraction and Treatment System, San Bernardino County, California. Prepared for Mark Howell/Biologist, Bureau of Land Management Lake Havasu Field Office. October 12.

———. 2004d (November). Addendum 3: Biological Survey Technical Memorandum for Interim Measures No. 3, Topock Compressor Station, Expanded Groundwater Extraction and Treatment System, San Bernardino County, California. Prepared for Mark Howell/Biologist, Bureau of Land Management Lake Havasu Field Office. November 4.

———. 2004e (November). Addendum 4: Biological Survey Technical Memorandum for Interim Measures No. 3, Topock Compressor Station, Expanded Groundwater Extraction and Treatment System, San Bernardino County, California. Prepared for Mark Howell/Biologist, Bureau of Land Management Lake Havasu Field Office. November 15.

———. 2005a (April). *Land Area Subject to Groundwater Well Installation Biological Resources Monitoring—Completion Report Topock Project Site, Needles, California*. Oakland, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2005b (October). *Biological Resources Survey Report for the Area of Potential Effect (APE) Topock Compressor Station Expanded Groundwater Extraction and Treatment System Needles, California.* Oakland, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2007a (January). *Final Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Actions.* San Bernardino County, California. Oakland, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2007b (August). *Final Report, RCRA Facility Investigation/Remedial Investigation, PG&E Topock Compressor Station, Needles, California Report. Volume 2—Hydrogeologic Characterization and Results of Groundwater and Surface Water Investigation*. Oakland, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2009. *Final Report, Groundwater Corrective Measures Study/Feasibility Study Report for SWMU 1/AOC 1 and AOC 10, PG&E Topock Compressor Station, Needles, California.* Oakland, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2010a. *Biological Reconnaissance Survey in Additional Minor Portions of Project Area Outside of the Expanded Area of Potential Effects.* Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2010b (September 14). *Biological Survey in Three Areas Outside of the APE*. Oakland, CA. Technical memorandum prepared for Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2011. *Biological Resources Completion Report for AOC 4 Removal Action*. Prepared for BLM and USFWS on behalf of PG&E. February 14, 2011.

———. 2012. *Instream Habitat Typing Survey, Topock Compressor Station, Colorado River*. Prepared for PG&E. May 21, 2012.

———. 2013. *Wetlands and Waters of the United States, Delineation for the Pacific Gas and Electric Groundwater Remediation Project, San Bernardino County, California (Document ID: PGE20130822A)*. Published by Pacific Gas and Electric Company. August 22, 2013.

———. 2014. *Bird Impact Avoidance and Minimization Plan Topock Groundwater Remediation Project.* Prepared for Pacific Gas and Electric Company. April 2014.

CH2M HILL & Garcia and Associates (GANDA). 2011. *Topock Compressor Station Groundwater Remediation Project, Mature Plants Survey Methodology*. Technical Memorandum Prepared for PG&E. October 31, 2011.

———. 2013a. *Topock Groundwater Remediation Project, Floristic Survey Report.* Prepared for PG&E. March 29, 2013.

———. 2013b. *Topock Groundwater Remediation Project Revised Floristic Survey Report*. Prepared for PG&E. December 30, 2013.

CNDDB. *See* California Natural Diversity Database.

CNPS. *See* California Native Plant Society.

GANDA. *See* Garcia and Associates.

Garcia and Associates (GANDA). 2005a (August). *Southwestern Willow Flycatcher Presence/Absence Surveys for the PG&E Compressor Station Expanded Groundwater Extraction and Treatment System.* San Anselmo, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2005b (July). *Desert Tortoise Presence/Absence Surveys for the PG&E Compressor Station Expanded Groundwater Extraction and Treatment System, Topock, California*. San Anselmo, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2006a (August). *Southwestern Willow Flycatcher Presence/Absence Surveys for the PG&E Topock Compressor Station Expanded Groundwater Extraction and Treatment System*. San Anselmo, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2006b (July). *Desert Tortoise Presence/Absence Surveys for the PG&E Topock Compressor Station Expanded Groundwater Extraction and Treatment System.* San Anselmo, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2007 (September). *Southwestern Willow Flycatcher Presence/Absence Surveys for the PG&E Topock Compressor Station*. San Anselmo, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2008a (July). *Desert Tortoise Presence/Absence Surveys for the PG&E Topock Compressor Station Expanded Groundwater Extraction and Treatment System.* San Anselmo, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2008b (September). *Southwestern Willow Flycatcher Presence/Absence Surveys for the PG&E Topock Compressor Station Expanded Groundwater Extraction and Treatment System*. San Anselmo, CA. Published by Pacific Gas and Electric Company, San Luis Obispo, CA.

———. 2009a (September). *Southwestern Willow Flycatcher Presence/Absence Surveys for the PG&E Topock Compressor Station Expanded Groundwater Extraction and Treatment System*. San Anselmo, CA. Prepared for CH2M HILL and Pacific Gas and Electric Company.

———. 2009b (September). *Desert Tortoise Presence/Absence Surveys for the PG&E Topock Compressor Station*. San Anselmo, CA. Prepared for the Pacific Gas and Electric Company.

———. 2010 (September). *Southwestern Willow Flycatcher Presence/Absence Surveys for the PG&E Topock Compressor Station*. San Anselmo, CA. Prepared for CH2M HILL and Pacific Gas and Electric Company.

———. 2012 (October). *Southwestern Willow Flycatcher Presence/Absence Surveys for the PG&E Topock Compressor Station*. San Anselmo, CA. Prepared for CH2M HILL and Pacific Gas and Electric Company.

Grinnell, J. J.S. Dixon, and J.M. Linsdale. 1937. Fur-bearing mammals of California. 2 Vols. University of California Press, Berkeley. 777 pp.

International Society of Arboriculture (ISA). 2011. *Pruning Mature Trees.* Champiagn, IL.

Johnson, Matthew J., S. L. Durst, C. M. Calvo, L. Stewart, M. K. Sogge, G. Bland, and T. Arundel. 2008. *Yellow-billed Cuckoo distribution, abundance, and habitat use along the lower Colorado River and its tributaries, 2007 Annual Report*: U.S. Geological Survey Open-File Report 2008-1177, 274 p. Available: <http://pubs.usgs.gov/of/2008/1177/>. Accessed December 2008.

Konecny Biological Services (KBS). 2012 (July). *Results of a Focused Survey for the Yuma Clapper Rail and California Black Rail at the Pacific Gas and Electric Grouindwater Remediation Project Site near the Topock Compressor Station (PG&E-1925), City of Needles, County of San Bernardino, California, 2012.* Sacramento, California. Published by Pacific Gas and Electric Company.

Moyle, Peter. 2002. *Inland Fishes of California*. University of California Press. Berkeley, CA.

Noss, R. 1983. A Regional Landscape Approach to Maintain Diversity. *Bioscience* 33: 700–706

Pacific Gas & Electric Company (PG&E). 2014. *PG&E Topock Compressor Station, Information for Ring-Tailed Cat (Bassariscus astutus).*

———. 2015a (March). *Preliminary Habitat Analysis for Bat Use at PG&E Topock Remediation Project, San Bernardino, CA.* March 2, 2015.

———. 2015b (February). *Assessment of Potential Impacts to Four Special-Status Species for Soil Environmental Impact Report Investigation and Final Groundwater Remedy Areas, Topock Compressor Station, California.* February 11, 2015.

RHJV. *See* Riparian Habitat Joint Venture.

Riparian Habitat Joint Venture. 2004. Version 2.0. *The Riparian Bird Conservation Plan: A Strategy for reversing the decline of riparian associated birds in California.* Prepared with California Partners in Flight. Available: <http://www.prbo.org/calpif/pdfs/riparian.v-2.pdf>. Accessed December 2008.

San Bernardino County. 2007 (April). *San Bernardino County General Plan Amendment*. Available:

<http://www.sbcounty.gov/landuseservices/General%20Plan%20Update/General%20Plan%20Text/FINAL%20General%20Plan%20Text%20-%203-1-07_w_Images.pdf>.

Simberloff, D. S., and J. Cox. 1987. Consequences and Costs of Conservation Corridors. *Conservation Biology* 1:63-71.

Taylor. W.P. 1954. Food habits and notes on life history of the ring-tailed cat in Texas. J. Mammal. 35:55-63.

Trapp, G.R. 1978. Comparative behavioral ecology of the ringtail and gray fox in southwestern Utah. Carnivore 1:3-32.

U.S. Army Corps of Engineers (USACE). 2013. Personal communication with Gerry Salas, USACE Los Angeles. Email correspondence on March 4, 2013.

U.S. Bureau of Land Management. 2001. Status of the Science: On Questions that Relate to BLM Plan Amendment Decisions and Peninsular Ranges Bighorn Sheep. Updated March 14, 2001.

———. 2007 (May). *Lake Havasu Field Office Approved Resource Management Plan*. Available: <http://www.blm.gov/az/st/en/info/nepa/environmental_library/arizona_resource_management/LHFO_ROD_07.html>. Lake Havasu City, AZ.

———. 2013. *Nelson's bighorn sheep species account*. http://www.blm.gov/ca/pdfs/cdd_pdfs/Bighorn1.pdf. Accessed February 25, 2013.

U.S. Bureau of Reclamation (BOR). 1996. *Biological Assessment for Operations and Maintenance for Sensitive Species along the Lower Colorado River.* Available: <http://www.usbr.gov/lc/region/g2000/batoc.html>. Accessed December 2008May 2010.

———. 2004a (December). *Final Lower Colorado River Multi-Species Conservation Program, Volume II: Habitat Conservation Plan*. Available: <http://www.lcrmscp.gov/publications/VolumeII.pdf>. Last updated January 2010. Accessed April 2010.

———. 2004b (December). *Final Lower Colorado River Multi-Species Conservation Program, Volume III: Final Biological Assessment*. Available: < http://www.lcrmscp.gov/publications/VolumeIII.pdf>. Last updated January 2010. Accessed April 2010.

———. 2008 (September).*Lower Colorado River Multi-Species Conservation Program*. *Species Accounts*. Bureau of Reclamation Lower Colorado Region, Boulder City, NV. Available: <http://www.lcrmscp.gov/worktasks/speciesresearch/C3/SpeciesAccounts.pdf>. Accessed December 2008.

U.S. Fish and Wildlife Service. 1994a. *Desert tortoise* (Mojave population) *Recovery Plan*. U.S. Fish and Wildlife Service, Portland, OR. Available: <http://ecos.fws.gov/docs/recovery_plans/1994/940628.pdf>. Accessed October 2008.

———. 1994b. *Lower Colorado River National Wildlife Refuges Comprehensive Management Plan*. Available: <http://library.fws.gov/CCPs/LowerCOriver_cmp94.pdf>. Accessed October 2008.

———. 2002a. (August). *Southwestern Willow Flycatcher Recovery Plan*. Albuquerque, NM.

———. 2002b. *Bonytail* (Gila elegans) *Recovery Goals: Amendment and Supplement to the Bonytail Chub Recovery Plan.* U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, CO. Available: <http://www.fws.gov/southwest/es/arizona/Bonytail.htm>. Accessed December 2008.

———. 2005 (March). *Biological and Conference Opinion on the Lower Colorado River Multi-Species Conservation Program, Arizona, California, and Nevada*. U.S. Fish and Wildlife Service Arizona Ecological Services Office, Phoenix, AZ. Available: http://www.fws.gov/southwest/es/arizona/Documents/Biol_Opin/040161_LCRMSCP.pdf. Accessed December 2008.

———. 2006 (May). Yuma clapper rail/*Rallus longirostris yumanensis* 5-Year Review—2006. U.S. Fish and Wildlife Service Arizona Ecological Services Office. Available: <http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/YumaClapperRail/5-Year%20Review%209-06.pdf>. Accessed November 2008.

———. 2007. Havasu National Wildlife Refuge Species Lists. Available: <http://www.fws.gov/southwest/refuges/Arizona/havasu/specieslists.html >. Accessed March 2013.

———. 2008. Havasu National Wildlife Refuge. Available: < http://www.fws.gov/refuges/profiles/index.cfm?id=22550l >. Accessed March 2013.

Walker, E.P., F. Warnick, and S.E. Hamlet. 1968. Mammals of the World. 2nd ed., 2 vols. Johns Hopkins Press, Baltimore, MD. 1,500 pp.

William Self Associates (WSA). 2013 (October). Desert Tortoise Presence/Absence Surveys for the PG&E Topock Arizona Freshwater Sites. Flagstaff, Arizona. Published by Pacific Gas and Electric Company.