Topock Project Executive Abstract									
Document Title:	Date of Document: December 14, 2012								
Biological Resources Completion Report for the East Ravine Groundwater Investigation, Topock Compressor Station Needles, California Submitting Agency/Authored by: BLM, USFWS	Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) PG&E								
Final Document? 🛛 Yes 🗌 No									
Priority Status: HIGH MED K LOW Is this time critical? Yes No Ves Memo Type of Document: Letter Memo Memo Oraft Report Letter Memo Other / Explain: HIGH Memo Memo	Action Required: Information Only Review & Comment Return to: By Date: Other / Explain:								
What does this information pertain to? Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA) RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment) Corrective Measures Study (CMS)/Feasibility Study (FS) Corrective Measures Implementation (CMI)/Remedial Action California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR) Interim Measures Other / Explain: Programmatic Biological Assessment (PBA)	Is this a Regulatory Requirement? ∑ Yes ☐ No If no, why is the document needed?								
What is the consequence of NOT doing this item? What is the consequence of DOING this item? This report is required by the approved PBA. Not performing the survey and preparing this report constitute non-	Other Justification/s:								
Brief Summary of attached document:									
The Biological Resources Completion Report for the East Ravine there were any adverse effects on species protected under the investigative activities during the East Ravine Groundwater Inve Project Management Measures described in the PBA, and follow the work area and surrounding lands. The project was conducted determination for the southwestern willow flycatcher, Mojave of chub and under a "no effect" determination for the Colorado pit take of these species.	Groundwater Investigation (ERGI), was prepared to determine if federal Endangered Species Act resulting from remedial and stigation (ERGI) at the Topock Compressor Station. The General ved throughout the ERGI, were effective in minimizing impacts to d under a "may affect, but not likely to adversely affect" lesert tortoise, Yuma clapper rail, razorback sucker, and bonytail keminnow. In compliance with these determinations, there was no								
Written by: PG&E									
Recommendations:									
How is this information related to the Final Remedy or Regulatory Requ	Jirements:								
This report is a requirement of the PBA upon the completion of constru- Other requirements of this information? None	iction activities.								



Report

Biological Resources Completion Report for the East Ravine – Topock Compressor Station Groundwater Investigation, Topock Compressor Station Needles, California

Prepared for

United States Bureau of Land Management United States Fish and Wildlife Service

On behalf of **Pacific Gas and Electric Company**

December 14, 2012



Contents

Secti	ion	Page
1.0	Introduction	
	1.1 Regional Environmental Setting	
	1.2 Report Objectives and Organization	
2.0	Awareness Training and Compliance Monitoring	g2-1
3.0	Project Location and Existing Disturbance	
	3.1 Well Locations	
4.0	Pre- and Post-activity Surveys	
	4.1 Preconstruction Surveys	
5.0	Conclusion	
6.0	References	

Table

4-1 List of Observed Plants and Wildlife Incidental to Pre- and Post-activity Surveys

Figures

- 1-1 Site Location Map
- 1-2 ER-TCS Groundwater Investigation Sites

Appendixes

- A Awareness Training Sign-off Sheets
- B Photograph Documentation

Acronyms and Abbreviations

Cr(VI)	hexavalent chromium
DOI	United States Department of the Interior
ESA	Endangered Species Act
РВА	Programmatic Biological Assessment for the Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Actions
PG&E	Pacific Gas and Electric Company
RCRA	Resource Conservation and Recovery Act
RFI/RI	RCRA facility investigation/remedial investigation
USFWS	United States Fish and Wildlife Service

1.0 Introduction

Pacific Gas and Electric Company (PG&E) is addressing chromium in groundwater at the Topock Compressor Station located in eastern San Bernardino County, California, approximately 15 miles southeast of Needles, California. Figure 1-1 provides a site location map for the Topock Compressor Station.

Investigative and remedial activities at the Topock Compressor Station are being performed under the Resource Conservation and Recovery Act (RCRA) corrective action process under an agreement between PG&E and the California Environmental Protection Agency, Department of Toxic Substances Control, as well as under the Comprehensive Environmental Response, Compensation and Liability Act under an agreement between PG&E and the United States Department of the Interior (DOI). Under the terms of these agreements, PG&E is conducting the RCRA facility investigation/CERCLA remedial investigation (RFI/RI) to identify and evaluate the nature and extent of hazardous waste and constituent releases at the compressor station.

Groundwater monitoring wells were installed at eleven locations in the East Ravine and Topock Compressor Station area to provide additional groundwater characterization data for the RFI/RI for the Topock site. Well installation activities began in March 2011 and continued through July 2012. Twenty new monitoring wells installed within 16 boreholes were established in the eleven locations during the investigation. Well development, sampling, borehole flow characterization, aquifer testing and hydraulic monitoring occurred during the project. The primary technical objectives of the groundwater investigation in the East Ravine and Topock Compressor Station (TCS) areas were to:

- East Ravine Area
 - Define the nature and extent of the groundwater contamination within the bedrock and/or alluvium.
 - Identify the source(s) of bedrock groundwater contamination.
- TCS Site
 - Define the nature and extent of the groundwater contamination within the bedrock and/or alluvium.
 - Characterize hydrogeologic conditions within the bedrock and alluvium.
 - Determine whether groundwater contaminant sources are present within the TCS boundary that could affect the immediate area or surrounding land, including the East Ravine area.

Primary field tasks conducted during this investigation included:

- Site access, preparation, and compliance monitoring.
- Borehole drilling and lithologic logging at 16 boreholes.

- Collecting soil samples during drilling of select boreholes (Sites 1-5, and H).
- Characterizing borehole flow using hydrophysics at three boreholes (MW-60BR-245, MW-70BR-225, and MW-72BR-200).
- Collecting depth-specific groundwater samples prior to and/or during borehole flow characterization.
- Installing and developing single and nested groundwater monitoring wells completed within the borehole.
- Well development and collecting at least one round of groundwater samples for laboratory analysis from each newly installed monitoring well or borehole.
- Managing investigation-derived waste.

Well installation and testing activities were completed as outlined in the *Revised Addendum to the Revised Work Plan for East Ravine Groundwater Investigation* (Work Plan Addendum) (CH2M HILL, 2010). The drilling, well installation, and associated groundwater investigations activities are collectively referred to in this report as the East Ravine–Topock Compressor Station (ER-TCS) Groundwater Investigation. The drill sites and completed well locations are depicted in Figure 1-2.

These activities have been approved and are addressed in the *Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Actions* (PBA) (CH2M HILL, 2007). Well installation activities followed all applicable General Project Management Measures in the PBA, a 2007 United States Fish and Wildlife Service (USFWS) letter of concurrence (USFWS, 2007), the DOI approval letter for the Revised Work Plan for the East Ravine Groundwater Investigation, dated November 7, 2008 (DOI, 2008), and the minimization measures in the adopted Mitigation Monitoring and Reporting Plan for the Topock Compressor Station Groundwater Remediation Project, dated January 2011.

1.1 Regional Environmental Setting

The Topock Compressor Station is located in a sparsely populated, rural area. Much of the nearby surrounding land is publicly owned by the federal government and has important spiritual meaning to local Indian tribes. Public lands in the area are owned and/or managed by a number of federal and regional agencies, including the Bureau of Land Management, USFWS, Bureau of Reclamation, and San Bernardino County.

Dominant features of the area include the Colorado River to the east; the Chemehuevi Mountains to the south; the Burlington Northern Santa Fe railroad tracks and bridge; and Interstate 40, which links Barstow, California and Topock, Arizona. Topography in the area is abrupt, rising from around 450 feet above mean sea level at the Colorado River to over 1,200 feet above mean sea level within 1 mile to the south and southwest.

The area is characterized by arid conditions and high temperatures. The surrounding land consists of a series of terraces divided by desert washes. The landscape within the project area is considerably eroded and can most suitably be described as badlands. The lands are made of small to moderately-sized terraces with very steep slopes. Terraces occurring in the

project area are homogeneous, composed of rocky soils with very sparse vegetation. Structurally diverse vegetation in the project area is primarily limited to the Colorado River floodplain and the ephemeral washes.

1.2 Report Objectives and Organization

This biological completion report documents field activities associated with performing well installation activities at the eleven locations mentioned above from March 2011 through July 2012.

The PBA (CH2M HILL, 2007) was prepared to determine any potential effect on species protected under the federal Endangered Species Act (ESA) resulting from remedial and investigative activities at the Topock Compressor Station. The USFWS concurred with the determinations provided in the PBA, as documented in a letter dated February 8, 2007 (USFWS, 2007). The field activities addressed in this report are included in the PBA; therefore, this report, as part of the PBA, serves as supporting documentation under the ESA for the evaluation of project effects to federally-listed species and resulting determinations.

This report has been prepared in compliance with the General Project Management Measure 23 of the PBA (CH2M HILL, 2007). This condition requires that, within 60 days of completion of construction activities, a brief report shall be prepared for the Bureau of Land Management and the Havasu National Wildlife Refuge. This report shall document the effectiveness of the mitigation measures, make recommendations for modifying the measures to enhance species protection, and provide information on survey and monitoring activities, observed listed species, and the actual acreage disturbed by the project.

To comply with these requirements, this report contains:

- Documentation of awareness training and compliance monitoring (Section 2.0).
- Project location and existing disturbed areas (Section 3.0).
- Pre- and post-activity surveys, including the observed listed species (Section 4.0).
- Conclusions, including a discussion of the effectiveness of the mitigation measures and recommendations for modifying the measures to enhance species protection (Section 5.0).

2.0 Awareness Training and Compliance Monitoring

In accordance with the General Project Management Measure 5 described in the PBA (CH2M HILL, 2007), awareness training was provided to personnel before the start of construction activities. The awareness training focused on the southwestern willow flycatcher (*Empidonax traillii extimus*) and the desert tortoise (*Gopherus agassizii*) for activities in the desert washes and uplands. PG&E and CH2M HILL biologists provided training to onsite personnel prior to initiating work activities. The core groups were trained at the project initiation meeting on March 15, 2011, and new personnel were identified and trained at safety meetings conducted each morning before work. Training included a description of each species; its habitat, natural history, threats, and legal protection under the ESA; potential penalties; current survey findings; management; and protection measures in the PBA. The attendance of personnel at training sessions are documented in the daily sign-in sheets provided as Appendix A to this report.

During project activities, a designated PG&E or CH2M HILL field contact representative provided compliance monitoring. In accordance with General Project Management Measure 2, the field contact representative was responsible for overseeing compliance with the mitigation measures.

3.0 Project Location and Existing Disturbance

Various past activities have resulted in land disturbance of the general area of the Topock Compressor Station. The area is traversed by a major highway, a railway, several gas pipelines, gas pipeline access roads, overhead electric power lines, county roads, private property access roads, and parking areas.

3.1 Well Locations

The associated construction staging areas and the access routes were located within previously disturbed areas on the Topock Compressor Station and Havasu National Wildlife Refuge land adjacent to the Topock Compressor Station. Well locations are presented in Figure 1-2. All monitoring locations were installed with flush to ground surface completions, except wells installed at Site H.

- Site F is located southeast of the TCS along a pre-existing dirt pipeline access road. Two boreholes were advanced at this location: one during the 2009 investigation where one monitoring well was installed (MW-60-125), and the other during the 2011 ER-TCS investigation where it remained as an open borehole (MW-60BR-245).
- Site H is in a previously disturbed desert wash (except for the upper 200 feet of the access path) located southeast of the TCS. The wash is sparsely vegetated with creosote bush scrub species, mesquite, and beavertail cactus and has been previously disturbed by construction of earthen berms, culverts, roads, and pipelines within or adjacent to the wash. Two boreholes were advanced at this location where one was completed as monitoring well (MW-70-105) and the other as an open borehole (MW-70BR-225).
- Site I is located east of the TCS along a pre-existing dirt pipeline access road. One borehole was advanced and one monitoring well (MW-73-080) was installed at this location.
- Site J is located immediately south the TCS along a pre-existing dirt road that provides access to the TCS water tanks. One borehole was advanced and one monitoring well (MW-74-240) was installed at this location.
- Site K is located east of the TCS along a pre-existing dirt pipeline access road. Two boreholes were advanced at this location where one was completed as a monitoring well (MW-72-080) and the other as an open borehole (MW-72BR-200).
- Site L is located east of the TCS along a pre-existing dirt pipeline access road. One borehole was advanced, and one monitoring well (MW-71-035) was installed at this location.
- Site 2 is located on the TCS along a pre-existing asphalt road. Two boreholes were advanced at this location: one where a nested monitoring well pair was installed (MW-67-225 and MW-67-260), and the other where a single monitoring well was installed (MW-67-185).

- Site 3 is located on the TCS along a pre-existing asphalt road. Two boreholes were advanced at this location: one where a nested monitoring well pair was installed (MW-68-180 and MW-68-240), and the other where it remained as an open borehole (MW-68BR-280).
- Site 4 is located immediately south of the TCS fence line along a pre-existing dirt pipeline access road and general equipment storage area. One borehole was advanced and a monitoring well was installed (MW-69-195) at this location.
- Site 5 is located on the TCS in an unpaved area used for general equipment staging. One borehole was advanced and a nested monitoring well pair was installed (MW-65-160 and MW-65-225) at this location.
- Site 6 is located on the TCS in an unpaved area used for general equipment staging. Two boreholes were advanced at this location: one where a nested monitoring well pair was installed (MW-66-165 and MW-66-230), and the other where it remained as an open borehole (MW-66BR-270).

Because the groundwater investigation locations, associated staging areas, and access routes have been used for past activities, these areas have vegetation cover that ranges from none to sparse. All vegetation adjacent to pre-existing disturbed areas was avoided during project activities. All construction occurred within previously disturbed areas except for Site H. No additional areas were disturbed by the activity; one beavertail cactus was inadvertently removed at Location H, and overall no habitat loss occurred. Post-construction photographs are included as Appendix B.

Site H wells are located within a desert wash referred to as the East Ravine. Equipment access and egress was kept to the active channel to limit impacts to the wash. In all cases, access to the well locations was kept to the established routes and to the active wash channel to limit impacts to biological resources.

4.1 Preconstruction Surveys

Prior to March 15, 2011, the start of construction activity, qualified biologists surveyed work sites and surrounding areas for sensitive biological resources. No listed species or nesting birds were observed during the pre-activity survey. An additional nesting bird survey was conducted on August 19, 2011 per the requirements of the PBA and the Work Plan for sites I, K, and L. No nesting birds were observed during the August survey.

During the pre-construction survey, sensitive vegetation that was to be avoided was flagged, and the conditions noted. No listed species were observed during the pre-construction survey. All sampling activities were confined to areas with pre-existing disturbance and active channels in the desert wash. No vegetation was cleared as a result of mobilization, soil sampling, and demobilization.

Flora and fauna observed during the pre- and post-activity survey are listed in Table 4-1

4.2 Post-construction Surveys

On October 2, 2012, following well construction, development, and demobilization, a post-activity survey was conducted to document field conditions. No listed species were observed during the post-activity survey. Photographs of post-construction conditions are provided as Appendix B. All sampling activities were confined to areas with pre-existing disturbance and active channels in the desert wash. With the exception of one beavertail cactus removed at Location H during project activities, no other vegetation was removed as a result of mobilization, well construction, well development, and demobilization.

Flora and fauna observed during the pre- and post-activity survey are listed in Table 4-1.

Common Name Scientific Name Plants Anderson's lycium Lycium andersonii Apricot mallow Sphaeralcea ambigua var ambigua Beavertail cactus Opuntia basilaris Cat claw acacia Senegalia greggii Creosote bush Larrea tridentata Desert trumpet Eriogonum inflatum Fluffgrass Dasyochloa pulchella

TABLE 4-1List of Observed Plants and Wildlife Incidental to Pre- and Post-activity SurveysBiological Resources Completion Report for the East Ravine Groundwater Investigation Project,Topock Compressor Station, Needles, California

TABLE 4-1

List of Observed Plants and Wildlife Incidental to Pre- and Post-activity Surveys Biological Resources Completion Report for the East Ravine Groundwater Investigation Project, Topock Compressor Station, Needles, California

Common Name	Scientific Name
Honey mesquite	Prosopis glandulosa
Screwbean mesquite	Prosopis pubescens
Palo verde	Parkinsonia spp.
Red brome	Bromus madritensis var. rubens
Ripgut brome	Bromus diandrus
Russian thistle	Salsola tragus
Salt Cedar	Tamarix ramosissima
Saltgrass	Distichlis spicata
Stork's bill	Erodium cicutarium
Reptiles	
Side-blotched lizard	Uta stansburiana
Birds	
Gambel's quail	Callipepla gambelii
Turkey vulture	Cathartes aura
Rock pigeon	Columba livia
White-winged dove	Zenaida asiatica
Mourning dove	Zenaida macroura
Say's phoebe	Sayornis saya
Common raven	Corvus corax
Black-throated sparrow	Amphispiza bilineata
Great-tailed grackle	Quiscalus mexicanus
House finch	Carpodacus mexicanus
House sparrow	Passer domesticus
Mammals	
Desert cottontail	Sylvilagus audubonii

5.0 Conclusion

Well construction activities were approved by the federal regulatory agencies. In conformance with the PBA General Project Management Measures, personnel were provided with awareness training, and qualified biologists conducted pre- and post-activity surveys in all areas subject to construction use. A field contact representative remained onsite during all construction activities.

The General Project Management Measures described in the PBA were effective in minimizing impacts to the work area and surrounding lands. The project was conducted under a "may affect, but not likely to adversely affect" determination for the southwestern willow flycatcher, Mojave desert tortoise, Yuma clapper rail (*Rallus longirostris yumanensis*), razorback sucker (*Xyrauchen texanus*), and bonytail chub (*Gila elegans*) and under a "no effect" determination for the Colorado pikeminnow (*Ptycheilus lucius*). In compliance with these determinations, there was no take of these species during any of the well installation activities in the East Ravine.

CH2M HILL. 2007. Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Actions. January.

_____. 2010. Revised Addendum to the Revised Work Plan for East Ravine Groundwater Investigation PG&E Topock Compressor Station, Needles, California. December.

California Department of Toxic Substances Control. *Final Environmental Impact Report for the Topock Compressor Station Groundwater Remediation Project: Volume II.* January 2011.

_____. Mitigation Monitoring and Reporting Program, Exhibit 2 to Attachment B, January 31, 2011 Memorandum to Karen Baker from Aaron Yue regarding Certification of the PG&E Topock Compressor Station Groundwater Remediation Final Environmental Impact Report. January 2001.

- United States Department of the Interior (DOI). 2008. Letter to Yvonne Meeks PG&E. "PG&E Topock Compressor Station Remediation Site –Federal agency consultation on Revised Work Plan for the East Ravine Groundwater Investigation (Revised Workplan), dated July 11, 2008." November 7.
- United States Fish and Wildlife Service (USFWS). 2007. Letter to Field Manager, Lake Havasu Field Office, Bureau of Land Management. "Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Remedial Investigative Actions, January 2007." February 8.

Figures



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Appendix A Training Documentation – Daily Logs

Your signature constitutes an agreement to abide by the biological and cultural resources avoidance and minimazation measures presented in this training. Pacific Gas and Electric Topock Groundwater Extraction & Remediation Project 2011 Biological & Listed Species Cultural Resources Awareness Training Attendance Sheet

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Appendix B Site Photographs

Site F – facing west

Site H – facing southwest from road above

Site L – facing east

Site I – facing east

Site 6 – facing west

Site 4 – facing northeast