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May 31, 2007

Cathy Wolff-White  
U.S. Bureau of Land Management  
2610 Sweetwater Avenue  
Lake Havasu, AZ 86406

**Subject: Batch Treatment Facility Decommissioning Work Plan,  
PG&E Topock Compressor Station, Needles, California**

Dear Ms. Wolff-White:

This letter serves as a formal request for approval to implement the actions described in the *Batch Treatment Facility Decommissioning Work Plan* for the Pacific Gas and Electric Company (PG&E) Topock Compressor Station. This work plan describes the remaining decommissioning of the batch treatment facilities and proposed reconfiguration of the remaining Interim Measures Number 3 support facilities.

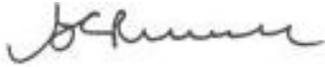
In 2004, BLM authorized activity at the monitoring well MW-20 Bench under an action memorandum that permitted PG&E to pump and transport extracted groundwater. Subsequently, BLM authorized PG&E to operate for a limited time, a batch treatment system on the MW-20 Bench, and use the MW-20 Bench to accommodate the need to transport treated water and brine until more permanent disposal measures are in place. In a letter dated June 1, 2005, BLM required PG&E to submit a draft work plan for decommissioning the batch treatment facility. PG&E submitted the decommissioning work plan in August 2005 and ceased batch treatment operations in early September 2005. More recently, PG&E secured tanks and remaining equipment and removed support facilities from the site as described in a status report submitted March 29, 2006.

Decommissioning the batch treatment system offers an opportunity to reconfigure the Interim Measures No. 3 support facilities resulting in improved environmental protective measures and a substantially smaller facility footprint.

Cathy Wolff-White  
Page 2

If you have any questions regarding this work plan, please call me at (760) 326-5582.

Sincerely,

A handwritten signature in cursive script, appearing to read "Curt Russell".

Curt Russell  
Topock Onsite Project Manager

Attachments:

Batch Treatment Facility Decommissioning Work Plan

cc: Jim Priest, BLM  
Sally Murray, BLM  
Aaron Yue, DTSC  
Casey Padgett, DOI  
Yvonne Meeks, PG&E

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**Batch Treatment Facility  
Decommissioning Work Plan  
Topock Compressor Station  
Needles, California**

Prepared for  
**United States Bureau of Land Management**

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

May 31, 2007

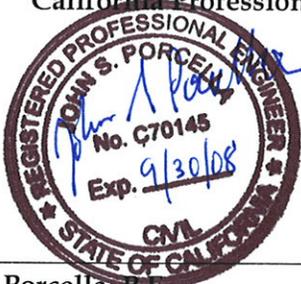
**CH2MHILL**

**Batch Treatment Facility  
Decommissioning Work Plan  
PG&E Topock Compressor Station**

Prepared for  
United States Bureau of Land Management

On behalf of  
Pacific Gas and Electric Company

This work plan was prepared under supervision of a  
California Professional Engineer,



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John Porcella, P.E.  
Project Engineer

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**Attachment**

United States Bureau of Land Management Action Memorandum: Time Critical Removal Action No. 3, Pacific Gas and Electric Topock Compressor Facility. September 17, 2004.

# Acronyms and Abbreviations

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|          |   |
|----------|---|
| µg/L     | micrograms per liter                              |
| BLM      | United States Bureau of Land Management           |
| CEQA     | California Environmental Quality Act              |
| Cr(T)    | total chromium                                    |
| Cr(VI)   | hexavalent chromium                               |
| DOI      | United States Department of the Interior          |
| DTSC     | California Department of Toxic Substances Control |
| IM       | Interim Measure                                   |
| IM No. 2 | Interim Measure Number 2                          |
| IM No. 3 | Interim Measure Number 3                          |
| mg/kg    | milligrams per kilogram                           |
| PG&E     | Pacific Gas and Electric Company                  |

# 1.0 Introduction

---

Pacific Gas and Electric Company (PG&E) is addressing chromium in groundwater at the Topock Compressor Station under the oversight of the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). An Interim Measure (IM) consisting of a groundwater extraction, treatment, and injection system is being implemented to provide hydraulic control of the plume boundaries near the Colorado River.

This work plan describes (1) the final deconstruction of the former batch treatment facility and (2) the reconfiguration of IM No. 3 support facilities at the location known as the MW-20 Bench.

## 1.1 Project Background

The Topock Compressor Station is located in eastern San Bernardino County, approximately 15 miles to the southeast of Needles, California (Figure 1-1). The compressor station began operation in 1951 to compress natural gas supplied from the southwestern United States for transport through pipelines to PG&E's service territory in central and northern California.

The compressor station occupies approximately 15 acres of a 65-acre parcel of PG&E-owned land. The property on which the compressor station was built was previously owned by the State of California. From 1951 to 1965, PG&E leased the property from the state. In 1965, PG&E purchased the property from the state.

PG&E also owns a 100-acre parcel located about 0.5 mile north of the compressor station, purchased in 2004 to facilitate interim remedial measures. Ownership of this parcel will be transferred to the Fort Mojave Indian Tribe later in 2007. The surrounding area includes land owned and/or managed by a number of federal government agencies in the United States Department of Interior (DOI). The MW-20 bench is located on DOI land.

In February 1996, PG&E and DTSC entered into a Corrective Action Consent Agreement pursuant to Section 25187 of the California Health and Safety Code. Under the terms of that agreement, PG&E was directed to conduct a Resource Conservation and Recovery Act facility investigation and to implement corrective measures to address constituents of concern released in the Bat Cave Wash near the PG&E Topock Compressor Station. The primary constituents of concern at Topock are hexavalent chromium [Cr(VI)] and total chromium [Cr(T)]. The source of these constituents was Cr(VI) salts historically used as a corrosion inhibitor in the station's cooling towers. DTSC is the lead administering agency for the project.

The DOI is the lead federal agency, on land under its jurisdiction, custody or control, and is responsible for oversight of response actions being conducted by PG&E pursuant to the Comprehensive Environmental Response, Compensation and Liability Act. Portions of the site where hazardous substances from the Topock Compressor Station are now located are on or under land managed by the Department's Bureau of Land Management (BLM), Fish

and Wildlife Service, and Bureau of Reclamation. In July 2005, PG&E and these federal agencies entered into an Administrative Consent Agreement to implement response actions at the site as set forth in the National Oil and Hazardous Substances Pollution Contingency Plan (DOI, 2005).

This area is of great importance to many of the Tribes that have inhabited this area along the Colorado River. The Colorado River, the surrounding landscape and area, and the Chemehuevi mountains hold great value and importance to the various tribes in this area.

### 1.1.1 Interim Measures

PG&E began implementing interim measures at the site in March 2004. Initially, groundwater was extracted from an existing monitoring well cluster located on the MW-20 bench. This operation was eventually replaced by the current extraction well system. Groundwater extraction began at wells TW-2S and TW-2D in May 2004, at well TW-3D in December 2005, and at well PE-1 in 2006. Beginning in July 2004, and continuing until the commencement of operations of the current groundwater treatment and extraction systems (IM No. 3) in July 2005, a batch treatment plant operated on the MW-20 bench, and treated groundwater was transported offsite for disposal at a permitted facility. The pumping and subsequent batch treatment operations were a part of Interim Measure Number 2 (IM No. 2)

Currently, PG&E is implementing Interim Measure Number 3 (IM No. 3) at the Topock site. IM No. 3 consists of groundwater extraction for hydraulic control of the groundwater plume boundaries in the Colorado River floodplain and management of extracted groundwater. The groundwater pumping, transport, and disposal activities are considered an IM pursuant to Section IV.A of the Corrective Action Consent Agreement. The purpose of the IM is to maintain hydraulic control of the groundwater plume boundaries until the time that a final corrective action is in place at the site. As defined by DTSC, the performance standard for IM No. 3 is to “establish and maintain a net landward hydraulic gradient, both horizontally and vertically, that ensures that hexavalent chromium (Cr[VI]) concentrations at or greater than 20 micrograms per liter ( $\mu\text{g}/\text{L}$ ) in the floodplain are contained for removal and treatment.”

Currently, the IM facilities include a groundwater extraction system (four extraction wells TW-2D, TW-3D, TW-2S, and PE-1), conveyance piping, a groundwater treatment plant, an injection well field for the discharge of the treated groundwater, and a brine-handling facility which is located on the MW-20 Bench. Of the four extraction wells, two are currently in operation (TW-3D and PE-1). The groundwater treatment system is a continuous, multi-step process that involves: (1) reducing Cr(VI) to the less soluble trivalent form, (2) precipitating and removing of precipitate solids by clarification and microfiltration, and (3) lowering the naturally-occurring total dissolved solids concentration using reverse osmosis. Treated groundwater is returned to the aquifer through an injection system consisting of two injection wells, IW-2 and IW-3. The brine produced from the reverse osmosis system is pumped to brine storage tanks on the MW-20 Bench and then transported to an appropriate offsite facility using tanker trucks. The existing groundwater extraction, treatment, injection, and brine-handling systems, collectively, are referred to as IM No. 3.

## 1.2 Previous Authorizations

In three action memoranda, the Arizona State Director of the BLM authorized PG&E to conduct a time-critical removal action to prevent or abate the release of Cr(VI) into the Colorado River. These memoranda were issued pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (42 USC §§9601 et seq.) and were dated March 3, May 20, and September 17, 2004.

BLM authorized activity at the MW-20 bench under an action memorandum, dated March 3, 2004 (BLM, 2004a), that permitted PG&E to pump and transport extracted groundwater and to site, install, and test new wells as part of the time-critical removal actions (BLM, 2004a). On May 20, 2004, BLM issued a second Action Memorandum authorizing PG&E to operate, for a limited period of time, a batch treatment system on the MW-20 Bench (BLM, 2004b). The purpose of this time-critical removal action was to reduce the volume of hazardous waste being shipped offsite by allowing treatment of groundwater onsite prior to offsite transport and disposal as non-hazardous waste. In a third action memorandum, dated September 17, 2004, BLM authorized PG&E to install conveyance piping, conduct the necessary improvements to existing access roads, install additional monitoring wells, and expand facilities on, and transportation from, the MW-20 bench to accommodate the potential need to transport treated water and brine (IM No. 3 activities) until more permanent disposal measures are in place (BLM, 2004c).

PG&E submitted a request to BLM on April 8, 2005 requesting a 180-day extension to continue batch treatment operations on the MW-20 bench. In a letter dated June 1, 2005, BLM authorized PG&E to continue with the temporary treatment operations at the existing batch plant until September 5, 2005 (BLM, 2005).

## 1.3 History of Decommissioning Activities

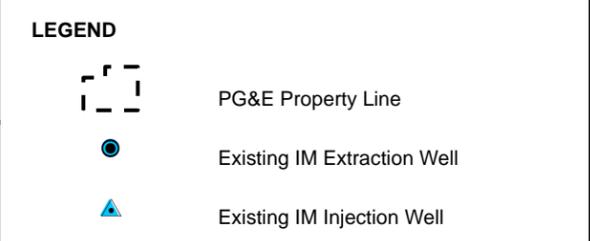
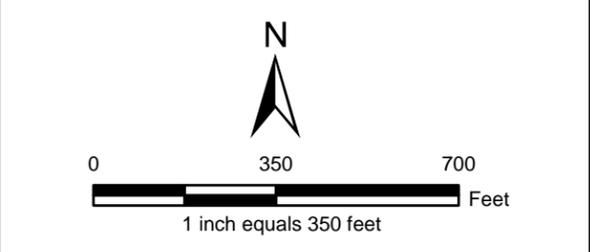
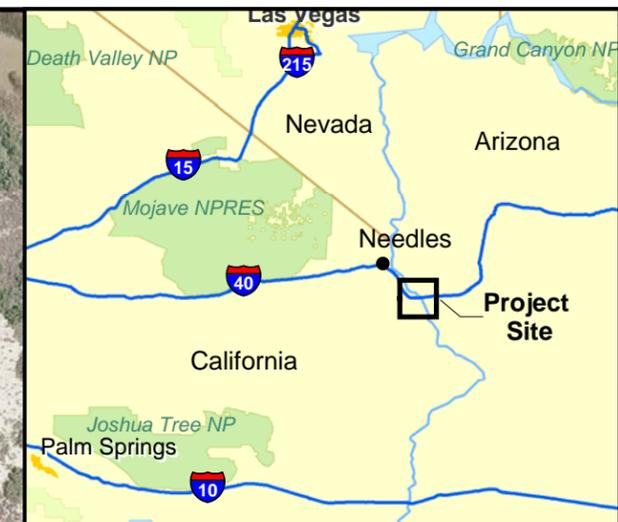
Per the requirements of the BLM authorization letter of June 1, 2005, PG&E submitted a draft work plan for decommissioning the batch treatment facility on August 8, 2005. The plan laid out a conceptual timeline for maintaining the batch treatment facilities to support IM No. 3 operations for a period of two low river seasons (CH2M HILL, 2005a). During this time, the batch treatment facility would serve as a contingency for water treatment and storage for the Topock remediation activities.

Decommissioning of the batch treatment facility has consisted of:

- **July 17, 2005:** Ceased full-time batch treatment facility operation.
- **August 8, 2005:** Submitted a draft decommissioning work plan for BLM consideration (CH2M HILL, 2005a).
- **September 5, 2005:** Ceased all batch treatment operations and removed treatment chemicals, extracted groundwater (untreated, partially-treated, or batch-treated), and treatment by-product sludge in storage from the site. PG&E submitted a letter to the BLM documenting this event on September 6, 2005 (PG&E, 2005a).

- **September 5, 2005 through March 31, 2006:** Secured tanks and remaining equipment and removed support facilities from the site; end of first lower river stage season. PG&E submitted a letter to the BLM documenting this event on March 29, 2006 (PG&E, 2006).
- **March 31, 2006 through March 31, 2007:** No additional site decommissioning was conducted consistent with the draft work plan (CH2M HILL, 2005a); end of second low river stage season.

This work plan describes the remaining decommissioning proposed for the batch treatment facilities (Sections 2.0 and 3.0) and proposed reconfiguration of the remaining IM No. 3 support facilities (Section 4.0). Even though the remaining IM No. 3 support facilities are temporary, there are benefits to reconfiguring them, including improving spill containment and reducing the facility footprint. Section 5.0 describes the approach for restoring the MW-20 bench after PG&E completes remediation at Topock, Section 6.0 describes the management approach for the work described in this plan, and Section 7.0 contains a preliminary schedule of the work. Section 8.0 provides a list of references used while preparing this report. This work plan does not contain all of the detailed information that will be required for decommissioning of existing equipment and construction of reconfigured facilities. PG&E will prepare an engineering design package for construction purposes.



**FIGURE 1-1**  
**SITE LOCATION MAP**  
 PACIFIC GAS AND ELECTRIC COMPANY  
 TOPOCK COMPRESSOR STATION

## 2.0 Batch Treatment Facility Deconstruction

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The following section describes the deconstruction (removal) of the tanks, piping, clarifier, and secondary containment remaining on the MW-20 bench that comprise the batch treatment facility.

### 2.1 Batch Treatment Facility Status – November 2006

Figure 2-1 is a photograph of the batch treatment facility as of November 2006. The batch treatment facility equipment include six blue storage tanks (referred to as 'frac' tanks), a clarifier used during batch treatment operations, and the underlying temporary containment system. The secondary containment area has also been used as a staging area for groundwater investigation and *in-situ* pilot study activities, for example, the white polyethylene tank shown in the photograph.



FIGURE 2-1  
Batch Treatment Facility– November 2006

## 2.2 Batch Treatment Facility Deconstruction

Proposed deconstruction activities include:

- Removal of the six tanks and clarifier associated with the batch treatment facility.
- Removal of the secondary containment liner.
- Removal of piping, conduit, pumps, and ancillary equipment used at the IM No. 2 facility.
- Demolition and/or removal of temporary structures (e.g., wood platform, chemical tote stands).
- Relocate equipment in use (such as the white polyethylene tank) to temporary location until reconfiguration is complete.
- Inspection and removal of the underlying sand base material that was added to the soil surface during initial construction of the facility. If inspection shows that the sand base is clean and suitable for re-use, this material may be re-used as part of the re-configuration of the MW-20 bench as described in Section 4.0.

The existing chain link security fencing will be removed and will be replaced with a new chain link fence as part of the reconfiguration of the facilities on the MW-20 bench, as described in Section 4.0.

Deconstruction of the batch treatment facility will be accomplished by a combination of manual labor and mechanical equipment (e.g., backhoe, crane, trucks). Temporary facilities that may be required include roll-off bins for collecting the demolition materials and a water truck and pressure washer for final rinsing of tanks and equipment. Rinse water will either be treated at the IM No. 3 facility or transported offsite for disposal.

Mechanical equipment will be brought in along the National Trails Highway and access the MW-20 bench via the existing driveways north and south of the facility. Equipment and materials will be staged on the MW-20 bench away from the remaining IM No. 3 support areas (e.g., brine loading areas and trucking lanes). There will be no additional disturbance of the MW-20 Bench in order to accommodate the equipment required to accomplish this work.

## 2.3 Disposition and Disposal

All used materials that will not continue to be used for IM operations will be characterized and transported (with appropriate shipping documents) to an offsite disposal or recycling facility. The frac tanks are rented and will be returned to the vendor. The clarifier will be either re-located to PG&E property or another offsite location. The clarifier may be sold as used equipment if a future use is not identified.

PG&E will be careful to disturb as little soil as possible during these activities. This is especially true for native soils, which the Fort Mojave Indian Tribe considers to be a part of a sacred landscape. Therefore, base material will either be re-used as fill onsite as part of the

re-configuration activities whenever possible. If soils are found to be contaminated, they will be transported to an appropriate offsite disposal facility.

## 3.0 Confirmation Sampling and Analysis

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The ground surface that was within the footprint of the former batch treatment facility, defined here as underlying the secondary containment, will be visually inspected after deconstruction.

After completing the visual inspection, 5 confirmation soil samples will be collected from the top 6 inches of the ground surface that was within the footprint of the former batch treatment facility. One sample will be collected from near the middle, and four samples will be collected in the proximity of each corner of the former IM No. 2 facility. The soil samples will be tested for Cr(T) using Method 6010B.

Samples collected from the MW-20 bench to verify the previous cleanup of the sludge spill in March 2005 were used to establish background chromium concentrations of 31 milligrams per kilogram (mg/kg) for Cr(T) (CH2M HILL, 2005b).

If the confirmation soil sample analytical results are comparable to or below the background soil concentration previously collected from the MW-20 bench, the area will be considered free of soil contamination and reconfiguration activities will proceed as planned. If analysis of confirmation soil samples reveals Cr(T) concentrations greater than the background concentration of 31 mg/kg, PG&E will consult with the BLM regarding the need for further sampling. At the direction of BLM, soils found to be contaminated will be transported to an appropriate offsite disposal facility.

## 4.0 Reconfiguration of the IM No. 3 Support Facilities

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This section describes the proposed reconfiguration of the support facilities on the MW-20 bench to support ongoing IM No. 3 water management needs. In addition, the proposed reconfiguration will also provide for improved staging and management of wastes that are generated as part of ongoing field investigations and studies and extraction well maintenance. The planned facilities are temporary improvements and are expected to be in use only while IM No. 3 is in operation. Figure 4-1 shows the current IM No. 3 support facilities on the MW-20 bench as of November 2006. The IM support facilities are enclosed within the same fence as the batch treatment facilities. The three extraction wells TW-3D, TW-2D, and TW-2S (the latter two wells are obscured in the photograph) and Valve Vault No. 1 (encircled by the brine tanks) will remain in their current locations.

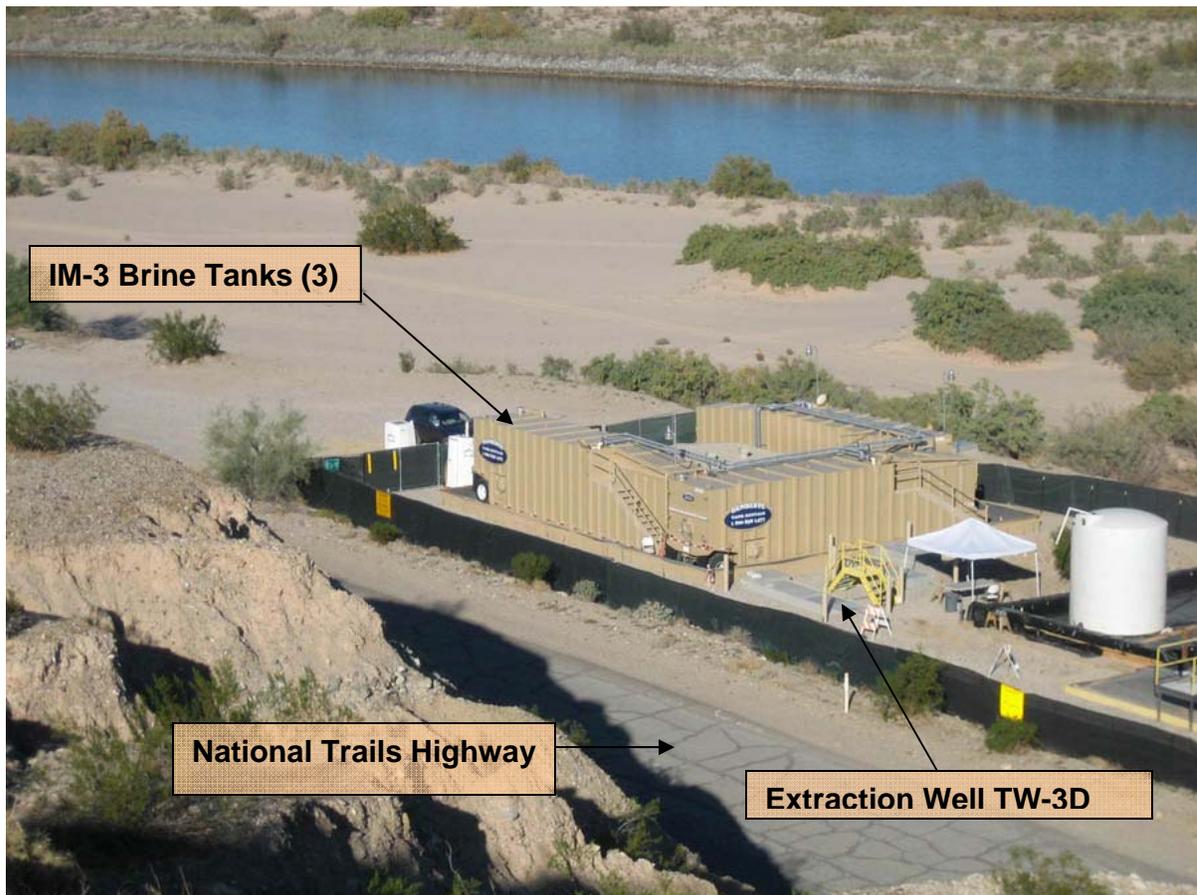


FIGURE 4-1  
IM No. 3 Facilities on the MW-20 Bench – November 2006

## 4.1 Current IM No. 3 Support Activities on the MW-20 Bench

Since IM No. 3 began operation in 2005, the facilities on the MW-20 bench have served in two primary roles:

- Brine management for IM No. 3 plant
- As a staging area for intermittent field activities on the floodplain

A major objective of the proposed reconfiguration is to minimize the footprint for these support activities. Through improved operational strategies developed over the last 2 years (such as efficient plant operation and optimized trucking schedules), the brine management needs can now be met entirely through just the use of the three existing IM No. 3 brine tanks, without the need for supplemental storage that was previously provided by the IM No. 2 tankage. These improvements will allow for the complete disassembly and removal of the former IM No. 2 facility, without the need for any additional or replacement tanks for brine management.

The MW-20 bench facility has allowed necessary field work in the area to proceed in a safer and more efficient manner, while having less impact on the surrounding area. Field crews have used the secondary containment area at the MW-20 bench to avoid the need to set up temporary staging areas for sampling, drilling, materials management and other field activities. These activities are expected to continue during the time period that IM No. 3 is operating. By providing a dedicated staging area for these continuing activities, with properly-designed spill containment, the overall impact of these activities are minimized.

## 4.2 Reconfiguration of IM No. 3 Support Facilities

While it is recognized that the MW-20 bench support facilities are temporary in that they support the temporary IM No. 3 and other work required for development of the final remedy, reconfiguration of these facilities will still have important benefits. The goals of the reconfiguration include reducing the footprint of the facilities to the extent possible and, improving the safety, reliability, and security of the IM support facilities for brine management and other staging and support functions. Figure 4-2 illustrates the reconfigured facility site plan and Figure 4-3 shows a simulation of the reconfiguration (looking from the west of the National Trails Highway). The facility will have two areas with separate containment systems: (1) a brine storage and loading area which will be re-located to a portion of the Former Batch Plant area; and (2) a waste management area in the vicinity of the existing Valve Vault No. 1. Existing facilities which will remain on the MW-20 bench include the extraction well vaults, Valve Vault No. 1, and an electrical vault. The result of this reconfiguration will reduce the footprint by about 7,500 square feet (more than 40 percent). See Figure 4-4 which shows a photograph of the current facilities and the reconfigured facilities simulation (shown on Figure 4-3) together.

An important outcome of this reconfiguration will be improved spill containment facilities. The existing brine storage tanks are sitting on a plastic-lined containment structure with wooden walls. The current phase separators and frac tanks are placed on drive-on plastic spill pads. Spill pads of the same design are used in the truck loading lane under the tanker trucks. PG&E's experience is that these plastic-based containment systems are not

sufficiently durable in the Topock environment and the current containment approach creates a risk of brine waste releases impacting the soils beneath the plastic. The materials wear rapidly due to traffic and also degrade due to the effects of high temperatures and ultraviolet radiation. This material degradation makes it necessary for PG&E to perform frequent maintenance and replacement of these plastic materials. These maintenance activities require continuing construction activity on the MW-20 bench area, and disposal of degraded materials.

The temporary concrete-based spill containment systems proposed in this work plan will protect the environment by solving all of the problems mentioned above. Any future releases will be contained and managed by returning the wastes to proper containers. Precipitation will also be collected and properly managed with no potential for site runoff or percolation. When the brine management facilities are no longer needed on the MW-20 bench, the temporary concrete containment structure will be removed and the original grade of the Bench area can be restored to its pre-use condition.

#### 4.2.1 Brine Storage and Loading Area

Brine management facilities will be moved somewhat south of their current location, to a portion of the area where the former batch treatment facility is currently located. A concrete foundation with a containment berm will be constructed for the brine tanks described above (Section 4.0). Brine will be pumped from the IM No. 3 treatment plant to the tanks, as is currently done. The tanks will be equipped with level controls and alarms for monitoring and control. The containment will be integrated with the truck loading stations so that if brine is spilled, it will be contained. The brine storage area will be sloped to a single drain point located near the three brine tanks. Brine hauling trucks will enter along the west side of the facility on a concrete truck lane to one of two loading stations. Two loading stations will be constructed to allow either (1) two vehicles to load simultaneously or (2) allow one vehicle to load at the southern station and then move to the northern station for a vehicle safety inspection before leaving the site. A lane will be provided to allow for vehicle access to the area of three extraction well vaults (TW-2S, TW-2D, and TW-3D) for pump and well maintenance.

#### 4.2.2 Other Waste Management Area

The spill containment area surrounding Valve Vault No. 1 will be used for several purposes including staging areas and to support remediation program waste management requirements. As such, a frac tank and two phase separators will be located in this area on an as-needed basis for storing well purge, development water, aquifer test water, and soil cuttings. Soil cuttings from the saturated part of the aquifer have a liquid and solid component. Phase separators have been shown to be a reliable approach to handle drill cuttings especially for the saturated cuttings. Phase separators dewater solids by gravity and consist of a filter fabric laid on a metal frame mounted in a conventional metal waste storage bin. The bin is similar in size to a 10 cubic yard capacity waste storage bin. The water collects in the bottom of the separator and can be pumped to a separate container to be pumped to the IM No. 3 treatment plant or pumped to a truck for disposal at an offsite facility, if appropriate. Mounting racks will be installed in this area to hold the two phase separators.

Field investigations and testing requires equipment decontamination. Decontamination of equipment, such as drilling augers and other field equipment will be completed in a decontamination pad located in this area. Drainage from this pad will be connected with the rest of the waste storage area.

### 4.2.3 Fencing and Security

A chain link security fence currently surrounds the facility on the MW-20 bench. This fencing serves to keep wildlife out of work areas and prevents access to the site by passers-by. Similarly, a new chain link fence will be placed around the smaller reconfigured facility with access gates for vehicles and personnel. Gates will be either swing-type or roller mounted and may be motorized. An unpaved road along the east side of the facility will allow for emergency access. Security equipment will be installed to allow for facility monitoring. A data transmission system will be installed to allow remote monitoring of equipment condition and security status. Lights will be installed but will be only used for facility inspections or when maintenance or repair is required at night. Most facility operations will be limited to daylight hours.

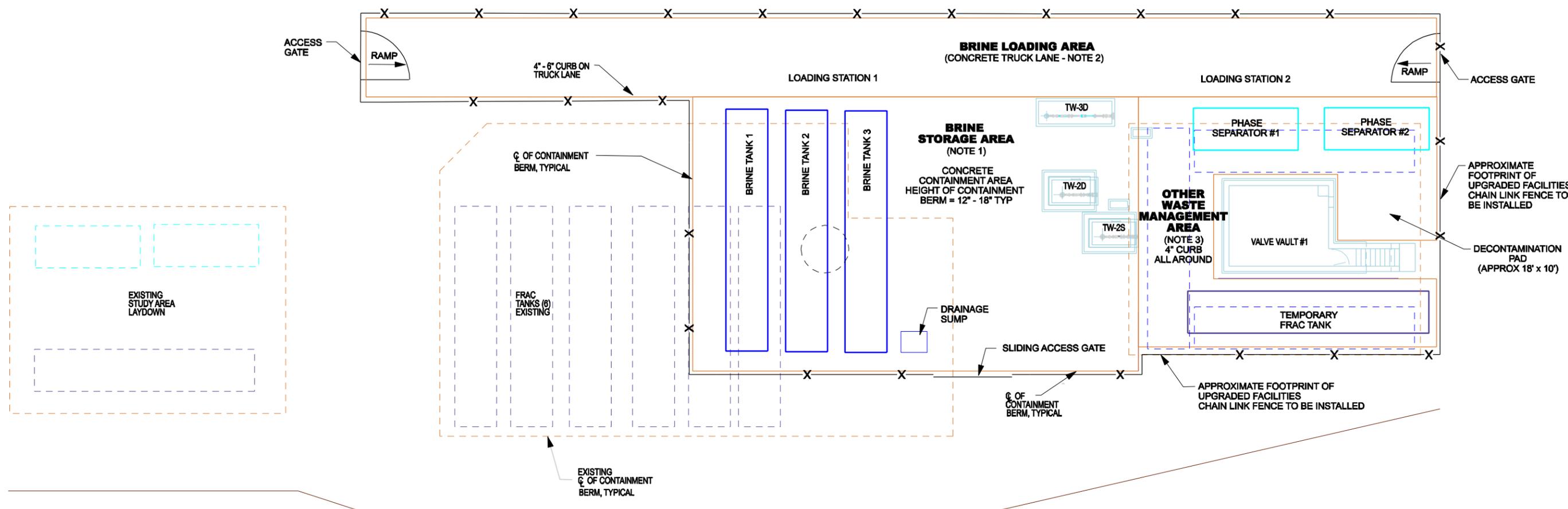
## 4.3 Implementation Summary

Reconfiguration of the IM No. 3 support facilities will be completed by a combination of manual labor and mechanical equipment (e.g., backhoes, cranes, trucks, and compactors). Temporary equipment that may be required includes roll-off bins for collecting the demolition materials and a water truck for soil compaction.

Mechanical equipment will be brought in along the National Trails Highway via the existing driveways north and south of the facility. Equipment and materials will be staged on the MW-20 bench away from active IM support areas (e.g., brine loading areas and trucking lanes). The work will be sequenced so that brine can be stored at and trucked from the MW-20 bench with minimal operational disruption.



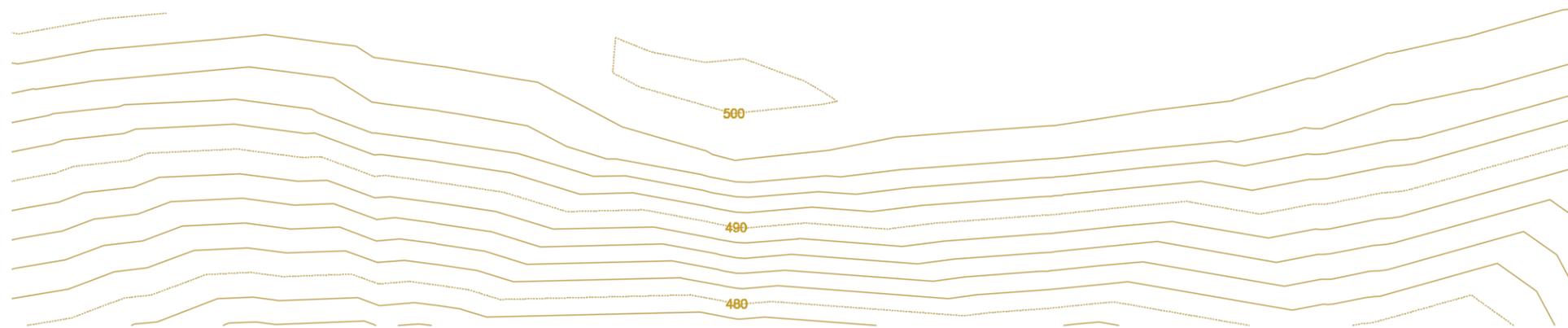
NATIONAL TRAILS HIGHWAY



- NOTES**
1. AREA IS APPROX. 85'x55' (4,400 SQ. FT.)
  2. AREA IS APPROX 15'x210' (3,100 SQ. FT.)
  3. AREA IS APPROX. 2,100 SQ. FT.
  4. DRIVEWAY WITHIN FENCING AREA TO BE PAVED WITH CONCRETE UNLESS OTHERWISE INDICATED.
  5. WARNINGS TO BE INSTALLED AT THE LOADING STATION FOR PERSONNEL PROTECTION.
  6. MAINTAIN 20-FT CLEARANCE FROM EDGE OF FENCE TO TOP OF BANK ALONG THE EAST SIDE OF THE SITE TO ENSURE BANK STABILITY.
  7. LIGHTING TO BE PROVIDED WITH MOTION-DRIVEN SENSORS. MANUAL SWITCH IS TO BE INSTALLED FOR ROUTINE SECURITY INSPECTIONS.
  8. DATA COMMUNICATION DEVICE TO BE INSTALLED FOR REMOTE MONITORING.
  9. PREDESIGN EFFORTS WILL INCLUDE TOPOGRAPHIC SURVEY.

**LEGEND**

|   |             |                  |
|---|-------------|------------------|
| EXISTING / REMOVED                      | NEW / MOVED | BRINE TANK       |
| SOLID WASTE CONTAINER / PHASE SEPARATOR | FRAC TANK   | CONTAINMENT AREA |
| EXISTING FEATURES TO REMAIN             |             |                  |



|                              |     |      |          |    |     |                   |            |               |                    |        |                                     |                         |      |  |  |     |              |        |
|------------------------------|-----|------|----------|----|-----|-------------------|------------|---------------|--------------------|--------|-------------------------------------|-------------------------|------|--|--|-----|--------------|--------|
| RESPONSIBLE ENGINEER<br>PC / | NO. | DATE | REVISION | BY | CHK | REVISION APPROVAL | REV        | DATE          | PRINT DISTRIBUTION | STATUS |                                     |                         |      | PACIFIC GAS & ELECTRIC CO.<br>TOPOCK COMPRESSOR STATION<br>BATCH TREATMENT FACILITY<br>DECOMMISSIONING<br>PROJ NO. 347053<br><b>CH2MHILL</b> | CIVIL<br>PROPOSED RECONFIGURATION<br>SITE PLAN |     |              |        |
|                              |     |      |          |    |     | DISCIPLINE        | REVIEWED   | DISCIPLINE    | REVIEWED           | DATE   | ISSUED                              | REV                     | DATE |  | SDE  | PEM | FIG. NO. 4-2 | REV. 0 |
|                              |     |      |          |    |     | CIVIL             |            | ELECTRICAL    |                    |        | PRELIMINARY                         |                         |      |  |  |     |              |        |
|                              |     |      |          |    |     |                   | STRUCTURAL |               | INST & CONTROL     |        |                                     | FOR REVIEW AND APPROVAL |      |  |  |     |              |        |
|                              |     |      |          |    |     | MECHANICAL        |            | ARCHITECTURAL |                    |        | APPROVED FOR CONSTRUCTION           |                         |      |  |  |     |              |        |
|                              |     |      |          |    |     | PROCESS           |            | ENVIRONMENTAL |                    |        | REVISED & APPROVED FOR CONSTRUCTION |                         |      |  |  |     |              |        |
|                              |     |      |          |    |     | PIPING            |            | GEN. ARRANG.  |                    |        |                                     |                         |      |  |  |     |              |        |
|                              |     |      |          |    |     |                   |            |               |                    |        |                                     |                         |      |  |  |     |              |        |

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2MHILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL.



**FIGURE 4-3**  
**VISUAL SIMULATION OF PROPOSED**  
**RECONFIGURATION**  
PACIFIC GAS AND ELECTRIC COMPANY  
TOPOCK COMPRESSOR STATION



**FIGURE 4-4**  
Current (November 2006) and Computer Simulation of Reconfigured Facilities at MW-20 Bench

## 5.0 MW-20 Bench Restoration

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The MW-20 bench will be restored after active use of the area is complete. In coordination with federal agencies, interested Tribes, and other stakeholders, PG&E will develop a site restoration plan once use of the area is no longer required to support IM No. 3 operations or site investigations and studies.

# 6.0 Management and Oversight

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## 6.1 Work Plan and Project Management

After the work plan is approved, PG&E will conduct a project initiation meeting to ensure that all workers comply with all site and work plan requirements. All workers will participate in a training session that describes the sacred and sensitive nature of the area and the need for workers to act respectfully toward the land in this important location. Key agencies and all participating tribes will be invited to this project initiation meeting.

Decommissioning of the batch treatment facility will be managed to ensure direct and effective communications among BLM, DTSC, the PG&E project team, and other interested stakeholders. PG&E will facilitate effective and efficient coordination and management of the various decommissioning tasks. The work will be conducted in a timely manner and in compliance with the requirements of BLM.

## 6.2 Mitigation Measures

The MW-20 bench lies within a larger area of significant cultural, biological, and tribal sacred site resources, and all activities in this work plan will be conducted in a manner that recognizes and respects these resources. In addition, the Colorado River itself is of spiritual and cultural importance to local tribes. Although the area has been greatly disturbed in the past, all work will be planned, coordinated, and conducted in consultation with Native American tribes, and in a manner consistent with the importance of these resources. PG&E welcomes the presence of Native American monitors during the construction activities.

Decommissioning of the MW-20 bench will also be managed as outlined in previous work plans, and mitigation measures for previously authorized activities will remain in effect (stipulations listed by the BLM Lake Havasu Field Office in Action Memorandum No. 3 – see Attachment).<sup>1</sup>

## 6.3 Permits and Authorizations

The following permits and authorizations apply to the activities on the MW-20 bench during the decommissioning phases.

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<sup>1</sup> Mitigation Measures of the BLM Lake Havasu Field Office are attached to Action Memorandum No. 3. Mitigation Measure 28 requires immediate notification of the BLM Lake Havasu Field Manager (or his designated representative) of any cultural resources (prehistoric/historic sites or objects) encountered during operations. PG&E will similarly notify the Ft. Mojave Tribe of any such cultural resource discoveries. The Cultural Resources Management Plan (CRMP) referenced in the Memorandum of Agreement attached to Action Memorandum No. 3, is currently under review. Its provisions might change.

| Agency  | Filings and Authorizations  |
|---|---|
| United States Bureau of Land Management   | Action memoranda of March 3, May 20, and September 17, 2004 authorizing IM No. 2 and IM No. 3 activities on BLM land.   |
| Facility/Generator Identification Number  | The United States Environmental Protection Agency Identification No. for the site is CAR00015118. Although not anticipated, if hazardous waste is generated during decommissioning, this number will be used on hazardous waste manifests for tracking and reporting purposes.  |
| Conditionally Authorized Hazardous Waste Treatment Unit Termination Certification | The batch treatment system operated under a grant of conditional authorization from the San Bernardino Fire Department, which is the Certified Unified Program Agency with jurisdiction for this facility. Following completion of this work, a letter will be submitted to the San Bernardino County Fire Department and to the Department of Toxic Substances Control in accordance with California Health and Safety Code, Division 20, Chapter 6.5, Article 9, Section 25200.3(g) |
| Hazardous Materials Business Plan   | The Hazardous Materials Business Plan filed with the San Bernardino County Fire Department for the site (including IM No. 2 and No. 3 operations) will be modified, as necessary, to address the sites uses following re-configuration.   |
| Industrial Stormwater General Permit  | The Industrial Stormwater General Permit in place for this site includes IM No. 2 and IM No. 3. The Stormwater Pollution Prevention Plan will be modified to address revisions to Best Management Practices, if necessary.  |

Typically, activities submitted for approval via a work plan to the BLM are subject to the requirements of the National Historic Preservation Act Section 106, including consultation with the local tribes. Prior to approval, the BLM is also required to conform to the requirements of Section 7 of the federal Endangered Species Act. The proposed activity in this work plan has been designed to be in compliance with the requirements of the Endangered Species Act. All the proposed work will be conducted in accordance with the Programmatic Biological Assessment (CH2M HILL, 2006).

None of the waste streams anticipated to be generated or accumulated at the site is expected to be hazardous. All new wastes will be characterized to determine whether they are hazardous and, if so, will be managed in accordance with the requirements for hazardous waste generators specified in 22 CCR Division 4.5, Chapter 12. PG&E will apply management practices for spill containment, inspections, training, and preparedness consistent with those prepared for the IM No. 3 treatment plant operations.

# 7.0 Schedule

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Table 7-1 presents a preliminary project schedule that assumes IM No. 2 decommissioning and the reconfiguration of the IM No. 3 facilities on the MW-20 bench will be combined into a single mobilization effort. The durations of activities shown in the table are given as days following BLM approval of a final decommissioning work plan. PG&E will provide a project schedule revised to show calendar dates prior to the start of construction at the site.

TABLE 7-1  
 Preliminary Project Schedule  
*IM-2 Decommissioning*

| Task  | Duration,<br>days | Total<br>Duration |
|---|-------------------|-------------------|
| BLM Approval of Final Work Plan   |                   |                   |
| Mobilization  | 30                | 30                |
| <u>Deconstruction</u>   |                   |                   |
| Clean equipment and tanks. Disassemble electrical equipment and cable                       | 4                 | 34                |
| Disassemble piping and equipment. Remove piping and equipment from site                     | 2                 | 36                |
| Remove tanks and secondary containment. PG&E to remove clarifier                            | 5                 | 41                |
| Inspection and Confirmation Testing   | 8                 | 49                |
| <u>Reconfiguration</u>  |                   |                   |
| Remove base material and prepare subgrade for concrete foundation                           | 5                 | 49                |
| Install subsurface utilities  | 21                | 70                |
| Build forms, pour brine and solid waste storage and containment foundation, finish and cure | 35                | 105               |
| Epoxy coat brine tanks and solid waste storage and containment foundation                   | 5                 | 110               |
| Construct truck loading stations and ramp   | 21                | 131               |
| Install brine tanks   | 14                | 124               |
| Startup brine tanks   | 5                 | 129               |
| Complete solid waste storage and containment area   | 21                | 150               |
| Replace construction fencing with security fencing  | 14                | 164               |
| Construction Complete   |                   | 164               |

## 8.0 References

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- CH2M HILL. 2005a. *Draft Monitoring Well 20 Bench Decommissioning Work Plan, PG&E Topock Compressor Station, Needles, California*. August 8.
- \_\_\_\_\_. 2005b. *Spill Event and Cleanup Report, April 10, 2005 Spill Event at IM-2 Batch Treatment Plant, Pacific Gas and Electric Company Topock Compressor Station, Needles, California*. August 5.
- \_\_\_\_\_. 2006. *Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station, Remedial and Investigative Actions*. December.
- PG&E. 2005a. *Letter from Yvonne Meeks/PG&E to Cathy Wolf-White/BLM, Discontinuation of Batch Treatment Plant Operations*. September 6.
- \_\_\_\_\_. 2005b. *Letter from Yvonne Meeks/PG&E to Cathy Wolf-White/BLM. Interim Measures No. 2 Decommissioning Update*. March 29.
- \_\_\_\_\_. 2006. *Letter from Curt Russell /PG&E to Cathy Wolf-White/BLM. Interim Measures No. 2 Decommissioning Update*. March 29.
- United States Bureau of Land Management (BLM). 2004a. *Time Critical Removal Action, Pacific Gas and Electric Topock Compressor Facility*. March 3.
- \_\_\_\_\_. 2004b. *Time Critical Removal Action No. 2, Pacific Gas and Electric Topock Compressor Facility*. May 20.
- \_\_\_\_\_. 2004c. *Time Critical Removal Action No. 3, Pacific Gas and Electric Topock Compressor Facility*. September 17.
- \_\_\_\_\_. 2005. *Letter to Yvonne Meeks/PG&E from Timothy Smith*. June 1.
- United States Department of Interior (DOI). 2005. *IN THE MATTER OF: Topock Compressor Station, PACIFIC GAS AND ELECTRIC COMPANY (Respondent), Proceeding Under Sections 104 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act as amended 42 U.S.C. §§ 9604 and 9622 -- Administrative Consent Agreement*. July 11.

**Attachment**  
**United States Bureau of Land Management**  
**Action Memorandum: Time Critical Removal**  
**Action No. 3, Pacific Gas and Electric Topock**  
**Compressor Facility. September 17, 2004**

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# BLM Fax Cover Sheet

Bureau of Land Management  
Lake Havasu Field Office

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Signed action Memo #3

w/ Mitigation Measures

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UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAKE HAVASU FIELD OFFICE

In Reply Refer To:  
CAAZCA 43660  
2640 (AZ-070)

September 17, 2004

**ACTION MEMORANDUM**

**TO:** State Director

**FROM:** Acting Field Manager, Lake Havasu Field Office

**THROUGH:** Acting District Manager, Colorado River District

**SUBJECT:** Time Critical Removal Action No. 3,  
Pacific Gas and Electric Topock Compressor Facility

**I. PURPOSE**

This Action Memorandum documents the basis for authorizing a time critical removal action to address the release of hazardous substances from the Pacific Gas and Electric ("PG&E") Compressor Station near Topock, Arizona (hereafter "PG&E facility"). Hazardous substances released from the PG&E facility have migrated onto or under land managed by the Bureau of Land Management ("BLM") on behalf of the Bureau of Reclamation ("BOR"). Specifically, hazardous substances including, without limitation, hexavalent chromium released from the PG&E facility have been detected in groundwater under BLM-managed land. This plume of contaminated groundwater has been detected in groundwater within 100 feet of the Colorado River and is or may be migrating toward the Colorado River.

This proposed time critical removal action is authorized pursuant to the response action authority of Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"), 42 U.S.C. 9604. Pursuant to Executive Order 12580, as amended, and Department of the Interior ("DOI") Departmental Manual, Section 104 response action authority has been delegated to BLM to address the release or threatened release of hazardous substances on or from land under BLM's jurisdiction, custody, or control.

The purpose of this proposed time critical removal action is to undertake additional measures, as specified herein, to maintain hydraulic control of the groundwater plume to prevent or abate the release of hexavalent chromium into the Colorado River.

## **II. SITE CONDITIONS AND BACKGROUND**

### **A. Site Description**

The PG&E facility comprises approximately 265 acres located 15 miles southeast of Needles, California, south of Interstate 40, in the north end of the Chemehuevi Mountains. The facility is on private land owned by PG&E and is situated within the Havasu National Wildlife Refuge. The facility is located within one-half a mile of BLM-managed land and is less than one mile from the Colorado River.

PG&E has been the owner and operator of the PG&E facility since 1951 and has owned the property on which the facility is located since 1965. Beginning in 1951 and continuing to approximately 1989, PG&E conducted onsite disposal of significant quantities of wastewater containing hexavalent chromium from the cooling towers of the compressor station at the facility. According to PG&E's estimates, from 1951 to 1969, PG&E disposed annually at least six million gallons of untreated chromium-contaminated wastewater into Bat Cave Wash, an ephemeral stream that flows north from the facility across Havasu National Wildlife Refuge and BLM-managed land emptying into the Colorado River. From 1970 to 1989, PG&E disposed its wastewater into evaporation ponds on Havasu National Wildlife Refuge property adjacent to BLM-managed property.

### **B. Other Actions to Date**

In 1988, PG&E completed a soil investigation in the Bat Cave Wash area at the request of the California Department of Health Services (now known as the Department of Toxic Substances Control ("DTSC")) and the U.S. Environmental Protection Agency ("EPA"). The soil investigation documented chromium releases to the environment. In 1989, a "Comprehensive Ground Water Monitoring Evaluation" prepared by the California Regional Water Quality Control Board identified chromium releases in groundwater.

By letter dated May 29, 1995, PG&E reported the presence of chromium in groundwater samples taken on the east side of Bat Cave Wash near the north boundary of the PG&E facility. In response, on February 26, 1996, DTSC and PG&E executed a Corrective Action Consent Agreement pursuant to State law under which DTSC directed PG&E to perform a "Facility Investigation" as well as any "Interim Measures" determined to be necessary to address immediate or potential threats to human health and/or the environment.

In the course of implementing groundwater monitoring required under the Corrective Action Consent Agreement, PG&E has documented an extensive plume of groundwater contaminated with hexavalent chromium that stretches from the PG&E facility under National Wildlife Refuge and BLM-managed property toward the Colorado River. On February 3, 2004, PG&E reported concentrations of hexavalent chromium of 111 parts per billion ("ppb") in groundwater taken

from monitoring well MW34-80. This monitoring well is located on BLM-managed property within 100 feet from the Colorado River.

Based on this finding, DTSC ordered PG&E to prepare and submit Interim Measures ("IM") Work Plan No. 2 "to immediately begin pumping, transport and disposal of groundwater from existing monitoring wells at the MW20 cluster." These monitoring wells located on or near the "MW20 bench" are on BLM-managed property. By Action Memorandum issued March 3, 2004, BLM authorized PG&E to conduct a time critical removal action, consistent with IM No. 2, to prevent or abate the release of hexavalent chromium into the Colorado River. The scope of this removal action was to extract contaminated groundwater from existing or, if necessary, new wells to reverse the groundwater gradient away from the Colorado River and maintain hydraulic control of the chromium-contaminated plume.

On May 20, 2004, BLM issued a second Action Memorandum authorizing PG&E to operate, for a limited period of time, a batch treatment system on the MW20 bench. The purpose of this time critical removal action was to reduce the volume of hazardous waste being shipped offsite by allowing treatment of contaminated groundwater onsite prior to offsite transport and disposal as non-hazardous waste.

### **III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT**

As documented by recent groundwater sampling results, hexavalent chromium has been detected in significant concentrations in wells within 100 feet of the Colorado River. The proximity of the groundwater plume to the Colorado River constitutes an actual or potential threat to the environment.

To date, the rate of extraction of groundwater has succeeded in maintaining hydraulic control of the chromium plume. However, due to the influence of water levels in the Colorado River on groundwater gradient, increasing groundwater extraction rates is expected to be necessary to maintain hydraulic control of the chromium-contaminated plume. Specifically, during the period of lowest river levels from October 2004, through January 2005, extraction rates between 120-150 gallons per minute may be required to maintain such hydraulic control. Existing storage and treatment capacity on the MW20 bench is insufficient to satisfy these increased extraction rates.

Expansion of the existing facilities on the MW20 bench as the sole means of managing the maximum projected groundwater volume poses several concerns for public health and safety, and ease of implementation. Our review of the Potential Expansion of Facilities on the Monitoring Well 20 (MW20) Bench, submitted on September 17, 2004 shows that transporting the maximum projected volume of groundwater from the MW20 bench would require more than 40 trucks per day, increasing risks of transportation accidents and hazardous waste spills, adverse impacts on local roads and residents, and potential impacts on cultural and biological resources. Additional offsite treatment and disposal facilities that could accommodate the additional volume of hazardous waste on a 24 hours a day, seven days a week basis would be required. Such disposal facilities would be several hundred miles from the Topock site. For these reasons and others, expanding the MW20 bench facilities as the sole means of managing the volume of

extracted groundwater necessary to maintain hydraulic control of the chromium-contaminated plume is undesirable.

#### IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances through groundwater may continue to migrate toward the Colorado River and may reach the River if not addressed by implementing the time critical removal action described in this Action Memorandum. This time critical removal action is necessary to prevent or abate the release or substantial threat of release of hazardous substances into the Colorado River. Due to the proximity of the groundwater plume to the River, BLM determines, in accordance with Section 300.415(b)(2) of the National Oil and Hazardous Substances Contingency Plan ("National Contingency Plan" or "NCP"), 42 U.S.C. §300.415(b)(2), that a time critical response is necessary.

#### V. PROPOSED ACTIONS AND ESTIMATED COSTS

As described specifically in the attached *Interim Measures No. 3 Work Plan, Revision 1* ("Work Plan"), which is incorporated herein, the proposed time critical removal action includes the following actions: (1) installation and utilization of piping from the MW20 bench to a proposed private treatment facility on Parcel 650-151-06; (2) installation and utilization of piping for conveyance of treated water from the proposed private treatment facility to proposed injection wells on Parcel 650-151-06; (3) any necessary improvements to existing access roads to install piping or remove waste materials from the proposed private treatment facility; (4) potential installation of monitoring wells to evaluate the effects on groundwater flow and chemistry due to injection of treated waste water; and (5) expansion of facilities on, and transportation from, the MW20 bench to accommodate, for a limited time period, the potential need to transport treated water and brine until more permanent disposal measures are in place. These activities, as identified in the attached Work Plan, are authorized by this Action Memorandum: provided, however, that prior to implementation all such activities are subject to BLM review and approval. Specifically, all such measures must comply with appropriate mitigation measures as identified by BLM in consultation with affected parties, to address impacts on cultural and biological resources and satisfy all applicable Federal requirements.

In particular, implementation of the activities identified in the Work Plan must comply with all mitigation measures identified in the *Cultural Resources Management Plan for the Topock Compressor Station Expanded Groundwater Extraction and Treatment System, San Bernardino County, California (September 2004)*, as specified by the Memorandum of Agreement executed on September 14, 2004, by BLM, and the California State Historic Preservation Officer regarding Interim Measures No. 3. Furthermore, implementation of the activities identified in the Work Plan must comply with all mitigation measures identified, and to be identified by BLM in the attached Lake Havasu Field Office Wildlife and Threatened or Endangered Species Stipulations, and in consultation with State agencies and the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act, 16 U.S.C. §1536.

Because such actions will be financed by PG&E, BLM has not determined the estimated costs to implement this time critical removal action.

## **VI. EXPECTED CHANGE IN SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

In the event this time critical response action is delayed or not taken, hazardous substances may be released, or there is a substantial threat of such release, into the Colorado River.

## **VII. OUTSTANDING POLICY ISSUES**

BLM is coordinating this time critical removal action with work required of PG&E pursuant to the Corrective Action Consent Agreement issued by DTSC. This coordination of BLM CERCLA authorities and State RCRA authorities is intended to facilitate and streamline PG&E's performance of work necessary to protect the Colorado River. BLM must ensure, however, that such work is performed in a manner consistent with CERCLA, the NCP, and other applicable Federal requirements. In the event that Federal requirements are not satisfied through this coordination effort, BLM may be required to initiate, or require PG&E to perform, activities independent of State law.

## **VIII. ENFORCEMENT**

BLM and DOI have determined that PG&E is a responsible party pursuant to Section 107 of CERCLA, 42 U.S.C. §9607. As defined by CERCLA, PG&E is the owner and operator of the PG&E facility from which hexavalent chromium has been released into the environment. Hexavalent chromium is a hazardous substance under CERCLA.

By letter dated February 12, 2004, DOI has notified PG&E of its potential liability under CERCLA and has requested that PG&E enter into an administrative order on consent ("AOC") by which PG&E would perform future response action and agree to reimburse DOI, BLM, and other DOI bureaus for response costs incurred in overseeing PG&E's performance of response action on Federal property. In the event that DOI is unable to reach an agreement with PG&E over the terms of this AOC, DOI may decide to take response action unilaterally, may initiate enforcement action or take any other measures necessary to direct or require PG&E to perform response action, and seek to recover all response costs incurred from PG&E.

## **IX. ADDITIONAL MITIGATION MEASURES**

Further review of the proposal revealed that the Mitigation Measures in Section 7.0 of Interim Measures No. 3 Work Plan, Revision 1 need further revision. The attachment entitled Mitigation Measures, Lake Havasu Field Office replaces Section 7.0 of the Interim Measures No. 3 Workplan, Revision 1, in its entirety.

## **X. RECOMMENDATION**

This decision document identifies the current proposed time critical removal action to prevent or abate releases of hexavalent chromium from the PG&E facility from migrating to the Colorado River. BLM has determined that PG&E is capable of performing this removal action in a manner consistent with the NCP, contingent on PG&E's full compliance with the requirements of this Action Memorandum including the attached Work Plan. Conditions at the site meet the criteria for undertaking the proposed time critical removal action, as specified by Section 300.415 (b)(2) of the NCP, 40 CFR §300.415(b)(2). We recommend your approval of the proposed time critical removal action.

Patricia A. Taylor  
Acting Field Manager

9-17-04  
Date

I Concur:

Wayne King WAYNE King  
Acting District Manager

9/17/2004  
Date

Stanley J. Zielinski  
Approval  
State Director

9/17/04  
Date

\_\_\_\_\_  
Disapproval  
State Director

\_\_\_\_\_  
Date

Attachments:

- Interim Measures No. 3 Work Plan, Revision 1
- Memorandum of Agreement between BLM, Lake Havasu Field Office and California State Historic Preservation Officer
- Mitigation Measures, Lake Havasu Field Office
- Potential Expansion of Facilities on the Monitoring Well 20 (MW20) Bench

## MITIGATION MEASURES

### LAKE HAVASU FIELD OFFICE

1. All project activities shall be conducted in a manner that avoids take of a Federally listed species. Take is defined to include any harm or harassment, including significant habitat modification or degradation that could potentially kill or injure listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Should a listed species enter the project site or become harmed or killed by project activities, the project shall be shut down and the USFWS, BLM and CDFG shall be consulted. Impacts to habitat shall also be minimized to the maximum possible extent.
2. PG&E shall designate a field contact representative (FCR) who shall be responsible for overseeing compliance with the mitigation measures. The FCR must be onsite during all construction activities. The FCR shall have authority to halt all activities that are in violation of the mitigation measures and/or pose a danger to listed species. The FCR shall have a copy of all mitigation measures when work is being conducted on the site. The FCR may be a project manager, PG&E representative, or a biologist.
3. PG&E shall have a qualified biologist responsible for assisting crews in compliance with the mitigation measures, performing surveys in front of the crew as needed to locate and avoid listed species, and monitoring compliance. Preconstruction surveys by a biologist shall be implemented for special-status wildlife species in impact areas immediately prior to initiation of ground-disturbing activities. The inspection shall provide 100 percent coverage of the area within the project limits. All 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 the conclusion of work activities, all flagging shall be removed.
4. Listed species including the desert tortoise shall not be handled or harassed. Encounters with a listed species shall be reported to the project biologist and BLM Lake Havasu (BLM) biologists. These biologists will maintain records of all listed species encountered during project activities. This information will include for each individual: the locations (narrative, vegetation type, and maps) and dates of observations; general conditions and health; any apparent injuries and state of healing; and diagnostic markings.
5. All PG&E employees and contractors involved with the proposed project shall be required to attend PG&E's threatened and endangered species education program prior to initiation of activities. New employees shall receive formal, approved training prior to working on-site.
6. To the maximum extent possible, facilities (treatment facility, pipelines, injection wells, and access routes) shall be sited within an existing right-of-way (ROW) and previously-disturbed or barren areas to limit new surface disturbance.
7. Existing routes of travel to and from the proposed project site shall be used. Cross-country use of vehicles and equipment shall be prohibited.
8. Trash and food items shall be contained in closed containers and removed daily to reduce attractiveness to opportunistic predators such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs.

9. To minimize effects, lights shall be angled toward the ground, reduced in intensity to levels compatible with safety concerns, and limited in duration of usage. The hue of lighting shall be that which is most compatible with and least disturbing to wildlife.
10. Employees shall not bring pets to the project site.
11. Firearms shall be prohibited from the project site, except as required for security employees.
12. Employees shall be required to check under their equipment or vehicle before it is moved. If a desert tortoise is encountered, the vehicle is not to be moved until the animal has voluntarily moved to a safe distance away from the parked vehicle.
13. Upon project completion, all unused material and equipment shall be removed from the site. This condition does not apply to fenced sites.
14. Palo verde, ocotillo, mesquite, cat-claw, smoke tree, and cacti species are considered sensitive by the BLM. To the extent practicable, these species shall be avoided. If avoidance is not possible, these species shall be transplanted when practical. Should any of the aforementioned plants be destroyed, they shall be replaced.
15. The area of disturbance shall be confined to the smallest practical area, considering topography, placement of facilities, location of burrows, nesting sites or dens, public health and safety, and other limiting factors. As needed, work area boundaries shall be delineated with flagging or other marking to minimize surface disturbance associated with vehicle straying.
16. All activities shall be restricted to a pre-determined corridor. If unforeseen circumstances require project expansion, the potential expanded work areas shall be surveyed for listed species prior to use of the area. All appropriate mitigation measures shall be implemented within the expanded work areas based on the judgment of the agencies and the project biologist. Work outside of the original ROW shall proceed only after receiving written approval from the BLM, Fish and Wildlife Service (Service) and CDFG describing the exact location of the expansion.
17. PG&E has the option of erecting desert tortoise fencing in lieu of inspection of open trenches. If the trench is short, personnel may monitor the trench. All open holes and trenches shall be inspected for trapped desert tortoises at the beginning, middle, and end of the work day, at a minimum. During excavation of trenches or holes, earthen ramps shall be provided to facilitate the escape of any wildlife species that may inadvertently become entrapped. If desert tortoises are trapped, the project biologist shall be notified immediately. The desert tortoise shall be allowed to escape before work continues in that location. A final inspection of the open trench segment shall also be made immediately before back filling. All open pipe segments shall be covered when work activity is not occurring at the site.
18. All construction vehicles and equipment shall be periodically checked to ensure proper working condition and to ensure that there is no potential for fugitive emissions of oil, hydraulic fluid or other hazardous products. The BLM shall be informed of any hazardous spills.

19. Workers shall exercise caution when traveling to and from the project area. To minimize the likelihood for vehicle strikes of listed species, speed limits when commuting to project areas on ROW roads shall not exceed 20 miles per hour.
20. Intentional killing or collection of either plant or wildlife at construction sites and surrounding areas shall be prohibited. The BLM shall be notified of any such occurrences.
21. For emergency situations involving a pipeline leak or spill or any other immediate safety hazard, PG&E shall notify the BLM within 48 hours. As a part of this emergency response, the BLM may require specific measures to protect listed species. During cleanup and repair, the agencies may also require measures to recover damaged habitats.
22. Once the treatment facility is no longer needed, PG&E shall restore disturbed areas in a manner that will assist in the re-establishment of biological values within the disturbed ROW. Methods of such restoration shall include the reduction of erosion, re-spreading of the top two inches of soil, planting with appropriate native shrubs, and scattering of bladed vegetation and rocks across the ROW, depending upon the appropriateness or effectiveness in a given area.
23. Within 60 days of completion of construction activities, the FCR and biologist shall prepare a brief report for the BLM documenting the effectiveness and practicality of the mitigation measures and making recommendations for modifying the measures to enhance species protection. The report will also provide information on survey and monitoring activities, observed listed species, and the actual acreage disturbed by the project.
24. Any future construction during the nesting season for migratory birds, generally February to August for most birds, will require preconstruction surveys for nesting pairs, nests, and eggs. These preconstruction surveys shall occur in areas proposed for any vegetation removal and active nesting areas flagged. If nesting birds are detected, vegetation removal will be avoided during the nesting season. All construction activity within 200 feet of active nesting areas will be prohibited until the nesting pair/young have vacated the nests.
25. All areas within the proposed action area, subject to operations and maintenance activities, and within the potential impact of the action shall be monitored semiannually during the active period for tortoise by a biologist knowledgeable of desert tortoise ecology. Surveys shall be completed throughout the duration of the action to verify the presence or absence of desert tortoise and reports shall be provided to the biologists in the BLM Lake Havasu Field Office on an annual basis.
26. Riparian areas surrounding the proposed action site and subject to influence of operations and maintenance activities shall be surveyed for southwestern willow flycatchers according to the protocol established by the Service. These surveys shall be completed each year by a biologist permitted by the Service to carry out flycatcher surveys until the action has been completed and all facilities have been removed. Reports shall be provided to the biologists in the BLM Lake Havasu Field Office on an annual basis.
27. Upon locating an individual of a dead or injured listed species, PG&E shall make initial notification to the BLM and US Fish and Wildlife Service (Service) within three working days of its finding. The notification must be made in writing to the Service's Division of Law Enforcement in Torrance (370 Amapola Avenue, Suite 114, Torrance, California 90501;

(310) 328-1516) and by telephone and writing to the Ventura Fish and Wildlife Office (2493 Portola Road, Suite B, Ventura, California 93003; (805) 644-1766). The report will include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and other pertinent information. Animals injured through PG&E activities shall be transported to a qualified veterinarian for treatment at the expense of PG&E. If an injured animal recovers, the CDFG and the BLM shall be contacted for final disposition of the animal.

28. PG&E will immediately notify the BLM Lake Havasu Field Manager (or his designated representative) of any cultural resources (prehistoric/historic sites or objects) and/or paleontological resources (fossils) encountered during permitted operations and will maintain the integrity of such resources pending subsequent investigation. All operations in the immediate area of the discovery must be suspended until written authorization from BLM to proceed is issued. An evaluation of the discovery shall be made by a qualified archaeologist or paleontologist to determine appropriate actions to prevent the loss of significant cultural or scientifically-important paleontological values.
29. No permanent improvements that affect the integrity of the bridge/culvert over Bat Cave Wash on historic Route 66 will be implemented.
30. Actions that result in impacts to archaeological or historical resources are subject to the provisions of the Archaeological Resources Protection Act of 1979, as amended, and the Federal Land Policy and Management Act of 1976.

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**MEMORANDUM OF AGREEMENT  
BETWEEN  
THE BUREAU OF LAND MANAGEMENT, LAKE HAVASU FIELD OFFICE  
AND  
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER  
REGARDING  
THE PACIFIC GAS & ELECTRIC TOPOCK INTERIM MEASURES NO. 3,  
EXPANDED GROUNDWATER EXTRACTION AND TREATMENT PROJECT  
SAN BERNARDINO COUNTY, CALIFORNIA**

WHEREAS, Pacific Gas & Electric Company (PG&E) proposes to construct; operate and maintain in the area depicted as the "Area of Potential Effects" (APE) in Figure 1 of Attachment 1 to this Memorandum of Agreement (MOA), an expanded groundwater extraction and treatment system, called the Topock Interim Measures No. 3 Project (Project), in order to maintain hydrologic control of an area in which groundwater has been contaminated by Chromium VI to prevent Chromium-contaminated groundwater from impacting the Colorado River; and

WHEREAS, the U.S. Department of the Interior, Bureau of Land Management (BLM), Lake Havasu Field Office, proposes to issue an Action Memorandum under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Undertaking) authorizing PG&E to conduct that portion of the Project located on public lands, and will act as lead federal agency for all lands within the current and within any expanded APE of the Undertaking and the Project, regardless of ownership, for purposes of complying with Section 106 of the National Historic Preservation Act, as amended (NHPA) (16 U.S.C. 470f), and its implementing regulations codified at 36 CFR part 800; and

WHEREAS the BLM, in consultation with the California State Historic Preservation Office (SHPO), has determined that construction, operation, maintenance, and subsequent dismantling of the Project will have an adverse effect upon CA-SBr-2910H, a property determined eligible for inclusion in the National Register of Historic Places (NR) and upon CA-SBr-219, a property listed in the NR (historic properties), and notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect finding in accordance with 36 CFR part 800, regulations effective January 11, 2001, implementing Section 106 of the NHPA; and

WHEREAS, PG&E will construct, operate, maintain, and ultimately dismantle the Project, implement the *Cultural Resources Management Plan for the Topock Compressor Station Expanded Groundwater Extraction and Treatment System, San Bernardino County, California* (Applied Earthworks, September 2004) (CRMP) that is Attachment 1 to this MOA, has participated in the consultation, and has been invited to concur in this MOA; and

1  
2 WHEREAS, the BLM has consulted the Quechan Tribe-Fort Yuma, Ft. Mohave Indian Tribe,  
3 Cocopah Indian Tribe, Chemehuevi Indian Tribe, Havasupai Tribe, Hualapai Tribe, Yavapai-  
4 Prescott Indian Tribe, Twenty-Nine Palms Band of Mission Indians and Colorado River Indian  
5 Tribes (Tribes) regarding the Project and the Undertaking and their effect on historic properties,  
6 and will continue to consult with the Tribes throughout the implementation of this MOA and the  
7 CRMP;

8  
9 NOW, THEREFORE, the BLM and the SHPO agree that the Project and the Undertaking shall  
10 be implemented in accordance with the following stipulations in order to take into account the  
11 effects of the Project and the Undertaking on historic properties, and further agree that these  
12 stipulations shall govern the Project and the Undertaking and all of their parts until this MOA  
13 expires or is terminated.

### 14 Stipulations

15  
16 The BLM shall ensure that the following measures are carried out:

#### 17 I. MANAGEMENT OF HISTORIC PROPERTIES AND CULTURAL RESOURCES

- 18  
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20  
21  
22 A. The BLM shall ensure that known historic properties and other cultural resources, whether  
23 known or unknown that may be subsequently identified, within the current APE and within  
24 any expanded APE, are managed in accordance with the CRMP. Unsurveyed portions of the  
25 current APE and any expanded APE shall be surveyed and inventoried as prescribed in the  
26 CRMP.  
27  
28 B. Notwithstanding the current provisions of section 1.3, page 4, of the CRMP, the parties to  
29 this MOA agree that copies of survey and evaluation reports and of annual reports will  
30 routinely be submitted to the SHPO.  
31  
32 C. The parties to this MOA agree that the effects and any prospective effects of the Project and  
33 of the Undertaking on historic properties and cultural resources subject to this MOA shall be  
34 resolved by satisfactory implementation and completion of the measures prescribed in the  
35 CRMP or in any amendments thereto agreed upon pursuant to stipulation II.C.2., below.

#### 36 II. ADMINISTRATIVE PROVISIONS

- 37  
38  
39 A. **Confidentiality.** The parties to this MOA acknowledge that historic properties and cultural  
40 resources covered by this MOA are subject to the provision of § 304 of the National Historic  
41 Preservation Act of 1966 and § 6254.10 of the California Government Code (Public Records  
42 Act), relating to the disclosure of archaeological site information and, having so  
43 acknowledged, will ensure that all actions and documentation prescribed by this MOA are  
44 consistent with § 304 of the NHPA and § 6254.10 of the California Government Code.

1  
2 **B. Resolving Objections.**  
3

4 1. Should any party to this MOA object to the manner in which the terms of this MOA are  
5 implemented, to any action carried out or proposed with respect to implementation of the MOA  
6 (other than the Project and the Undertaking itself) or to any documentation prepared in  
7 accordance with and subject to the terms of this MOA, the BLM shall immediately notify the  
8 other parties to this MOA of the objection and consult with the objecting party and the other  
9 parties to this MOA for no more than fourteen (14) days to resolve the objection. The BLM shall  
10 reasonably determine when this consultation will commence. If the objection is resolved through  
11 such consultation, the action in dispute may proceed in accordance with the terms of that  
12 resolution. If, after initiating such consultation, the BLM determines that the objection cannot be  
13 resolved through consultation, the BLM shall forward all documentation relevant to the objection  
14 to the ACHP, including the BLM's proposed response to the objection, with the expectation that  
15 the ACHP will within thirty (30) days after receipt of such documentation:  
16

- 17 a. advise the BLM that the ACHP concurs in the BLM's proposed response to the  
18 objection, whereupon the BLM will respond to the objection accordingly; or  
19  
20 b. provide the BLM with recommendations, which the BLM will take into account in  
21 reaching a final decision regarding its response to the objection; or  
22  
23 c. notify the BLM that the objection will be referred for comment pursuant to 36 CFR §  
24 800.7(c), and proceed to refer the objection and comment. The BLM shall take the  
25 resulting comment into account in accordance with 36 CFR § 800.7(c)(4) and Section  
26 110(1) of the NHPA.  
27

- 28 2. Should the ACHP not exercise one of the above options within thirty (30) days after receipt of  
29 all pertinent documentation, the BLM may assume the ACHP's concurrence in its proposed  
30 response to the objection.  
31  
32 3. The BLM shall take into account any ACHP recommendation or comment provided in  
33 accordance with this stipulation with reference only to the subject of the objection. The  
34 BLM's responsibility to carry out all actions under this MOA that are not the subjects of the  
35 objection will remain unchanged.  
36  
37 4. At any time during implementation of the measures stipulated in this MOA, should an  
38 objection pertaining to such implementation be raised by a Tribe, the BLM shall notify the  
39 other parties to the MOA in writing of the objection and take the objection into consideration.  
40 The BLM shall consult with the objecting party and, if the objecting party so requests, with  
41 the other parties to this MOA for no more than fifteen (15) days. Within ten (10) days  
42 following closure of this consultation period, the BLM will render a decision regarding the  
43 objection and notify all consulting parties hereunder of its decision in writing. In reaching its  
44 decision, the BLM will take into account any comments from the consulting parties and the

1 objecting party regarding the objection. The BLM's decision regarding the resolution of the  
2 objection will be final.

3  
4 5. The BLM shall provide all parties to this MOA, and the ACHP when ACHP comments have  
5 been issued hereunder, and any parties that have objected pursuant to paragraph 4. of section  
6 B. of this stipulation, with a copy of its final written decision regarding any objection  
7 addressed pursuant to this stipulation.

8  
9 6. The BLM may authorize any action subject to objection under this stipulation to proceed after  
10 the objection has been resolved in accordance with the terms of this stipulation.

11  
12 7. Notwithstanding any provision of stipulation II.B., the Project and the Undertaking may  
13 proceed without interruption during the resolution of any objections under this MOA.  
14 Following resolution of any objection, the BLM shall ensure that measures required by such  
15 resolution are carried out.

16  
17 **C. Amendments.**

18  
19 1. Any party to this MOA may propose that this MOA be amended, whereupon the parties to  
20 this MOA will consult for no more than fifteen (15) days to consider such amendment. The  
21 amendment process shall comply with 36 CFR §§ 800.6(c)(1) and 800.6(c)(7). This MOA  
22 may be amended only upon the written agreement of the signatory parties. If it is not  
23 amended, this MOA may be terminated by either signatory party in accordance with  
24 Stipulation II.D., below.

25  
26 2. Attachment 1 (CRMP, including Appendices) to this MOA may be amended through  
27 consultation among the parties to this MOA without amending the MOA proper.

28  
29 **D. Termination.**

30  
31 1. If this MOA is not amended as provided for in section C.1. of this stipulation, or if either  
32 signatory party proposes termination of this MOA for other reasons, the signatory party  
33 proposing termination shall, in writing, notify the other parties to this MOA, explain the  
34 reasons for proposing termination, and consult with the other parties for at least thirty (30)  
35 days to seek alternatives to termination. Such consultation shall not be required if the BLM  
36 proposes termination because the Undertaking no longer meets the definition set forth in 36  
37 CFR § 800.16(y).

38  
39 2. Should such consultation result in an agreement on an alternative to termination, then the  
40 consulting parties hereunder shall proceed in accordance with the terms of that agreement.

41  
42 3. Should such consultation fail, the signatory party proposing termination may terminate this  
43 MOA by promptly notifying the other parties to this MOA in writing. Termination hereunder  
44 shall render this MOA without further force or effect.

1  
2 4. If this MOA is terminated hereunder and if the BLM determines that the Undertaking and the  
3 Project authorized by the Undertaking will nonetheless proceed, then the BLM shall either  
4 consult in accordance with 36 CFR § 800.6 to develop a new MOA or request the comments  
5 of the ACHP pursuant to 36 CFR Part 800.  
6

7 **E. Duration of the MOA.**  
8

- 9 1. Unless terminated pursuant to section D. of this stipulation, or unless it is superseded by an  
10 amended MOA, this MOA will be in effect following execution by the signatory parties until  
11 the BLM, in consultation with the other parties to this MOA, determines that all of its  
12 stipulations have been satisfactorily fulfilled. Upon a determination by the BLM that all of  
13 the terms of this MOA have been satisfactorily fulfilled, this MOA will terminate and have no  
14 further force or effect. The BLM will promptly provide the other parties to the MOA with  
15 written notice of its determination and of the termination of this MOA. Following provision  
16 of such notice, this MOA will have no further force or effect.  
17
- 18 2. The terms of this MOA shall be satisfactorily fulfilled within ten (10) years following the date  
19 of execution by the SHPO. If the BLM determines that this requirement cannot be met, the  
20 parties to this MOA will consult to reconsider its terms. Reconsideration may include  
21 continuation of the MOA as originally executed, amendment, or termination. In the event of  
22 termination, the BLM will comply with section D.4 of this stipulation if it determines that the  
23 Undertaking and the Project authorized by the Undertaking will proceed notwithstanding  
24 termination of this MOA.  
25
- 26 3. If the Undertaking has not been implemented within ten (10) years following execution of this  
27 MOA by the SHPO, this MOA shall automatically terminate and have no further force or  
28 effect. In such event, the BLM shall notify the other parties to this MOA in writing and, if it  
29 chooses to continue with the Undertaking and the Project authorized by the Undertaking, shall  
30 reinitiate review of the Undertaking and the Project in accordance with 36 CFR Part 800.  
31

32 **F. Effective Date of this MOA.** This MOA will take effect on the date that it has been  
33 executed by the BLM and the SHPO.  
34

35 **EXECUTION** of this MOA by the BLM and the SHPO, its transmittal by the BLM to the  
36 ACHP in accordance with 36 CFR § 800.6(b)(1)(iv), and subsequent implementation of its  
37 terms, shall evidence, pursuant to 36 CFR § 800.6(c), that this MOA is an agreement with the  
38 ACHP for purposes of Section 110(1) of the NHPA, and shall further evidence that the BLM has  
39 afforded the ACHP an opportunity to comment on the Undertaking and the Project and their  
40 effects on historic properties, and that the BLM has taken into account the effects of the  
41 Undertaking and the Project on historic properties.  
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**SIGNATORY PARTIES:**

BUREAU OF LAND MANAGEMENT,  
LAKE HAVASU FIELD OFFICE

By: Patricia Taylor Date: 9-14-04

Title: Acting Field Manager

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

By: Wayne O'Neil Date: 14 SEP 2004

Title: State Historic Preservation Officer

**CONCURRING PARTY:**

PACIFIC GAS & ELECTRIC COMPANY

By: Robert C. Doss Date: SEPT. 14, 2004

Title: PRINCIPAL ENGINEER, ENVIRONMENTAL AFFAIRS