Topock Project Executive Abstract

Document Title: Work Plan for Time-Critical Removal Action at AOC 4 Debris Ravine, Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Submitting Agency: Department of the Interior (DOI)

Final Document? ☒ Yes ☐ No

Date of Document: 12/18/2009

Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other)

PG&E

Priority Status: ☒ **HIGH** ☐ **MED** ☐ **LOW**
Is this time critical? ☒ Yes ☐ No

Type of Document:
☐ Draft ☐ Report ☐ Letter ☐ Memo

☒ Other / Explain: Work Plan

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:

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?
Work Plan is required to be in compliance with DOI's AOC 4 Debris Ravine Final Action Memorandum (received by PG&E on June 24, 2009).

Other Justification/s:
☐ Permit ☐ Other / Explain:

Brief Summary of attached document:

This Work Plan is submitted in conformance with DOI's AOC 4 Debris Ravine Final Action Memorandum dated May 28, 2009 (issued to PG&E on June 24, 2009). The Work Plan presents the proposed approach for the AOC 4 removal action. Key elements include: (1) construction activities and methods, waste management, sample collection, air monitoring, and health and safety; (2) anticipated progression of work and post excavation slope stabilization; (3) anticipated approvals and authorizations; and (4) reporting/schedule.

Written by: PG&E

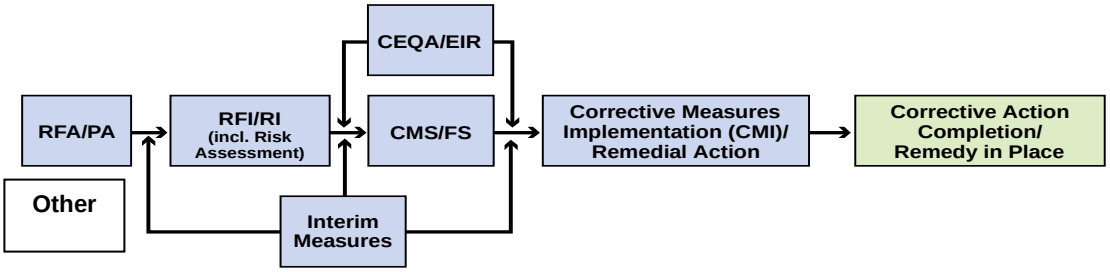
Recommendations:

How is this information related to the Final Remedy or Regulatory Requirements:
This Work Plan is required by DOI's AOC 4 Debris Ravine Final Action Memorandum dated May 28, 2009.

Other requirements of this information?
None

Related Reports and Documents:

Click any boxes in the Regulatory Road Map (below) to be linked to the Documents Library on the DTSC Topock Web Site (www.dtsc-topock.com).



Legend
RFA/PA – RCRA Facility Assessment/Preliminary Assessment
RFI/RI – RCRA Facility Investigation/CERCLA Remedial Investigation (including Risk Assessment)
CMS/FS – RCRA Corrective Measure Study/CERCLA Feasibility Study
CEQA/EIR – California Environmental Quality Act/Environmental Impact Report

Pacific Gas and Electric Company

Yvonne J. Meeks
Manager

Environmental Remediation
Gas Transmission & Distribution

Mailing Address
4325 South Higuera Street
San Luis Obispo, CA 93401

Location
6588 Ontario Road
San Luis Obispo, CA 93405

805.234.2257
Fax: 805.546.5232
E-Mail: yjm1@pge.com

December 18, 2009

Pamela Innis
U.S. Department of the Interior
Office of Environmental Policy and Compliance
P.O. Box 25007 (D-108)
Denver Federal Center, Bldg 56
Denver, CO 80225-0007

Subject: Final Work Plan for Time-Critical Removal Action at AOC 4 Debris Ravine, PG&E Topock Compressor Station, Needles, California

Dear Ms. Innis:

This letter transmits the Final Time-Critical Removal Action Work Plan at AOC 4 Debris Ravine, PG&E Topock Compressor Station, Needles, California. This Work Plan is submitted in conformance with the Department of the Interior's (DOI) AOC 4 Debris Ravine Final Action Memorandum, which was issued to PG&E on June 24, 2009. This Work Plan incorporates the tracked changes in the December 11, 2009 Redline Work Plan. The only other change has been an update of Figure 5-1 Project Timeline to reflect DOI's approval of the Redline Work Plan on December 15, 2009.

If you have any questions, please contact me at (805) 234-2257.

Sincerely,

Yvonne Meeks
Topock Project Manager

c: Aaron Yue/DTSC
Cathy Wolff-White/BLM
Carrie Marr/USFWS
Jeff Smith/BOR
Rick Newill/DOI
Laura Kaweski/DTSC
Addie Farrell/AECOM

Final Report

Work Plan for Time-Critical Removal Action at AOC 4, Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Prepared for

Pacific Gas & Electric Company

December 2009

Signature Page

Michael Cavaliere, P.G.
CH2M HILL

Richard L Bohrer, CIH
NES, Inc

Bo Bowman
Alisto Engineering Group

Allan G. Steckelberg
ARCADIS U.S., Inc.

Jerry McCasland.
Turn-Key Construction Services, Inc.

Contents

Appendices

Tables

Figures

Acronyms and Abbreviations

ACM	asbestos-containing material
AOC	Area of Concern
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
BMP	best management practices
CCR	California Code of Regulations
CESA	California Endangered Species Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
COPCs	Constituents of potential concern
COPECs	Constituents of potential ecological concern
Cr(VI)	hexavalent chromium
CRZ	contamination reduction zone
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
DETO	Mojave Desert tortoise
DOI	U.S. Department of the Interior
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
ESA	Endangered Species Act
EZ	exclusion zone
HASP	Health and Safety Plan
HNWR	Havasu National Wildlife Refuge
MDAQMD	Mojave Desert Air Quality Management District
mg/kg	milligrams per kilogram
NAGPRA	Native American Graves Protection and Repatriation Act
RCRA	Resource Conservation and Recovery Act

OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
PBA	Programmatic Biological Assessment
PCB	Polychlorinated Biphenyls
PEL	permissible exposure limit
PG&E	Pacific Gas and Electric Company
PPE	personal protective equipment
PSO	Project Safety Officer
RCRA	Resource Conservation and Recovery Act
RFI/RI	RCRA Facility Investigation
SSO	Site Safety Officer
SVOC	semivolatile organic compound
SWFL	southwestern flycatcher
TCRA	Time-Critical Removal Action
UCL	upper confidence limit or the mean
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Services
XRF	X-ray fluorescence

1.0 Introduction

On June 24, 2009, the United States Department of the Interior (DOI) issued an Action Memorandum entitled "Request for Time-Critical Removal Action Number 4 at AOC 4 Debris Ravine, Pacific Gas and Electric Topock Compressor Station" (DOI, 2009). The DOI's Action Memorandum directed Pacific Gas and Electric Company (PG&E) to initiate activities necessary to implement the Time-Critical Removal Action (TCRA) and perform the proposed actions specified in Section V of the memorandum. This TCRA, which is being conducted in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), is intended to stabilize and mitigate the threat of release of contaminated material and is not intended to substitute any investigative or remedial activities that may be required under the Resource Conservation and Recovery Act (RCRA), or be the final remedy for Area of Concern No. 4 Debris Ravine (AOC 4).

This Work Plan has been prepared in response to DOI's Action Memorandum and describes the objectives, construction approach and rationale, field screening methods, administrative approvals, proposed schedule, and reporting plans for this removal action.

1.1 Project Background

The Topock Compressor Station is located in San Bernardino County, approximately 15 miles to the southeast of Needles, California, as shown in Figure 1-1. (All figures are located at the end of this document.) Investigative and remedial activities are being performed under RCRA Corrective Action process, as well as CERCLA pursuant to agreements with the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) and DOI, respectively. Under the terms of these agreements, PG&E has been conducting the RCRA facility investigation/remedial investigation (RFI/RI) at the Topock Compressor Station. The purpose of the RFI/RI is to identify and evaluate the nature and extent of hazardous waste and constituent releases at the compressor station. Multiple phases of the RFI/RI have been performed at the site since 1996.

The *Final RCRA Facility Investigation/Remedial Investigation Report, Volume 1 – Site Background and History* (RFI/RI Volume 1) (CH2M HILL, 2007a) identifies the Solid Waste Management Units, AOCs, and other undesignated areas at the Topock Compressor Station (collectively referred to as the investigation areas) based on review of company records, interviews with current and former employees, and review of government agency files. AOC 4 is one of the areas identified in the RFI/RI Volume 1. As shown in Figures 1-1 and 1-2, AOC 4 is located on PG&E property, except for a small portion of the westernmost end which extends onto Havasu National Wildlife Refuge (HNWR).The HNWR is managed by the United States Fish and Wildlife Services (USFWS).

AOC 4 comprises a narrow, steep-sided arroyo that drains into Bat Cave Wash at the southwest corner of the compressor station. Operational history at AOC 4 is not well documented; however, over the years, fill material and debris have been deposited over the northern slope, with some debris accumulating in the bottom of the ravine.

Based on observations made during the recent investigation, there are two primary areas of fill material and debris deposition at AOC 4, which include:

- The western portion of the north side (south-facing slope) of the ravine.
- A smaller area of fill material concentrated at the upper end of a service road in the northeastern portion of the AOC.

The classification of materials identified in the ravine, and their conceptual orientation, are presented on Figure 1-3. The terms and definitions presented for the different material types at AOC 4 are used throughout this work plan.

Constituents of potential concern (COPCs) and Constituents of potential ecological concern (COPECs) for AOC 4 identified in the RFI/RI Volume 1 include Title 22 metals, hexavalent chromium (Cr[VI]), polycyclic aromatic hydrocarbons (PAHs), and asbestos. Subsequent to the RFI, dioxins and polychlorinated biphenyls (PCBs) were identified in additional debris samples from AOC 4.

1.2 Summary of AOC 4 Data Collection

This section summarizes data collection activities at AOC 4 to date. Figure 1-2 shows the sampling locations. Tables 1-1 through 1-8 summarize the analytical results.

1.2.1 Data Collection Activities Prior to June 2009

Prior to June 2009, 69 samples were collected at AOC 4. During Phase I of the RFI/RI (April 1997), 12 soil samples were collected from seven locations within the ravine (DR-1 through DR-7) up to 1 foot below ground surface (bgs). During Phase 3 of the RFI (November 1998), a single sample (WPDR) was collected from the surface of white powdery material present within the ravine.

During the Soil Sampling Part A, Phase 1 (August-October 2008), 56 samples were collected from 45 locations. Samples were analyzed for Title 22 and Contract Laboratory Program metals, Cr(VI), PAHs, semivolatile organic compounds (SVOCs), and volatile organic compounds. A subset of the samples was also analyzed for polychlorinated biphenyls (10 samples), pesticides (10 samples), and asbestos (35 samples). Samples were collected from soil (stained and unstained), white powdery material, burnt material, and wooden debris. In December 2008, at the request of DTSC and DOI, one sample was collected at each of two areas containing burnt material (encountered along the north slope of the AOC 4 and the upper debris area) for dioxins/furans analysis.

Samples were collected by hand or by the use of a long-reach excavator. The steep terrain, rocky soil, and bedrock distribution limited sample locations and sample depths. Many samples were limited to the surface interval only (0 to 0.5 foot bgs) because bedrock is encountered immediately beneath a thin veneer of alluvium/fill. Four trenches were excavated in the upper areas of the northern slope to assess the distribution and thickness of fill material. Sample and trench locations are shown in Figure 1-2.

Due to conditions of steep slopes and loose debris encountered in the field that constrained investigation, the full extent of contaminated fill material and debris is not determined.

1.2.2 Pre-Work Plan Data Collection Activities (Post June 2009)

Pursuant to the DOI's Action Memorandum (DOI, 2009) and prior to the preparation of this AOC 4 TCRA Work Plan, additional data were collected to supplement the existing AOC 4 data set for use in the development of Work Plan elements, including the air monitoring plan, health and safety plan, and approach to removal construction. A summary of the pre-Work Plan data collection activities is provided below:

- Six soil samples (AOC4-D1 through AOC4-D6) from surface/shallow soils (up to 0.5 foot bgs) were collected using hand tools and were analyzed for dioxins/furans (Table 1-8).
- An asbestos survey was performed by State of California-certified asbestos professionals. The survey included a visual inspection of surface materials and debris and collection of surface/shallow soil samples (up to 1 foot bgs) using hand tools for laboratory analysis of asbestos. The results of this survey indicated that asbestos is present in surface debris located across the AOC 4 area but was not detected in soil samples at concentrations greater than 1 percent.
- A survey of slope surface between the two primary fill areas was performed using the field X-ray fluorescence (XRF) analyzer. Soil samples were collected for XRF screening analyses from 17 locations on the north wall of Debris Ravine to further evaluate the extent of metals contamination. Two locations within planned removal areas showed elevated arsenic levels (13 milligrams per kilogram [mg/kg] and 24 mg/kg, respectively) when compared to the target endpoint for this removal (11 mg/kg). The same two locations had the highest XRF chromium concentrations. The XRF does not have a direct reading for Cr(VI); Cr(VI) is detected as part of the chromium reading. The XRF chromium concentrations were less than the target endpoint for chromium (1,400 mg/kg) but greater than the target endpoint for hexavalent chromium (37 mg/kg). All other measured XRF results for target metals were less than their corresponding target endpoints.
- Geotechnical data were collected from four borings (AOC4-GEO1 though –GEO4) installed along the top of the primary fill slope. The scope of the geotechnical investigation did not include evaluation of fill along the slope face and at the bottom of the slope. These data were used to evaluate slope stability to the extent practicable, and to assist with identifying applicable debris and fill removal methods. The evaluation indicated:
  - The top 5 feet of material in each boring was comprised of fill material.
  - A slope of 1H:1V in the native alluvial material is estimated to be stable throughout the slope height of approximately 35 feet.
  - The strength of the fill material was not characterized given the limited number of samples collected from fill and the unknown extent. The stability of fill areas must be assessed during removal activities.
  - Stability of the slope and work platforms for equipment will be evaluated throughout the removal efforts. If work platforms are deemed unstable by the

removal contractor during excavation, additional measures such as further benching into native materials may be necessary to maintain safe site working conditions.

1.3 Objectives and Target Endpoints for AOC 4 TCRA

Section V of DOI's Action Memorandum (DOI, 2009) stated the intent and objectives of the AOC 4 TCRA as follows:

> *"This time-critical removal action is intended to stabilize and mitigate the threat of release of contaminated material and is not intended to be the final remedy for this AOC. DOI has established target endpoint concentration requirements to guide the cleanup of AOC 4. The target endpoint concentrations used to guide the extent of the removal of non-native material (primarily debris and fill material) on PG&E property are the CHHSL or RSLs Industrial levels for metals, PAHs, and dioxins, whichever is more restrictive. The target endpoints for the removal on the Refuge are background levels. For the SVOCs and Dioxins/Furans, no current background level exist, therefore ECVs shall be used for the target endpoint concentration. These target endpoints shall be used to screen non-native debris and fill material for removal and shall not be used for removal of native bedrock and alluvial material."*

In order to comply with the stated intent and objectives of the AOC 4 TCRA, screening of native alluvial material will be based on exceedences of ten times the target end point concentrations. This will reduce the amount of native alluvium to be removed, but will also remove material that may present an imminent and substantial endangerment to public health, or welfare or the environment.

Subsequent to the review of the Draft AOC4 TCRA Work Plan, DOI directed PG&E to add PCBs to the list of compounds with target endpoint concentrations for the removal. The target endpoint concentrations for PCBs are based on the Industrial RSL on PG&E property (note that the toxicity values used in the development of the CHHSL are effectively outdated) and the ECV on the Refuge property (no current background level exist). Table 1-9 presents the target endpoint concentrations to be used in this TCRA.

1.4 Work Plan Organization

The AOC 4 TCRA Work Plan (Work Plan) was prepared by a team of independent PG&E contractors (CH2M HILL, NES, Alisto, and ARCADIS/Turnkey), each has authored specific sections or subsections in accordance with their respective roles on the project.

The Work Plan is organized as follows:

- Section 1.0 presents the project background, AOC 4 data collection activities to date, and the objectives/target endpoints for the removal.
- Section 2.0 presents construction activities and methods as well as air monitoring and screening activities.

- Section 3.0 presents the anticipated approach to removal activities including site preparation, the progression of removal of activities, and post-construction slope stabilization.
- Section 4.0 presents anticipated approvals and authorizations for the Work Plan activities.
- Section 5.0 presents the anticipated project schedule and reporting
- Section 6.0 provides a list of references used during report preparation.
- The appendices are authored by various team members per their respective roles on the project:
  - Appendix A - Health and Safety Plan
  - Appendix B - Air Monitoring Plan
  - Appendix C - Transportation Plan
  - Appendix D - Waste Management Plan
  - Appendix E - Data Quality Plan/Data Quality Objectives
  - Appendix F - Best Management Practices for Run On and Run Off Controls
  - Appendix G – BLM letter dated December 8, 2009

2.0 Construction Activities and Methods

This section presents the activities, methods, and processes that will be used to implement the AOC 4 TCRA Work Plan. The next section, Section 3.0, presents the anticipated progression of work or the planned work approach using the methods in this section. PG&E shall follow strict quality assurance and quality control measures throughout the project to monitor, document, and adjust and record changes to improve the removal process. Inspections and review of the work plans requirements shall be carried out by PG&E and their sub-contractors with frequent and regular documentation and review. Key areas of quality assurance and quality control review will include, but not be limited to health and safety, run-off control, spill prevention, waste handling and transport, air monitoring, and sample collection.

2.1 Pre-construction Activities, Site Access, and Preparation

This section presents activities that will be conducted before intrusive removal actions.

2.1.1 Project Initiation Meeting

Consistent with other phases of work conducted at the Topock site, PG&E will invite agency representatives and other stakeholders (including representatives of Native American Indian tribes involved with the Topock project) to the site for a project initiation meeting. This meeting will be scheduled to occur prior to the start of intrusive removal activities; however, it is anticipated that various site preparation activities will be conducted prior to this meeting. During the meeting, PG&E will present an overview of the activities that will be conducted as part of this Work Plan, discuss various cultural and biological sensitivities associated with the project, introduce key project team members (including subcontractors), identify certifications required for site visitors, describe applicable site safety and communication protocols, and review plans for project communications with the agency and stakeholders during work.

2.1.2 Cultural Values and Materials Training

Per BLM letter dated December 8, 2009 (see Appendix G), training will be provided for equipment operators and others working in the contaminated zone in understanding the cultural resource values associated with this area, what cultural materials to look for, responsibility for immediately reporting suspected cultural materials to monitors, and procedures for suspension of all work in the area of discovery where cultural materials are located. The Tribes will be invited to participate in this training.

2.1.3 Site Access and Demarcation

Prior to the start of work, the AOC 4 work area will be segregated into three primary work zones such that work is conducted in accordance with California Division of Occupational Safety and Health (Cal/OSHA) regulations set forth in Title 8, California Code of Regulations [CCR] Section 5192. This section identifies the estimated location and extent of

the primary exclusion zone, contaminant reduction zone, and support zone, as shown in Figure 2-1. The certifications required for personnel to enter or conduct work within each zone are defined in the site-specific Health and Safety Plan (HASP), presented in Appendix A. In addition, equipment staging and waste management areas, and associated traffic routes are presented in Figure 2-2 and Appendix C, respectively.

2.1.3.1 Equipment Staging Areas

Figure 2-2 presents the areas that will be used for the staging of equipment and clean empty waste containers arriving onsite. In accordance with standard site procedures, all idle powered equipment will be staged over containment devices to prevent the release of leaked fluids to the environment. Creosote bushes will be preserved at all staging areas.

2.1.3.2 Support Zone

The support zone, which includes areas outside the exclusion zones (EZ) and contamination reduction zones (CRZ), will be the most active equipment staging area. The support zone will act as the area for daily planning and health and safety meetings and will function as a communication and coordination center for emergency situations.

PG&E and its contractors will provide an administrative office and support facilities to accommodate the field team. The administrative office will serve as the command center and will be temporarily connected to electricity and telephone services. This command center will allow for direction of site operations, a controlled environment for computer equipment, and will provide a point of contact location. Sanitary facilities will be established in or near the command center.

2.1.3.3 Contamination Reduction Zone

The CRZ will serve as a buffer between the EZ and the support zone to prevent the migration of contaminants outside of the EZ. The CRZ will be composed of the personnel decontamination area(s) and the equipment decontamination area(s) described in Section 2.7. Separate CRZs may be established as determined necessary to access the waste management areas and to minimize traffic through the areas where removal work is occurring. Separate CRZs may also be established for other areas of the site not accessible through the primary CRZ.

2.1.3.4 Exclusion Zone

The EZs will encompass the areas within the proposed limits of the areas where removal work is being performed and the areas where contaminated material handling and staging occurs. The location and extent of the EZs will be continuously adjusted as work progresses and as dictated by field air monitoring results. Criteria for the reconfiguration of the EZs are presented in the HASP.

The EZ will be accessed through the CRZ. Worker personnel requiring access to the EZ must be 40-hour OSHA HAZWOPER certified, must be qualified and trained for the appropriate personal protective equipment (PPE) as determined by the HASP, and must have reviewed the HASP.

The Cal/OSHA HAZWOPER standard located at 8 CCR 5192 (Federal OSHA 29 CFR 1910.120) in section (g) 1 A states that engineering controls and work practices shall be instituted to reduce and maintain employee exposure to or below the PELs of substances regulated by 8 CCR 5155, except to the extent that such controls and practices are not feasible. Work practices which may be feasible include removing all non-essential employees from potential exposure.

Therefore, access to the EZ will be limited to those essential for the safe completion of project goals and donning PPE to enter the EZ will be the last option after the use of engineering controls and administrative controls are evaluated.

2.1.3.5 Waste Management Areas

Waste management areas include all areas where waste is handled before being containerized and staged once containerized. All waste management areas will be considered an EZ unless waste materials are containerized.

Waste loading and handling areas will be established next to the proposed excavation boundary. These areas will be used for transfer and loading of material removed from the excavation, and will allow for segregation and handling of any separate waste streams to be temporarily stockpiled for management. The temporary stockpiling will only be done temporarily to facilitate container loading by a second piece of equipment if the removal equipment cannot efficiently or safely load containers directly. Temporary stockpiling will be done on contaminated material, or on a bermed lined pad if the underlying material is clean. All waste loading and handling will be conducted within the primary EZ. Temporary stockpiles will not remain beyond the duration of a daily work shift.

Based on space restriction in the immediate AOC 4 work area, it will be necessary to construct staging areas for containerized waste outside of the immediate AOC 4 work areas. The trucks used by the waste hauler will be larger than the traffic routes through the compressor station will accommodate. The containerized waste staging areas are expected to be near the entrance to the Topock Compressor Station or elsewhere inside the compressor station. Waste containment vessels will be covered prior to leaving the EZ, and will undergo exterior decontamination through the CRZ prior to being moved to the waste staging area.

A bermed, lined storage area will be constructed for storage of materials that are anticipated to constitute a small portion of the removal volume, such as drums, debris, or other industrial wastes that are discovered during excavation and that differ from approved waste disposal profiles. These wastes will be segregated from the other excavated material and will be stored in appropriate containers as required.

If native alluvium or weathered bedrock are removed temporarily to create safe working conditions (such as for benching and setback) then those materials will be placed in containers, characterized, and managed in a waste handling and storage area. If confirmed to meet target endpoints, these materials will be removed from containers to be used for site restoration.

2.1.4 Aboveground and Underground Feature Survey

A survey of aboveground and underground utilities will be conducted within all work areas prior to beginning site preparation and removal activities. This survey will include, but will not be limited to, the following activities:

- Site-specific reconnaissance, which will include a visual inspection of work areas and review of available site utility plans and 'as-built' documentation.
- Notification to Underground Service Alert or "Dig Alert," which is the on-call notification center that supports the Southern California area.
- Geophysical survey, which will include the primary work area being surveyed using various non-intrusive remote sensing tools to identify underground features.

Prior to intrusive work and as determined necessary, all known or suspected utilities that are identified through the activities above will be exposed by hand or with non-destructive excavation equipment. The appropriate exposure method will be selected in consultation with the owner of the feature (as appropriate) and may be dependent upon the type of feature being investigated.

2.1.5 Water Supply

A water source will be established in the primary work area to provide adequate water resources for use with engineering controls associated with dust control (see Section 2.3), equipment decontamination, and other activities. A temporary storage and distribution system will be established such that the existing Topock Compressor Station water supply can be used for AOC 4 TCRA activities without interfering with compressor station operations. Clean, temporary fresh water storage tanks (estimated capacity of up to 21,000 gallons each) will be staged within the staging areas shown in Figure 2-2. A temporary network of aboveground distribution lines will be employed to convey water to the appropriate work areas, as necessary. A water truck (with associated overhead fill tank) may also be used to convey water to the work areas or along vehicle traffic routes as determined necessary to suppress dust.

2.1.6 Runoff Controls

Appropriate runoff controls and other best management practices will be implemented to meet the substantive requirements of a Storm Water Pollution Prevention Plan. These are described in Appendix F, Best Management Practices for Run-On and Run-Off Controls.

2.2 Removal Methods and Equipment

This section describes the three primary methods that will be employed to remove fill and debris material from AOC 4. These removal methods and associated equipment were chosen based on:

- Steep topography of the work area.
- Limited access for equipment.
- Protection of cultural and sacred Tribal resources.

It is anticipated that a variety of techniques and equipment will be employed at different locations of the site to maintain the safety of site workers and to minimize the overall footprint of the removal action to the extent practicable. As work progresses, site supervisors will observe and evaluate the effectiveness and safety of each removal technique to determine if modifications are required.

2.2.1 Manual Collection and Excavation

Field personnel will work on foot to collect various debris in areas where the use of mechanical equipment would cause unnecessary disturbance of native materials. Typically, materials will be gathered either by hand or with hand tools and will be carried to the loading area for placement in waste containers, as appropriate. Field personnel working on slopes will be secured using OSHA-approved methods and equipment, as detailed in the HASP.

2.2.2 Vacuum Excavation

Vacuum excavation, which is a common technique for removing trench backfill in the vicinity of underground utilities, will allow the field team to delicately remove unconsolidated fill sediments and fine debris in areas where mechanical excavation would cause unnecessary disturbance of native materials.

The typical operation of vacuum excavation at AOC 4 will include a vacuum unit (skid or truck-mounted) staged in the EZ with the vacuum hose deployed to the excavation area. On-foot personnel will deploy and maneuver the hose at the excavation point. During this process, hand or mechanical tools may be required to scrape or agitate the target materials. Vacuum-excavated materials will be drawn through the hose and immediately containerized at the vacuum unit, which will be coupled with a waste container. The vacuum unit will be equipped with high-efficiency particulate air (HEPA) filters to minimize release of fugitive dust. In addition, a separate "bag house" dust filtration system will be connected to the vacuum unit exhaust outlet to function as a second-stage filter to supplement the HEPA filtration.

2.2.3 Mechanical Excavation and Material Management

Mechanical excavation will be the primary removal method. Mechanical excavation will be conducted using precise equipment and methods and in a manner that minimizes disturbance to native material underlying the target fill and debris. Two types of mechanical excavation that may be used during AOC 4 TCRA work, standard and long reach equipment, as well as hoisting methods are presented in the following subsections.

2.2.3.1 Excavation Equipment

Standard-reach and long-reach excavators will be employed where practical to perform most or all mechanical removal from work areas above AOC 4 slopes. At least one long-stick excavator, equipped with an extended boom providing a reach up to 65 feet, will be employed. The excavator chassis will be a Caterpillar 330 (or equivalent, depending on availability, indicating a chassis weight of approximately 70,000 pounds [32,000 kilograms]). To prevent tipping during maximum reach, this excavator will be limited to approximately 1 cubic yard capacity bucket. It is anticipated that the long-reach unit will be limited to the

upper scarp of the ravine and in Sub-Area C Plateau of Primary Slope. Additional smaller excavators will also be employed in specific Sub-Areas. A Caterpillar 320 or equivalent (42,000 pounds (19,000 kilograms) may be employed on an excavated temporary bench placed approximately midway down the slope. A smaller excavator (Caterpillar 312 or equivalent (26,000 pounds/12,000 kilograms) may be positioned at the bottom of the ravine (Sub-area E). See Section 3.2 for a description of how excavation equipment will be used in each sub-area. During excavation work, the excavators will rotate their buckets over the area of in-place material to prevent spreading contaminated material back over the area that has been excavated.

Due to the tight confines of the loading area, it is unlikely that long-stick units will be able to directly load into trucks or bins. See Figure 2-1 for the proposed vicinity of the loading area. Consequently, a smaller tracked or wheeled loader will operate in the loading area to place materials deposited at this site into waiting containers. Due to the limited space in the working area, filled trucks or bins will be immediately moved from the loading area through the CRZ to a waste staging area or if characterization is sufficient, the trucks will proceed directly to the designated disposal facility.

The loading area will also act as the location for routine equipment maintenance at the end of each shift. Equipment will be fueled, greased, etc. at the end of each work shift. Most of the equipment will be parked on this level surface at the end of the shift.

2.2.3.2 Hoisting and Winching

Hoisting and winching will generally be limited to maneuvering heavy equipment and large tools up and down the slopes to the various work areas. A winch dozer with a cable drum attached to the back will be employed to perform this function. The dozer will be positioned a safe distance away from the slope scarp, directly above the location where the equipment is to be placed. The equipment will be lowered directly down the slope. A spotter will be positioned at the head scarp to observe the progress of the equipment being lowered and to ensure the area below the equipment remains unoccupied. The spotter and operator of the cable drum will remain in continuous visual and verbal contact while the equipment is being lowered.

Winching of large debris up slope will generally be avoided in favor of removal by hoisting large debris as a crane pick or reducing the size of large debris for excavator removal. Should a crane be needed to extract any debris or other equipment from the ravine bottom (Sub-areas E and F), that work would be performed as a separately scheduled event. Debris/equipment determined to need removal by crane will be either left in place or will be moved to a location that will be accessible. The materials designated to be removed by the crane will be marked with spray paint to indicate special handling is required to minimize the number of crane mobilizations.

A crane with sufficient reach and load capacity (as determined by the Lifting Plan that will be prepared in advance of procuring the crane) will be mobilized to the site. The crane will only be operated by the licensed crane operator assigned to the machine. Prior to operating, the crane will undergo a safety inspection by the Site Superintendent and Site Safety Officer (SSO). The Lifting Plan will be reviewed by the Site Superintendent, the SSO, the Crane

Operator, and the Construction Manager. The crane will be removed from the site following the completion of moving all indicated items to the designated loading/handling area.

2.3 Dust Control

Engineering controls for the abatement of airborne particles during removal activities will be strictly applied. This section presents the primary types of engineering controls that will be employed to control dust given the variety of material types that will be encountered and the variety of removal methods that may be implemented.

2.3.1 Vacuum

To prevent the escape of effluent dust from vacuum collection systems, a second-stage HEPA filter or "bag house" portable dust collection system with filter specifications appropriate to the removal contractors approved HASP will be used to provide additional filtering of the effluent from the vacuum truck.

2.3.2 Wetting

Ground surface and targeted wetting will be the primary dust suppression method during removal activities. The spray can be applied by either equipment (e.g., a water truck) or hand-held hose lines. Typically, water is applied at the minimum amount needed to moisten the ground surface and to prevent dust lifting into the air such that excess runoff is not generated. Water may be applied as a pre-wetting step in addition to use during removal and excavation activities. Hand-held hose lines with high-pressure emitters will be used to emit a mist or fog for suppression of dust from mechanical removal activities.

A water truck will be used in the loading area and on haul roads at the perimeter of the site and where trucks enter and exit the edge of the EZ. Water used for dust suppression will come from the Topock Compressor Station water supply system.

Water application rates will be optimized to the greatest practical extent while still maintaining dust control but reducing run off from affected material. BMPs will be establish prior to the removal action in order to minimize the transport of excess dust suppression water and minimize transport of contamination.

Application of dust suppression water will be closely monitored to minimize ponding or run-off. If needed, additional run-off control measures (including waddles, temporary berms, and/or silt fencing) will be employed.

2.3.3 Application of Commercial Dust Control Products

Surface application of commercial dust control products will be used to provide dust control where removal is either temporarily halted or completed. These are typically polymer- or guar-based slurries. Products selected for the project will be environmentally low-impact, organic-based stabilization materials, such as Soil-Tac or similar products. Potentially a surfactant (wetting agent) will be mixed with water in some dust control applications to improve water penetration below the surface.

2.4 Air Monitoring

Air monitoring is required to assess the concentrations of airborne contaminants, if any, at various locations within the site. The results of the air monitoring will dictate actions such as levels of PPE in the EZ, location of EZ boundaries, and identification of the requirements for additional dust control measures, depending on the location of the sample collection. Baseline monitoring will be conducted prior the start of excavation. During the excavation, samples will be collected to assess conditions at the EZ boundary, and property line samples will be collected to assess conditions at the property boundary. Contractors will perform personal air monitoring of their employees to assess the adequacy of the level of protection being used.

Samples will be collected and analyzed for the following compounds:

- Cr(VI)
- Asbestos
- Dioxin/furans
- Polychlorinated biphenyls
- Pentachlorophenol
- Lead
- Total dust

Samples will be collected using air pumps and appropriate media for each sample per the approved method. The volume of air collected will be adequate to achieve a limit of detection at or below the action levels specified in the Air Monitoring Plan. If measured concentrations are greater than the specified action levels, actions such as increased dust control will be implemented per the Air Monitoring Plan.

The detailed Air Monitoring Plan is attached to this work plan as Appendix B.

2.4.1 Baseline Monitoring

Prior to the start of any excavation activity, a series of baseline air monitoring at the likely Exclusion Zone boundary and at the property line will be performed. The purpose of this monitoring is to establish airborne concentrations of contaminants prior to the excavation activities. Additionally, a meteorological station will be used at this point and throughout the excavation to assist in locating sample collection points. Meteorological data and baseline monitoring will also be used to establish an action level for wind velocity. If the wind exceeds this predetermined velocity, excavation activities will cease until winds are calmer and within the action level. Generally speaking, three samples will be collected downwind of the EZ and one upwind for each contaminant. A blank sample will be submitted daily for each sample type.

2.4.2 Perimeter Monitoring

Perimeter monitoring will be conducted at the property line to assess whether airborne contaminants are leaving the PG&E property. Three samples will be collected downwind of the excavation and one upwind for each contaminant based on data from the meteorological station. Action levels for perimeter monitoring will be based on human health risk assessment data such as reference exposure levels published by the California Office of

Environmental Health Hazard Assessment. These are concentrations of a contaminant, below which there are no known health effects.

2.4.3 Exclusion Zone Monitoring

Exclusion zone monitoring will be conducted at the EZ boundary to assess the concentrations, if any, of airborne contaminants at the boundary. Three samples will be collected downwind of the excavation and one upwind for each contaminant based on data from the meteorological station. Action levels for EZ monitoring will be based on Cal/OSHA permissible exposure limits (PELs). The PELs are the 8-hour time-weighted average concentration of airborne contaminants that a worker may be exposed to over a work shift without any respiratory protection. Access to the EZ will be limited to those essential for the safe completion of project goals and donning PPE to enter the EZ will be the last option after the use of engineering controls and administrative controls are evaluated.

If airborne concentrations exceed Cal/OSHA PELs at the EZ boundary, additional dust control measures will be implemented, or the EZ boundary may be expanded.

Direct reading instrumentation for total particulates will be used as a screening tool to estimate anticipated amounts of specific compounds. These data can be used to adjust the EZ boundary, if necessary.

2.4.4 Personal Monitoring

Contractors will perform personal monitoring within the exclusion zone to assess the exposure of airborne contaminants to their workers. Action levels for EZ monitoring will be based on PELs.

If airborne concentrations exceed Cal/OSHA PELs in the EZ, actions taken will depend on the level of respiratory protection being utilized at the time. For example, if workers are in Level D PPE, no respiratory protection is being used and the PEL itself is the action level. Actions taken if the PEL is exceeded may include an upgrade to Level C PPE where respiratory protection is required. Alternatively, additional dust control measures may be implemented, to reduce the concentrations of airborne contaminants.

If Level C PPE is being used, which includes a half-face air-purifying respirator, the action level in the EZ is 10 times the PEL, as the respirator provides a protection factor of 10. If the airborne concentrations of contaminants exceed 10 times the PEL, the SSO may require personnel to upgrade to a full-face air-purifying respirator, with a protection factor of 50, or upgrade to Level B PPE, which requires air-supplied respiratory protection with a much higher protection factor.

Direct reading instrumentation for total dust will be used as a screening tool to estimate anticipated amounts of specific compounds. These data can be used to modify the level of PPE protection, if necessary.

2.5 Waste Management

Waste management at this site will be handled as a site-specific guidance for the management of investigation- and remediation-derived waste at the AOC 4, Pacific Gas and

Electric Company Topock Compressor Station, Needles, California. Waste management is intended to provide procedures for the proper collection, storage, characterization, transportation, and disposal of waste generated during remediation activities at the Site. The objective of the waste management is to specify procedures for safe handling of waste materials generated during the removal action that are protective of human health and the environment within the framework of appropriate federal, state, and local requirements, and consistent with United States Environmental Protection Agency (USEPA) guidance.

The AOC 4 removal activities that will likely generate waste that will need to be managed include the removal activities and associated investigation of the vertical and lateral extent of contamination at the site and decontamination of equipment and vehicles. These AOC 4 removal activities will generate a variety of wastes that are expected to include:

- Debris and fill material, including wood, metal (cans, machine parts, rebar, etc.), concrete, broken transite (asbestos-containing materials [ACM]) panels, burned debris, and white powder.
- Stained and or contaminated alluvium or ash.
- Decontamination waste, used PPE, and refuse.

The waste management portion of the project is discussed in more detail in the Waste Management Plan Appendix D, as well as in the Transportation Plan Appendix C. These appendices include discussions of waste management through the process of segregation, profiling, transportation, and disposal.

2.6 Sample Collection, Screening, and Confirmation Analysis

This section presents the approach to soil sample collection, screening, and confirmation analysis during removal activities. The extent of removal activities will be guided by a phased approach to screening and confirmation laboratory analysis. Screening-level and confirmation-level data obtained during this process will be compared to the target endpoint concentrations established by DOI to guide the removal of non-native fill material and debris at AOC 4. These target endpoint concentrations, which are presented in the Action Memorandum as well as Table 1-9 of this work plan, were not developed through a site-specific risk assessment. While every effort will be made to achieve the target endpoints specified for this removal action, these are goals for this interim measure only and are not cleanup goals for a final remedy for AOC 4.

Data quality objectives (DQOs) for screening-level and confirmation sample collection have been developed for this TCRA and are presented in Appendix E - Data Quality Plan/Data Quality Objectives. These DQOs are specific to this TCRA, and were developed to ensure that data collected during the TCRA are of sufficient quantity and quality to enable the decisions of the TCRA to be made, specifically: *remove material until target end point concentrations have been achieved*. Table E-1 provides details of the seven-step DQO process for this TCRA.

A diagram of the decision process (Step 5 of the DQOs) for the screening and confirmation analysis of material encountered during removal is presented in Figure 2-3. The general approach presented in Figure 2-3 is summarized as follows:

1. The area will be initially examined for evidence of debris or fill material. Removal of materials in a given area will continue until visual examination indicates that fill and debris have been removed. If bedrock is encountered, the removal in that area will be complete.

2. Once an area is clear of debris or fill material, a soil sample will be collected for subsequent screening and confirmation laboratory analysis. Sample collection methods are described below.

3. A portion of the sample will then be segregated for field chemical screening of metals. If screening-level results indicate metal concentrations exceed target endpoint concentrations, then removal will continue unless further removal is deemed unsafe. If native alluvial material has been encountered, and screening level results are greater than 10 times the target end points, then removal of native alluvial material will continue, unless further removal is deemed unsafe. At anytime during the TCRA, if continued removal is deemed unsafe, work will stop in that area and DOI will be consulted.

4. When screening-level results indicate metal concentrations are below target endpoint concentrations, or less than 10 times if in an area where native alluvium has been encountered, a portion of the sample will then be segregated for screening-level laboratory analysis for the following organic compounds: PAHs, pentachlorophenol, PCBs, and dioxins/furans. If screening-level laboratory results indicate organic compound concentrations exceed target endpoint concentrations, then removal will continue unless further removal is deemed unsafe. If native alluvial material has been encountered, and screening level results are greater than 10 times the target end points, then removal of native alluvial material will continue, unless further removal is deemed unsafe.

5. When screening-level laboratory results indicate organic compound concentrations are below target endpoints, a portion of the sample will then be segregated for confirmation laboratory analysis of all organic and inorganic compounds for which target endpoint concentrations have been established. If confirmation results indicate metal concentrations exceed target endpoint concentrations, then removal will continue unless further removal is deemed unsafe. If native alluvial material has been encountered, and screening level results are greater than 10 times the target end points, then removal of native alluvial material will continue, unless further removal is deemed unsafe.

6. Removal is complete when target end points for all COPCs and COPECs have been achieved or bedrock is encountered.

If additional removal activities are required for a given area based on the process above, the screening process will re-start with the collection of a new soil sample from the freshly exposed surface. Additional details associated with this process are provided in the following subsections.

2.6.1 Sample Collection

During removal activities, a grid of approximately 25-foot spacing (plan view) will be established. Figure 2-4 presents an example sampling grid developed with this conceptual approach. Once an area is clear of debris or fill material, a surface soil sample for the given grid unit will be collected for subsequent screening and confirmation analysis, as appropriate. Enough volume will be collected from each grid point to allow for analysis of all screening and confirmation samples from each grid point. Discrete samples will be collected from the approximate center point of each grid cell to characterize the entire cell. If a grid cell contains both alluvium and bedrock, samples will be collected from the center of the alluvium. Sample collection will be performed in accordance with *SOP-B14 Standard Operating Procedures for Sample Collection.* After collection, the sample will be homogenized in accordance with SOP-B7, *Homogenization of Sediment and Soil Samples*. The sample preparation will be performed in appropriate PPE at a dedicated workstation set up within the exclusion zone. Sample container exteriors will be decontaminated before leaving the exclusion zone. Actual sample locations will be recorded and documented in the AOC Time Critical Removal Action Completion Report.

2.6.2 Screening-level Analysis of Soil Samples

Screening-level analysis of soil samples for metals and organic compounds will be conducted using field methods and modified laboratory analytical procedures, respectively.

2.6.2.1 Field Analysis for Metals

Soil samples will be analyzed for metals in the field using the XRF analyzer or equivalent. All XRF analyses will be performed in accordance SOP-B16, *Field-portable X-Ray Fluorescence Soil Sampling*. Figure 2-4 is the proposed sampling grid. Corrected XRF results will be compared to target endpoint concentrations on Table 1-9 on a point by point basis see Appendix E - the Data Quality Plan/Data Quality Objectives, for explanation of the XRF data correction process). If target endpoint concentrations are exceeded, removal of fill material will continue in the area(s) where the exceedances occur. If native alluvium has been encountered and field screening results for metals are greater than 10 times the target end points then removal will continue.

If field screening results for metals are below target endpoints (or below 10 times target endpoint concentrations if in native alluvial material), then a portion of the soil sample will be submitted to the laboratory for screening-level analysis of organics.

2.6.2.2 Laboratory Analysis for Organics

Field screening methods for PAHs, pentachlorophenol, PCBs, dioxins/furans are not accurate or consistent, and often provide reporting levels greater than the target endpoint concentrations established for this TCRA; therefore, laboratory screening will be performed instead. A modified SW8270SIM method will be used to analyze PAHs and pentachlorophenol, a modified SW8082 will be used to analyze PCBs, and a modified SW8290 method will be used to analyze dioxins/furans. The modified laboratory screening methods will provide quick results (24 hour turn-around-time for PAHs, PCBs, and pentachlorophenol, and 48 hour turn-around-time for dioxins/furans) and reporting limits will be below the target end point concentrations for these compounds.

The results of screening-level laboratory analyses will be compared to target endpoint concentrations. Initially, the comparison of these data will be done on a point-by-point basis. If results are above target endpoint concentrations for PAHs (calculated as benzo (a) pyrene equivalent), pentachlorophenol, PCBs, or dioxins/furans, removal of fill will continue for the given area.

If laboratory screening results are above target endpoint concentrations on a point-by-point basis, and if eight to ten samples have been analyzed, then area-wide average concentrations may be calculated as the 95th percent upper confidence limit of the mean, using ProUCL Version 4.0 software (USEPA, 2007). If area-wide average concentrations are above the target endpoint concentrations then removal will continue for the given area.

If native alluvium has been encountered and screening results for organics are above 10 times the target endpoint concentrations, then removal will continue for the given area. If laboratory screening concentrations are below target endpoint concentrations, (or below 10 times target end point concentrations if in native alluvial material), then removal will stop for the given area and confirmation laboratory analysis will be performed (see Section 2.6.3).

2.6.3 Confirmation Analysis

Once the results of screening-level analyses are below target endpoint concentrations, confirmation laboratory analysis will commence. Interim dust control and erosion control measures following procedures described in Section 2.3.3 and Appendix F will be employed to stabilize areas where excavation is paused pending confirmation analysis results. Confirmation analysis will follow standard method protocols and will be validated according to the *PG&E Program Quality Assurance Project Plan, Revision* 1 (CH2M HILL, 2008a), *Addendum to PG&E Program Quality Assurance Project Plan for the RCRA Facility Investigation/Remedial Investigation* (CH2M HILL, 2008b) and any current revisions.

The confirmation analyses are shown in Table 2-1 and will include:

- Metals:
  - SW-6010B – Antimony, Arsenic, Barium, Chromium, Cobalt, Copper, Lead, Molybdenum, Nickel, Selenium, Vanadium, Zinc
  - SW-7471A – Mercury
  - SW-7199/SW-3060A – Cr(VI)
- Semivolatile Organic Compounds via 8270SIM: PAHs – (expressed as benzo(a)pyrene toxic equivalents) and pentachlorophenol,
- PCBs via SW8082 (aroclors or congeners)
- Dioxins/furans via SW-8290 - (expressed as tetrachlorodibenzo-p-dioxin toxic equivalents)
- Samples for asbestos will also be collected and analyzed via CARB435, following final excavation. Asbestos is not part of the time-critical removal action and will not be evaluated as an action goal.

The results of confirmation laboratory analysis of soil samples will be compared to target endpoint concentrations. Initially, the comparison will be done on a point-by-point basis. If confirmation results are below the target endpoint concentrations, then no further removal is necessary for the given area. If confirmation results are above target endpoint concentrations, then an area-wide average concentration will be calculated as the 95th percent upper confidence limit of the mean, using ProUCL Version 4.0 software (USEPA, 2007). If area-wide average concentrations are below target endpoint concentrations, then no further removal is necessary. If area-wide average concentrations are above the target endpoint concentration, then removal of fill will continue for the areas of the elevated concentrations.

If native alluvium has been encountered and screening confirmation sample results are above 10 times the target endpoint concentrations, then removal will continue.

If confirmation sample results are below target endpoint concentrations (or below 10 times target end point concentrations if in native alluvial material), then the removal action is complete.

2.7 Decontamination

2.7.1 Equipment Decontamination Facility

A portable equipment decontamination facility will be constructed to properly decontaminate equipment by mechanical means as well as with the use of high-pressure, low-volume hot water when necessary. Equipment that has entered the EZ and has been affected by contaminated materials will be decontaminated when exiting the EZ. An inspection record of equipment entering and exiting the EZ will be maintained onsite.

Decontamination rinse water will be captured and routed to temporary storage tanks and will be managed in accordance with applicable regulations. Sediments collected from the decontamination facility will be transferred to the waste management area and will be combined with the appropriate waste stream.

The equipment decontamination facility will be located in the CRZ. Figure 2-1 shows the designated work zones.

2.7.2 Personnel Decontamination Facility

The personnel decontamination area will provide the facilities for personnel and visitors to don and doff their PPE as they enter and exit the EZ. The decontamination area will have an entrance from the support zone where personnel will remove and store their clean street clothing and personal items and don clean PPE. An entrance to and from the EZ will be located at the opposite end of the decontamination area, where personnel will remove their PPE as they exit the remediation area. The personnel decontamination facility will be equipped with potable water, emergency shower, sanitary facilities, boot wash and boot rack, and appropriate storage facilities for spent PPE to be disposed.

Decontamination rinse water will be captured and routed to temporary storage tanks and will be managed in accordance with applicable regulations. Sediments collected from the

decontamination facility will be transferred to the waste management area and will be combined with the appropriate waste stream.

The personnel decontamination facilities will be located in the CRZs.

2.8 Health and Safety Approach

The health and safety of PG&E personnel, contractors, observers, and visitors is of the utmost importance on this project. No task will be performed that cannot be performed safely. This will be accomplished by the preparation and implementation of site-specific HASPs. The HASP in Appendix A is a guide and will not take precedence over contractor's site-specific HASPs prepared for implementation of this work plan.

The purpose of the HASP is to provide a basic framework for the safe handling and removal of chemically affected soil in areas AOC 4. The procedures contained in this plan will apply to all contractors, subcontractors, and visitors to the site. PG&E will provide a project HASP. Each contractor will be required to prepare and submit for acceptance a site-specific HASP that addresses their operations on this project.

All PG&E personnel, visitors, and observers entering the EZ will be required to read and sign a signature sheet, acknowledging that they have read, understood, and will comply with the provisions of the project HASP. Contractor personnel will be required to acknowledge understanding and conformance with their HASP.

The Cal/OSHA HAZWOPER standard located at 8 CCR 5192 (Federal OSHA 29 CFR 1910.120) in section (g) 1 A states that engineering controls and work practices shall be instituted to reduce and maintain employee exposure to or below the PELs of substances regulated by 8 CCR 5155, except to the extent that such controls and practices are not feasible. Work practices which may be feasible include removing all non-essential employees from potential exposure.

The designated Project Safety Officer (PSO) will coordinate aspects of the site health and safety activities under the direction of the Project Manager. The PSO will be responsible for the overall health and safety of PG&E and visitors and observers assigned to the project and for advising each subcontractor of the potential hazards and the minimum general requirements of the HASP. Specific site duties will include, but will not be limited to:

- Reviewing and accepting contractor for conformance with the project HASP (Appendix A).
- Providing guidance to contractors regarding air monitoring.
- Notifying the proper response agency in the event of an emergency.
- Leading investigations of any health and safety-related incidents that may occur on the project.

Each contractor onsite must have a Site Safety Officer (SSO). The SSO will be responsible for the implementation of their site-specific HASP. The SSO will be responsible for providing field supervision, establishing and maintaining restricted work areas, enforcing safe work and hygiene practices, requiring proper use of PPE, and communicating approved modified

safety requirements to site personnel. Specific site duties will include, but will not be limited to:

- Conducting health and safety field meetings.
- Conducting daily safety inspections.
- Maintaining a first-aid kit.
- Providing first aid as necessary.
- Conducting site-specific employee training and information sessions.
- Conducting air monitoring as directed.
- Completing the necessary recordkeeping.
- Maintaining, inspecting, and controlling an adequate inventory of safety equipment at the site.
- Monitoring any site decontamination procedures.

Contractors will also be required to submit a detailed Job Safety Analysis on each method.

Site visitors and observers will be required to comply with the provisions of this HASP, including training, PPE, and decontamination requirements. Every effort will be made to provide a safe area from which to observe site activities; however, the safety of the visitors, observers, PG&E, and contractor personnel is the primary concern, and visitors and observers must comply with direction from the PSO or contractor SSO whenever there is a safety concern on the site.

3.0 Anticipated Progression of Work

This section presents details associated with the initial approach to the implementation of the AOC 4 TCRA using the various methods and equipment presented in Section 2.0. The details provided in this section are meant to present the best approach based on the current understanding of the site. However, because the nature and extent of fill material and debris has not been fully characterized at AOC 4, it may be necessary to modify this approach during the removal action as additional data are collected. Regardless of modification to the approach, only methods, equipment, and processes identified in Section 2.0 will be used. The initial work approach is divided into three primary phases: site preparation, removal activities, and post-work slope stabilization. To facilitate the presentation of the initial work approach, the site is subdivided into technical sub-areas, shown in Figure 3-1.

3.1 Site Preparation

Site preparation will involve a variety of activities conducted before the removal of fill and debris begins. Pre-mobilization activities will include, but are not limited to, the following activities, which are expected to begin in December 2009 and to continue through the beginning of removal activities:

- Initiation of baseline perimeter air monitoring.
- Pre-construction biological survey (see Section 4.0).
- Implementation of aboveground and underground feature survey.
- Preparation of approved staging areas.
- Preparation of temporary water supply system.
- Mobilization of waste bin transfer truck and the staging of clean, empty bins to be used for waste management and disposal.
- Mobilization and staging of field command trailer, contractor tool trailer, and other support equipment.
- Mobilization and initial setup of signs and barriers, as defined in the Transportation Plan (Appendix C).
- Mobilization of excavation equipment.
- Dust control for fugitive dust associated with the mobilization of equipment using unpaved roads.

3.2 Removal Activities

This section presents the initial approach to removal activities, including discussion of equipment types and removal techniques presented in Section 2.2. The approach is divided into sub-areas which have been identified based on a variety of considerations including:

- Anticipated waste types and contaminants that may be encountered.
- Area accessibility as determined by site topography and removal of material from other sub-areas.
- Cultural sensitivity considerations associated with minimizing the overall footprint of the removal activities.

Prior to beginning removal activities at the site, runon and runoff controls will be installed. Two temporary check dams will be constructed within the drainage channel itself using a combination of hay bales, wire reinforced silt fencing, rock and other erosion control methods. The first check dam will be constructed at the upgradient side of the drainage near the southeast border of planned removal activities as shown on Figure 3-1. This check dam will act to help divert water from precipitation events flowing toward work areas of the site. A temporary pipeline will be constructed at the upgradient low point of this check dam and will be used to convey collected waters from upgradient sources by gravity flow through closed pipe to the downstream end of the work area. This flexible pipeline will follow the bottom of the ravine which will allow temporary removal in the work is being conducted. The pipeline will be reinstalled at the end of work shifts. In the event that a greater volume of runon water from precipitation events are experienced, a pump will be utilized to provide sufficient capacity to convey water around the current work areas.

Additionally, other pre-planned preventive measures may be taken before storms, such as re-applying soil stabilizer to the work area. The second check dam will be constructed at the northwest end (downstream) of the drainage. The flexible pipeline used in the upgradient check dam will discharge below the downstream check dam which is shown in Figure 3-1. This downstream dam will serve as a settling and filtration barrier to slow runoff leaving the site and to reduce the potential for sediment migrating offsite.

Prior to the installation of runoff controls and the implementation of removal activities and potentially concurrent with some site preparation activities, PG&E will organize the project initiation meeting at the site to meet with subcontractors, agency representatives, and other stakeholders. In general, the removal of fill material and debris will begin at the upper elevation of the ravine slope and will progress from the southeast (upstream) to the northwest (downstream), as practicable. The approach presented may be modified in the field as deemed necessary to maintain worker safety or achieve various other project goals.

To the extent possible, removed material will be directly loaded into covered bins. As each bin is filled, it will be covered and then moved to the waste staging area. A clean, empty bin will then be positioned within reach of the excavator.

3.2.1 Sub-area A (Eastern Slope and Burned Area)

Sub-area A is accessible at the upslope boundary (north side) via an unimproved track. The area is on a steep slope primarily comprised of bedrock outcrop, which limits heavy equipment access onto the site. Material targeted for removal consists of fill and debris (large debris, rock, and ACM) directly overlying bedrock and, in limited areas, disturbed alluvium and/or native alluvium. The majority of material targeted for removal within this sub-area will be removed down to the bedrock surface with no screening or confirmation sampling of the final excavation surface. Where disturbed alluvium and native alluvium remains after material removal, screening and confirmation samples will be collected from the excavation surface.

Anticipated remediation methods at this location include hand removal and vacuum excavation. ACM materials will be collected by hand and carried up to segregated roll-off bins designated for these materials.

After removal of the ACM, the soils will be primarily excavated using vacuum extraction. An excavator positioned at the north end of the site should be able to assist by loosening soils with the toothed edge of the bucket. Other oversized debris that needs to be removed will be broken into manageable pieces with mechanical equipment and then removed by hand or with the excavator.

3.2.2 Sub-area B (Upper Portion of Primary Slope)

This sub-area has moderate slope and is readily accessible from the road and designated loading area. Material targeted for removal consists of fill and debris similar to that described for Sub-area A, overlying disturbed alluvium and/or native alluvium and/or bedrock. Fill and debris directly overlying bedrock will be removed down to the bedrock surface with no screening or confirmation sampling of the final excavation surface. Where disturbed alluvium and/or native alluvium remains after material removal, screening and confirmation samples will be collected from the excavation surface.

The initial excavation approach for this area will be to excavate using standard mechanical equipment. Generally, an excavator will start from the highest portion of Sub-area B at the north end and will work downslope, moving toward the south until the fill above Sub-area C is pulled back to a safe slope. This excavator will load material directly into bins staged at the loading area behind (away from the slope).

3.2.3 Sub-area C (Plateau of Primary Slope)

This sub-area has moderate slope and is readily accessible from the road and designated loading area. Material targeted for removal consists of fill and debris overlying disturbed alluvium and/or native alluvium and/or bedrock. Fill and debris directly overlying bedrock will be removed down to the bedrock surface with no screening or confirmation sampling of the final excavation surface. Where disturbed alluvium and/or native alluvium remains after material removal, screening and confirmation samples will be collected from the excavation surface.

The initial approach will be excavation using standard reach mechanical equipment. Generally, an excavator will start from the highest portion of Sub-area C at the southeast

end and will work as far as it can reach downslope, moving toward the northwest (down drainage). This excavator will load material directly into bins staged at the loading area behind (away from the slope).

Once the standard excavator has progressed to the practical extent of its reach on the slope face, it will be replaced with the long-stick excavator. This unit will continue to excavate Sub-area C and also extend downslope into Sub-area D. As the excavator attains its maximum reach from the top of the slope, it will level off the top of the remaining, in-place soils creating a "bench" for the next piece of equipment to begin work.

3.2.4 Sub-area D (Lower Portion of Primary Slope)

Material targeted for removal consists of fill and debris overlying disturbed alluvium and/or native alluvium and/or bedrock. Fill and debris directly overlying bedrock will be removed down to the bedrock surface with no screening or confirmation sampling of the final excavation surface. Where disturbed alluvium and/or native alluvium remains after material removal, screening and confirmation samples will be collected from the excavation surface.

Excavation will proceed from the upper slope area, starting from the southeast quadrant and advance along the axis of the drainage channel toward the northwest quadrant. Debris in this area will initially be accessed by equipment working from the upper slope (Sub-area C). A long-reach excavator, having a reach of up to 65 feet, will begin excavation in Sub-area D. The excavator chassis will be a Caterpillar 330 (or equivalent, depending on availability). To prevent tipping during maximum reach, this excavator will be limited to using approximately 1 cubic yard bucket. It is expected that this excavator will be able to reach to the toe of Sub-area D and to Sub-area E.

3.2.5 Sub-area E (Ravine Bottom)

The ravine bottom is a very narrow area with very limited access from a few locations. Sub-area E consists primarily of fill and debris and/or disturbed alluvium and/or native alluvium deposited over bedrock. Fill and debris directly overlying bedrock will be removed down to the bedrock surface with no screening or confirmation sampling of the final excavation surface. Where disturbed alluvium and/or native alluvium remains after material removal, screening and confirmation samples will be collected from the excavation surface.

Work will progress in this sub-area using a similar concept to Sub-area D. A small, tracked excavator, Caterpillar 312 (26,000 pounds/12,000 kilogram weight machine) or equivalent, will access the ravine bottom via the more gradual southeastern slope. Once in the bottom of the ravine the machine will advance downstream collecting material and moving the material along with the excavator.

At locations where larger excavators positioned up-slope can reach the ravine bottom, the smaller excavator will deposit all the material it has collected. The materials will then be transferred up to the loading area bins by the other excavators. To minimize the potential for re-contaminating ground surfaces that have already been remediated, the small excavator will collect and stockpile materials in advance of the upslope work that is

progressing from southeast to northwest so the units lifting the ravine bottom materials can continue the pattern of rotating over areas that have not yet been excavated.

After the Caterpillar 312 reaches the furthest extent practical on the northwest end of the ravine, it will return to the southeastern reach and track back up to the top of the slope. Should weather reports indicate significant potential rainfall, equipment will be removed upslope, out of the lower part of the channel until the weather clears.

3.2.6 Sub-area F (Ravine Bottom, Unsafe Access)

Sub-area F is a narrow drainage at the western end of the site and includes the portion of the ravine west of primary fill and debris areas and the area where the ravine meets Bat Cave Wash. The ravine bottom is a very narrow area with very limited access. Sub-area F consists of fill and debris and/or disturbed alluvium and/or native alluvium deposited over bedrock. Weathered, extensively fractured, extrusive volcanic rock comprises the southern slope and semi-consolidated conglomerate is present on the northern slope. The conglomerate face is near vertical and has been under cut at the base by stream erosion. Recent field observations of Sub-area F (September 2009) indicate that the location of the identified debris and contaminants in this drainage are generally directly under the vertical face and undercut of the conglomerate. Observations at the face of the conglomerate indicate desiccation cracks and loose exposed large cobbles and boulders.

This portion of the ravine is not accessible by equipment, and many sections of the ravine in Sub-area F are not safe to be occupied by personnel. Accessing much of the debris and fill in this sub-area is considered impractical due to safety issues. The narrow, sinuous nature of the channel prevents heavy equipment from reaching into this section of the drainage from any direction without extensively excavating the adjacent slopes. The unstable condition of the conglomerate prevents safe access by field labor due to the high potential of sloughing from the vertical conglomerate face or large individual cobbles working loose due to vibration. Where safe and practical (primarily at the ends of Sub-Area), limited removal and sampling of fill and debris will be performed using the excavator to reach into unsafe areas.

Given the physical conditions of this location, it is recommended that the materials indentified in Sub-Area F be left in place during this interim remediation. It is also recommended that a rock gabion or similar runoff control be installed in the ravine outfall to Bat Cave Wash downstream of Sub-area F at the start of AOC 4 work activities. The gabion will be located downstream from the two temporary check dams described in Section 3.1 and shown on Figure 3-1. The upstream controls (temporary check dams) will limit runoff velocities into Sub-area F, and the downstream control will limit sediment transport out of Sub-area F. The gabion will be cobble-filled wire baskets lined with filter fabric. The gabion will act as a sediment filter and will retain any debris that is washed out of the drainage during seasonal rains. Final placement of the gabion, and appropriate longer term maintenance procedures, will be developed and mutually agreed upon by the Refuge Manager and PG&E. During placement of the gabion, soil samples for confirmation analyses will be collected remotely from these locations as practical, using an excavator bucket. Any materials removed during the sampling or during local site leveling for the gabion installation will be placed into a roll-off bin and managed similarly to other excavated materials. Runoff flows that result in temporary ponding above the gabion could deposit sand, silt and debris above the gabion. During removal activities, post-rainfall

inspection and cleanout of debris or fines that accumulate above the downstream gabion would serve as added mitigation measures. All areas not defined as Sub-areas A through F and addressed above will be addressed using one or more of the methods described above and listed in Figure 3-1. As the nature of the materials and terrain conditions are not yet identified, they will have to be addressed by the Site Superintendent (in consultation with the Construction Manager and Project Safety officers) once the type and location of potential material is identified.

3.3 Post-construction Activities

The section presents the approach to stabilize the excavated slopes following the removal of fill material and debris. The extent of material that must be removed to satisfy removal action objectives is unknown and will be determined during the implementation of this Work Plan. Therefore, a precise approach to post-construction activities cannot be identified before all material has been removed. Further, because additional site characterization may be required following completion of this TCRA for AOC 4, this post-construction slope stabilization efforts conducted during this project will not be the final disposition of the site.

Post-construction activities will include reporting and post-construction slope stabilization of the AOC 4 area, followed by inspection and maintenance. The objectives of this effort will be safety, dust control, erosion control, and prevention of pollutants being discharged to Bat Cave Wash.

Post construction soil stabilization for dust control will include application of stabilizer such as Soil-Tac or equivalent. Soil stabilizer will be re-applied as necessary, based on periodic inspection. Slope stabilization will be accomplished by working to leave a stable slope angle of native material or clean fill after removal and will be augmented by mechanical stabilization, such as netting, if needed. The lowest slopes will be armored where protection from scour is appropriate. Run-on controls may also be employed above the upper slope. Above the upper slope, barriers may be installed to keep Topock Compressor Station personnel activities at a safe setback from the slope.

The gabion below the slot canyon Sub-area F will be maintained under a periodic inspection program, with special attention to pre- and post-rainfall inspections. Sediment trapped above the gabions may be removed if accumulated after rainfall events.

4.0 Approvals and Authorizations

This section presents the anticipated approvals required to implement this Work Plan, as well as the details pertaining to the various biological and cultural considerations. It is PG&E's understanding that DOI's approval of the Final Work Plan constitutes permission to implement the Work Plan and authorization to access federal property as described in the Work Plan. No other application or approval for access to federal property will be required before field implementation.

4.1 Anticipated Approvals

This TCRA is being conducted under the authority of CERCLA Section 104 and is therefore exempt from obtaining any federal, state, or local permits or complying with other administrative requirements, pursuant to CERCLA Section 121(e). However, the National Contingency Plan (40 CFR 300.415(j)) requires that removal actions shall, to the extent practicable considering the exigencies of the situation, attain applicable or relevant and appropriate federal and state environmental requirements (applicable or relevant and appropriate requirements [ARARs]).

The proposed Work Plan activities will be conducted in a manner consistent with the Programmatic Biological Assessment (PBA) (CH2M HILL, 2007b), and is therefore in compliance with Endangered Species Act (ESA) requirements. This TCRA fits within two of the seven planned activity categories of the PBA Category 4 (soil sampling) and Category 6 (restoration activities). The allowable disturbance from this activity will occur on steep slopes of AOC 4, with a small portion of the activity occurring in the ephemeral channel at the floor of the AOC 4. The allowable disturbance fits into the upland disturbance category under the PBA.

The proposed Work Plan activities also fit under the Master Streambed Alteration Agreement as "Unspecified Investigative and Remediation Activities," with actual disturbance levels to be determined. Compliance with Section 106 of the National Historic Preservation Act is expected to involve expedited consultation with local Native American tribes and with the State Historic Preservation Office.

Before field work, Underground Service Alert notifications will be made so that utility companies can locate and mark the locations of their underground facilities. Overhead utility hazards are not present in the work area. Section 2.1.3 discusses the underground utility location procedures.

The following section lists the areas for which substantive requirements related to otherwise exempt permits have been identified as potentially applicable for this removal action.

4.1.1 Air Quality

- Visible emissions, nuisance dust, and fugitive dust
- Asbestos

- Portable equipment

4.1.2 Water Quality

- Dredge and fill
- Stormwater management
  - Prohibiting unauthorized non-stormwater discharges.
  - Prohibiting stormwater discharges and authorized non-stormwater discharges causing or contributing to an exceedance of any applicable water quality standard.
  - Identifying potential pollutant sources, and develop and implement best management practices (BMPs) to prevent discharge of pollutants to stormwater, including BMPs that address erosion and sedimentation.
  - Inspecting and maintaining BMPs.
  - Sampling stormwater discharges to water bodies impaired due to sedimentation or discharges that could contain pollutants that are not visibly detectable.
  - Performing site inspections before, during, and after storm events to evaluate BMP effectiveness.
- Surface water quality standards

4.2 Biological Evaluation

The previously completed PBA (CH2M HILL, 2007b) and associated ESA Section 7 consultation addressed a variety of PG&E Topock remedial and investigative actions at the project site. The PBA provides programmatic coverage of remedial and investigative actions up to the final remedy and avoids the need for project-specific consultations under the federal ESA. Applicable measures are identified in the PBA to offset potential impacts resulting from this category of activity.

The purpose of this biological evaluation is to outline the proposed TCRA action activities at AOC 4 as they relate to federally listed species and to determine if the actions are within the context and boundaries of the PBA, as requested by the DOI Bureau of Land Management. To achieve this purpose, this section discusses project timing, project location and habitat sensitivity, habitat loss, conservation measures, listed species determinations, and conclusions.

Substantive requirement with the following regulations is planned:

- **Endangered Species**. Listed species at the Topock site may include the southwestern willow flycatcher (SWFL), Mojave Desert tortoise (DETO), and Yuma clapper rail. The removal action will be conducted in a manner that does not result in a "take" of a listed or candidate species. Determinations are described below within the context of the PBA:
  - The project area is marginal DETO habitat, and no live DETO or sign were observed in 5 previous years of protocol surveys. This action will have no direct effect upon

this species. The USFWS protocol surveys that were performed in 2004, 2005, 2006, 2007, 2008, and 2009 resulted in no recent evidence of species presence within the Area of Potential Effect; therefore, any potential direct effects will be avoided.

- Yuma clapper rail have not been observed among incidental wildlife in 5 previous years of protocol DETO and SWFL surveys. Prior surveys conducted at the project site and documented by the PBA have not indicated the presence of Yuma clapper rail in the vicinity of the proposed Work Plan activities. The application of conservation and management measures referenced above would serve to further limit the potential direct or indirect effects to the Yuma clapper rail, which are expected to be either insignificant or discountable. A determination of "may affect, but not likely to adversely affect" is concluded for this species.
- The project area is also marginal SWFL habitat. While transient SWFL have been observed during 5 previous years of protocol surveys, those sightings were along the Colorado River floodplain ½ mile or more distant from the AOC 4 project area. Nesting SWFL have not been confirmed at the project site in the five previous years of protocol surveys. Through application of the conservation and management measures referenced above and described in detail in the PBA, the potential direct or indirect effects of the proposed Work Plan activities to the southwestern willow flycatcher are expected to be either insignificant or discountable. A determination of "may affect, but not likely to adversely affect" is concluded for this species.
- The razorback sucker and bonytail chub will not be affected by this project. This action will have no effect upon these species. The project will not occur within the Colorado River or 100-year floodplain as delineated in the PBA; therefore, potential direct and indirect effects to this species will be avoided. No direct or indirect impacts to critical habitat or the bonytail chub would result from implementation of the Work Plan activities.

Additionally, the removal action will be conducted in a manner that meets the substantive requirements of the following Acts: Migratory Bird Protection Act; Fish and Wildlife Coordination Act; National Wildlife Refuge System Administration Act. The substantive requirements under the Master Streambed Alteration Agreement will be followed (including notification requirements).

4.2.1 Project Location and Habitat Sensitivity

The proposed Work Plan activities are scheduled to commence in December 2009. The precise start date is contingent upon receipt of Work Plan approval.

Removal action Sub-areas A through E are located within PG&E's compressor station property and are sufficiently upland from the sensitive riparian habitat along the Colorado River such that no direct or indirect effects to avian species would result. This is also true for Sub-area F location on HNWR property immediately to the west. The TCRA work areas therefore are not expected to be subject to the nesting bird restrictions established in the PBA. DETO have not been found in 5 years of protocol surveys within the project area. The proposed gabion runoff control measures to be located at the outfall of the debris ravine into Bat Cave Wash will also serve to exclude DETO from the TCRA work area.

4.2.2 Habitat Loss

TCRA activities may require limited vegetation removal (less than 0.25 acre), primarily expected in the ravine floor. Efforts will be made to preserve the mature Mesquite tree that is present in the ravine floor below Sub-areas A and D. TCRA activity at Sub-areas E and F could result in floodplain habitat loss, defined in the PBA as "the removal of trees and perennial shrubs." The proposed Work Plan activities described herein would conform to the cumulative limits of 2.5 acres of floodplain habitat loss and 3.0 acres of upland habitat loss prescribed in the PBA. A pre-construction biological survey will be conducted in accordance with PBA Measure #3. The Work Plan activities are located sufficiently upland from the Colorado River floodplain (i.e., over 200 feet) to avoid potential impacts to riparian areas.

Implementation of the Work Plan activities will also be subject to the applicable general management measures provided for in the PBA. This is expected to include designation of a Field Contact Representative responsible for overseeing compliance with applicable mitigation measures, construction awareness training, and preparation of a construction completion report that includes a quantification of impacted habitat.

4.2.3 Conclusions

The activities proposed in this Work Plan are within the context and boundaries outlined in the PBA, including the general management measures, mitigation measures, and Bureau of Land Management Lake Havasu Field Office. Therefore, this action will be compliant with the federal ESA provided that applicable mitigation measures identified in the PBA are implemented. Additional consultation with the USFWS is not required.

4.3 Cultural Resource Evaluation

The area subject to activities described in this Work Plan was included in an archaeological survey of the Area of Potential Effect (Applied Earthworks, 2007). Although there are two archeological sites located within several hundred meters of AOC 4, no archeological sites or historical sites were identified on or within the AOC 4 work area or Topock Compressor Station. Based on Applied Earthworks 2007 study, the expectation for an undiscovered archaeological or historical site on a slope is extremely low.

Following standard archaeological BMPs, all work areas will be re-examined by an archaeologist before work proceeds. An archeologist will monitor at the beginning of the project and further assess the need for continue monitoring of the removal activities. In the event full -time monitoring is not warranted, monitoring on a periodic basis will be undertaken.

PG&E will notify the Tribes of the AOC 4 work schedule to allow for Native American cultural resources monitoring as well.

The following regulatory requirements were evaluated during work planning.

4.3.1 Archeological and Historic Preservation

Archeological and historic requirements for which substantive compliance is planned include:

- National Historic Preservation Act; National Archeological and Historic Preservation Act; Archeological Resources Protection Act; Historic Sites Act; Native American Graves Protection and Repatriation Act (NAGPRA); Religious Freedom Restoration Act
- American Indian Religious Freedom Act: Several federally recognized tribes have identified areas of traditional religious and cultural importance within the Area of Potential Effects previously established for the remedial investigation currently underway at the Topock site. Consultation with these tribes will be undertaken by DOI to address this requirement.

4.3.2 Compliance Activities and Conclusion

PG&E representatives will be responsible for providing archaeological sensitivity training to the workers implementing this Work Plan and for ensuring compliance with all applicable archaeological measures during TCRA activities.

The Topock site and adjacent lands are contained within a larger geographic area that is considered sacred by several of the local Native American tribes. In recognition of this, work activities will be conducted in a manner that recognizes and respects these resources and the spiritual values of the surrounding lands. PG&E understands that the environmental, cultural, and spiritual resources may not be physically perceptible. To this end, site orientation will stress that all site activities must be conducted in a respectful manner that is conscious of this context. In addition, PG&E will contact the Tribes, which have, in the past, expressed a desire for tribal monitors. In the event there is a desire to monitor this work, PG&E will make arrangements for monitoring of field activities, consistent with security and health and safety considerations.

Per BLM's letter dated December 8, 2009 (see Appendix G), the following conditions will be followed:

- Tribal and archaeologist monitors will not be allowed to enter the contaminated area [i.e., the exclusion zone]. Suspected cultural materials will be brought to the monitors in an uncontaminated area for inspection. If the materials are contaminated, photos of the suspected cultural materials shall be brought to the monitors for inspection.
- Temporary barriers and/or temporary fencing at archaeological sites CA-SBR-11993, a rock shelter, and CA-SBR-11864, a lithic assay station, will be installed to insure that no undertaking activities occur at these two locations. The placement of the fencing or barriers shall be monitored by Tribal and archaeological monitors. The temporary barriers or fencing shall be monitored weekly and will be immediately repaired or reinstalled as needed and removed once removal action has been completed.
- If cultural materials are identified during undertaking implementation, all work in the area of discovery will cease until such time as BLM in consultation with the Tribal and archaeologist monitors can determine where work will be limited. BLM shall notify the Tribes, SHPO and Advisory Council within 24 hours of the discovery with a plan for

treatment. The Advisory Council shall have 48 hours to provide comments on the treatment plan per 36CFR800.13(b)(3).

4.4 Hazardous Waste Management

Compliance with the substantive requirements of the following regulations under the categories of hazardous waste management, hazardous materials management, and oil spill prevention and response is planned:

4.4.1 Hazardous Waste Identification

Waste material and debris that is excavated during the removal action and that exceeds hazardous waste characteristic levels will be managed as hazardous. Applicable Hazardous waste toxicity characteristic levels for selected constituents of concern are presented in Table 4-1.

4.4.2 Hazardous Waste Generator Requirements, Land Disposal Restrictions

Established treatment standards will be observed for RCRA and specified non-RCRA hazardous wastes that must be met before waste can be disposed to land. Non-RCRA hazardous wastes anticipated to be generated during the removal action are not subject to Land Disposal Restriction requirements. Waste exhibiting RCRA characteristics must also meet treatment standards for underlying hazardous constituents. These requirements are applicable to offsite disposal of excavated material and debris exhibiting RCRA hazardous waste characteristics.

4.4.3 Oil Spill Prevention and Response

Established requirements will be observed for oil spill prevention, including general containment requirements; specific requirements for sized secondary containment for bulk storage tanks and containers; emergency response procedures; and an update of the compressor station *Spill Prevention, Control, and Countermeasures Plan* (SPCC), if necessary. This removal action project is being conducted on the compressor station site and the compressor station SPCC will be followed. No petroleum products will be stored at staging areas not on PG&E property.

5.0 Schedule and Reporting

The estimated project implementation schedule is presented in Figure 5-1. Note that the timing and duration of the removal activities will be refined upon receipt of DOI approval of the Work Plan.

The final TCRA removal action report will be completed 12 weeks after completion of the removal action. This report will include a description of the volume and disposition of materials removed, figures depicting the extent of the excavation and soil sample locations, and tables listing soil sample confirmation screening results. A detailed post-construction inspection and maintenance plan will also be included in this report.

6.0 References

Applied Earthworks. 2007. *Archaeological and Historical Investigations, Third Addendum: Survey or the Original and Expanded APE for Topock Compressor Station Site Vicinity.* May.

CH2M HILL. 2007a. *Revised Final RCRA Facility Investigation and Remedial Investigation Report. Volume 1 – Site Background and History.* August.

_____. 2007b. *Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Remedial and Investigative Action.* January 2007.

_____. 2008a. *PG&E Program Quality Assurance Project Plan, Revision 1, Topock Compressor Station, Needles, California*. December.

_____. 2008b. *Addendum to PG&E Program Quality Assurance Plan for the RCRA Facility Investigation/Remedial Investigation, Topock Compressor Station, Needles, California*. December.

_____. 2009. *Revised Soil Background Investigation at the Pacific Gas and Electric Company Topock Compressor Station, Needles, California, Technical Memorandum*. May.

United States Environmental Protection Agency (USEPA). 2007. *ProUCL Version 4.0 Technical Guide.* Office of Research and Development.

United States Department of Interior (DOI). 2009. Action Memorandum. "Request for Time-critical Removal Action Number 4 at AOC 4 Debris Ravine, Pacific Gas and Electric Topock Compressor Station." May 29.

Tables

TABLE 1-1
Soil Sample Results: Metals
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium**	**Chromium, Hexavalent**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
AOC4-1	10/14/08	0 - 0.5	N	ND (2) J	3.7	440 J	ND (1)	ND (1)	47	0.49	6.7	16	8.5	ND (0.1)	ND (1)	19	ND (1)	ND (1)	ND (2)	23	48
	10/14/08	0.5 - 1	N	ND (2)	4	120	ND (1)	ND (1)	32	ND (0.404)	9.6	13	10	ND (0.1)	ND (1)	17	ND (1)	ND (1)	ND (2)	32	47
	10/14/08	2 - 3	N	ND (2)	3.6	120	ND (1)	ND (1)	20	ND (0.405)	7.4	12	17	ND (0.1)	ND (1)	13	ND (1)	ND (1)	ND (2)	30	39
AOC4-2	10/03/08	0 - 0.5	N	ND (2)	6	230	ND (2)	ND (1)	84	8.68	12	280	26	0.13	2	34	ND (1)	ND (2)	ND (4)	36	200
	10/03/08	0.5 - 1	N	ND (2)	5.1	230	ND (2)	ND (1)	79	3.05	9.3	71	18	0.16	ND (2)	30	ND (1)	ND (2)	ND (4)	32	89
AOC4-3	08/24/08	0 - 0.5	N	ND (4) J	6.4	140	ND (2)	ND (2)	14	ND (0.401)	4.7	9.2	6.5	ND (0.1)	ND (2)	11	ND (2)	ND (2)	ND (4)	26	32
	08/24/08	0.5 - 1	N	ND (4)	6.9	110	ND (2)	ND (2)	11	ND (0.403)	4.6	8.9	6.5	ND (0.1)	ND (2)	9.2	ND (2)	ND (2)	ND (4)	26	32
AOC4-4	08/24/08	0 - 0.5	N	ND (4)	6	230	ND (2)	ND (2)	110	3.68	10	52	80	0.27	2.6	42	ND (2)	ND (2)	ND (4)	48	96
	08/24/08	0 - 0.5	FD	ND (4)	5.9	190	ND (2)	ND (2)	89	4.68	12	270	31	ND (0.1)	ND (2)	40	ND (2)	ND (2)	ND (4)	48	150
AOC4-5	10/03/08	0 - 0.5	N	ND (2)	6.2	330	ND (2)	ND (1)	120	6.84	13	63	30	ND (0.098)	ND (2)	49	ND (1)	ND (2)	ND (4)	45	120
AOC4-6	08/24/08	0 - 0.5	N	ND (4)	7.3	510	ND (2)	ND (2)	79	8.45	7.6	810	94	ND (0.1)	ND (2)	28	ND (2)	ND (2)	ND (4)	37	150
	08/24/08	0.5 - 1	N	ND (4)	5.9	310	ND (2)	ND (2)	54	5.03	7	350	33	ND (0.1)	ND (2)	23	ND (2)	ND (2)	ND (4)	35	170
	10/03/08	2 - 3	N	ND (2.1)	7	250	ND (2.1)	ND (1)	43	1.98 J	8.6	32	24	ND (0.1)	ND (2.1)	24	ND (1)	ND (2.1)	ND (4.1)	35	69
AOC4-7	10/03/08	0 - 0.5	N	ND (2)	6.3	460	ND (2)	ND (1)	100	5.5	14	450	280	ND (0.1)	ND (2)	47	ND (1)	ND (2)	ND (4)	48	210
AOC4-8	10/03/08	0 - 0.5	N	ND (2)	5.7	240	ND (2)	ND (1)	84	2.67	11	210	33	ND (0.1)	2.1	39	ND (1)	ND (2)	ND (4)	41	110
AOC4-9	08/24/08	0 - 0.5	N	ND (4)	7.4	650	ND (2)	ND (2)	90	11.4	7.3	4,000	54	0.18	2.3	27	ND (2)	ND (2)	ND (4)	40	170
AOC4-10	10/03/08	0 - 0.5	N	ND (2)	5.7	310	ND (2)	ND (1)	67	2.13	12	25	18	ND (0.1)	ND (2)	42	ND (1)	ND (2)	ND (4)	45	76
AOC4-11	10/03/08	0 - 0.5	N	ND (2) J	5.1	200 J	ND (2)	ND (1)	69	ND (0.402)	14	28	7.9	ND (0.1)	ND (2)	45	ND (1)	ND (2)	ND (4)	54	52
AOC4-12A	08/24/08	0 - 0.5	N	ND (4)	6.5	210	ND (2)	ND (2)	18	ND (0.401)	4.2	12	16	ND (0.1)	ND (2)	11	ND (2)	ND (2)	ND (2)	22	50
AOC4-12	10/03/08	0 - 0.5	N	ND (2)	6.2	200	ND (2)	ND (1)	25	ND (0.402)	7.2	15	6.4	ND (0.1)	ND (2)	21	ND (1)	ND (2)	ND (4)	26	38
	10/03/08	0.5 - 1	N	ND (2)	6.1	180	ND (2)	ND (1)	28	ND (0.403)	8.3	14	5.4	ND (0.1)	ND (2)	25	ND (1)	ND (2)	ND (4)	28	36
AOC4-13	08/24/08	0 - 0.5	N	ND (4)	7.3	940	ND (2)	ND (2)	92	15	5.7	93	130	0.49	3	22	ND (2)	ND (2)	ND (4)	26	380
AOC4-14	08/24/08	0 - 0.5	N	ND (4)	6.3	330	ND (2)	ND (2)	31	5.4	5.7	35	28	ND (0.1)	ND (2)	16	ND (2)	ND (2)	ND (4)	27	120
	08/24/08	0 - 0.5	FD	ND (4)	6.2	380	ND (2)	ND (2)	27	3.21	5.4	29	24	ND (0.1)	ND (2)	15	ND (2)	ND (2)	ND (4)	24	95
AOC4-15	09/19/08	0 - 0.5	N	34	9.9	2,900	ND (5)	19	1,500	36.6	21	3,600	11,000	2.6	99	580	ND (5)	ND (5)	ND (10)	26	6,900
	09/19/08	0.5 - 1	N	69	16	1,700	ND (5)	27	2,100	66.1	30	5,900	3,500	3.3	190	380	ND (5)	ND (5)	ND (10)	33	9,900
	09/19/08	2 - 3	N	ND (10)	9.7	2,500	ND (5.2)	5.8	520	40.9	12	4,000	670	0.65	39	230	ND (2.1)	ND (5.2)	ND (10)	40	2,500
AOC4-B10	10/05/08	0 - 0.5	N	ND (2)	10	180	ND (2)	ND (1)	160	3.37	10	70	41	ND (0.1)	ND (2)	23	ND (1)	ND (2)	ND (4)	29	280
AOC4-B20	10/05/08	0 - 0.5	N	ND (2.1)	6.3	150	ND (2.1)	ND (1)	270	4.09	5.1	70	83	0.59	ND (2.1)	14	ND (1)	ND (2.1)	ND (4.2)	20	350
AOC4-B30	10/05/08	0 - 0.5	N	ND (2.7)	2.1	16	ND (1.4)	ND (1.4)	44	ND (5.25)	ND (1.4)	9	8.9	ND (0.14)	ND (1.4)	1.6	ND (1.4)	ND (1.4)	ND (2.7)	2.6	70
AOC4-D10	10/05/08	0 - 0.5	N	ND (2.2)	9.6	180	ND (2.2)	ND (1.1)	310	38.5	9	83	46	2.2	5.3	27	ND (1.1)	ND (2.2)	ND (4.4)	12	210
AOC4-D20	10/05/08	0 - 0.5	N	ND (2.2)	40	240	ND (11)	ND (1.1)	160	11.8	ND (11)	540	59	29	ND (11)	22	ND (1.1)	ND (11)	ND (22)	25	840
AOC4-D30 [1]	10/05/08	0 - 0.5	N	ND (2.1)	5.4	400	ND (1)	ND (1)	160	6.04	5.7	79	37	2.9	2.5	20	ND (1)	ND (1)	ND (2.1)	23	130
AOC4-DE5	10/05/08	0 - 0.5	N	ND (2.3) J	1.8	140 J	ND (1.1)	ND (1.1)	720	201	6.4	31	23	0.55	ND (1.1)	16	ND (1.1)	ND (1.1)	ND (2.3)	25	850
AOC4-GH10	10/05/08	0 - 0.5	N	ND (2.2)	11	330	ND (4.4)	ND (1.1)	57	1.52	13	55	40	ND (0.11)	ND (4.4)	39	ND (1.1)	ND (4.4)	ND (8.7)	47	59
AOC4-GH30	10/05/08	0 - 0.5	N	3.2	7.4	1,000	ND (2.2)	ND (1.1)	190	27.9	9.9	590	150	0.55	6.9	41	ND (1.1)	ND (2.2)	ND (4.4)	37	300
AOC4-I20	10/05/08	0 - 0.5	N	ND (2.2)	6.9	530	ND (2.2)	ND (1.1)	94	13.4	10	71	34	0.11	2.2	37	ND (1.1)	ND (2.2)	ND (4.3)	36	120
AOC4-I30	10/05/08	0 - 0.5	N	ND (2.2)	6.5	250	ND (2.2)	ND (1.1)	60	ND (0.432)	11	40	6.2	ND (0.11)	ND (2.2)	36	ND (1.1)	ND (2.2)	ND (4.3)	43	48
AOC4-Z25	10/05/08	0 - 0.5	N	ND (2.1)	7.7	110	ND (2.1)	ND (1)	24	ND (0.405)	8.9	11	6.1	ND (0.1)	ND (2.1)	20	ND (1)	ND (2.1)	ND (4.1)	32	35
AOC4-SS1	09/19/08	0 - 0.5	N	5.5	ND (2)	570	ND (2)	ND (2)	3,500	659	8.4	270	140	0.11	14	59	ND (2)	ND (2)	ND (4)	14	5,400
AOC4-SS2	10/03/08	0 - 0.5	N	ND (2)	3.8	46	ND (1)	3.4	140	4.1	1.4	15	43	ND (0.1)	ND (1)	6.6	ND (1)	ND (1)	ND (2)	4.7	170
AOC4-SS3	10/03/08	0 - 0.5	N	ND (2)	11	270	ND (2)	ND (1)	410	10.4	6.2	130	70	0.78	3.8	41	ND (1)	ND (2)	ND (4)	28	420

TABLE 1-1
Soil Sample Results: Metals
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Location	Date	Depth (ft bgs)	Sample Type	Metals (mg/kg)																
				Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium, Hexavalent	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
AOC4-Stained	10/04/08	0 - 0.5	N	5.3	ND (1)	350	ND (2)	ND (1)	2,000	1,560	9.7	42	62	0.59	4	31	ND (1)	ND (2)	ND (4)	27	110
AOC4-T1a	10/22/08	0 - 0.5	N	ND (2.1)	7.1	700	ND (2.1)	ND (1)	94	14.8	7.9	310	81	0.22	2.2	26	ND (1)	ND (2.1)	ND (4.1)	32	160
	10/22/08	3.5 - 4	N	ND (2.2)	8.8	490	ND (2.2)	ND (1.1)	80	2.26	12	640	50	ND (0.11)	ND (2.2)	41	ND (1.1)	ND (2.2)	ND (4.3)	53	62
AOC4-T2a	10/22/08	3.5 - 4	N	ND (2.3)	11	250	ND (4.5)	ND (1.1)	51	1.24	11	29	18	ND (0.11)	ND (4.5)	36	ND (1.1)	ND (4.5)	ND (9.1)	43	59
AOC4-T2b	10/22/08	2.5 - 3	N	26	15	2,200	ND (4.1)	6.1	700	120	15	5,300	1,700	1.9	49	130	ND (1)	ND (4.1)	ND (8.2)	20	2,300
	10/22/08	7.5 - 8	N	ND (2.2)	7.1	1,000	ND (2.2)	ND (1.1)	130	8.09	13	62	39	ND (0.11)	2.3	43	ND (1.1)	ND (2.2)	ND (4.3)	57	160
AOC4-T2c	10/22/08	0 - 0.5	N	ND (2.2)	11	220	ND (4.4)	ND (1.1)	97	11.2	11	39	30	0.17	ND (4.4)	36	ND (1.1)	ND (4.4)	ND (8.8)	43	120
	10/22/08	2.5 - 3	N	ND (2.1)	6.4	220	ND (2.1)	ND (1.1)	86	1.46	12	28	15	ND (0.11)	ND (2.1)	40	ND (1.1)	ND (2.1)	ND (4.2)	46	72
AOC4-T3a	10/23/08	2.5 - 3	N	ND (2) J	3.7	140	ND (1)	ND (1)	280 J	13.6 J	3.1	63 J	78 J	0.16	2.5	8.1	ND (1)	ND (1)	ND (2)	12	290 J
	10/23/08	2.5 - 3	FD	ND (2)	3.7	130	ND (1)	ND (1)	210	10.7 J	3.4	29	67	0.18	1.9	8.8	ND (1)	ND (1)	ND (2)	14	230
AOC4-T3b	10/23/08	2.5 - 3	N	ND (2.1)	6.9	170	ND (2.1)	ND (1)	28	ND (0.412)	7.7	14	5.4	ND (0.1)	ND (2.1)	22	ND (1)	ND (2.1)	ND (4.1)	32	35
AOC4-T3c	10/23/08	2.5 - 3	N	ND (2.1)	6.8	170	ND (2.1)	ND (1)	39	ND (0.413)	9.4	36	6.6	ND (0.1)	3.3	31	ND (1)	ND (2.1)	ND (4.1)	36	51
AOC4-T4a	10/23/08	2.5 - 3	N	ND (2)	7.3	200	ND (2)	ND (1)	31	ND (0.402)	7.6	11	6.3	ND (0.1)	ND (2)	24	ND (1)	ND (2)	ND (4.1)	32	35
AOC4-T4b	10/23/08	2.5 - 3	N	ND (2.1)	4.8	130	ND (1)	ND (1)	33	ND (0.413)	7.1	13	4.3	ND (0.1)	ND (1)	23	ND (1)	ND (1)	ND (2.1)	29	31
AOC4-T4c	10/23/08	2.5 - 3	N	ND (2)	7.1	160	ND (2)	ND (1)	34	ND (0.409)	8.4	11	4	ND (0.1)	ND (2)	26	ND (1)	ND (2)	ND (4.1)	36	31
AOC4-Wood1 [2]	10/03/08	0	N	ND (10)	ND (5.2)	820	ND (5.2)	ND (5.2)	15,000	47.7 J	ND (5.2)	380	350	5	14	13	ND (5.2)	ND (5.2)	ND (10)	41	1,400
AOC4-Wood2 [2]	10/03/08	0	N	ND (11)	ND (5.4)	480	ND (5.4)	ND (5.4)	15,000	89.2 J	ND (5.4)	620	130	ND (0.11)	10	9.1	ND (5.4)	ND (5.4)	ND (11)	28	3,900
DR-1	04/24/97	0 - 0.5	N	ND (5)	3.5	180	0.58	ND (2)	31	ND (0.1)	9.1	23	13	ND (0.02)	ND (2)	28	1.1	---	---	32	71
	04/24/97	0.5 - 1	N	ND (5)	3.6	210	0.73	ND (2)	45	ND (0.1)	13	29	10	ND (0.02)	ND (2)	39	1	---	---	47	59
DR-2	04/24/97	0 - 0.5	N	ND (5)	4	230	0.61	ND (2)	39	0.13	9	30	19	0.07	ND (2)	27	1.1	---	---	35	82
DR-3	04/24/97	0 - 0.5	N	ND (5)	6.9	330	ND (0.5)	ND (2)	390	0.85	5.9	57	43	0.02	2.3	19	1.2	---	---	31	520
	04/24/97	0.5 - 1	N	ND (5)	4.6	180	ND (0.5)	ND (2)	160	0.43	7	43	20	0.02	ND (2)	22	0.58	---	---	30	280
DR-4	04/24/97	0 - 0.5	N	ND (5)	4	340	ND (0.5)	ND (2)	100	0.17	8.5	190	63	0.72	ND (2)	28	1.2	---	---	33	190
DR-5	04/24/97	0 - 0.5	N	ND (5)	2.8	200	ND (0.5)	ND (2)	33	ND (0.1)	5.7	22	24	0.02	ND (2)	14	1.6	---	---	22	94
	04/24/97	0.5 - 1	N	ND (5)	2.8	220	ND (0.5)	ND (2)	30	0.12	6.1	18	16	0.18	ND (2)	16	1.7	---	---	24	66
DR-6	04/24/97	0 - 0.5	N	ND (5)	3.9	360	ND (0.5)	ND (2)	91	0.29	61	54	100	0.73	ND (2)	19	ND (0.5)	---	---	28	160
	04/24/97	0.5 - 1	N	ND (5)	2.8	120	ND (0.5)	ND (2)	64	0.29	4.7	96	35	0.77	ND (2)	17	1.1	---	---	18	130
DR-7	04/24/97	0 - 0.5	N	ND (5)	3.4	180	ND (0.5)	ND (2)	72	0.4	7.2	31	42	0.42	ND (2)	21	ND (0.5)	---	---	29	120
	04/24/97	0.5 - 1	N	ND (5)	3.9	230	0.59	ND (2)	47	ND (0.1)	9.6	35	14	0.2	ND (2)	25	1.4	---	---	39	70
WP-DR	11/23/98	0	N	---	---	---	---	---	12.2	ND (0.67)	---	7.7	---	---	---	2.2 J	---	---	---	---	19.2 J

1 white powder sample
2 wood sample

mg/kg milligrams per kilogram
ft bgs feet below ground surface
N primary sample
FD field duplicate
--- not analyzed
ND (x) not detected at the listed reporting limit (x)
J concentration or reporting limit estimated by laboratory or data validation

TABLE 1-2
Soil Sample Results: Contract Laboratory Program Inorganics
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Contract Laboratory Program (CLP) Inorganics (mg/kg)							
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Aluminum**	**Calcium**	**Iron**	**Magnesium**	**Manganese**	**Potassium**	**Sodium**	**Cyanide**
AOC4-1	10/14/08	0 - 0.5	N	8,400	21,000	20,000	7,900	310	2,500 J	270	ND (1.01)
AOC4-4	08/24/08	0 - 0.5	N	13,000	38,000	26,000	12,000	400	3,500	390	ND (1)
	08/24/08	0 - 0.5	FD	13,000	35,000	24,000	12,000	390	3,300	390	ND (1)
AOC4-7	10/03/08	0 - 0.5	N	14,000	31,000	29,000	14,000	480	3,100	220	ND (1)
AOC4-11	10/03/08	0 - 0.5	N	15,000	32,000	27,000	14,000	450	3,900	230	ND (1.01)
AOC4-13	08/24/08	0 - 0.5	N	9,000	23,000	15,000	7,800	310	2,300	290	ND (1)
AOC4-DE5	10/05/08	0 - 0.5	N	7,300	24,000	13,000	6,300	190	2,400	680 J	ND (1.08) J
AOC4-Stained	10/04/08	0 - 0.5	N	10,000	35,000	25,000	10,000	330	2,900	ND (3,400)	ND (1.01)
AOC4-T1a	10/22/08	0 - 0.5	N	10,000	36,000	19,000	9,400	330	3,000	980	ND (1.07)
AOC4-T4a	10/23/08	2.5 - 3	N	9,100	30,000	17,000	9,900	290	2,200	510	ND (1.01)
WP-DR	11/23/98	0	N	---	5,460 J	2,220 J	943 J	35.3 J	956 J	368,000	---

mg/kg milligrams per kilogram
ft bgs feet below ground surface
N primary sample
FD field duplicate
--- not analyzed
ND (x) not detected at the listed reporting limit (x)
J concentration or reporting limit estimated by laboratory or data validation

TABLE 1-3
Soil Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polycyclic Aromatic Hydrocarbons (µg/kg)																			
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**1-Methyl naphthalene**	**2-Methyl naphthalene**	**Acena phthylene**	**Acenaphthene**	**Anthracene**	**Benzo (a) anthracene**	**Benzo (a) pyrene**	**Benzo (b) fluoranthene**	**Benzo (ghi) perylene**	**Benzo (k) fluoranthene**	**Chrysene**	**Dibenzo (a,h) anthracene**	**Fluoranthene**	**Fluorene**	**Indeno (1,2,3-cd) pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**PAH Low molecular weight**	**PAH High molecular weight**	**B(a)P Equivalent**
AOC4-1	10/14/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	14	11	37	12	18	28	ND (5)	37	ND (5)	12	ND (5)	10	24	10	190	20
	10/14/08	0.5 - 1	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND	ND	ND (4.4)
	10/14/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (4.2)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC4-2	10/03/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	22	17	25	14	20	30	5.1	60	ND (5)	13	ND (5)	18	48	18	250	27
	10/03/08	0.5 - 1	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	22	20	28	16	23	31	6.4	50	ND (5)	16	ND (5)	21	40	21	250	31
AOC4-3	08/24/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND	ND	ND (4.4)
	08/24/08	0.5 - 1	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND	ND	ND (4.4)
AOC4-4	08/24/08	0 - 0.5	N	ND (5) J	ND (5) J	ND (5) J	550	2,200	8,300	3,800	8,900	1,900	2,800	7,800	11 J	24,000	ND (5) J	2,100	ND (5) J	13,000	18,000	16,000	78,000	6,100
	08/24/08	0 - 0.5	FD	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	29 J	27 J	51 J	25 J	21 J	43 J	6.9 J	75 J	ND (5) J	24 J	ND (5) J	16 J	63 J	16	360	42
AOC4-5	10/03/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	9.8	220	150	200	93	180	230	37	440	ND (5)	96	ND (5)	50	430	60	2,100	230
AOC4-6	08/24/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	13	120	83	130	62	51	110	15	230	ND (5)	62	ND (5)	110	210	120	1,100	130
	08/24/08	0.5 - 1	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	36	22	43	17	17	42	ND (5)	100	ND (5)	17	ND (5)	37	84	37	380	35
	10/03/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	61	30	39	15	45	67	6.8	200	ND (5.1)	15	21	120	160	140	640	49
AOC4-7	10/03/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	16	16	31	13	22	32	ND (5)	43	ND (5)	13	ND (5)	6.3	41	6.3	230	25
AOC4-8	10/03/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	26	25	41	18	31	45	6.6	57	ND (5)	19	ND (5)	7.8	59	7.8	330	39
AOC4-9	08/24/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	30	25	40	18	15	32	ND (5)	54	ND (5)	18	ND (5)	13	50	13	280	36
AOC4-10	10/03/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	35	32	47	26	37	50	9.4	84	ND (5)	25	ND (5)	19	77	19	420	50
AOC4-11	10/03/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	46	36	56	27	45	57	9.6	97	ND (5)	26	ND (5)	12	100	12	500	57
AOC4-12A	08/24/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	33	26	42	20	18	33	ND (5)	79	ND (5)	19	ND (5)	18	68	18	340	38
AOC4-12	10/03/08	0 - 0.5	N	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND	ND	ND (4.4)
	10/03/08	0.5 - 1	N	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND (5) J	ND	ND	ND (4.4)
AOC4-13	08/24/08	0 - 0.5	N	ND (5) J	ND (5) J	7.3 J	9.9 J	ND (500) J	11,000	8,100	16,000	4,800	4,700	11,000	1,100 J	27,000	6.7 J	4,600	ND (5) J	2,900	26,000	2,900	110,000	12,000
AOC4-14	08/24/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	21	970	660	1,600	530	530	1,100	110	2,400	ND (5)	500	ND (5)	160	2,200	180	11,000	1,100
	08/24/08	0 - 0.5	FD	ND (5)	ND (5)	ND (5)	ND (5)	45	2,100	1,100	1,800	870	1,300	2,000	310	4,100	ND (5)	790	ND (5)	330	3,600	380	18,000	1,800
AOC4-15	09/19/08	0 - 0.5	N	7.2	7.2	ND (5)	ND (5)	11	210	120	190 J	85	200	330	39	440	ND (5)	80	16	150	360	190	2,100	200
	09/19/08	0.5 - 1	N	9.7	7	ND (5)	ND (5)	13	88	48	94 J	24	93	180	13	310	ND (5)	26	20	210	160	260	1,000	84
	09/19/08	2 - 3	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	60	37	61	26	43	81	11	140	ND (5.2)	27	ND (5.2)	37	110	37	600	61
AOC4-B10	10/05/08	0 - 0.5	N	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	12 J	76 J	57 J	140 J	44 J	33 J	100 J	13 J	370 J	ND (5.1) J	38 J	ND (5.1) J	45 J	190 J	57	1,100	91
AOC4-B20	10/05/08	0 - 0.5	N	ND (5.2) J	ND (5.2) J	17 J	ND (5.2) J	76 J	600 J	600 J	1,300 J	430 J	410 J	730 J	56 J	860 J	ND (5.2) J	370 J	ND (5.2) J	99 J	810 J	190	6,200	890
AOC4-B30	10/05/08	0 - 0.5	N	ND (6.9) J	ND (6.9) J	ND (6.9) J	ND (6.9) J	9.8 J	63 J	52 J	97 J	40 J	35 J	89 J	11 J	180 J	ND (6.9) J	38 J	ND (6.9) J	99 J	130 J	110	740	80
AOC4-D10	10/05/08	0 - 0.5	N	ND (5.5) J	ND (5.5) J	ND (5.5) J	25 J	32 J	140 J	260 J	410 J	190 J	150 J	170 J	48 J	590 J	17 J	170 J	33 J	220 J	570 J	330	2,700	370
AOC4-D20	10/05/08	0 - 0.5	N	ND (5.5) J	ND (5.5) J	ND (5.5) J	18 J	64 J	1,700 J	1,100 J	2,000 J	900 J	670 J	1,700 J	89 J	3,700 J	11 J	800 J	ND (5.5) J	2,100 J	3,300 J	2,200	16,000	1,700
AOC4-D30 [1]	10/05/08	0 - 0.5	N	ND (5.2) J	ND (5.2) J	ND (5.2) J	11 J	40 J	120 J	130 J	210 J	99 J	70 J	140 J	25 J	380 J	7 J	88 J	ND (5.2) J	230 J	290 J	290	1,600	190
AOC4-DE5	10/05/08	0 - 0.5	N	14 J	17 J	ND (5.7) J	7.4 J	23 J	470 J	140 J	1,200 J	94 J	380 J	940 J	26 J	2,200 J	5.9 J	91 J	22 J	1,200 J	1,500 J	1,300	7,000	370
AOC4-GH10	10/05/08	0 - 0.5	N	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND	ND	ND (4.7)
AOC4-GH30	10/05/08	0 - 0.5	N	ND (5.5) J	ND (5.5) J	ND (5.5) J	ND (5.5) J	ND (5.5) J	15 J	15 J	31 J	16 J	11 J	24 J	ND (5.5) J	31 J	ND (5.5) J	12 J	ND (5.5) J	9.7 J	28 J	9.7	180	23
AOC4-I20	10/05/08	0 - 0.5	N	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND	ND	ND (4.7)
AOC4-I30	10/05/08	0 - 0.5	N	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND (5.4) J	ND	ND	ND (4.7)
AOC4-Z25	10/05/08	0 - 0.5	N	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND (5.1) J	ND	ND	ND (4.5)
AOC4-SS1	09/19/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	5.3	21	360	270	530	200	300	460	57	700	ND (5)	190	5.2	240	670	270	3,700	430
AOC4-SS2	10/03/08	0 - 0.5	N	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	29	ND (25)	50	33	31	60	ND (25)	83	ND (25)	ND (25)	ND (25)	25	96	25	380	30
AOC4-SS3	10/03/08	0 - 0.5	N	ND (5)	ND (5)	9.8	9.8	200	250	220	260	120	290	360	46	1,300	21	110	ND (5)	690	960	930	3,900	330
AOC4-Stained	10/04/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	7.8	7.3	10	6.1	12	13	ND (5)	14	ND (5)	5.5	ND (5)	ND (5)	12	ND	88	12
AOC4-T1a	10/22/08	0 - 0.5	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	7.8	7.8	14	10	7.7	10	ND (5.2)	15	ND (5.2)	7	ND (5.2)	6.5	14	6.5	93	12
	10/22/08	3.5 - 4	N	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	8.3	ND (5.4)	ND (5.4)	6.2	ND (5.4)	10	ND (5.4)	ND (5.4)	ND (4.7)	ND (5.4)	8.9	ND	33	5.3
AOC4-T2a	10/22/08	3.5 - 4	N	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND (5.7)	ND	ND	ND (5)
AOC4-T2b	10/22/08	2.5 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	8.3	ND (5.1)	15	5.8	ND (5.1)	17	ND (5.1)	24	ND (5.1)	ND (5.1)	ND (5.1)	27	19	27	89	6.4
	10/22/08	7.5 - 8	N	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND	ND	ND (4.7)

TABLE 1-3
Soil Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polycyclic Aromatic Hydrocarbons (µg/kg)																			
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**1-Methyl naphthalene**	**2-Methyl naphthalene**	**Acena phthylene**	**Acenaphthene**	**Anthracene**	**Benzo (a) anthracene**	**Benzo (a) pyrene**	**Benzo (b) fluoranthene**	**Benzo (ghi) perylene**	**Benzo (k) fluoranthene**	**Chrysene**	**Dibenzo (a,h) anthracene**	**Fluoranthene**	**Fluorene**	**Indeno (1,2,3-cd) pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**PAH Low molecular weight**	**PAH High molecular weight**	**B(a)P Equivalent**
AOC4-T2c	10/22/08	0 - 0.5	N	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	43	47	97	42	30	69	11	100	ND (5.5)	37	ND (5.5)	41	95	41	570	72
	10/22/08	2.5 - 3	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	7.7	6.9	14	7	ND (5.3)	9.9	ND (5.3)	16	ND (5.3)	5.8	ND (4.7)	5.4	14	5.4	81	11
AOC4-T3a	10/23/08	2.5 - 3	N	ND (5.1)	ND (5.1)	10	24	62	360	280	670	200	160	480	55	810	14	180	12	370	650	490	3,800	440
	10/23/08	2.5 - 3	FD	ND (5.1)	ND (5.1)	ND (5.1)	33	50	390	270	560	170	140	480	49	880	19	150	22	510	700	630	3,800	420
AOC4-T3b	10/23/08	2.5 - 3	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	69	60	98	38	30	70	11	80	ND (5.2)	35	ND (4.9)	16	77	16	570	88
AOC4-T3c	10/23/08	2.5 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	11	20	90	78	140	56	40	90	15	240	6.9	51	ND (4.4)	170	180	210	980	120
AOC4-T4a	10/23/08	2.5 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	7.4	5.4	ND (5.1)	ND (5.1)	ND (5.1)	7.5	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	6.7	ND	27	4.9
AOC4-T4b	10/23/08	2.5 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	11	6	16	6.3	ND (5.1)	16	ND (5.1)	23	ND (5.1)	ND (5.1)	ND (4.8)	7.3	20	7.3	98	10
AOC4-T4c	10/23/08	2.5 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (4.9)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC4-Wood1 [2]	10/03/08	0	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	12	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	86	ND (5.2)	ND (5.2)	ND (5.2)	100	48	110	130	4.5
AOC4-Wood2 [2]	10/03/08	0	N	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	5.4	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	7.1	ND (5.4)	ND (5.4)	ND (5.4)	9.3	6.2	9.3	19	5
DR-1	04/24/97	0 - 0.5	N	---	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND	ND	ND (290)
	04/24/97	0.5 - 1	N	---	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND	ND	ND (290)
DR-2	04/24/97	0 - 0.5	N	---	ND (330)	ND (330)	ND (330)	ND (330)	670	490	680	350	710	820	130 J	1,100	ND (330)	330 J	ND (330)	130 J	2,100	130	7,400	780
DR-3	04/24/97	0 - 0.5	N	---	ND (330)	ND (330)	ND (330)	ND (330)	620 J	540 J	1,400 J	350 J	ND (330)	820 J	ND (330)	820 J	ND (330)	340 J	ND (330)	200 J	1,500 J	200	6,400	860
	04/24/97	0.5 - 1	N	---	ND (330)	ND (330)	ND (330)	ND (330)	140 J	110 J	320 J	100 J	ND (330)	190 J	ND (330)	230 J	ND (330)	94 J	ND (330)	61 J	430	61	1,600	240
DR-4	04/24/97	0 - 0.5	N	---	ND (340)	ND (340)	ND (340)	ND (340)	100 J	71 J	240 J	ND (340)	ND (340)	140 J	ND (340)	250 J	ND (340)	56 J	ND (340)	88 J	310 J	88	1,200	190
DR-5	04/24/97	0 - 0.5	N	---	ND (340)	ND (340)	ND (340)	ND (340)	49 J	ND (340)	ND (340)	ND (340)	ND (340)	68 J	ND (340)	160 J	ND (340)	ND (340)	ND (340)	110 J	160 J	110	440	280
	04/24/97	0.5 - 1	N	---	ND (350)	ND (350)	ND (350)	ND (350)	61 J	ND (350)	240 J	82 J	ND (350)	140 J	ND (350)	120 J	ND (350)	74 J	ND (350)	59 J	170 J	59	890	290
DR-6	04/24/97	0 - 0.5	N	---	ND (330)	ND (330)	ND (330)	ND (330)	280 J	140 J	410	130 J	ND (330)	280 J	ND (330)	650	ND (330)	78 J	120 J	570	750	690	2,700	290
	04/24/97	0.5 - 1	N	---	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	37 J	ND	37	310
DR-7	04/24/97	0 - 0.5	N	---	ND (330)	ND (330)	ND (330)	ND (330)	130 J	58 J	190 J	ND (330)	ND (330)	130 J	ND (330)	200 J	ND (330)	ND (330)	ND (330)	140 J	320 J	140	1,000	180
	04/24/97	0.5 - 1	N	---	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	ND (380)	43 J	ND	43	330

1 white powder sample
2 wood sample

µg/kg micrograms per kilogram
ft bgs feet below ground surface
N primary sample
FD field duplicate
--- not analyzed
ND (x) not detected at the listed reporting limit (x)
J concentration or reporting limit estimated by laboratory or data validation

TABLE 1-4
Soil Sample Results: VOCs, SVOCs, TPHs, and pH
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Semi-volatile Organic Compounds (µg/kg)							VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry
Location	Date	Depth (ft bgs)	Sample Type	2,4-Dimethylphenol	Bis (2-ethylhexyl) phthalate	Butyl benzyl phthalate	Carbazole	Dibenzofuran	Di-N-butyl phthalate	Pentachloro phenol	Methyl acetate	TPH as gasoline	TPH as diesel	TPH as motor oil	pH
AOC4-1	10/14/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	ND (10)	---
	10/14/08	0.5 - 1	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	ND (10)	---
	10/14/08	2 - 3	N	ND (330)	810	ND (330)	---	ND (330)	ND (330)	ND (1,600)	12	ND (0.98)	ND (10)	ND (10)	---
AOC4-2	10/03/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	11.2	---
	10/03/08	0.5 - 1	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	148	---
AOC4-3	08/24/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	ND (10)	---
	08/24/08	0.5 - 1	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	ND (10)	---
AOC4-4	08/24/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	490	ND (330)	ND (330)	1,900	---	---	ND (10)	ND (10)	---
	08/24/08	0 - 0.5	FD	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	25.5	---
AOC4-5	10/03/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	18.1	---
AOC4-6	08/24/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	ND (10)	---
	08/24/08	0.5 - 1	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	11.1	---
	10/03/08	2 - 3	N	ND (340)	ND (340)	ND (340)	---	ND (340)	ND (340)	ND (1,600)	---	ND (1)	ND (10)	ND (10)	---
AOC4-7	10/03/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	ND (10)	---
AOC4-8	10/03/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	10.9	---
AOC4-9	08/24/08	0 - 0.5	N	ND (330)	2,000	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	14.1	---
AOC4-10	10/03/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	10.8	16.8	---
AOC4-11	10/03/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	---	---	12	11.7	---
AOC4-12A	08/24/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	ND (10)	---
AOC4-12	10/03/08	0 - 0.5	N	ND (330) J	ND (330) J	ND (330) J	---	ND (330) J	ND (330) J	ND (1,600) J	---	---	67.7 J	54.4 J	8.54 J
	10/03/08	0.5 - 1	N	ND (330) J	ND (330) J	ND (330) J	---	ND (330) J	ND (330) J	ND (1,600) J	---	---	48.4 J	43.1 J	8.57 J
AOC4-13	08/24/08	0 - 0.5	N	ND (1,700)	ND (1,700)	ND (1,700)	ND (1,700)	ND (1,700)	ND (1,700)	ND (8,000) *	---	---	91.8	444	---
AOC4-14	08/24/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	44.7	---
	08/24/08	0 - 0.5	FD	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	11.9	60.5	---

TABLE 1-4
Soil Sample Results: VOCs, SVOCs, TPHs, and pH
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Semi-volatile Organic Compounds (µg/kg)							VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**2,4-Dimethylphenol**	**Bis (2-ethylhexyl) phthalate**	**Butyl benzyl phthalate**	**Carbazole**	**Dibenzofuran**	**Di-N-butyl phthalate**	**Pentachloro phenol**	**Methyl acetate**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**pH**
AOC4-15	09/19/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	132	---
	09/19/08	0.5 - 1	N	ND (330)	720	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	36.4	651	---
	09/19/08	2 - 3	N	ND (340)	ND (340)	ND (340)	---	ND (340)	ND (340)	ND (1,700)	---	ND (35)	ND (10)	155	---
AOC4-B10	10/05/08	0 - 0.5	N	ND (330) J	ND (330) J	ND (330) J	---	ND (330) J	ND (330) J	ND (1,600) J	---	---	ND (10) J	51.4 J	---
AOC4-B20	10/05/08	0 - 0.5	N	ND (340) J	ND (340) J	ND (340) J	---	ND (340) J	ND (340) J	ND (1,700) J	---	---	10.2 J	67.6 J	---
AOC4-B30	10/05/08	0 - 0.5	N	ND (450) J	ND (450) J	ND (450) J	---	ND (450) J	ND (450) J	ND (2,200) J	---	---	57.9 J	541 J	---
AOC4-D10	10/05/08	0 - 0.5	N	ND (1,800) J	ND (1,800) J	ND (1,800) J	---	ND (1,800) J	ND (1,800) J	ND (8,800) J *	---	---	95.4 J	219 J	---
AOC4-D20	10/05/08	0 - 0.5	N	ND (360) J	ND (360) J	ND (360) J	---	ND (360) J	ND (360) J	ND (1,800) J	---	---	10 J	59.7 J	---
AOC4-D30 [1]	10/05/08	0 - 0.5	N	ND (850) J	ND (850) J	ND (850) J	---	ND (850) J	ND (850) J	ND (4,100) J	---	---	12.2 J	83.5 J	---
AOC4-DE5	10/05/08	0 - 0.5	N	ND (370) J	ND (370) J	ND (370) J	ND (370) J	ND (370) J	ND (370) J	ND (1,800) J	---	---	73.8 J	186 J	---
AOC4-GH10	10/05/08	0 - 0.5	N	ND (360) J	ND (360) J	ND (360) J	---	ND (360) J	ND (360) J	ND (1,700) J	---	---	ND (10) J	20.6 J	---
AOC4-GH30	10/05/08	0 - 0.5	N	ND (360) J	ND (360) J	ND (360) J	---	ND (360) J	ND (360) J	ND (1,700) J	---	---	72.9 J	334 J	---
AOC4-I20	10/05/08	0 - 0.5	N	ND (350) J	ND (350) J	ND (350) J	---	ND (350) J	ND (350) J	ND (1,700) J	---	---	ND (10) J	ND (10) J	---
AOC4-I30	10/05/08	0 - 0.5	N	ND (360) J	ND (360) J	ND (360) J	---	ND (360) J	ND (360) J	ND (1,700) J	---	---	ND (10) J	10.3 J	---
AOC4-Z25	10/05/08	0 - 0.5	N	ND (340) J	ND (340) J	ND (340) J	---	ND (340) J	ND (340) J	ND (1,600) J	---	---	ND (10) J	ND (10) J	---
AOC4-SS1	09/19/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	---	ND (330)	ND (330)	ND (1,600)	---	---	10.8	87.3	---
AOC4-SS2	10/03/08	0 - 0.5	N	ND (830)	ND (830)	ND (830)	---	ND (830)	ND (830)	ND (4,000)	---	---	147	312	---
AOC4-SS3	10/03/08	0 - 0.5	N	ND (830)	ND (830)	ND (830)	---	ND (830)	ND (830)	ND (4,000)	---	---	48.2	301	---
AOC4-Stained	10/04/08	0 - 0.5	N	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	---	---	ND (10)	28.5	---
AOC4-T1a	10/22/08	0 - 0.5	N	ND (340)	ND (340)	ND (340)	ND (340)	ND (340)	ND (340)	ND (1,700)	---	---	ND (10)	38.4	---
	10/22/08	3.5 - 4	N	ND (360)	ND (360)	ND (360)	---	ND (360)	ND (360)	ND (1,700)	---	ND (0.8) J	ND (10)	18.7	---
AOC4-T2a	10/22/08	3.5 - 4	N	ND (380)	ND (380)	ND (380)	---	ND (380)	ND (380)	ND (1,800)	---	ND (1.2) J	ND (10)	12.2	---
AOC4-T2b	10/22/08	2.5 - 3	N	ND (340)	ND (340)	ND (340)	---	ND (340)	ND (340)	ND (1,600)	---	ND (1.4) J	10.5	145	---
	10/22/08	7.5 - 8	N	ND (360)	ND (360)	ND (360)	---	ND (360)	ND (360)	ND (1,700)	---	ND (1.2) J	ND (10)	ND (10)	---

TABLE 1-4
Soil Sample Results: VOCs, SVOCs, TPHs, and pH
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Semi-volatile Organic Compounds (µg/kg)							VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**2,4-Dimethylphenol**	**Bis (2-ethylhexyl) phthalate**	**Butyl benzyl phthalate**	**Carbazole**	**Dibenzofuran**	**Di-N-butyl phthalate**	**Pentachloro phenol**	**Methyl acetate**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**pH**
AOC4-T2c	10/22/08	0 - 0.5	N	ND (360)	ND (360)	ND (360)	---	ND (360)	ND (360)	ND (1,800)	---	---	ND (10)	23.6	---
	10/22/08	2.5 - 3	N	ND (350)	ND (350)	ND (350)	---	ND (350)	ND (350)	ND (1,700)	---	ND (1) J	ND (10)	30.7	---
AOC4-T3a	10/23/08	2.5 - 3	N	ND (1,700)	ND (1,700)	ND (1,700)	---	ND (1,700)	ND (1,700)	ND (8,200) *	---	ND (0.8)	131	1,070	---
	10/23/08	2.5 - 3	FD	ND (1,700)	ND (1,700)	ND (1,700)	---	ND (1,700)	ND (1,700)	ND (8,100) *	---	ND (0.94)	122	1,240	---
AOC4-T3b	10/23/08	2.5 - 3	N	ND (340)	ND (340)	ND (340)	---	ND (340)	ND (340)	8,900	---	ND (1.4)	ND (10)	ND (10)	---
AOC4-T3c	10/23/08	2.5 - 3	N	ND (340)	ND (340)	ND (340)	---	ND (340)	ND (340)	ND (1,600)	---	ND (0.91)	ND (10)	10.5	---
AOC4-T4a	10/23/08	2.5 - 3	N	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	ND (6.2)	ND (0.96)	ND (10)	ND (10)	---
AOC4-T4b	10/23/08	2.5 - 3	N	ND (340)	ND (340)	ND (340)	---	ND (340)	ND (340)	ND (1,600)	---	ND (0.94)	ND (10)	ND (10)	---
AOC4-T4c	10/23/08	2.5 - 3	N	ND (340)	ND (340)	ND (340)	---	ND (340)	ND (340)	ND (1,600)	---	ND (0.96) J	ND (10)	ND (10)	---
AOC4-Wood1 [2]	10/03/08	0	N	ND (340)	ND (340)	ND (340)	---	ND (340)	ND (340)	ND (1,700)	---	---	89.5	562	---
AOC4-Wood2 [2]	10/03/08	0	N	ND (350)	ND (350)	ND (350)	---	ND (350)	ND (350)	ND (1,700)	---	---	19.2	103	---
DR-1	04/24/97	0 - 0.5	N	ND (330)	37 J	ND (330)	ND (330)	ND (330)	59 J	ND (1,600)	---	---	---	---	---
	04/24/97	0.5 - 1	N	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	---	---	---	---	---
DR-2	04/24/97	0 - 0.5	N	ND (330)	40 J	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	---	---	---	---	---
DR-3	04/24/97	0 - 0.5	N	ND (330)	86 J	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	---	---	---	---	---
	04/24/97	0.5 - 1	N	ND (330)	62 J	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	---	---	---	---	---
DR-4	04/24/97	0 - 0.5	N	ND (340)	47 J	60 J	ND (340)	ND (340)	ND (340)	ND (1,700)	---	---	---	---	---
DR-5	04/24/97	0 - 0.5	N	ND (340)	ND (340)	ND (340)	ND (340)	ND (340)	ND (340)	ND (1,600)	---	---	---	---	---
	04/24/97	0.5 - 1	N	ND (350)	51 J	ND (350)	ND (350)	ND (350)	ND (350)	ND (1,700)	---	---	---	---	---
DR-6	04/24/97	0 - 0.5	N	ND (330)	130 J	ND (330)	ND (330)	53 J	ND (330)	ND (1,600)	---	---	---	---	---
	04/24/97	0.5 - 1	N	44 J	ND (350)	ND (350)	ND (350)	ND (350)	ND (350)	ND (1,700)	---	---	---	---	---
DR-7	04/24/97	0 - 0.5	N	ND (330)	56 J	ND (330)	ND (330)	ND (330)	ND (330)	ND (1,600)	---	---	---	---	---
	04/24/97	0.5 - 1	N	ND (380)	170 J	ND (380)	ND (380)	ND (380)	ND (380)	ND (1,800)	---	---	---	---	---
WP-DR	11/23/98	0	N	---	---	---	---	---	---	---	---	---	---	---	9.95

1 white powder sample
2 wood sample

Only detected SVOCs and VOCs are presented.

VOC	volatile organic compound
SVOC	semivolatile organic compounds
TPH	total petroleum hydrocarbon
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND (x)	not detected at the listed reporting limit (x)
J	concentration or reporting limit estimated by laboratory or data validation

TABLE 1-5
Soil Sample Results: Pesticides
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Pesticides (µg/kg)																		
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**4,4-DDD**	**4,4-DDE**	**4,4-DDT**	**Aldrin**	**alpha-BHC**	**alpha-Chlordane**	**beta-BHC**	**delta-BHC**	**Dieldrin**	**Endo sulfan I**	**Endo sulfan II**	**Endosulfan sulfate**	**Endrin**	**Endrin aldehyde**	**Endrin ketone**	**gamma-BHC**	**gamma-Chlordane**	**Heptachlor**	**Heptachlor Epoxide**	**Methoxy chlor**	**Toxaphene**
AOC4-1	10/14/08	0 - 0.5	N	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (2)	ND (1)	ND (2)	ND (2)	ND (2)	ND (2) J	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (5)	ND (50)
AOC4-4	08/24/08	0 - 0.5	N	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (2)	ND (1)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (5)	ND (50)
	08/24/08	0 - 0.5	FD	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (2)	ND (1)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (5)	ND (50)
AOC4-7	10/03/08	0 - 0.5	N	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (2)	ND (1)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (5)	ND (50)
AOC4-11	10/03/08	0 - 0.5	N	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (2)	ND (1)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (5)	ND (50)
AOC4-13	08/24/08	0 - 0.5	N	ND (2) J	ND (2) J	ND (2) J	ND (1) J	ND (1) J	ND (1) J	ND (1) J	ND (1) J	ND (2) J	ND (1) J	ND (2) J	ND (2) J	ND (2) J	ND (2) J	ND (2) J	ND (1) J	ND (1) J	ND (1) J	ND (1) J	ND (5) J	ND (50) J
AOC4-DE5	10/05/08	0 - 0.5	N	ND (2.3) J	ND (2.3) J	ND (2.3) J	ND (1.1) J	ND (1.1) J	ND (1.1) J	ND (1.1) J	ND (1.1) J	ND (2.3) J	ND (1.1) J	ND (2.3) J	ND (2.3) J	ND (2.3) J	ND (2.3) J	ND (2.3) J	ND (1.1) J	ND (1.1) J	ND (1.1) J	ND (1.1) J	ND (5.7) J	ND (57) J
AOC4-Stained	10/04/08	0 - 0.5	N	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (2)	ND (1)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (5)	ND (50)
AOC4-T1a	10/22/08	0 - 0.5	N	ND (2.1)	ND (2.1)	ND (2.1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (2.1)	ND (1)	ND (2.1)	ND (2.1)	ND (2.1)	ND (2.1)	ND (2.1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (5.2)	ND (52)
AOC4-T4a	10/23/08	2.5 - 3	N	ND (2)	ND (2) J	ND (2)	ND (1)	ND (1) J	ND (1) J	ND (1) J	ND (1)	ND (2) J	ND (1)	ND (2)	ND (2) J	ND (2)	ND (2)	ND (2) J	ND (1)	ND (1)	ND (1)	ND (1) J	ND (5.1)	ND (51)

µg/kg micrograms per kilogram
ft bgs feet below ground surface
N primary sample
FD field duplicate
--- not analyzed
ND (x) not detected at the listed reporting limit (x)
J concentration or reporting limit estimated by laboratory or data validation

TABLE 1-6
Soil Sample Results: Polychlorinated Biphenyls
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polychlorinated Biphenyls (µg/kg)									
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Aroclor 1016**	**Aroclor 1221**	**Aroclor 1232**	**Aroclor 1242**	**Aroclor 1248**	**Aroclor 1254**	**Aroclor 1260**	**Aroclor 1262**	**Aroclor 1268**	**Total PCBs**
AOC4-1	10/14/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	24	ND (17)	ND (17)	ND (17)	24
AOC4-4	08/24/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	230	120	ND (17)	ND (17)	350
	08/24/08	0 - 0.5	FD	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	840	430	ND (17)	ND (17)	1,300
AOC4-7	10/03/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	290	ND (17)	ND (17)	ND (17)	290
AOC4-11	10/03/08	0 - 0.5	N	ND (16)	ND (33)	ND (16)	ND (16)	ND (16)	44	ND (16)	ND (16)	ND (16)	44
AOC4-13	08/24/08	0 - 0.5	N	ND (17) J	ND (33) J	ND (17) J	ND (17) J	ND (17) J	790 J	290 J	ND (17) J	ND (17) J	1,100
AOC4-DE5	10/05/08	0 - 0.5	N	ND (19) J	ND (37) J	ND (19) J	ND (19) J	ND (19) J	780 J	ND (19) J	ND (19) J	ND (19) J	780
AOC4-Stained	10/04/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	35	ND (17)	ND (17)	ND (17)	35
AOC4-T1a	10/22/08	0 - 0.5	N	ND (17)	ND (34)	ND (17)	ND (17)	ND (17)	1,900	ND (17)	ND (17)	ND (17)	1,900
AOC4-T4a	10/23/08	2.5 - 3	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND

µg/kg micrograms per kilogram
ft bgs feet below ground surface
N primary sample
FD field duplicate
--- not analyzed
ND (x) not detected at the listed reporting limit (x)
J concentration or reporting limit estimated by laboratory or data validation

TABLE 1-7
Soil Sample Results: Asbestos
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Location	Date	Depth (ft bgs)	Sample Type	Asbestos		
				PLM/BULK [1]	CARB435/ PLM [2]	TEM [3]
AOC4-1	10/14/08	0 - 0.5	N	Not Present	---	---
	10/14/08	0.5 - 1	N	Not Present	---	---
	10/14/08	2 - 3	N	Not Present	---	---
AOC4-2	10/03/08	0 - 0.5	N	Present	ND (0.1)	---
	10/03/08	0.5 - 1	N	Present	ND (0.1)	---
AOC4-3	08/24/08	0 - 0.5	N	Not Present	---	---
	08/24/08	0.5 - 1	N	Not Present	---	---
AOC4-4	08/24/08	0 - 0.5	N	Present	ND (0.1)	---
	08/24/08	0 - 0.5	FD	Present	ND (0.1)	---
AOC4-5	10/03/08	0 - 0.5	N	Present	0.1	---
AOC4-6	08/24/08	0 - 0.5	N	Present	0.1	---
	08/24/08	0.5 - 1	N	Present	0.1	---
	10/03/08	2 - 3	N	Present	ND (0.1)	---
AOC4-7	10/03/08	0 - 0.5	N	Present	0.1	---
AOC4-8	10/03/08	0 - 0.5	N	Present	0.1	---
AOC4-9	08/24/08	0 - 0.5	N	Present	0.1	---
AOC4-10	10/03/08	0 - 0.5	N	Present	ND (0.1)	ND (0.07)
AOC4-11	10/03/08	0 - 0.5	N	Present	0.1	---
AOC4-12A	08/24/08	0 - 0.5	N	Not Present	---	---
AOC4-12	10/03/08	0 - 0.5	N	Not Present	---	---
	10/03/08	0.5 - 1	N	Not Present	---	---
AOC4-13	08/24/08	0 - 0.5	N	Present	0.1	---
AOC4-14	08/24/08	0 - 0.5	N	Present	ND (0.1)	---
	08/24/08	0 - 0.5	FD	Present	0.1	---
AOC4-15	09/19/08	0 - 0.5	N	Present	0.1	0.07
	09/19/08	0.5 - 1	N	Present	1.9	---
	09/19/08	2 - 3	N	Present	0.1	---
AOC4-B10	10/05/08	0 - 0.5	N	Present	ND (0.1)	---
AOC4-B20	10/05/08	0 - 0.5	N	Present	0.1	0.09
AOC4-B30	10/05/08	0 - 0.5	N	Not Present	ND (0.1)	---
AOC4-D10	10/05/08	0 - 0.5	N	Present	---	---
AOC4-D20	10/05/08	0 - 0.5	N	Not Present	ND (0.1)	---
AOC4-D30 [4]	10/05/08	0 - 0.5	N	Present	0.1	---
AOC4-DE5	10/05/08	0 - 0.5	N	Present	0.1	---
AOC4-GH10	10/05/08	0 - 0.5	N	Present	0.1	---
AOC4-GH30	10/05/08	0 - 0.5	N	Present	0.1	---
AOC4-I20	10/05/08	0 - 0.5	N	Present	0.1	---

TABLE 1-7
Soil Sample Results: Asbestos
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Location	Date	Depth (ft bgs)	Sample Type	Asbestos		
				PLM/BULK [1]	CARB435/ PLM [2]	TEM [3]
AOC4-I30	10/05/08	0 - 0.5	N	Not Present	---	---
AOC4-Z25	10/05/08	0 - 0.5	N	Not Present	---	---
AOC4-SS4 [5]	10/03/08	0 - 0.5	N	15	---	---
AOC4-Stained	10/04/08	0 - 0.5	N	Present	0.1	---
AOC4-T1a	10/22/08	0 - 0.5	N	Present	0.1	0.08
	10/22/08	3.5 - 4	N	Not Present	---	---
AOC4-T2a	10/22/08	3.5 - 4	N	Not Present	---	---
AOC4-T2b	10/22/08	2.5 - 3	N	Present	0.3	---
	10/22/08	7.5 - 8	N	Present	ND (0.1)	---
AOC4-T2c	10/22/08	0 - 0.5	N	Present	0.1	0.16
	10/22/08	2.5 - 3	N	Not Present	---	---
AOC4-T3a	10/23/08	2.5 - 3	N	Present	ND (0.1)	---
	10/23/08	2.5 - 3	FD	Present	0.1	---
AOC4-T3b	10/23/08	2.5 - 3	N	Not Present	---	---
AOC4-T3c	10/23/08	2.5 - 3	N	Not Present	---	---
AOC4-T4a	10/23/08	2.5 - 3	N	Not Present	---	---
AOC4-T4b	10/23/08	2.5 - 3	N	Not Present	---	---
AOC4-T4c	10/23/08	2.5 - 3	N	Not Present	---	---

[1] Polarized light microscopy of bulk samples
[2] California Air Resource Board Method 435/polarized light microscopy of bulk samples
[3] Transmission electron microscopy
[4] white powder sample
[5] debris sample

ft bgs - feet below ground surface
FD - field duplicate
--- - not analyzed
ND (x) - not detected at the listed reporting limit (x)

TABLE 1-8
Soil Sample Results: Dioxins/Furans
AOC 4 - Debris Ravine
Work Plan for Time-Critical Removal Action at AOC 4
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Location	Date	Depth (ft bgs)	Sample Type	Dioxin/Furans (ng/kg)																	
				1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-HxCDF	1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-HxCDF	1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDF	2,3,4,6,7,8-HxCDF	2,3,4,7,8-PeCDF	2,3,7,8-TCDD	2,3,7,8-TCDF	OCDD	OCDF	TEQ [1]	TEQ Bird [2]
AOC4-16	12/16/08	0 - 0.5	N	12,000	ND (11,000)	560	660	3,100	ND (1,600)	3,200	940	680	680	2,100	4,500	4,100	140 J	1,700	45,000	1,800	3,900	8,200
AOC4-17	12/16/08	3 - 3.5	N	6,000	ND (3,300)	ND (93)	76	170	290	ND (250)	140	41	ND (56)	95	250	160	13	71	54,000	4,300	300	390
AOC4-D-1	07/30/09	0 - 0.5	N	36	19	ND (0.7)	ND (2)	ND (0.68)	ND (1)	ND (1.8)	ND (1)	ND (0.86)	ND (1.2)	ND (1.1)	ND (0.73)	2 J	0.65 J	ND (1.2)	480	15 J	3	4.5
AOC4-D-2	07/30/09	0 - 0.5	N	46,200	5,000	ND (2)	150	64	730	260	250	ND (1.4)	ND (1)	ND (0.46)	62	ND (0.46)	8.1	29	338,000	6,600	780	250
AOC4-D-3	07/30/09	0 - 0.5	N	271,000	50,200	ND (7.2)	730	850	8,500	2,100	2,000	ND (5.5)	ND (230)	510	1,000	ND (2.5)	58	180	3,400,000	42,100	6,000	2,200
AOC4-D-4	07/30/09	0 - 0.5	N	5,000	1,300	43	38	57	150	ND (97)	57	24	7.8 J	27	87	46	3.2 J	18	44,600 J	1,200	150	140
AOC4-D-5	07/30/09	0 - 0.5	N	18,700	7,490	330	ND (190)	430	790	530	ND (360)	110	ND (120)	250	340	1,300	ND (16)	960	147,000 J	8,000	1,100	2,700
AOC4-D-6	07/30/09	0 - 0.5	N	1,800	390	17	50	52	120	66	87	12 J	ND (30)	27	64	50	5.8	19	9,800	200	110	130

[1] TEQ Human and Ecological Receptors except birds, DTSC/HERD Human Health Risk Assessment (HHRA) NOTE 2, California Department of Toxic Substances Control, January 15, 2009.

[2] Environmental Health Perspectives Volume 106, Number 12, December 1998

TEQ 2,3,7,8 TCDD toxicity equivalency quotient = Σ (Concentration x TEF)
ND (x) not detected at the listed reporting limit (x)
--- not applicable
ng/kg nanogram per kilogram = picogram per gram (pg/g)
ft bgs feet below ground surface
N primary sample
J concentration or reporting limit estimated by laboratory or data validation

TABLE 1-9
Target Endpoint Concentrations
Work Plan for Time-Critical Removal Action at AOC4
PG&E Topock Compressor Station, Needles, California

Refuge Property

Parameter	Units	Topock Soil Background Threshold Value (BTV)[1]	Other Screening Level[2]
Metals			
Antimony	mg/kg	NA	
Arsenic	mg/kg	11	
Barium	mg/kg	410	
Cadmium	mg/kg	1.1	
Chromium	mg/kg	39.8	
Chromium, Hexavalent	mg/kg	0.83	
Cobalt	mg/kg	12.7	
Copper	mg/kg	16.8	
Lead	mg/kg	8.39	
Mercury	mg/kg	NA	
Molybdenum	mg/kg	1.37	
Nickel	mg/kg	27.3	
Selenium	mg/kg	1.47	
Vanadium	mg/kg	52.2	
Zinc	mg/kg	58.0	
Semivolatile Organic Compounds			
Pentachlorophenol	µg/kg		2,490
Polycyclic Aromatic Hydrocarbons			
B(a)P Equivalent [3]	µg/kg	NA	NA
Dioxins and Furans			
TEQ Human/Mammal [4]	µg/kg		0.0016
TEQ Bird[6]	µg/kg		0.0016
Polychlorinated Biphenyls (PCBs)			
Total PCBs	µg/kg		204

TABLE 1-9
Target Endpoint Concentrations
Work Plan for Time-Critical Removal Action at AOC4
PG&E Topock Compressor Station, Needles, California

PG&E Property

Parameter	Units	Topock Soil Background Threshold Value (BTV)[1]	Other Screening Level[2]	Native Alluvium Screening Levels[5]
Metals				
Antimony	mg/kg		380	3,800
Arsenic	mg/kg	11		110
Barium	mg/kg		6,300	63,000
Cadmium	mg/kg		810	8,100
Chromium	mg/kg		1,400	14,000
Chromium, Hexavalent	mg/kg		37	370
Cobalt	mg/kg		300	3,000
Copper	mg/kg		38,000	380,000
Lead	mg/kg		800	8,000
Mercury	mg/kg		180	1,800
Molybdenum	mg/kg		4,800	480,000
Nickel	mg/kg		16,000	160,000
Selenium	mg/kg		4,800	480,000
Vanadium	mg/kg		5,200	520,000
Zinc	mg/kg		100,000	1,000,000
Semivolatile Organic Compounds				
Pentachlorophenol	µg/kg		9,000	90,000
Polycyclic Aromatic Hydrocarbons				
B(a)P Equivalent [3]	µg/kg		130	1,300
Dioxins and Furans				
TEQ Human [4]	µg/kg		0.050	0.50
Polychlorinated Biphenyls (PCBs)				
Total PCBs	µg/kg		740	7,400

Source: Table 2 in DOI's Memorandum "Request for Time-Critical Removal Action Number 4 at AOC 4 Debris Ravine, Pacific Gas and Electric Topock Compressor Station" May 28, 2009. PCBs were added subsequent to DOI review of the Draft AOC4 TCRA Work Plan, October 30, 2009.

[1] Revised Soil Background Investigation at the Pacific Gas and Electric Company, Topock Compressor Station, Needles, California, Technical Memorandum, May 2009.

[2] Other screening levels include: commercial/industrial California human health screening levels and USEPA industrial regional screening levels for PG&E property, and ecological comparison values and residential preliminary remediation goal for refuge property.

[3] Expressed as Benzo (a) pyrene equivalents.

[4] As tetrachlorodibenzo-p-dioxin Toxic Equivalent (TCDD TEQ).

[5] Screening levels for Native Alluvium are 10 times the target endpoints.

[6] TEQ Bird was added at PG&E's request (12/28/09) and DOI's approval (Jan. 2010).

TABLE 2-1
Laboratory Confirmation Analysis
Work Plan for Time-Critical Removal Action at AOC 4
PG&E Topock Compressor Station, Needles, California

Parameter [a]	Units	Method	Laboratory [c]
Dioxins and Furans			
TEQ Human	ng/kg	SW 8290[b]	APPL
Polychlorinated Biphenyls (PCBs)			
PCB (Aroclors or Congeners)	µg/kg	SW8082[b]	ATL
Metals			
Antimony	mg/kg	SW6010B[b]	ATL
Arsenic	mg/kg	SW6010B[b]	ATL
Barium	mg/kg	SW6010B[b]	ATL
Beryllium	mg/kg	SW6010B[b]	ATL
Cadmium	mg/kg	SW6010B[b]	ATL
Chromium	mg/kg	SW6010B[b]	ATL
Cobalt	mg/kg	SW6010B[b]	ATL
Copper	mg/kg	SW6010B[b]	ATL
Lead	mg/kg	SW6010B[b]	ATL
Molybdenum	mg/kg	SW6010B[b]	ATL
Nickel	mg/kg	SW6010B[b]	ATL
Selenium	mg/kg	SW6010B[b]	ATL
Silver	mg/kg	SW6010B[b]	ATL
Thallium	mg/kg	SW6010B[b]	ATL
Vanadium	mg/kg	SW6010B[b]	ATL
Zinc	mg/kg	SW6010B[b]	ATL
Mercury	mg/kg	SW7471A[b]	ATL
Chromium, Hexavalent	mg/kg	SW7199/SW3060A[b]	ATL
Semivolatile Organic Compounds			
Pentachlorophenol	µg/kg	SW8270-Selected Ion Monitoring [b]	ATL
Polycyclic Aromatic Hydrocarbons			
B(a)P Equivalent	µg/kg	SW8270-Selected Ion Monitoring [b]	ATL

[a] See Table 1-9 for endpoint target levels.
[b] SW-846 Test Methods for Evaluating Solid Waste, 3rd Edition, revision 4, 1996.
[c] Advanced Technology Laboratories (ATL) of Signal Hill, California; the ATL satellite laboratory of Las Vegas, Nevada; and Agriculture & Priority Pollutants Laboratories, Inc. (APPL) Clovis, California.

TABLE 4-1
Hazardous Waste Characteristic Levels for Selected Constituents of Concern
Work Plan for Time-Critical Removal Action at AOC4
PG&E Topock Compressor Station, Needles, California

Constituent	Max. Detection (mg/kg) [7]	CA TTLC [1] (mg/kg)	CA STLC [2][8] (mg/l)	RCRA TC [3][9] (mg/l)
Antimony	69	500	15	NA
Arsenic	40	500	5.0	5.0
Asbestos	NR	1%	NA	NA
Barium	2,900	10,000[5]	100	NA
Cadmium	27	100	1.0	1.0
Chromium	15,000	2,500	5 [4]	5.0
Hexavalent Chromium	1,560	500	5	NA
Cobalt	61	8,000	80	NA
Copper	5,900	2,500	25	NA
Lead	11,000	1,000	5.0	5.0
Manganese	480	NA	NA	NA
Mercury	29	20	0.2	0.2
Molybdenum	190	3,500[6]	350	NA
Nickel	580	2,000	20	NA
Selenium	1.7	100	1.0	1.0
Vanadium	57	2,400	24	NA
Zinc	9,900	5,000	250	NA
PAHs	12,000	NA	NA	NA
Pentachlorophenol	8.9	17	1.7	100
Dioxin	0.0039	0.01	0.001	NA

Notes:
NA = constituent does not have a hazardous waste characteristic level.
NR = not reported.
(1) TTLC = total threshold limit concentration.
(2) STLC = soluble threshold limit concentration measured using the California Waste Extraction Test.
(3) RCRA TC = Resource Conservation and Recovery toxicity characteristic, measured using toxicity characteristic leaching procedure (TCLP).
(4) If the soluble chromium as determined by the TCLP is less than 5 mg/L, and the waste is not otherwise identified as a RCRA hazardous waste, then the soluble threshold limit concentration level is 560 mg/L instead of 5.0 mg/L.
(5) Excluding barium sulfate.
(6) Excluding molybdenum disulfide.
(7) Source: DOI Action Memorandum (2009a)
(8) The maximum detected concentration, which is a total value expressed in mg/kg, cannot be compared directly to the STLC, which is expressed in mg/l and is evaluated using the California Waste Extraction Test (WET). However, if a total value expressed in mg/kg is less than 10 times the STLC, it is unlikely that the STLC would be exceeded if the WET was performed.
(9) The maximum detected concentration, which is a total value expressed in mg/kg, cannot be compared directly to the TC level, which is expressed in mg/l and is evaluated using the Toxicity Characteristic Leaching Procedure (TCLP). However, if a total value expressed in mg/kg is less than 20 times the TC level, it is unlikely that the TC level would be exceeded if the TCLP was performed.

Figures

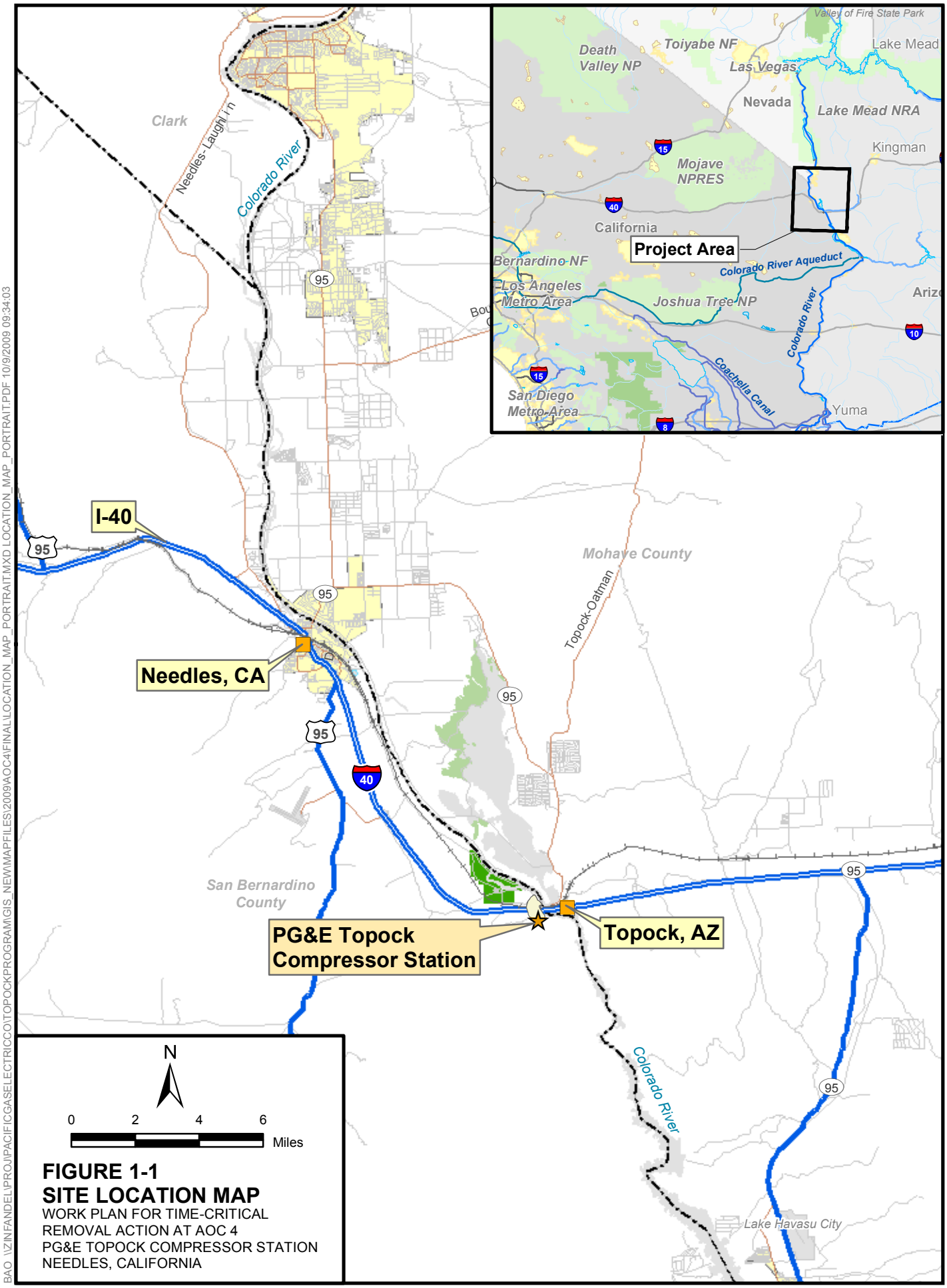
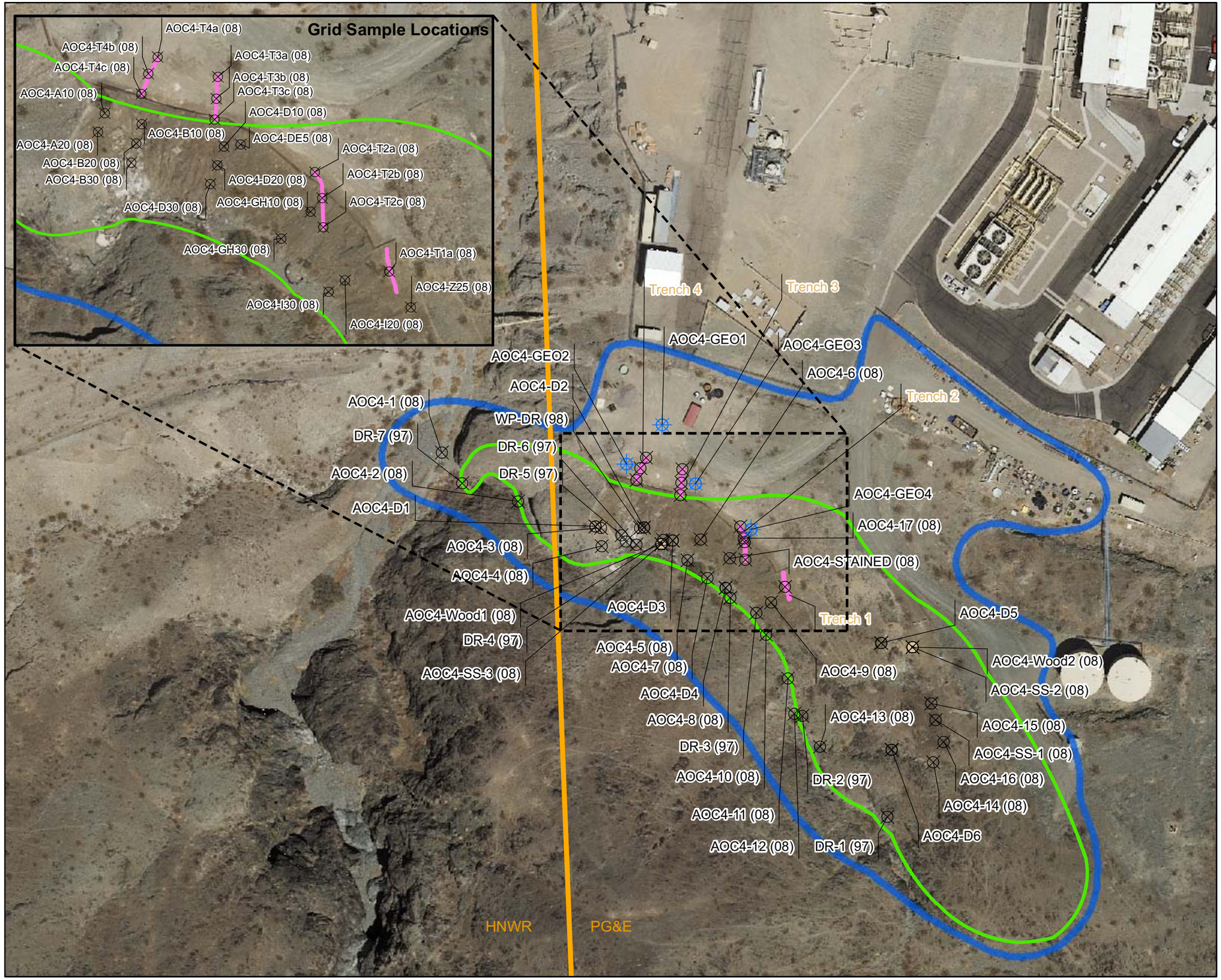
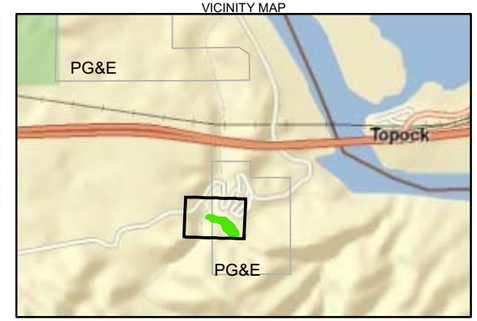


FIGURE 1-1
SITE LOCATION MAP
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

BAO \\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS_NEW\MAPFILES\2009\AOC4\FINAL\LOCATION_MAP_PORTRAIT.MXD LOCATION_MAP_PORTRAIT.PDF 10/9/2009 09:34:03



VICINITY MAP



LEGEND

- Sample Location
- Geotech Borings
- Wood Sample
- Trench
- Property Boundary
- AOC 4 Boundary From RFI (2007)
- Anticipated Primary Work Zone
- AOC4-7 (08)
  - Date of Installation
  - Location ID

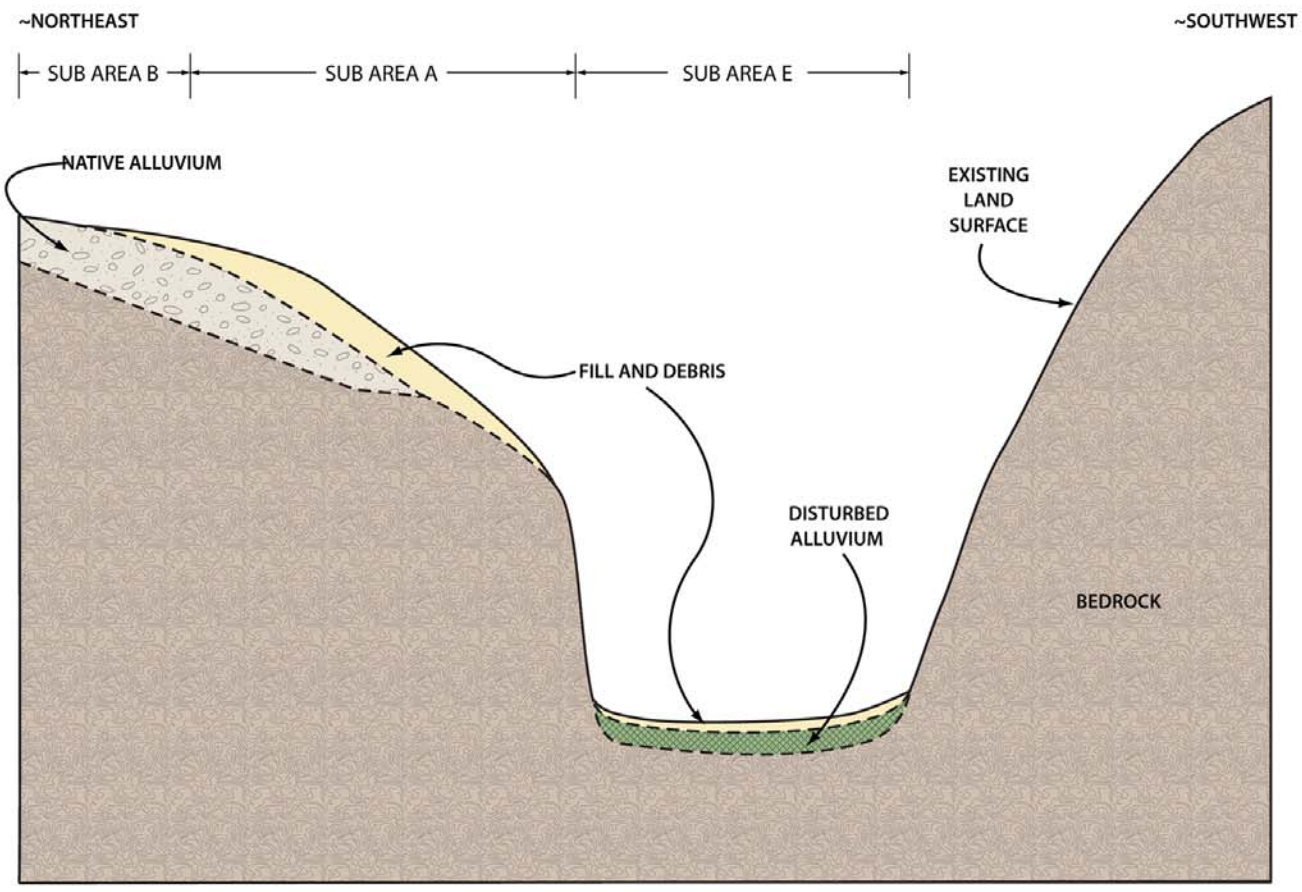
HNWR - Havasu National Wildlife Refuge
(Managed by U.S. Fish and Wildlife Service)

N

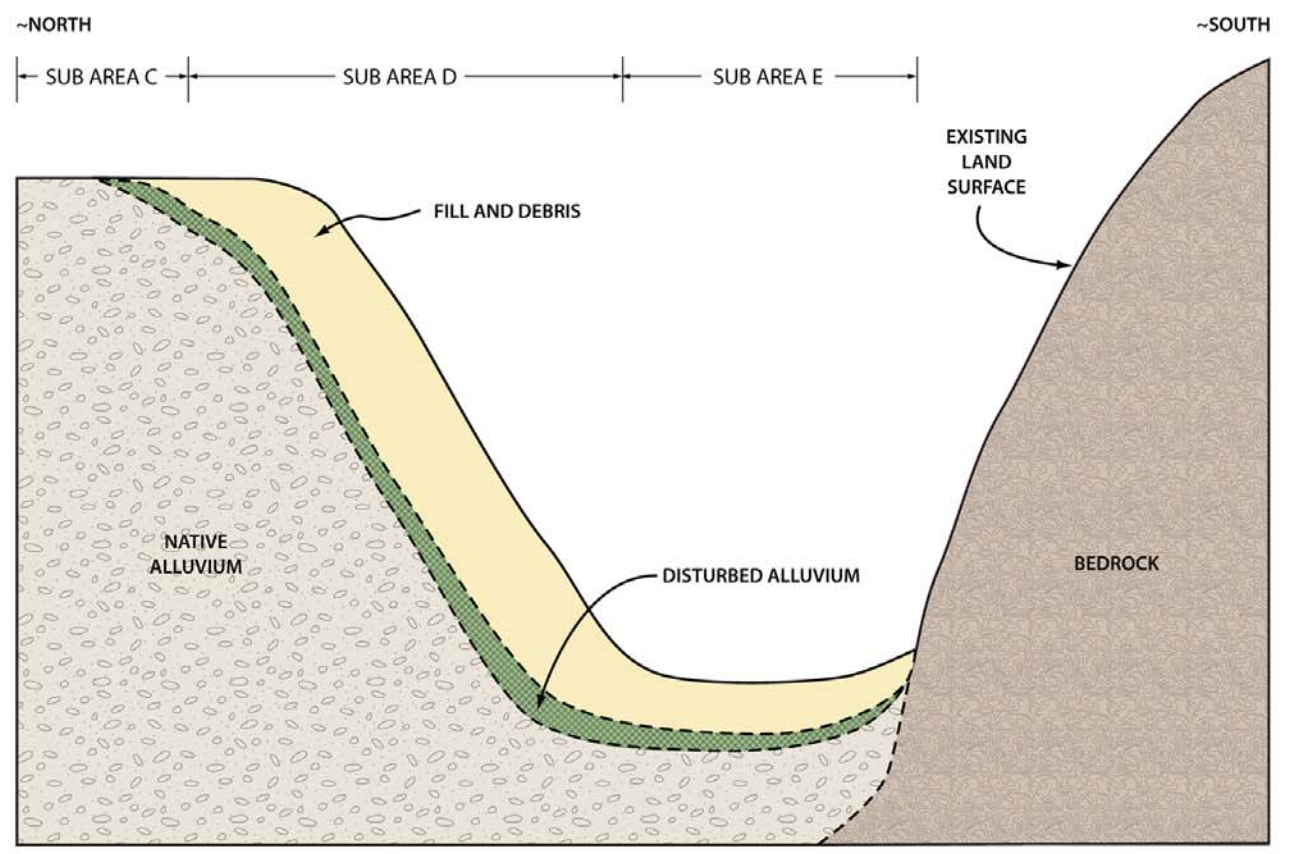
0 25 50 100 150 200
Feet

FIGURE 1-2
SAMPLE LOCATIONS
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

EASTERN AOC 4 AREA



WESTERN AOC 4 AREA



DEFINITIONS

FILL AND DEBRIS
Anthropogenic materials that may include, but are not limited to, ACM, white powder, ash, industrial scrap (metal, wire, gaskets, pipe, etc), concrete, wood, blasting sand, etc. This designation of material also includes locally-derived unconsolidated alluvium and colluvium that have been re-deposited by anthropogenic mechanisms and exhibit visual evidence of contamination (e.g., staining) and/or contain commingled debris.

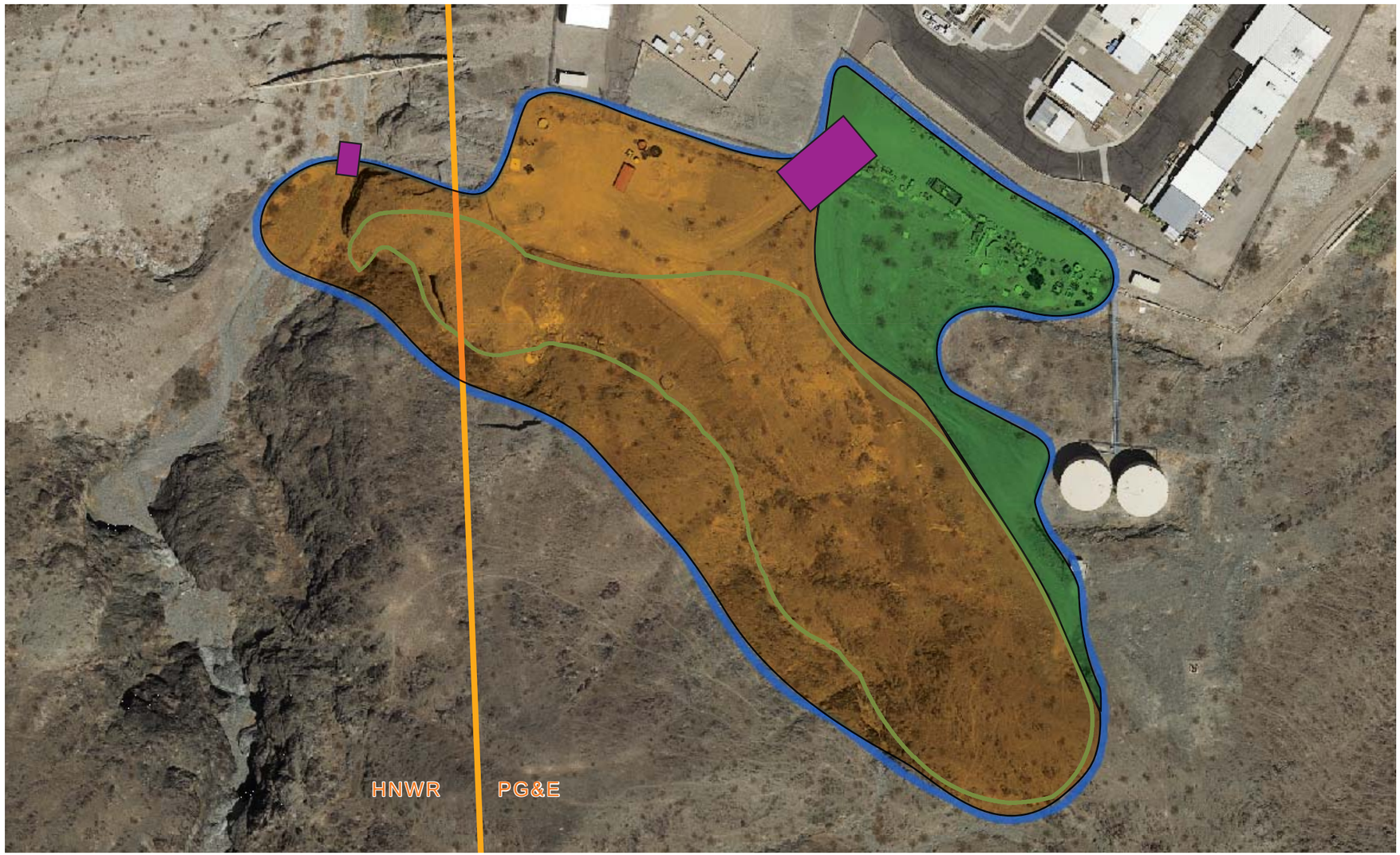
DISTURBED ALLUVIUM
Locally-derived unconsolidated alluvium and colluvium that have been re-deposited by anthropogenic mechanisms but exhibit no visible evidence of contamination and are not commingled with debris. This designation includes mixtures of fines, sand, gravel, and boulders representative of materials identified in undisturbed alluvial and bedrock outcrops in the immediate AOC 4 vicinity. These materials are loosely compacted, not cemented, and do not exhibit natural depositional features (e.g., bedding planes and/or preferred clast orientation/arrangement).

NATIVE ALLUVIUM
Locally-derived undisturbed alluvium, including alluvium and colluvium comprising the original slope. Native alluvium is observed in outcrops at the site as densely compacted and weakly cemented, and exhibiting natural depositional features (e.g., bedding planes and/or preferred clast orientation/arrangement). During previous activities at AOC 4, native alluvium was discerned from disturbed alluvium by the observation of a distinct change in material resistance/ penetration rate during trench excavation and/or soil sample collection.

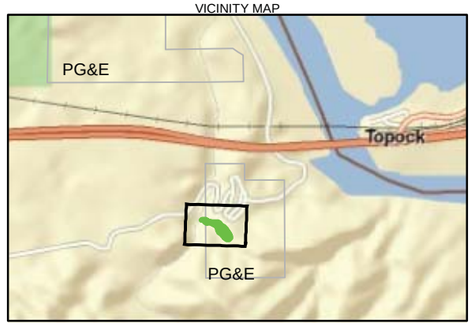
BEDROCK
Indurated rock (cemented or hardened). In the immediate AOC 4 area, bedrock consists of Pre-Tertiary metadiorite, which is a finely crystalline metamorphic rock that is grayish-green in appearance, and locally fractured. Miocene conglomerate bedrock, which is red-brown in appearance, calcite-cemented, and matrix supported, is encountered in the Topock area, but is not anticipated to be encountered at AOC 4.

NOTES:
- Drawings are not to scale.
- Drawings are conceptual and based on an incomplete understanding of site conditions.

FIGURE 1-3
DEFINITION AND CONCEPTUAL ORIENTATION OF SITE MATERIALS
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA



VICINITY MAP



LEGEND

- Property Boundary
- AOC 4 Boundary From RFI (2007)
- Anticipated Primary Work Zone
- Primary Support Zone
- Contaminant Reduction Zones
- General Exclusion Zone Area
- HNWR Havasu National Wildlife Refuge (Managed by U.S. Fish and Wildlife Service)

N

0 25 50 100 150 200

Feet

FIGURE 2-1
DESIGNATED WORK ZONES
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

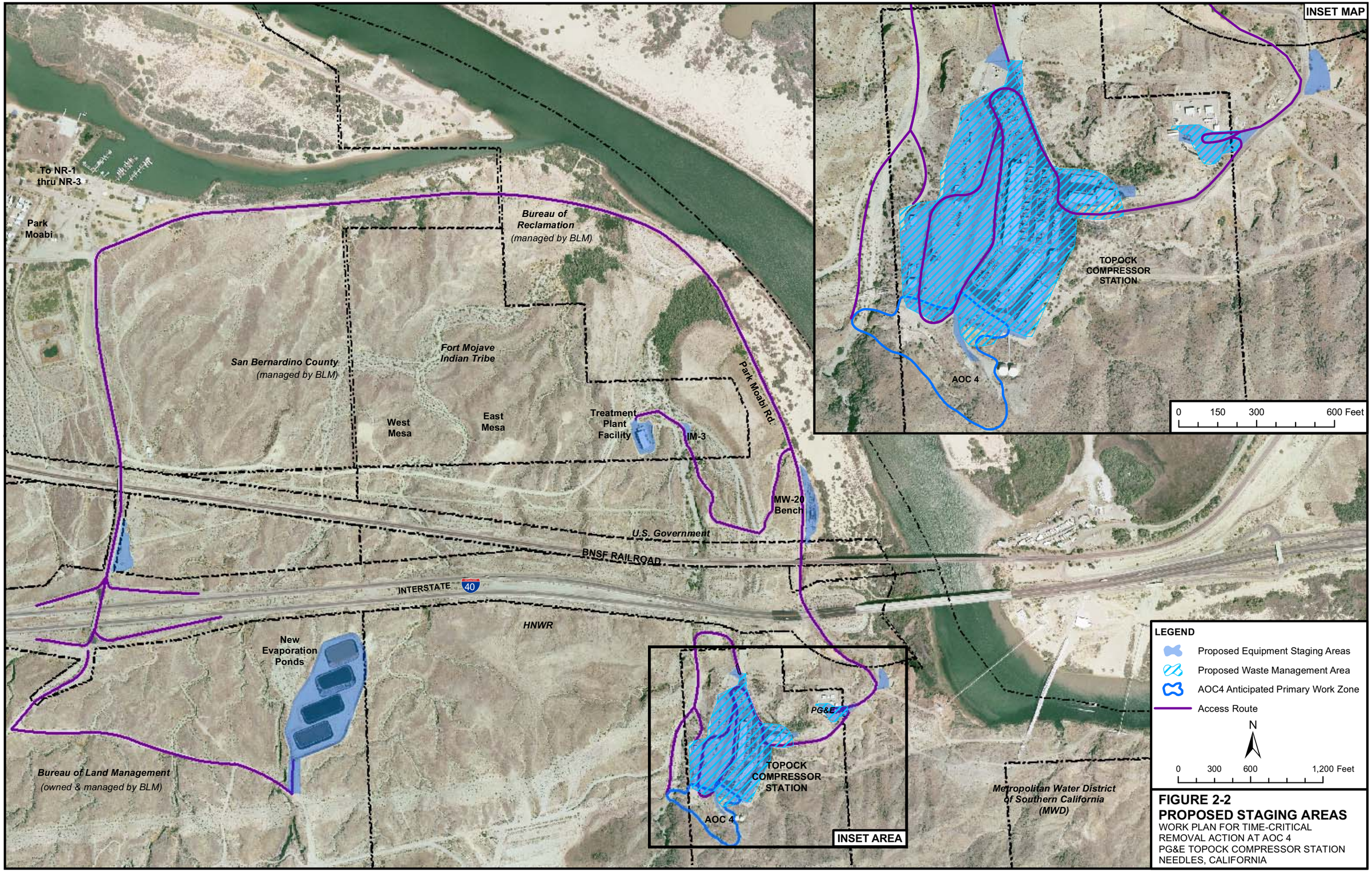
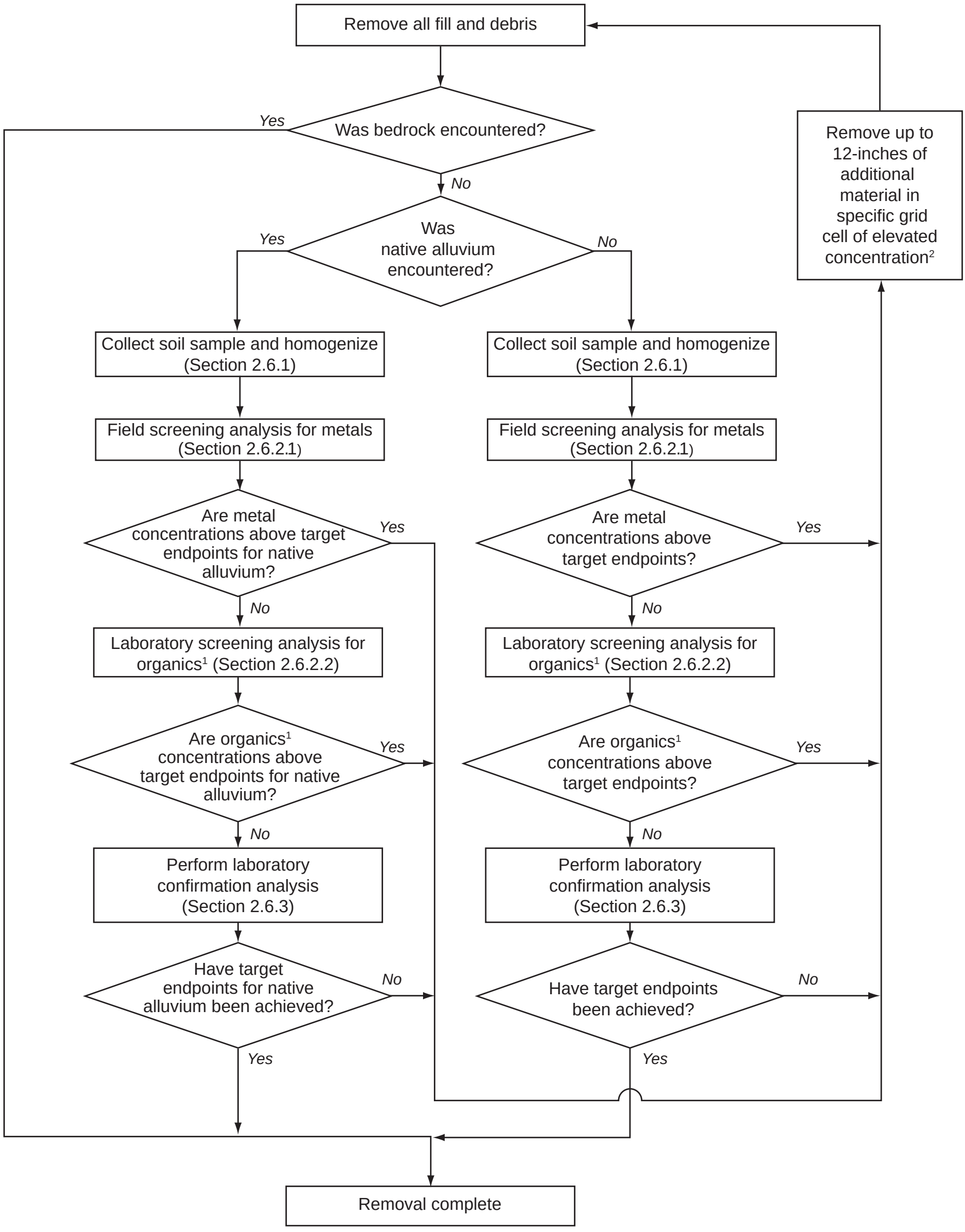


FIGURE 2-2
PROPOSED STAGING AREAS
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

BAO \\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS_NEW\MAPFILES\2009\AOC4\FINAL\TCRA_PROPOSED_STAGING_2009.MXD 12/1/2009 16:32:56

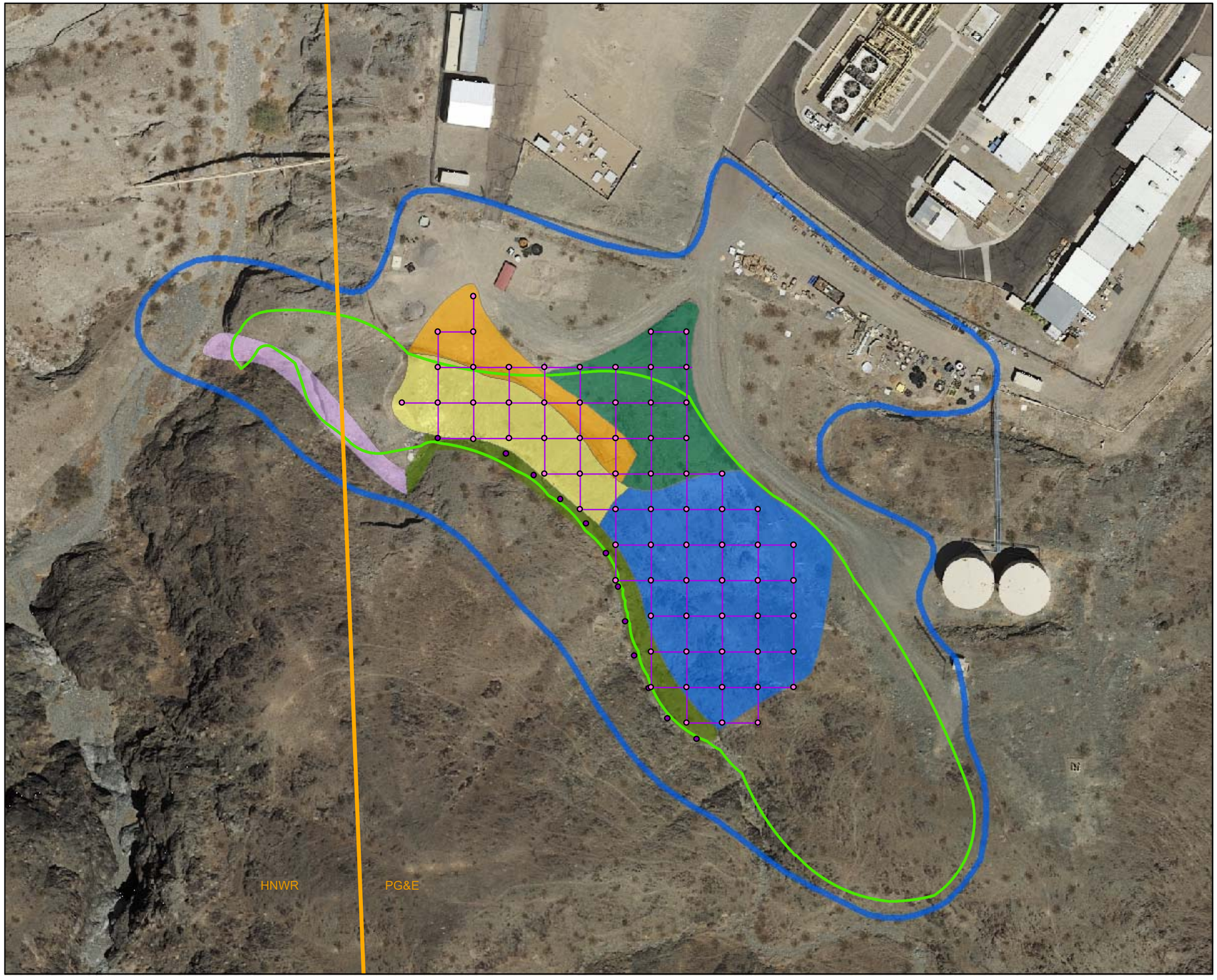


LEGEND

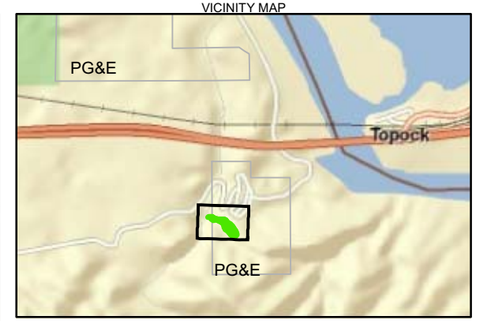
1 Organic Compounds include: PAHs, PCBs, Dioxins/Furans, and pentachlorophenol.

2 If continued removal is deemed unsafe, removal activities at given location will stop and DOI will be consulted.

FIGURE 2-3
SOIL SCREENING & REMOVAL ACTION DECISION PROCESS FLOW DIAGRAM
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA



VICINITY MAP



LEGEND

- Conceptual Soil Sample Location Associated With Sample Grid
- Conceptual Soil Sample Location Associated With Ravine Bottom
- Property Boundary
- AOC 4 Boundary From RFI (2007)
- Anticipated Primary Work Zone

AOC 4 Sub-Areas

- A: Eastern Slope and Burned Area
- B: Upper Portion of Primary Slope
- C: Plateau of Primary Slope
- D: Lower Portion of Primary Slope
- E: Ravine Bottom
- F: Ravine Bottom - Unsafe Access

Notes:

1. Grid layout and orientation is conceptual and for planning purposes only. The locations of soil sample collection may be altered in the field.
2. **HNWR** - Havasu National Wildlife Refuge (Managed by U.S. Fish and Wildlife Service)

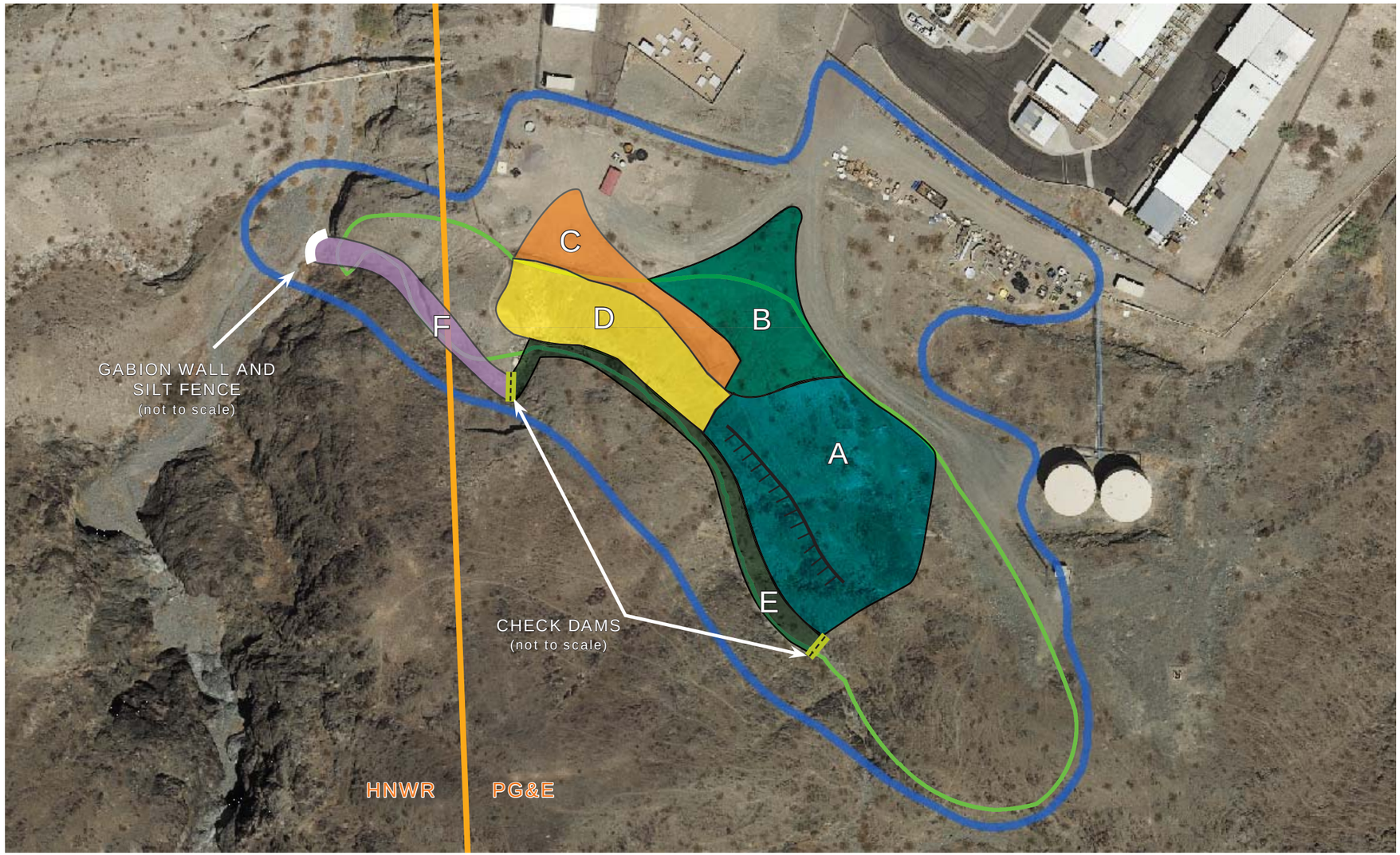
N

0 25 50 100 150

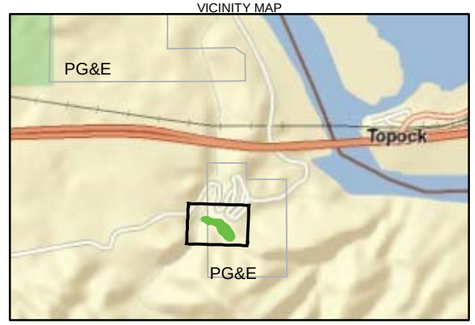
Feet

FIGURE 2-4
CONCEPTUAL APPROACH TO SOIL SAMPLE COLLECTION

WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA



VICINITY MAP



LEGEND

- Trench
- Property Boundary
- AOC 4 Boundary From RFI (2007)
- Anticipated Primary Work Zone
- Cliff

HNWR Havasu National Wildlife Refuge
(Managed by U.S. Fish and Wildlife Service)

NOTES:

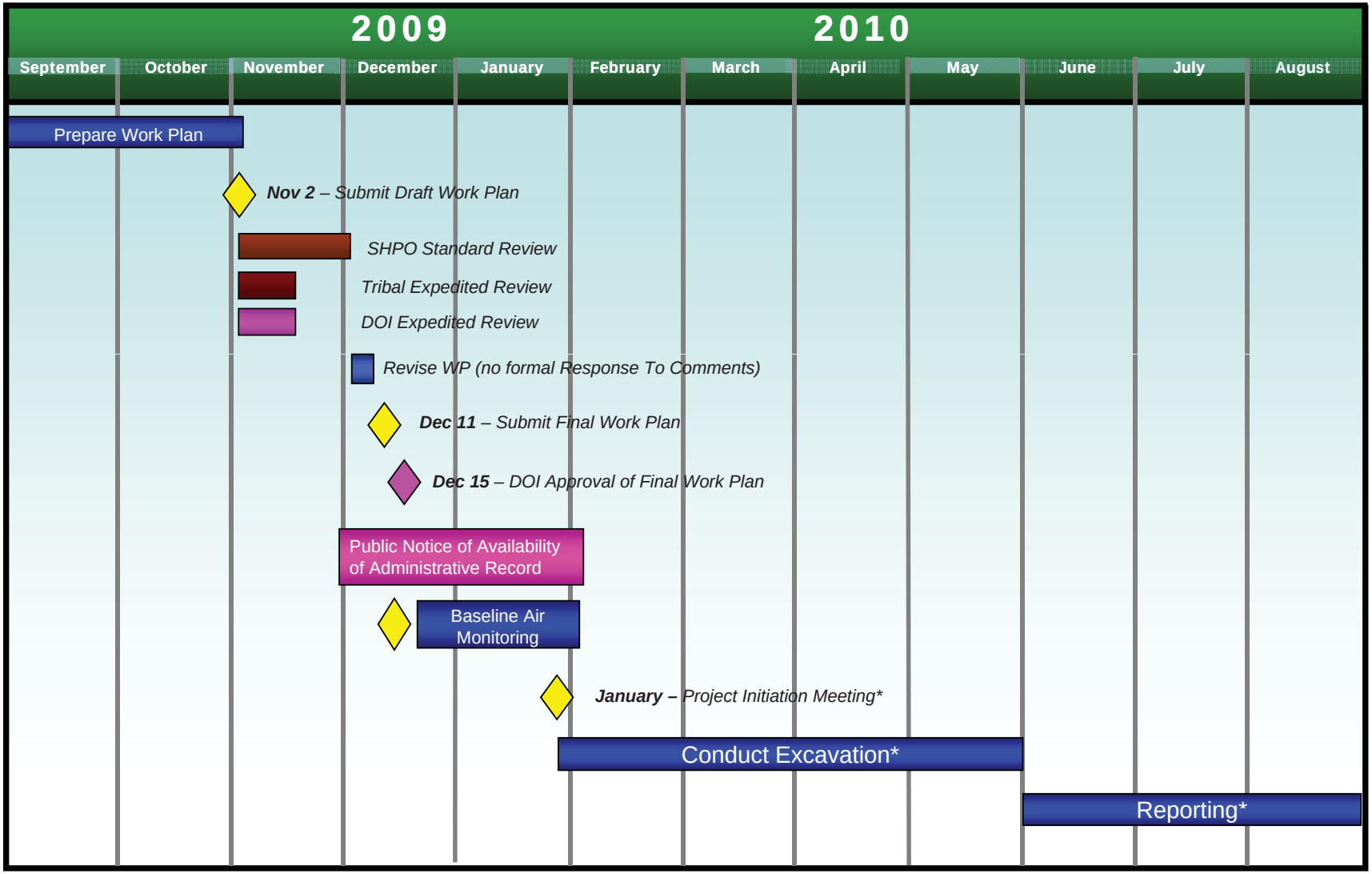
1. Check dams = Temporary installation (during removal activities only)
2. Gabion wall and silt fence = Longer term installation (pre- and post- removal activities)
3. Final gabion and check dam placement will be approved by HNWR.

N

0 25 50 100 150 200
Feet

Area	Description	Anticipated Material Removal Method				Primary Dust Control Method(s)		
		Hand/Manual	Vacuum	Hoisting	Mechanical	Wetting	Vacuum	Polymer
A	Eastern Slope and Burned Area	X	X		X	X	X	X
B	Upper Portion of Primary Slope	X	X		X	X	X	X
C	Plateau of Primary Slope				X	X		X
D	Lower Portion of Primary Slope		X	X	X	X		X
E	Ravine Bottom	X		X	X	X		X
F	Ravine Bottom - Unsafe Access	*not applicable / BMP at outfall*				X		X

FIGURE 3-1
REMOVAL AREAS AND WORK APPROACH
WORK PLAN FOR TIME-CRITICAL REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA



* - The timing and duration of the removal is estimated and will be refined following DOI approval of the work plan

FIGURE 5-1
PROJECTED AOC 4 TIME-CRITICAL REMOVAL ACTION (TCRA) PROJECT TIMELINE
WORK PLAN FOR TIME-CRITICAL REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Appendix A
Health and Safety Plan

Appendix A
Site-specific Health and Safety Plan
Topock Compressor Station
Remedial Actions
Topock, California

Contents

Attachments

1.0 Introduction

The purpose of this Site Specific Health and Safety Plan (HASP) is to provide a basic framework for the safe handling and removal of chemically impacted soil in areas Area of Concern Number 4 (AOC 4) located on the Pacific Gas and Electric (PG&E) Topock Compressor Station (TCS) facility located at Topock, California. This HASP meets the requirements of the California Occupational Safety and Health Administration (Cal/OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations found at Title 8 of the California Code of Regulations Section 5192 (8 CCR 5192). The procedures contained in this plan will apply to all contractors, subcontractors, and visitors to the site. This document serves as the Project HASP and each contractor will be required to prepare and submit for acceptance a site specific HASP that addresses their operations on this project. All PG&E personnel, visitors and observers entering the exclusion zone will be required to read and sign the signature sheet (Attachment A), acknowledging that the have read, understand, and will comply with the provisions of this HASP. Contractors will be required to prepare a HASP in conformance with this project HASP, and their personnel will be required to acknowledge understanding and conformance with their HASP.

1.1 Site Description

AOC 4 comprises a narrow, steep-sided arroyo (greater than 30-percent slope) that drains into Bat Cave Wash at the southwest corner of the compressor station. AOC 4 is located on PG&E property except for a small portion of the westernmost end, which extends onto Havasu National Wildlife Refuge (HNWR). Operational history at AOC 4 is not well documented; however, over the years, fill material and debris have been deposited over the northern slope and in the bottom of the ravine. Based on observations made during the recent investigation, there are two primary areas of fill material and debris deposition at AOC 4: (1) the western portion of the north side (south-facing slope) of the ravine and (2) a smaller area of fill material concentrated at the upper end of a service road in the northeastern portion of the AOC. Figure 1 provides a vicinity map and shows the two primary areas of fill material and debris. Materials identified in the ravine include wood, metal (cans, machine parts, rebar, etc.), concrete, broken transite panels, burned debris, and white powder, which is suspected to be unused lime and soda ash. Constituents of potential concern (COPCs) for AOC 4 identified in the Final Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Report, Topock Compressor Station, Needles, California, Volume 1 (CH2M HILL, 2007) include Dioxins/Furans, Title 22 metals, hexavalent chromium (Cr(VI)), polycyclic aromatic hydrocarbons (PAH), and asbestos. Refer to Section 1 of the AOC 4 TCRA Work Plan for analytical data summaries.

1.2 Site Background

The PG&E Topock Compressor Station ("the Compressor Station") is located in eastern San Bernardino County, California, approximately 12 miles southeast of Needles, California, south of Interstate 40, in the north end of the Chemehuevi Mountains. The Compressor

Station occupies approximately 15 acres of a 65-acre parcel of PG&E-owned land. The PG&E property is surrounded by the Refuge and directly south of land under the jurisdiction of the Bureau of Land Management ("BLM") and the Bureau of Reclamation ("BOR").

1.3 Scope of Work

Major activities planned with the TCRA are as follow:

- Mobilization and site preparation
- Dust control
- Air monitoring
- Debris and fill removal
- Screening soil sampling
- Staging of excavated material for characterization/ waste profiling
- Loading and removal of waste from site
- Post-construction activities including:
  - Slope stabilization
  - Final soil sampling
  - De-mobilization

It is not anticipated that pre-construction activities are to be included as part of the scope for this HASP.

2.0 Key Personnel and Responsibilities

2.1 Project Manager (PM)

The Project Manager (PM), Mr. Mel Wong, is responsible for directing and controlling all site activities, and is responsible for enforcing on-site compliance with the provisions of the HASP. PG&E reserves the right to make adjustments to staffing to meet the project objectives. Mr. Curt Russell and Mr. Chris Smith will represent the Project Manager for on-site activities.

2.2 Project Safety Officer (PSO)

The designated Project Safety Officer (PSO) will coordinate aspects of the site health and safety activities under the direction of the PM. PG&E reserves the right to make adjustments to staffing to meet project objectives. The PSO will be responsible for the overall health and safety of PG&E and visitor personnel assigned to the project and for advising each subcontractor of the potential hazards and the minimum general requirements of the HASP. Specific site duties will include, but will not be limited to:

- Reviewing and accepting contractor's HASP for conformance with this Project HASP.
- Providing guidance to contractors regarding air monitoring.
- Monitoring local weather conditions for wind-related shutdown
- Notifying the proper response agency in the event of an emergency
- Serving as leading investigations of any health and safety related incidents that may occur on the project.

2.3 Site Safety Officer (SSO)

Each contractor on site must have a Site Safety Officer (SSO). The SSO will be responsible for the implementation of their HASP. The SSO will be responsible for providing field supervision, establishing and maintaining restricted work areas, enforcing safe work and hygiene practices, requiring proper use of personal protective equipment, and communicating approved modified safety requirements to site personnel. Specific site duties will include, but will not be limited to:

- Conducting health and safety field meetings
- Conducting daily safety inspections
- Maintaining a first aid kit
- Providing first aid as necessary

- Conducting site-specific employee training and information sessions
- Conducting air monitoring as directed
- Completing the necessary record keeping
- Maintaining, inspecting and controlling an adequate inventory of safety equipment at the site.
- Monitoring any site decontamination procedures.

2.4 Contractors

In addition to providing an SSO for their work on the project, and preparing a HASP in conformance with this project HASP, all on-site contractor personnel are responsible for compliance with the provisions of the HASP and all other applicable elements of the Work Plan.

Contractors will be required to submit a detailed Job Safety Analysis on each method of work. An example of a JSA form is shown in Attachment B.

2.5 Site Visitors and Observers

Site visitors and observers will be required to comply with the applicable provisions of this HASP including training, personal protective equipment (PPE), and decontamination requirements. Every effort will be made to provide a safe area from which to observe site activities, however, the safety of the visitors, observers, PG&E and contractor personnel is the primary concern, and visitors and observers must comply with direction from the PSO or contractor SSO whenever there is a safety concern on the site.

3.0 Hazard Assessment

3.1 Chemical Hazards

The chemicals of concern for this project include hexavalent chromium (Cr(VI)), lead, dioxins and a number of other materials. The health hazards, and Permissible Exposure Limits (PEL) are shown in Table 1.

Action levels for total dust can be based on the concentrations of the specific contaminants found in the soil. If one takes the Cal/OSHA permissible exposure level (PEL) and divides that by the highest concentration level in soil, one can calculate the level of total dust required to exceed the PEL. This can be seen in the following equation:

$$\frac{\text{PEL (mg/m}^3\text{) X } 10^6 \text{ mg/kg}}{\text{Concentration in Soil (mg/kg)}} = \text{Minimum total dust required to reach the Max. PEL for that specific contaminant}$$

$$\frac{0.005 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{1{,}560 \text{ mg/kg}} = 3.2 \text{ mg/m}^3 \text{ total dust required to reach Cr(VI) PEL}$$

$$\frac{0.5 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{1.9 \text{ mg/kg}} = 263{,}000 \text{ mg/m}^3 \text{ total dust required to reach PCB PEL}$$

$$\frac{0.05 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{11{,}000 \text{ mg/kg}} = 4.5 \text{ mg/m}^3 \text{ total dust required to reach lead PEL}$$

$$\frac{0.5 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{8.9 \text{ mg/kg}} = 56{,}000 \text{ mg/m}^3 \text{ total dust required to reach Pentachlorophenol PEL}$$

There is no Cal/OSHA PEL for dioxins. Therefore, the Reference Exposure Level (REL) published by the California Office of Environmental Health Hazard Assessment (CA OEHHA) will be used to calculate the action level.

$$\frac{40 \text{ pg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{6085 \text{ ng/m}^3} = 6.6 \text{ mg/m}^3 \text{ total dust to reach dioxin REL}$$

Similarly, there is no PEL for Polycyclic Aromatic Compounds (PAHs). Again, the OEHHA REL will be used to calculate the action level.

$$\frac{0.001 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{12 \text{ mg/kg}} = 83.3 \text{ mg/m}^3 \text{ total dust required to reach PAH REL}$$

The Cal/OSHA PEL for total nuisance dust is 10 mg/m^3. Dust is generally visible at 2-3 mg/m^3. Therefore, when good dust control measures are in place and there is little or no visible dust generated on the job site, the likelihood of total dust levels exceeding 2-3 mg/m^3 is minimal. However, the concentrations of total dust required to reach the PELs for Cr(VI), lead and the REL for dioxins is low enough to warrant Level C PPE as the initial level of protection during removal activities. These concentrations also justify the continued air monitoring of contractor personnel, as the site is, by nature, quite heterogeneous, and it may be difficult to establish negative exposure assessments, unless a sufficient amount of data has been obtained.

The Cal/OSHA PEL for asbestos is 0.5 fibers/cubic centimeter greater than 5 micron in length (0.5 f/cc >5 μ).

It should be noted that not all contaminants would need to be monitored each day. This assessment will be made by the SSO with the concurrence with the PSO and the AMO. After a negative exposure assessment is made based on monitoring information, the PSO may elect to reduce or eliminate monitoring for a specific contaminant.

3.2 Physical Hazards

3.2.1 General Physical Hazards

Hazards typically encountered at construction sites will be present, namely, slippery ground, uneven terrain, and operation of heavy equipment. A fire hazard may also exist due to the presence of gasoline or Diesel fuel in motorized vehicle fuel tanks. Another hazard inherent at an operating facility is the chance of heavy equipment encountering and possibly severing underground utility lines, including but not limited to natural gas, water, sewer, and electrical lines. Contractors will utilize an underground service alert to identify the location of underground utilities.

All workers will be trained and certified (when applicable) to operate the equipment they are using. Equipment will be inspected prior to use and removed from service if found to be not in conformance with any specifications or regulations.

Fall protection for workers who may be near the edge of the ravine will be addressed in the contractor HASP. Harnesses and lanyards, or other means of protection will be required for workers on the steep slope of the ravine.

3.2.2 Geotechnical Hazards

The nature of the excavation into the ravine in AOC 4 makes it necessary to consider the geotechnical issues. Slope stability is a matter of concern during the excavation. The contractor will utilize the previously prepared geotechnical report in its technical approach to the excavation of the ravine, and include the technical approach in their HASP. The technical approach will be approved by the contractor's geotechnical expert and the PSO prior to the start of excavation of the ravine.

3.2.3 Compressor Station Hazards

Compressor plant events may impact AOC 4 activities. All workers will receive a PG&E Topock Compressor Station Safety Training prior to starting work. Contractors will make sure that their employees receive the PG&E training.

3.3 Environmental Hazards

3.3.1 Heat Stress Prevention

Wearing PPE puts site personnel at considerable risk of heat stress. Heat stress is caused by a number of interacting factors including environmental conditions, clothing, workload and the individual characteristics of the worker. Heat stress monitoring will commence when personnel are wearing PPE, including Tyvek coveralls and the ambient temperature exceeds 70 degrees F. If a worker's pulse rate exceeds 110 beats per minute following a break, then additional break time will be employed. An adequate amount of shade and drinking water will be available to all workers on site.

3.3.2 Noise

The equipment to be used on this site may produce high noise levels. Personnel working near this equipment will wear hearing protection during operation. On-site personnel may have other limited exposures to occupational noise exceeding the action level of 8-hour TWA of 85 dBA. For those cases, hearing protection will be worn whenever regular conversation becomes difficult at a distance of three feet in any work area, which is indicative of noise levels exceeding 85 dBA. The SSO will conduct noise monitoring as necessary and will require wearing earplugs if there is any question of noise exposures approaching the permissible exposure limit. The control of occupational noise exposures shall comply with Cal/OSHA requirements. Contractor workers will be included in their respective company's hearing conservation program.

3.3.3 Biological Hazards

Biological hazards such as rattlesnakes, scorpions, Hanta virus, and spiders may exist on the site. Each contractor will address these concerns and means to prevent exposure in their respective HASPs.

4.0 Personal Protective Equipment (PPE)

Based on an evaluation of the hazards of the site, personal protective equipment will be required for all personnel and visitors entering the controlled portion of the site. Protective equipment for each level of protection is as follows:

4.1 Level D

- Safety glasses.
- Steel-toed boots.
- Hard-hat.
- Gloves
- Hearing Protection
- Safety Vest

4.2 Modified Level D

- Safety glasses.
- Steel-toed boots.
- Disposable coveralls (as specified by the SSO)
- Disposable booties or rubber boots
- Hard-hat.
- Chemical protective gloves
- Hearing Protection
- Safety Vest

4.3 Level C

- Half or full face air purifying respirator, daily or more frequent cartridge change-out
- Safety glasses.
- Steel-toed boots.
- Disposable coveralls (as specified by the SSO)
- Disposable booties or rubber boots
- Hard-hat.
- Chemical protective gloves
- Hearing Protection
- Safety Vest

4.4 Level B

- Air supplied respirator or SCBA in pressure demand mode
- Safety glasses.

- Steel-toed boots.
- Disposable coveralls (as specified by the SSO)
- Disposable booties or rubber boots
- Hard-hat.
- Chemical protective gloves
- Hearing Protection
- Safety Vest

Based on the analytical data available, Level C PPE will be the initial level of protection in the exclusion zone for this project whenever ground disturbing activities are occurring. When ground disturbing activities are not underway, modified Level D PPE will be required in the exclusion zone, at the discretion of the PSO. This applies to all PG&E, contractor, visitor and observers. Any upgrades or downgrades to these requirements must be approved by the PSO. The contractor SSO will review the PPE requirements at the start of each shift. Air monitoring data will be utilized to support the assessment.

5.0 Air Monitoring

Contractors will perform personal monitoring within the exclusion zone to assess the exposure to any airborne contaminants to their workers. Action levels for exclusion zone monitoring will be generally based on the PEL for that contaminant.

If airborne concentrations exceed Cal/OSHA PELs in the exclusion zone, actions taken will depend on the level of respiratory protection being utilized at the time. For example, if workers are in Level D Personal Protective Equipment (PPE), no respiratory protection is being utilized and the PEL itself is the action level. Actions taken if the PEL is exceeded may include an upgrade to Level C PPE where respiratory protection is required. Alternatively, additional dust control measures may be implemented, to reduce the concentrations of airborne contaminants.

If Level C PPE is being utilized, and a half face air purifying respirator is used, the action level in the exclusion zone is 10 times the PEL as the respirator provides a protection factor of 10. If the airborne concentrations of contaminants exceed 10 times the PEL, the SSO may require personnel to upgrade to a full-face air purifying respirator, with a protection factor of 50, or upgrade to Level B PPE, which requires air supplied respiratory protection with a much higher protection factor.

Direct reading instrumentation for total dust will be used as a screening tool to estimate amounts of specific compounds. Action levels for total dust will be based on the information in Table 1 and discussed in Section 3.1, Chemical Hazards, above.

It is anticipated that much of the work will be conducted in level C PPE. Initially, Level C PPE is to be used whenever there is the potential to come in contact with contaminated soil. The SSO will review the PPE requirements at the start of each shift. Air monitoring data will be utilized to support the assessment.

6.0 Work Zones

The site safety zone layout and procedures should match the prescribed levels of personal protection. The contractor SSO will establish, control, and monitor these areas accordingly. For the purpose of identifying the perimeters of functional safety zones on the site, barriers such as fencing, barricades, traffic cones or warning tape will be used. Work zones may be modified by the SSO and/or PSO based on meteorological data.

6.1 Exclusion Zone (EZ)

The Cal/OSHA HAZWOPER standard located at 8 CCR 5192 (Federal OSHA 29 CFR 1910.120) in section (g) 1 A states that engineering controls and work practices shall be instituted to reduce and maintain employee exposure to or below the PELs of substances regulated by 8 CCR 5155, except to the extent that such controls and practices are not feasible. Work practices which may be feasible include removing all non-essential employees from potential exposure.

Therefore, access to the EZ will be limited to those essential for the safe completion of project goals and donning PPE to enter the EZ will be the last option after the use of engineering controls and administrative controls are evaluated.

The EZ is is normally separated from the non-exclusion zone by a hotline or barrier to prevent personnel from entering the exclusion zone without proper PPE. If there is the possibility of anyone entering the work area from outside, a barrier must be in place.

6.2 Contamination Reduction Zone (CRZ)

This zone is a transition area between the Exclusion and the Support areas. The contamination reduction areas will be set up to prevent the spread of contaminants from the Exclusion Area. Decontamination will be performed in this area. Decontamination procedures will depend on the type of protective clothing and the nature and magnitude of contamination.

6.3 Support Zone (SZ)

The support zone is considered to be free of contaminants and PPE is not required but should be available for emergency use, if necessary. All equipment and materials are stored within this zone. Donning of PPE is done in the support zone before entering the exclusion zone.

7.0 Decontamination

In order to reduce the physical transfer of contaminants or suspected contaminants from the exclusion zone by personnel and/or equipment, decontamination procedures will be instituted.

Heavy equipment, waste bins and other reusable materials will be decontaminated prior to leaving the site. The contractor will provide a detailed description of the decontamination process.

Personal protective equipment worn into Exclusion area will be decontaminated in accordance with the manufacturer's instructions upon leaving those areas, or placed in bins for disposal.

Direct skin contact with contaminated or suspected contaminated materials shall be avoided. Individuals whose skin comes into contact with contaminated or suspected contaminated materials must immediately remove the contaminated material and wash the skin with soap and water, and if necessary, seek medical attention.

Adequate hand washing facilities will be available in the support zone.

8.0 Medical Surveillance

All personnel, including subcontractors and visitors, entering the exclusion or contamination reduction zones, must have completed appropriate medical monitoring requirements required under 8 CCR 5912(f):

- Prior to hazardous waste site activities,
- Annually,
- Upon termination,
- Following exposure or injury, and
- Additionally as needed on a site-specific basis.

The minimum specific examination content and frequency based on probable site conditions, potential occupational exposures, and required protective equipment, based on consultation with the Occupational Physician.

The SSO will maintain copies of the physician's written authorization statements that all employees conducting hazardous waste site operations are fit for hazardous waste site duty and able to wear a respirator. Any restrictions shall be clearly stated. No one shall be permitted to conduct hazardous waste site operations until a copy of the medical certification is received by the SSO.

Personnel wearing respiratory protection will require a certification from the Occupational Physician that the person is medically qualified to wear respiratory protection.

9.0 Training

9.1 Initial Training

All personnel entering the exclusion zone are required to have completed the initial 40-hour HAZWOPER training in accordance with the Cal/OSHA HAZWOPER regulation (8 CCR 5192). Workers must also have current 8-hour HAZWOPER refresher training. Documents verifying adequate training will be maintained by the SSO or PSO.

Prior to entering the exclusion zone, all personnel assigned to this project are required to read the site-specific Health and Safety Plan and verify by signature that they have read and understand the potential hazards and required protection. The SSO shall maintain a current Health and Safety Plan signature sheet (Appendix A).

Contractor personnel involved with debris removal that may contain asbestos containing materials (ACM) will be trained as described in 8 CCR 1529, and work =under the direction of a Certified Asbestos Consultant (CAC).

The designated first aid/CPR individuals must have current first aid and CPR training and must also meet the training requirements specified by the Bloodborne Pathogens Standard (29 CFR 1910.1030).

9.2 Other Training

All personnel entering the exclusion zone are to be trained in accordance with all other applicable Cal/OSHA regulations including, but not limited to:

- Heat Stress
- Hearing Conservation
- Hazard Communication
- Equipment Operation

9.2 Onsite training

Safety briefings will be held by the SSO on a daily basis. Topics of discussion will include chemical, physical, and safety hazards for the activities to be conducted. Topics of discussion and attendees will be documented. A sample Tailgate Meeting Sign in Sheet is included as Attachment C. All personnel assigned work within the restricted work areas are required to attend the daily safety briefing. The site Safety Officer shall make the air monitoring results and/or air sampling results available to workers upon request.

9.3 Visitor/Observer Training and Access Controls

All site visitors/observers must attend a site safety and orientation briefing which will outline the requirements to be onsite. The intent of the briefing is to protect the visitors and the other site workers, and it will include information about communications, logistics, parking, site facilities, protective measures, and access constraints. The briefing will also describe the process that will be used to establish and manage an observation area for visitors/observers.

As described in Section 6.1, this project is committed to following the CAL/OSHA guiding principal to minimize potential exposure by using engineering and administrative control measures - including limiting access to the Exclusion Zone as an administrative control measure. This administrative control applies to all site workers and visitors.

If a visiting individual considered essential to the removal activity requires access to the EZ, the visitor must make a formal request to the SSO or PSO. The SSO or PSO will review the request to determine if the objective of the visitor access can be accomplished by a means other than entering the EZ. If it is determined that the objective of the visitor access can be accomplished by a means other than entering the EZ, the alternate means will be prescribed to accomplish the visitor's goal. Having the visitor wear PPE in order to enter the EZ will be the last option after the use of engineering controls and administrative controls have been evaluated and implemented.

If it is determined that a visitor will be allowed to enter the EZ, the visitor must meet the same qualifications as the site workers as described in Section 9.1. Visitors entering the exclusion zone must wear the level of PPE currently approved by the SSO for work within the exclusion zone. If respiratory protection is required, training in respiratory protection per 8 CCR 5144 is required, as well as documentation of fit testing. The PSO will substantiate that visitors or observers entering the exclusion have received proper training by reviewing their training documentation. Visitors within the EZ must be escorted by site workers at all times. Some areas within the EZ will not be accessible to anyone, due to physical safety constraints.

10.0 Emergency Procedures

Emergency communications at the site will be by means of cellular telephones. A list of emergency telephone numbers will be posted in a central location. A map to the nearest hospital will be posted, and is shown in Figure 2. All injuries occurring on the site, no matter how minor, will be immediately reported to the SSO. The SSO shall evaluate the extent of the injury, arrange for appropriate medical attention, and investigate the cause of the injury.

In the case of an evacuation, all personnel will assemble at a pre-designated meeting location. When the site is evacuated due to an onsite emergency, personnel shall not reenter until directed to do so by the SSO, and after each of the following has occurred:

- The conditions resulting in the emergency have been corrected.
- The hazards have been reassessed.
- The Site Health and Safety Plan has been reviewed.
- Site personnel have been briefed on any changes in the safety plan.

10.1 Medical Emergency

A map to the hospital will be posted on site. Each contractor will have at least one person currently trained and certified in first aid/CPR. The following general procedures will be followed in the case of a medical emergency at the site:

10.1.1 Inhalation

If warning symptoms such as dizziness, headache, nausea, shortness of breath, burning in the mouth, or other symptoms indicative of the exposure are experienced, the victim will leave or be removed from the controlled area of the site immediately. If the victim is no longer breathing, rescuers will first remove the victim from the contaminated area wearing respiratory protection. Rescue breathing or cardiopulmonary resuscitation (as applicable) will be undertaken immediately, and medical attention will be obtained as soon as possible.

10.1.2 Ingestion

Medical attention will be sought immediately.

10.1.3 Eye Contact

If eye contact is made with any of the materials at the site, the eye will be flooded with water for at least 15 minutes. An emergency eyewash will be available in the CRZ. Medical attention will be obtained as soon as possible.

10.1.4 Skin Contact

Skin exposure will be treated by washing with soap and water. Any contaminated clothing will be removed.

10.2 Fire Hazards

The following general fire-safety rules should be known and understood by all personnel on the project site.

- Smoking is permitted only in authorized and posted smoking areas.
- Each vehicle will carry an ABC-type fire extinguisher.
- Fire extinguishers will be staged appropriately.
- Flammable and combustible liquids shall be handled only in approved safety can.
- All personnel shall know the area escape route and alternate route.
- Vehicle fueling will be in a designated area.

10.3 Emergency Telephone Numbers

Emergency telephone numbers will be posted on site.

Emergency phone numbers:

- PG&E Project Manager – Mel Wong (510) 541-2196
- PG&E Project Safety Officer – Curt Russell (760) 791-5884
- Topock Compressor Station Operator (760) 326-5535
- Contractor Site Safety Officer(s) TBD (XXX) XXX-XXXX
- General/All emergencies -- dial 911
- Ambulance -- dial 911
- Hospital: Colorado River Medical Center
  760-326-4531
  1401 Bailey Ave
  Needles, California 92363
- Police Department -- dial 911
- Fire Department -- dial 911

Figures

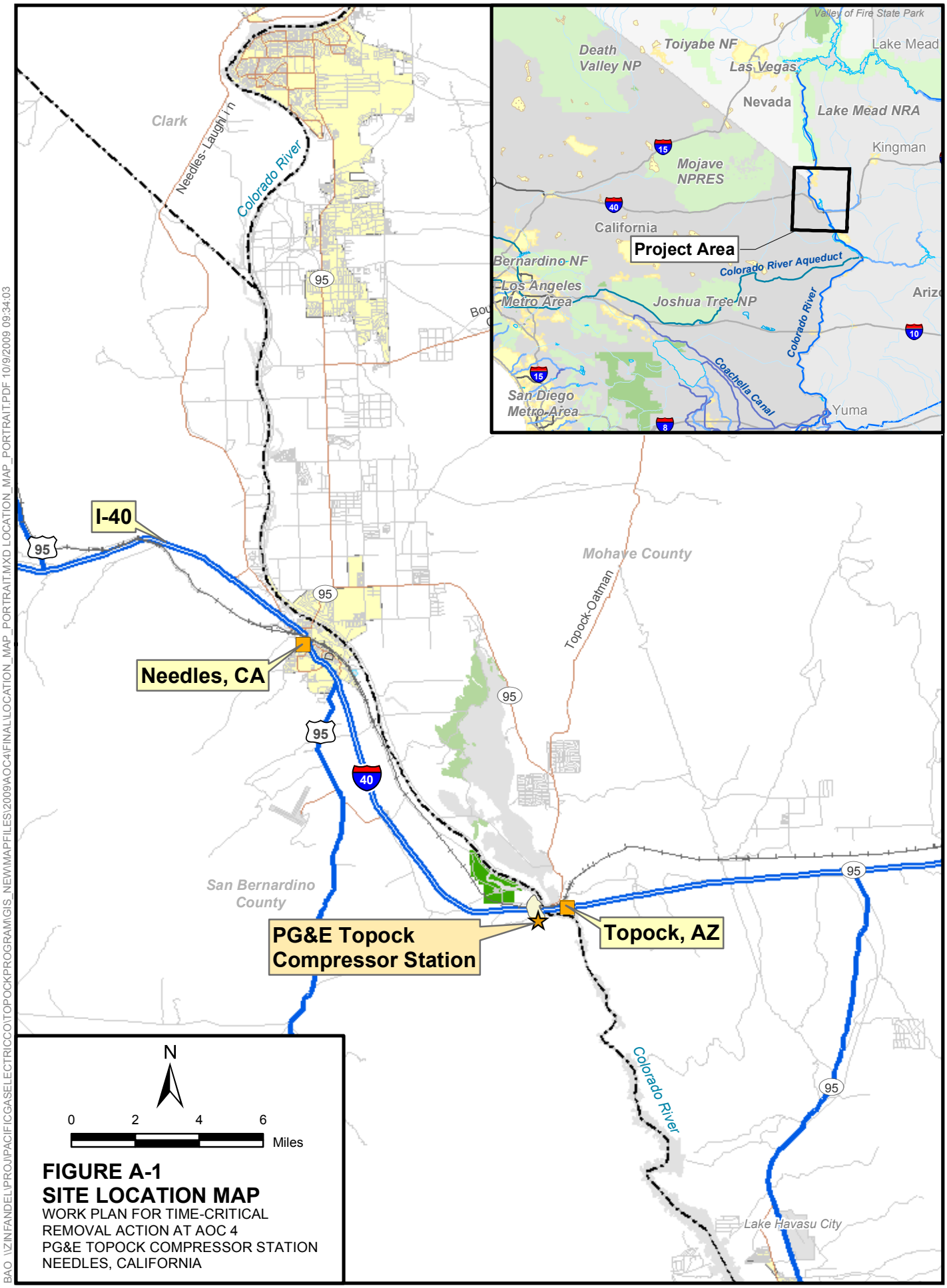
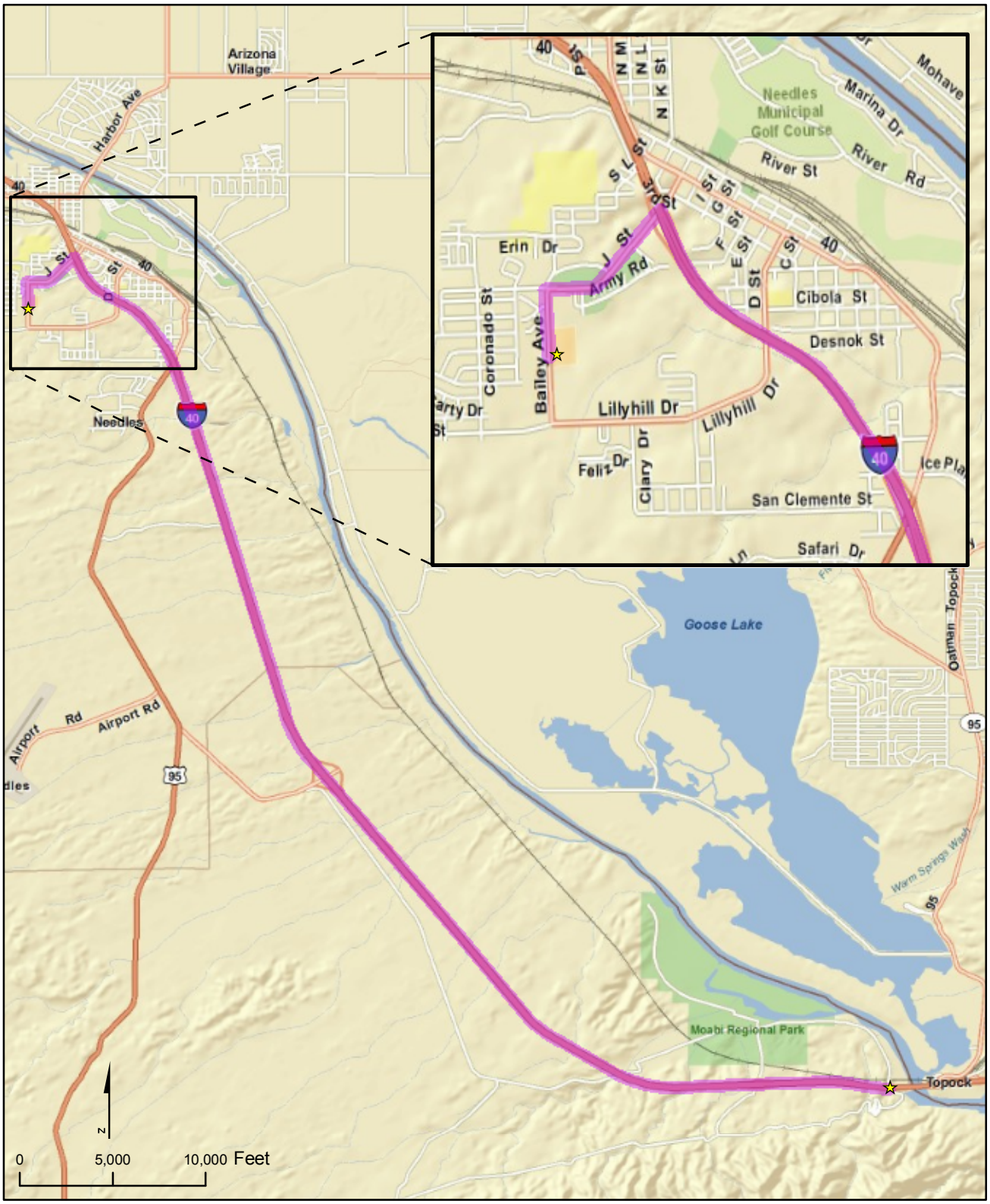


FIGURE A-1
SITE LOCATION MAP
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

BAO \\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS_NEW\MAPFILES\2009\AOC4\FINAL\LOCATION_MAP_PORTRAIT.MXD LOCATION_MAP_PORTRAIT.PDF 10/9/2009 09:34:03



Colorado River Medical Center
1401 Bailey Avenue
Needles, CA 92363
(760) 326-4531

LEGEND
Hospital Route

Directions:
- Exit Topock site via Park Moabi Road & drive northwest approximately 10 miles on Highway 40 west to Needles.
- Take the "J" Street exit & turn left onto "J" Street.
- Go several blocks & turn left onto Bailey Ave.
- Hospital is on the left after the park.

FIGURE A-2
HOSPITAL LOCATION MAP
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Tables

TABLE 1
Chemicals of Concern

Chemical	Health Hazards	Maximum Amount Detected (mg/kg)	Exposure Routes	Airborne Permissible Exposure Limit (PEL) (mg/m^3)
Hexavalent Chromium Cr(VI)	Acute: respiratory irritant, possible respiratory and skin allergen. Chronic: Carcinogenic (lung)	1,560	Inhalation of dust	0.005
PCBs	Acute: dermatitis (chloracne), nausea, abdominal pain, anorexia Chronic; liver injury, possible liver cancer	1.9	Inhalation (as dusts), Dermal	0.5 (54% chlorine)
Lead	Acute: weakness, insomnia, anemia, GI disturbances, neuromuscular dysfunction Chronic: tremor, encephalopathy, kidney disease, joint weakness	11,000	Inhalation of dust	0.05
Dioxins	Acute: minimal at concentrations likely to be encountered. Chronic: Carcinogenic, reproductive and developmental problems, damages immune system and hormonal systems	6.085 ng/kg	Inhalation of dust	40 pg/m^3 (REL per CA OEHHA)
Polynuclear Aromatic Hydrocarbons (PAHS)	Acute: eye irritation, nausea, vomiting, diarrhea Chronic: Possible carcinogen, cataracts, kidney and liver damage and jaundice. Repeated contact with skin may induce redness and skin inflammation.	12 B(a)P Equivalent	Inhalation of dust	0.025
Pentachloro-phenol	Acute: Affects cardiovascular system, blood, liver (jaundice), and eyes Chronic: Possible carcinogen, inflammation of the upper respiratory tract and bronchitis, blood effects, liver, kidney, blood, endocrine, immune system, and CNS.	8.9	Inhalation of dust	0.01
Asbestos	Acute: Possible respiratory irritant. Chronic: Asbestosis, lung cancer, mesotheleoma	NA	Inhalation of dust	fiber/cc >5 micron
Particulates	See other contaminants	NA	Inhalation of dust	10 mg/m^3 Total dust 5mg/m^3 (resp.)

Attachment A
Health and Safety Plan Signature Sheet

HEALTH AND SAFETY PLAN SIGNATURE SHEET

All personnel are required to read this HASP (and addenda, if necessary). The following site personnel have reviewed the above plan, are familiar with its provisions, and understand the potential hazards and required personal protection.

Name (print)	Signature	Company

Attachment B
Job Safety Analysis Form

Job Safety Analysis
Excavation

Analyzed by / Date:
Safety Officer / XX-XX-XX

Personnel to Perform Work	Principal Steps	Potential Hazards	Recommended Controls
Contractor	a) Excavate	1) Personnel injury	1) Operator will be knowledgeable about equipment.
		2) Slips, trips, and falls	2) Wear proper footwear and walk with caution.
		3) Equipment operation	3) Only trained experienced operators to operate equipment. All observers will stay out of immediate vicinity.
		4) Excavation hazards	4) Excavations deeper than 5' require shoring/sloping prior to entry. Deeper than 4' require ladders or other safe access. Excavation competent person to make daily inspections
		5) Chemical Exposure	5) Proper PPE (Level C) Proper Decon

Attachment C
Health & Safety Tailgate Briefing

HEALTH & SAFETY TAILGATE BRIEFING
AND ATTENDANCE SHEET

Subject: _____

Date: _____ Hours: _____

Summary: _____

_____

_____

_____

Training Materials Provided or Used: _____

_____

_____

ATTENDEES

Print Name	Signature

Appendix B
Air Monitoring Plan

Appendix B
Air Monitoring Plan
Topock Compressor Station Remedial Actions
Topock, California

Contents

1.0 Introduction

1.1 Site Description

AOC 4 comprises a narrow, steep-sided arroyo that drains into Bat Cave Wash at the southwest corner of the compressor station. AOC 4 is located on PG&E property except for a small portion of the westernmost end, which extends onto Havasu National Wildlife Refuge (HNWR). Operational history at AOC 4 is not well documented; however, over the years, fill material and debris have been deposited over the northern slope and in the bottom of the ravine. Figure 1 provides a vicinity map and shows the primary areas of fill material and debris. Materials identified in the ravine include wood, metal (cans, machine parts, rebar, etc.), concrete, broken transite panels, burned debris, and white powder, which is suspected to be unused lime and soda ash. Constituents of potential concern (COPCs) for AOC 4 identified in the *Final Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Report, Topock Compressor Station, Needles, California, Volume 1* (CH2M HILL, 2007) include Title 22 metals, hexavalent chromium (Cr(VI)), polycyclic aromatic hydrocarbons (PAH), and asbestos.

1.2 Scope of Work

The following major activities are planned:

- Pre-construction activities including:
  - Geotechnical survey
  - Asbestos survey
  - Work Plan preparation
  - Utility clearance
  - Topographic survey
  - Biologic survey
  - Baseline Air Monitoring
- Mobilization and site preparation
- Dust control
- Air monitoring
- Debris and fill removal
- Screening soil sampling
- Staging of excavated material for characterization/ waste profiling
- Loading and removal of waste from site
- Post-construction activities including:
  - Slope stabilization
  - Final soil sampling
  - De-mobilization

It is not anticipated that pre-construction activities, other than baseline air monitoring, are to be included as part of the scope for this AMP.

1.3 Purpose of Air Monitoring

Air monitoring is required to assess the concentrations of airborne contaminants, if any, at various locations within the site. The results of the air monitoring will dictate certain actions, depending on the location of the sample collection. Baseline monitoring will be conducted at the property line prior the start of removal activity to establish background concentrations, if any, of the contaminants. During the excavation samples will be collected from the exclusion zone and property line boundaries. Contractors will perform personal air monitoring of their employees to assess the adequacy of the level of protection being utilized.

2.0 Key Personnel and Responsibilities

2.1 Project Manager

The Project Manager (PM), Mr. Mel Wong, is responsible for directing and controlling all site activities, and is responsible for enforcing on-site compliance with the provisions of the AMP. PG&E reserves the right to make adjustments to staffing to meet the project objectives.

2.2 Project Air Monitoring Officer

The designated Project Air Monitoring Officer (AMO) will implement the AMP under the direction of the PM. PG&E reserves the right to make adjustments to staffing to meet project objectives. The AMO will be responsible for the collection of exclusion zone and perimeter air monitoring. Specific site duties will include, but will not be limited to:

- Collection of Exclusion zone and perimeter air samples
- Shipping the samples to the appropriate laboratory for analysis
- Collecting laboratory data and comparing to appropriate action levels
- Notifying the PM immediately of any action level exceedances
- Coordinating actions to be taken in the event of action level exceedances with the PM and PSO.
- Conducting direct reading particulate monitoring at the exclusion zone and perimeter boundaries as a screening tool to approximate airborne concentrations of contaminants.
- Operate and maintain meteorological station and utilize meteorological data to identify air sampling locations

Whenever samples for asbestos are collected, the AMO will work under the direction of a Certified Asbestos Consultant (CAC).

2.3 Site Safety Officer

Each contractor on site must have a Site Safety Officer (SSO). The SSO will be responsible for the implementation of their personal air monitoring, as well as their HASP. The SSO will be responsible for providing the AMO with air monitoring data sufficient to justify the specified level of protection.

The Mojave Desert Air Quality Management District (MDAQMD) Rule 401 prohibits emissions darker than Ringelmann No. 1 for more than three minutes per hour. This rule is applicable to equipment or activities capable of producing visible emissions. The contractor SSO, or designee, will be qualified to assess the visible emissions of equipment or operations.

3.0 Personal Air Monitoring

3.1 Monitoring Responsibilities

Contractors will perform personal monitoring within the exclusion zone to assess the exposure of airborne contaminants to their workers. Action levels for personal monitoring in the exclusion zone will be based on California Occupational Safety and Health Administration (Cal/OSHA) permissible exposure limits (PELs)

Action levels for total dust can be based on the concentrations of the specific contaminants found in the soil. If one takes the Cal/OSHA PEL and divides that by the highest concentration level in soil, one can calculate the worst case minimum concentration of total dust required to exceed the PEL. This can be seen in the following equation:

$$\frac{\text{PEL (mg/m}^3\text{) X } 10^6 \text{ mg/kg}}{\text{Concentration in Soil (mg/kg)}} = \text{Minimum total dust required to reach the Max. PEL for that specific contaminant}$$

$$\frac{0.005 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{1{,}560 \text{ mg/kg}} = 3.2 \text{ mg/m}^3 \text{ total dust required to reach Cr(VI) PEL}$$

$$\frac{0.5 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{1.9 \text{ mg/kg}} = 263{,}000 \text{ mg/m}^3 \text{ total dust required to reach PCB PEL}$$

$$\frac{0.05 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{11{,}000 \text{ mg/kg}} = 4.5 \text{ mg/m}^3 \text{ total dust required to reach lead PEL}$$

$$\frac{0.5 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{8.9 \text{ mg/kg}} = 56{,}000 \text{ mg/m}^3 \text{ total dust required to reach Pentachlorophenol PEL}$$

There is no Cal/OSHA PEL for dioxins. Therefore, the reference exposure level (REL) published by the California Office of Environmental Health Hazard Assessment (CA OEHHA) will be used to calculate the action level.

$$\frac{40 \text{ pg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{6085 \text{ ng/m}^3} = 6.6 \text{ mg/m}^3 \text{ total dust to reach dioxin REL}$$

Similarly, there is no PEL for polycyclic aromatic compounds (PAHs). Again, the OEHHA REL will be used to calculate the action level.

$$\frac{0.001 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{12 \text{ mg/kg}} = 83.3 \text{ mg/m}^3 \text{ total dust required to reach PAH REL}$$

The Cal/OSHA PEL for total nuisance dust is 10 mg/m^3. Dust is generally visible at 2-3 mg/m3. Therefore, when good dust control measures are in place and there is little or no visible dust generated on the job site, the likelihood of total dust levels exceeding 2-3 mg/m3 is minimal. However, the concentrations of total dust required to reach the PELs for Cr(VI), lead and the REL for dioxins is low enough to warrant Level C PPE as the initial level of protection. These concentrations also justify the continued air monitoring of contractor personnel, as the site is, by nature, quite heterogeneous, and it may be difficult to establish negative exposure assessments, unless a sufficient amount of data has been obtained.

The lowest action level for total dust as calculated above is for Cr(VI) at 3.2 mg/m^3. Therefore 3.2 mg/m^3 times the protection factor of the respiratory protection (e.g. 10 for half face air purifying respirators) will be the initial action level in the exclusion zone. If the action level is reached, PPE will be upgraded or additional dust control will be implemented.

The Cal/OSHA PEL for asbestos is 0.1 fibers/cubic centimeter greater than 5 micron in length (0.1 f/cc >5 μ).

There is no direct reading instrumentation for any of the specific airborne contaminants. To measure concentrations of the specific contaminants, samples must be collected and sent to a laboratory for analysis. Direct reading instrumentation for total dust will be used as a screening tool to estimate amounts of specific compounds (except asbestos). The lowest action level for total dust as calculated above is for Cr(VI) at 3.2 mg/m^3. Therefore 3.2 mg/m^3 times the protection factor of the respiratory protection (e.g. 10 for half face air purifying respirators) will be the initial action level in the PEL.

3.2 Direct Reading Instrumentation

There is no direct reading instrumentation for any of the specific airborne contaminants. To measure concentrations of the specific contaminants, samples must be collected and sent to a laboratory for analysis. Direct reading instrumentation for total dust will be used as a screening tool to estimate amounts of specific compounds. Direct reading measurements will be collected several times daily in the exclusion zone, at the exclusion zone boundary, and at the property line perimeter.

3.3 Sampling and Analytical Methods

Samples for specific contaminants will be collected and analyzed by methods validated by the federal Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH) or an equivalent method. The specific methods are listed in Table 2. There is not a NIOSH or OSHA validated method for dioxins. Personal air monitoring for dioxins will be performed using a modified method utilized by the California Air Resources Board (CARB) method 428 or USEPA, such as methods TO-9 or EPA 23.

4.0 Exclusion Zone Monitoring

4.1 Monitoring Responsibilities

The AMO will perform air monitoring at the exclusion zone boundary to assess the concentrations of airborne contaminants. Generally, three samples will be collected downwind of the removal activity and one upwind for each contaminant, based on data from the meteorological station. Additionally, samples for specific chemicals will be collected in conjunction with known areas of contamination (hot pockets). Action levels for the exclusion zone will be based on PELs. Direct reading measurements will be taken daily, and collected samples will be collected for the specific contaminants of concern weekly for the first month, and if chemicals are below action levels, biweekly thereafter.

If airborne concentrations exceed Cal/OSHA PELs at the exclusion zone boundary, actions will be taken to reduce the airborne concentrations. Generally, three samples will be collected downwind of the removal activity and one upwind for each contaminant, based on data from the meteorological station. Actions taken if the action level is exceeded may include an expansion of the exclusion zone. Alternatively, additional dust control measures may be implemented to reduce the concentrations of airborne contaminants.

4.2 Chemicals of Concern

The chemicals of concern for this project include hexavalent chromium (Cr(VI)), lead, dioxins and a number of other materials. The health hazards and PELs are shown in Table 1.

4.3 Action Levels

Action levels for total dust can be based on the concentrations of the specific contaminants found in the soil. If one takes the Cal/OSHA PEL and divides that by the highest concentration level in soil, one can calculate the worst case minimum concentration of total dust required to exceed the PEL. This can be seen in the following equation:

$$\frac{\text{PEL (mg/m}^3\text{) X } 10^6 \text{ mg/kg}}{\text{Concentration in Soil (mg/kg)}} = \text{Minimum total dust required to reach the Max. PEL for that specific contaminant}$$

$$\frac{0.005 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{1{,}560 \text{ mg/kg}} = 3.2 \text{ mg/m}^3 \text{ total dust required to reach Cr(VI) PEL}$$

$$\frac{0.5 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{1.9 \text{ mg/kg}} = 263{,}000 \text{ mg/m}^3 \text{ total dust required to reach PCB PEL}$$

$$\frac{0.05 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{11{,}000 \text{ mg/kg}} = 4.5 \text{ mg/m}^3 \text{ total dust required to reach lead PEL}$$

$$\frac{0.5\ mg/m^3 \times 10^6\ mg/kg}{8.9\ mg/kg} = 56{,}000\ mg/m^3$$ total dust required to reach Pentachlorophenol PEL

There is no Cal/OSHA PEL for dioxins. Therefore, the REL published by CA OEHHA will be used.

$$\frac{40\ pg/m^3 \times 10^6\ mg/kg}{6085\ ng/m^3} = 6.6\ mg/m^3$$ total dust to reach dioxin REL

Similarly, there is no PEL for PAHs. Again, the OEHHA REL will be used.

$$\frac{0.001\ mg/m^3 \times 10^6\ mg/kg}{12\ mg/kg} = 83.3\ mg/m^3$$ total dust required to reach PAH REL

The Cal/OSHA PEL for total nuisance dust is 10 mg/m^3. Dust is generally visible at 2-3 mg/m3. Therefore, when good dust control measures are in place and there is little or no visible dust generated on the job site, the likelihood of total dust levels exceeding 2-3 mg/m3 is minimal. However, the concentrations of total dust required to reach the PELs for Cr(VI), lead and the REL for dioxins is low enough to warrant Level C PPE as the initial level of protection. If this action level is exceeded at the exclusion zone boundary, then additional dust control measures will be implemented or the exclusion zone boundary will be expanded. These concentrations also justify the continued air monitoring at the exclusion zone boundary, as the site is, by nature, quite heterogeneous, and it may be difficult to establish negative assessments, unless a sufficient amount of data has been obtained.

The Cal/OSHA PEL for asbestos is 0.1 f/cc >5 μ.

There is no direct reading instrumentation for any of the specific airborne contaminants. To measure concentrations of the specific contaminants, samples must be collected and sent to a laboratory for analysis. Direct reading instrumentation for total dust will be used as a screening tool to estimate amounts of specific compounds. The lowest action level for total dust as calculated above is for Cr(VI) at 3.2 mg/m^3.

4.4 Direct Reading Instrumentation

There is no direct reading instrumentation for any of the specific airborne contaminants. To measure concentrations of the specific contaminants, samples must be collected and sent to a laboratory for analysis. Direct reading instrumentation for total dust will be used as a screening tool to estimate amounts of specific compounds. The lowest action level for total dust as calculated above is for Cr(VI) at 3.2 mg/m^3. Therefore 3.2 mg/m^3 times the protection factor of the respiratory protection (e.g. 10 for half face air purifying respirators) will be the initial action level in the PEL.

4.5 Sampling and Analytical Methods

Samples for specific contaminants will be collected and analyzed by methods validated by the federal OSHA, NIOSH, or an equivalent method. The specific methods are listed in

Table 2. There is not a NIOSH or OSHA validated method for dioxins. Air monitoring for dioxins will be performed using a modified method utilized by Method 428 or USEPA such as methods TO-9 or EPA 23.

5.0 Perimeter Monitoring

5.1 Monitoring Responsibilities

Perimeter monitoring will be conducted by the AMO at the property line to assess whether airborne contaminants are leaving the PG&E property. Generally, three samples will be collected downwind of the removal activity and one upwind for each contaminant, based on data from the meteorological station. Additionally, samples for specific chemicals will be collected in conjunction with known areas of contamination (hot pockets), within the exclusion zone of AOC 4. Action levels for perimeter monitoring will be based on risk assessment data such as RELs published by the CA OEHHA, or CARB. Direct reading measurements will be taken daily. Analytical samples for specific chemicals of concern shall be collected weekly for the first month, except for dioxins, and if concentrations are below action levels, biweekly thereafter. Due to the long laboratory turnaround time (2-3 weeks) for dioxin analytical results, more frequent sampling for dioxins will not aid in determining timely actions to prevent exceedance. Dioxins shall be collected and analyzed during the initial two months at a frequency of once every other week. Exceedance determination shall be based on direct read monitoring of particulates compared to the background and initial construction data for dioxins. RELs are based on the concentration level at or below which no adverse health effects are anticipated. RELs are based on the most sensitive, relevant, adverse health effect reported in the medical and toxicological literature. RELs are designed to protect the most sensitive individuals in the population by the inclusion of margins of safety. Since margins of safety are incorporated to address data gaps and uncertainties, exceeding the REL does not automatically indicate an adverse health impact.

If airborne concentrations exceed the RELs at the property line boundary, actions will be taken to reduce the airborne concentrations. Actions taken if the action level is exceeded will include additional dust control measures may be implemented, to reduce the concentrations of airborne contaminants. Alternatively, the AMO may reduce the wind velocity action level.

5.2 Chemicals of Concern

The chemicals of concern for this project include Cr(VI), lead, dioxins and a number of other materials. The sampling and analytical methods, and RELs are shown in Table 3.

5.3 Baseline Monitoring

Prior to the start of any removal activity, a series of baseline air monitoring at the likely Exclusion Zone boundary and at the property line will be performed. The purpose of this monitoring is to establish airborne concentrations of contaminants prior to the removal activity. Additionally a meteorological station will be utilized at this point and throughout the removal activity to assist in locating sample collection points. Meteorological data and

baseline monitoring will also be utilized to establish an action level for wind velocity. If the wind exceeds this predetermined velocity, removal activity will cease until winds are calmer and within the action level. Generally speaking, three samples will be collected downwind of the exclusion zone and one upwind for each contaminant. A blank sample will be submitted daily for each contaminant type.

5.4 Action Levels

Action levels for total dust can be based on the concentrations of the specific contaminants found in the soil. If one takes the REL and divides that by the highest concentration level in soil, one can calculate the worst case minimum concentration of total dust required to exceed the REL. This can be seen in the following equation:

$\frac{\text{REL (mg/m}^3\text{) X } 10^6 \text{ mg/kg}}{\text{Concentration in Soil (mg/kg)}}$	=	Minimum total dust required to reach the Max. REL for that specific contaminant
$\frac{0.0002 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{1{,}560 \text{ mg/kg}}$	=	0.12 mg/m³ total dust required to reach Cr(VI) REL
$\frac{3.4 \text{ ng/m}^3 \text{ x } 10^6 \text{ mg/kg}}{1.9 \text{ mg/kg}}$	=	1.8 mg/m³ total dust required to reach PCB REL
$\frac{0.001 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{11{,}000 \text{ mg/kg}}$	=	0.09 mg/m³ total dust required to reach lead REL
$\frac{0.002 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{8.9 \text{ mg/kg}}$	=	224 mg/m³ total dust required to reach Pentachlorophenol REL
$\frac{40 \text{ pg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{6085 \text{ ng/m}^3}$	=	6.6 mg/m³ total dust to reach dioxin REL
$\frac{0.001 \text{ mg/m}^3 \text{ x } 10^6 \text{ mg/kg}}{12 \text{ mg/kg}}$	=	83.3 mg/m³ total dust required to reach PAH REL

Perimeter asbestos concentrations should not exceed 0.01 fiber/cc as tested per USEPA 40 CFR 763 and analyzed via Transmission Electron Microscopy.

The MDAQMD allowable concentration of fugitive respirable dust (PM10) is 50 µg/m³ for a 24-hour average. This level is lower than all of the calculated values in Section 5.4 above. Therefore if the total fugitive dust is below the PM 10 limit, it is highly unlikely that any individual contaminant will exceed the REL.

5.5 Direct Reading Instrumentation

There is no direct reading instrumentation for any of the specific airborne contaminants. To measure concentrations of the specific contaminants, samples must be collected and sent to a laboratory for analysis. Direct reading instrumentation for total dust will be used as a

screening tool to estimate amounts of specific compounds. The MDAQMD allowable concentration of fugitive respirable dust (PM10) is 50 $\mu g/m^3$ for a 24-hour average. This level is lower than all of the calculated values in Section 5.4 above. Therefore, if the total fugitive dust is below the PM 10 limit, it is highly unlikely that any individual contaminant will exceed the REL.

5.6 Sampling and Analytical Methods

Samples for specific contaminants will be collected and analyzed by methods validated by the federal OSHA, NIOSH, or an equivalent method, if these methods can achieve the lower detection limit required by the perimeter monitoring program. Otherwise high volume USEPA methods will be utilized. The specific methods are listed in Table 3. There is not a NIOSH or OSHA validated method for dioxins. Air monitoring for dioxins will be performed using a modified method utilized by CARB Method 428 or USEPA, such as methods TO-9 or EPA 23.

6.0 Meteorological Considerations

6.1 Meteorological Station

A meteorological station will be employed for the primary purpose of documenting wind speed and direction. Wind direction data will be used to aid in identifying exclusion zone and perimeter monitoring locations. Wind speed will be monitored to comply with high wind conditions rules.

6.2 Exclusion Zone and Perimeter Monitoring Locations

Wind direction data will be used by the AMO to establish locations for the exclusion zone and perimeter monitoring. Generally, one sampling location will be upwind of the exclusion zone, one sample location will be directly downwind of the exclusion zone, and two samples on either side of the downwind location, but at roughly 60 degrees from the center line. Another way to view this is if the upwind station is at 12 o'clock, and the downwind sample is at 6 o'clock, the other 2 samples would be located at 4 and 8 o'clock. The reason for the samples located partially to the side is to account for minor variations in wind direction during the sampling period.

6.3 Wind Speed Action Level

The MDAQMD Rule 403.2 states that a reduction of earth moving activity is required under high wind conditions. High winds are defined as gusts in excess of 25 miles per hour (mph), or in excess of 15 mph on a 15-minute average. The meteorological station will provide this information. The AMO will monitor the wind speed and advise the contractor to reduce earthmoving activities under high wind conditions

7.0 Reporting Requirements

Results of personal air monitoring performed by the contractor will be reported to the AMO within 24 hours of receiving data from the laboratory. Direct reading instrumentation data will be provided to the AMO on a daily basis. Any exceedances of action levels will be reported to the AMO immediately.

The AMO will report all exceedances of any action level to the PM immediately. The AMO will prepare a summary report of all air monitoring results on a weekly basis.

The PM will provide any reports as required by any agency with the support of the AMO.

Figures

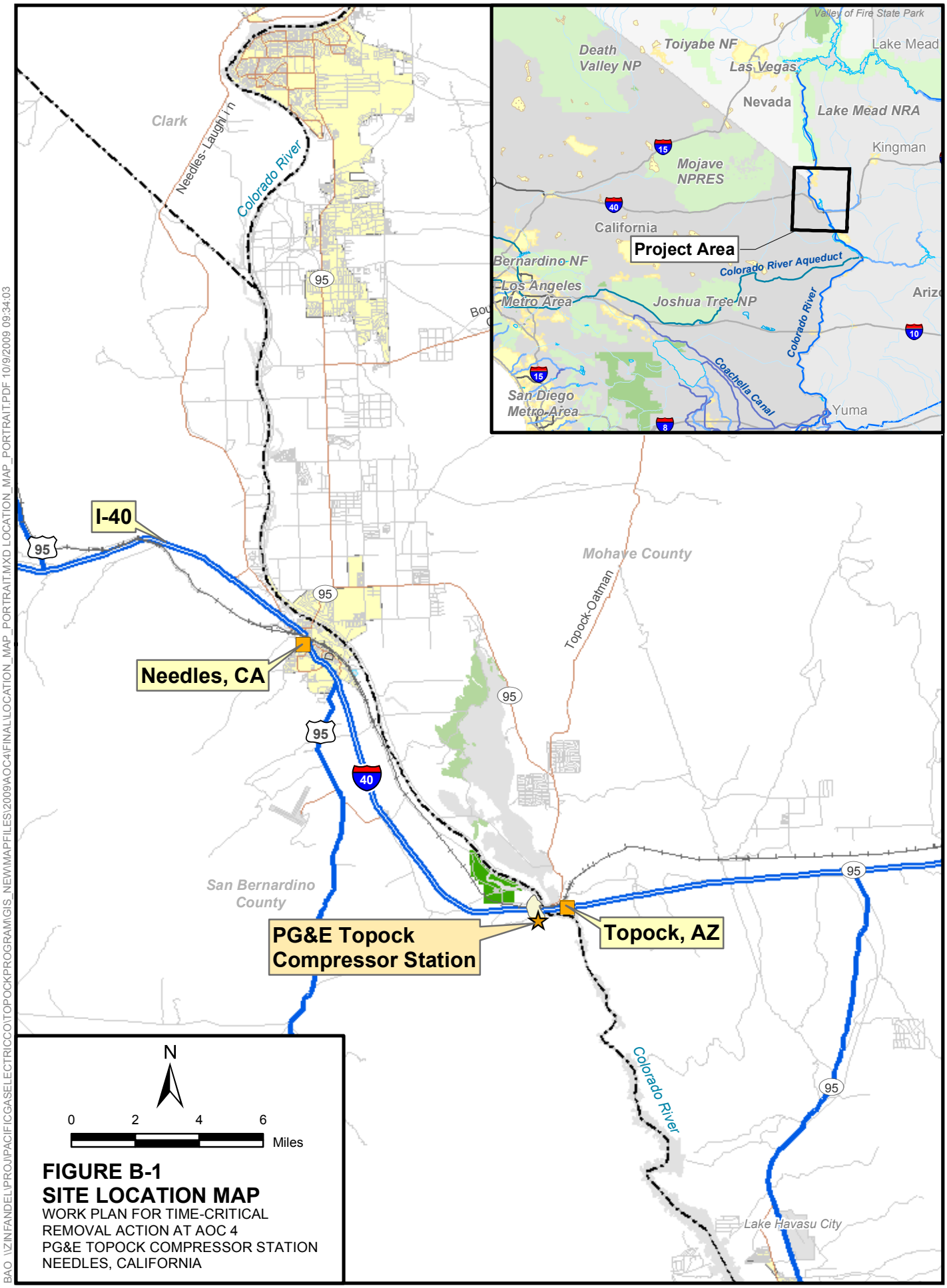


FIGURE B-1
SITE LOCATION MAP
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

BAO \\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS_NEW\MAPFILES\2009\AOC4\FINAL\LOCATION_MAP_PORTRAIT.MXD LOCATION_MAP_PORTRAIT.PDF 10/9/2009 09:34:03

Tables

TABLE 1
Chemicals of Concern

Chemical	Health Hazards	Maximum Amount Detected (mg/kg)	Exposure Routes	Airborne Permissible Exposure Limit (PEL) (mg/m^3)
Hexavalent Chromium Cr(VI)	Acute: respiratory irritant, possible respiratory and skin allergen. Chronic: Carcinogenic (lung)	1,560	Inhalation of dust	0.005
PCBs	Acute: dermatitis (chloracne), nausea, abdominal pain, anorexia Chronic; liver injury, possible liver cancer	1.9	Inhalation (as dusts), Dermal	0.5 (54% chlorine)
Lead	Acute: weakness, insomnia, anemia, GI disturbances, neuromuscular dysfunction Chronic: tremor, encephalopathy, kidney disease, joint weakness	11,000	Inhalation of dust	0.05
Dioxins	Acute: minimal at concentrations likely to be encountered. Chronic: Carcinogenic, reproductive and developmental problems, damages immune system and hormonal systems	6.085 ng/kg	Inhalation of dust	40 pg/m^3 (REL per CA OEHHA)
Polynuclear Aromatic Hydrocarbons (PAHS)	Acute: eye irritation, nausea, vomiting, diarrhea Chronic: Possible carcinogen, cataracts, kidney and liver damage and jaundice. Repeated contact with skin may induce redness and skin inflammation.	12 B(a)P Equivalent	Inhalation of dust	0.025
Pentachloro-phenol	Acute: Affects cardiovascular system, blood, liver (jaundice), and eyes Chronic: Possible carcinogen, inflammation of the upper respiratory tract and bronchitis, blood effects, liver, kidney, blood, endocrine, immune system, and CNS.	8.9	Inhalation of dust	0.01

TABLE 1
Chemicals of Concern

Chemical	Health Hazards	Maximum Amount Detected (mg/kg)	Exposure Routes	Airborne Permissible Exposure Limit (PEL) (mg/m^3)
Asbestos	Acute: Possible respiratory irritant. Chronic: Asbestosis, lung cancer, mesotheleoma	NA	Inhalation of dust	0.1 fiber/cc >5 micron
Particulates	See other contaminants	NA	Inhalation of dust	10 mg/m^3 (Total dust) 5mg/m^3 (Respirable)

TABLE 2
Sampling and Analytical Methods Personal and Exclusion Zone Monitoring

Chemical	Analytical Method	Airborne Permissible Exposure Limit (PEL) (mg/m^3)
Hexavalent Chromium Cr(VI)	OSHA ID-215 or equivalent	0.005
PCBs	NIOSH 5503 or equivalent	0.5 (54% chlorine)
Lead	NIOSH 7082, 7300 or equivalent	0.05
Dioxins	Modified EPA 23, TO-9, or CARB 28 or equivalent	40 pg/m^3 (REL per CA OEHHA)
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)	NIOSH 5506 or 5800 or equivalent	0.025
Pentachloro- phenol	NIOSH 5512 or equivalent	0.01
Asbestos	NIOSH 7400 or equivalent	0.1 fiber/cc >5 micron
Particulates	NIOSH 0500 or equivalent Plus Direct Reading Instrumentation	10 mg/m^3 (Total dust) 5mg/m^3 (Respirable)

TABLE 3
Sampling and Analytical Methods Perimeter Monitoring

Chemical	Analytical Method	Reference Exposure Limit (REL) or Other Recommended Limit
Hexavalent Chromium Cr(VI)	OSHA ID-215 or equivalent	0.02 µg/m^3
PCBs	NIOSH 5503 EPA TO-10 or equivalent	3.4 ng/m^3 (54% chlorine) DTSC cancer PRG
Lead	NIOSH 7082, 7300 or equivalent	1 µg/m^3 CARB
Dioxins	Modified EPA 23, TO-9, or CARB 28 or equivalent	40 pg/m^3
Polynuclear Aromatic Hydrocarbons (PAHS)	NIOSH 5506 or 5800 EPA TO-13 or equivalent	1 µg/m^3
Pentachloro-phenol	NIOSH 5512 or equivalent	2 µg/m^3
Asbestos	EPA (40 CFR 763) TEM or equivalent	0.01 fiber/cc USEPA
Particulates	EPA 450 or equivalent	50 µg/m^3 PM10 Mojave AQMD

Appendix C
Transportation Plan

Appendix C
Transportation Plan
Topock Compressor Station
AOC 4 Time Critical Removal Action
Topock, California

Contents

1.0 Introduction

The Transportation Plan for the hauling of excavated soil and hazardous waste for offsite disposal was prepared as an appendix to the work plan for the Time Critical Removal Action at Topock Area of Concern 4 Debris Ravine (AOC 4) as required by the United States Department of Interior (DOI). A ravine at the southwest corner of Pacific Gas & Electric Company's (PG&E) Topock Compressor Station has historically been used for disposal of waste materials, such as demolition concrete, asbestos containing materials, and other general industrial waste. The area, designated as "Area of Concern Number 4" (AOC 4), has been identified as an imminent hazard to the environment and human health. As such, the DOI directed PG&E to remove all hazardous and non-hazardous waste in a time-critical manner.

All excavated soils and wastes from AOC 4 will be transported by a qualified (licensed/registered and insured) waste hauler in covered trucks under manifests or proper shipping documents to permitted disposal facilities. The Transportation Plan is intended to provide the protocol and procedures for the preparation, loading, transportation, and documentation of all transportation-related activities during the removal action at AOC 4. The plan covers the following activities:

A. Removal of hazardous and non-hazardous materials and wastes from the project site in accordance with all applicable federal, state, and local laws, regulations, and ordinances.

B. Compliance with all applicable regulations related to transportation of wastes and excavated materials to protect public health and safety.

C. Compliance with PG&E requirements for spill prevention and traffic safety.

D. Transportation of all waste materials in a manner that prevents the release of any waste to areas outside of the approved disposal facilities.

E. Disposal of waste materials after profiling and receipt of written acceptance from the permitted disposal facilities.

F. Implementation of a traffic plan that includes staging and on site access to minimize disruption to station operations and prevent spills.

G. Implementation of site-specific health and safety plan as outlined in Appendix A and compliance with all approved project procedures to prevent or minimize the occurrence of accident, spill, or worker exposure to hazardous materials.

2.0 Waste Characterization and Quantity

2.1 Waste Profile

The site-specific chemicals of concern (COC) include: total and Hexavalent chromium, lead, asbestos, PCBs, dioxins, petroleum hydrocarbons, and semi-volatile organic compounds (SVOCs). Waste characterization procedures and laboratory analysis required are outlined in the work plan. Approval or acceptance by the disposal facilities will be obtained before start of excavation and removal action.

If the excavated soil or waste material is designated as a hazardous waste, Contractor shall use PG&E's EPA generator ID number as specified by PG&E for waste manifesting and management and comply with all EPA and DTSC requirements on hazardous waste management, temporary on-site storage, transportation, and disposal.

2.1.1 RCRA Hazardous Waste

RCRA hazardous waste is regulated under both the federal Resources Conservation and Recovery Act (RCRA) and the California Health and Safety Code (H&SC). The RCRA regulatory levels for D-wastes, using the Toxicity Characteristic Leaching Procedure (TCLP), are listed under the California Code of Regulations, Title 22 Section 66261.24(a)(1) (22 CCR Section 66261.24(a)(1)).

2.1.2 Non-RCRA Hazardous Waste

Non-RCRA Hazardous Waste is regulated only under the California Health and Safety Code and Title 22 of the California Code of Regulations (CCR). The Total Threshold Limit Concentration (TTLC) and Soluble Threshold Limit Concentration (STLC) values for the chemicals of concern are listed under 22 CCR Section 66261.24(a) (2).

2.1.3 Non-Hazardous Waste

The California H&SC Section 25157.8 prohibits the disposal of any waste containing total lead in excess of 350 mg/kg, copper in excess of 2,500 mg/kg, or nickel in excess of 2,000 mg/kg to land other than to a Class 1 disposal facility in California. For example, waste soils containing lead at 500 mg/kg may not be hazardous waste based on STLC results; however, these waste soils must be disposed of at a Class 1 disposal facility.

2.1.4 PCB Wastes

PCB waste is regulated under the federal Toxic Substances Control Act (TSCA) because it is either a waste containing polychlorinated biphenyls (PCBs) at a concentration of 50 mg/kg (or more) or an impervious surface with 10 micrograms per 100 square centimeters of PCBs. TSCA also regulates disposal of PCB wastes with concentrations over 1 mg/kg when the source of PCB wastes contains PCBs at 50 mg/kg or more. Certain PCB wastes are also regulated as non-RCRA hazardous wastes in California. All PCB wastes must be disposed of at a U.S. EPA approved PCB waste management facility. A current list of such PCB facilities is available at www.epa.gov/pcb/stordisp.html.

2.1.5 Asbestos Containing Materials

The California DTSC classifies asbestos containing material as hazardous waste if it is "friable" and contains one percent (1.0%) or more asbestos. A friable waste is one that can be reduced to a powder or dust under hand pressure when dry. This classification standard is defined in Title 22 CCR Section 66261.24. Because the U.S. EPA does not regulate asbestos containing material as hazardous waste under the Resource Conservation and Recovery Act (RCRA), it is considered to be a "non-RCRA," or "California-only" hazardous waste. DTSC considers non-friable bulk asbestos-containing waste to be nonhazardous regardless of its asbestos content; as such, it is not subject to regulation under Title 22, Division 4.5, of the CCR. Any excavated soil designated for offsite disposal that contains greater than 1% by weight of asbestos shall be disposed of at a disposal facility permitted to accept such waste.

3.0 Requirements for Transporters

All transporters of excavated soil and waste materials shall comply with the following procedures and requirements during the removal action at AOC-4.

3.1 Shipping Documents

Excavated soil will be managed either as hazardous or non-hazardous waste depending on the waste profile, and transported using the appropriate shipping documents (manifests, bill of lading or invoice) by a licensed waste hauler. At a minimum, the shipping document will include the following information:

- Name and Address of Waste Generator - Name and Address of Waste Transporter
- Name and Address of Disposal Facility
- Description of the Waste
- Quantity of Waste Shipped

The Contractor's designated personnel on site will maintain a copy of all shipping document for each truckload of excavated soil, waste, or fill material until completion of the removal action.

3.2 License and Insurance

The selected haulers or transporters shall be licensed and insured in both the shipping and receiving states, and in any states through which the waste will be transported, to transport the excavated soils, waste, or fill materials. Hazardous wastes must be shipped by a registered hazardous waste hauler. The removal action Contractor shall verify the status of registration and insurance policy of the selected transporters.

3.3 Contingency Plan

Each transporter is required to have a written contingency plan for PG&E review and approval to address the following conditions:

a. Emergency situations (vehicle breakdown, accident, waste spill, waste leak, fire, explosion, etc.) during transportation of excavated soils from the site to the destined disposal facility or during transportation of fill materials from a source to the site;

b. Change in the volume and condition of excavated soil;

c. Change in waste characteristics and condition; or

d. Inclement weather.

The Contingency Plan shall be prepared in accordance with DTSC's guidance for transportation plans for site remediation (DTSC, May 1994). After the transporter is selected, a copy of its contingency plan will be made a part of this Transportation Plan.

4.0 Traffic Control

Traffic control procedures and requirements to be implemented during removal action include the following:

4.1 Dust control

Soil for offsite disposal will be transported in a covered end-dump trailers/trucks, drums, or roll-off bins to an approved disposal facility. All waste hauler vehicles will be decontaminated prior to leaving the work area.

4.2 Traffic Control

Speed Limit: While on the Site, all vehicles are required to maintain slow speeds, e.g. less than five miles per hour (5 mph), for safety purposes and for dust control. While on streets or freeways, all transporters will follow the posted speed limits and apply defensive driving techniques (over traffic or road conditions) for traffic safety.

Site Access Control: All trucks shall be well maintained; ***leaks and spills from vehicles are not acceptable***. Trucks with excess grease or debris will be rejected and not allowed access to the site. A flag person of the Contractor will be located at the gate to inspect and approve vehicles, then assist the truck drivers to safely enter and depart the Site.

Truck Staging Area: Empty waste bins shall be inspected by the Contractor to confirm cleanliness prior to being off-loaded at sites designated within the work plan, as directed by the flagger. Truck loading will be coordinated so as to avoid staging offsite and long wait times for trucks; idling will be minimized to avoid unnecessary exhaust fumes.

4.3 Transportation routes

Offsite Traffic Flow: General highway trucks will enter and exit the project through the lower maintenance yard along 145453 National Trails Highway and will not enter the main station. Full and empty bins will be shuttled down to the lower yard. Prior to entering the site, trucks shall drive into an area with secondary containment area for visual inspection of fuel or oil leaks, as well as inspection of empty bins. PG&E requires placement of cones around vehicles when parked. Figure C-1 illustrates the proposed traffic routes near the Topock Station. Appropriate signage will be developed to control traffic flow.

There are numerous alternate routes that can be used to the designated disposal facility(ies). Proposed transportation route maps for the offsite shipment of impacted soil will be updated as necessary prior to shipping waste.

Onsite Traffic Flow: Only the designated Onsite Roll-Off trucks will be allowed within the main station to shuttle full and empty bins to the work areas. The Onsite Roll-Off trucks vehicles will drive around the B-Cooling Tower then down the hill to the southeast staging area. Trucks will wait inside the fenced project site within an area with secondary containment for directions to loading areas with traffic cones around vehicles. Traffic will be

coordinated in such a manner that, at any given time, no more than two (2) bin transportation trucks are onsite to reduce traffic on surrounding surface roads and reduce dust generation during onsite transportation. Figure C-1 illustrates the proposed traffic route in the station.

4.4 Truck Inspection and Cleaning

After loading the trucks, the removal action Contractor is responsible for ensuring trucks are clean prior to leaving the work zone and entering the Station's work area. A cleanout station shall be maintained by the Contractor for inspection and to keep truck clean prior to entering the Station work area and transport to the landfill. Wash water shall be controlled using storm water best management practice to prevent runoff and discharge to land.

5.0 Landfill Disposal facilities

Based on the results of waste profiling and classification, excavated soil and waste material will be transported under hazardous waste manifests or proper shipping documents to a permitted offsite disposal facility. Once the disposal facility has provided written acceptance, copies of waste profile reports will be provided to DTSC. Compliance with the land disposal restrictions, as necessary, will be documented and provided to DTSC after receipt of written acceptance from the disposal facility.

All hazardous wastes will be properly managed, manifested, and transported by a registered hazardous waste hauler to a proper waste management facility.

5.1 RCRA Hazardous Waste Facilities (Class I)

All RCRA hazardous wastes will be disposed of in a Class 1 hazardous waste disposal facility permitted to accept such wastes. A partial list of facilities below may be used for this project:

A. Chemical Waste Management
   5251 Old Skyline Road
   Kettleman, California 93239
   Phone: (559) 386-971 1

B. US Ecology Inc
   Highway 95, 11 miles South of Beatty
   Beatty, Nevada 89003
   Phone: 1.800.239.3940

C. Clean Harbours Button Willow Facility
   5295 South Garvey Road
   Westmoreland, California 92281

5.2 Non-RCRA Hazardous Waste Facilities (Class I or II)

A non-RCRA hazardous waste is a California only hazardous waste. When an asbestos containing waste is regulated as non-RCRA hazardous waste, it may be disposed of at a California Class 2 landfill or an out-of-state Class 3 landfill (permitted to accept such wastes). All other non-RCRA hazardous wastes will be disposed of at a California Class 1 land disposal facility or an out-of-state Class 3 landfill, permitted to accept such wastes. The waste management facilities below may be used for this project as well as others approved by PG&E:

A. Chemical Waste Management
   35251 Old Skyline Road
   Kettleman, California 93239
   Phone: (559) 386-9711

B. US Ecology Inc
Highway 95, 11 miles South of Beatty
Beatty, Nevada 89003
Phone: 1.800.239.3940

C. Clean Harbours Button Willow Facility
Highway 95, 11 miles South of Beatty
Beatty, Nevada 89003
Phone: 1.800.239.3940

5.3 Land Disposal Restriction

Land Disposal Restrictions (LDR) ensures that toxic constituents present in hazardous waste are properly treated before hazardous waste is disposed to land. Some wastes may require mandatory technology-based treatment before disposal. Agreements between PG&E and the approved facility or landfill will be made prior to transporting the waste to the facility.

6.0 Documentation

The Contractor will be responsible for maintaining proper documentation of all waste removal and transportation and site restoration activities.

6.1 Photographs

Photographic documentation representative of activities with particular attention to compliance with this Transportation Plan and the Removal Action Work Plan shall be collected throughout the course of the project.

6.2 Field Log Book

The Contractor shall be responsible for maintaining a field logbook to document observations, personnel on-site, truck arrival and departure times, and other vital project information.

6.3 Truck/Equipment Inspection Log Book

All trucks and equipment used in project activities shall be inspected daily and prior to entering and leaving the Site. A log book shall be kept to document thorough and complete inspection.

6.4 Weekly Reports

As part of the weekly report, the Contractor shall summarize the transportation activities and accomplishments in the weekly report. The weekly report will also include the completion status of all project objectives, verifies Contractor's adherence to proper site health and safety procedures, and describes the following week's activities and goals.

7.0 Plan Review Corrective Actions

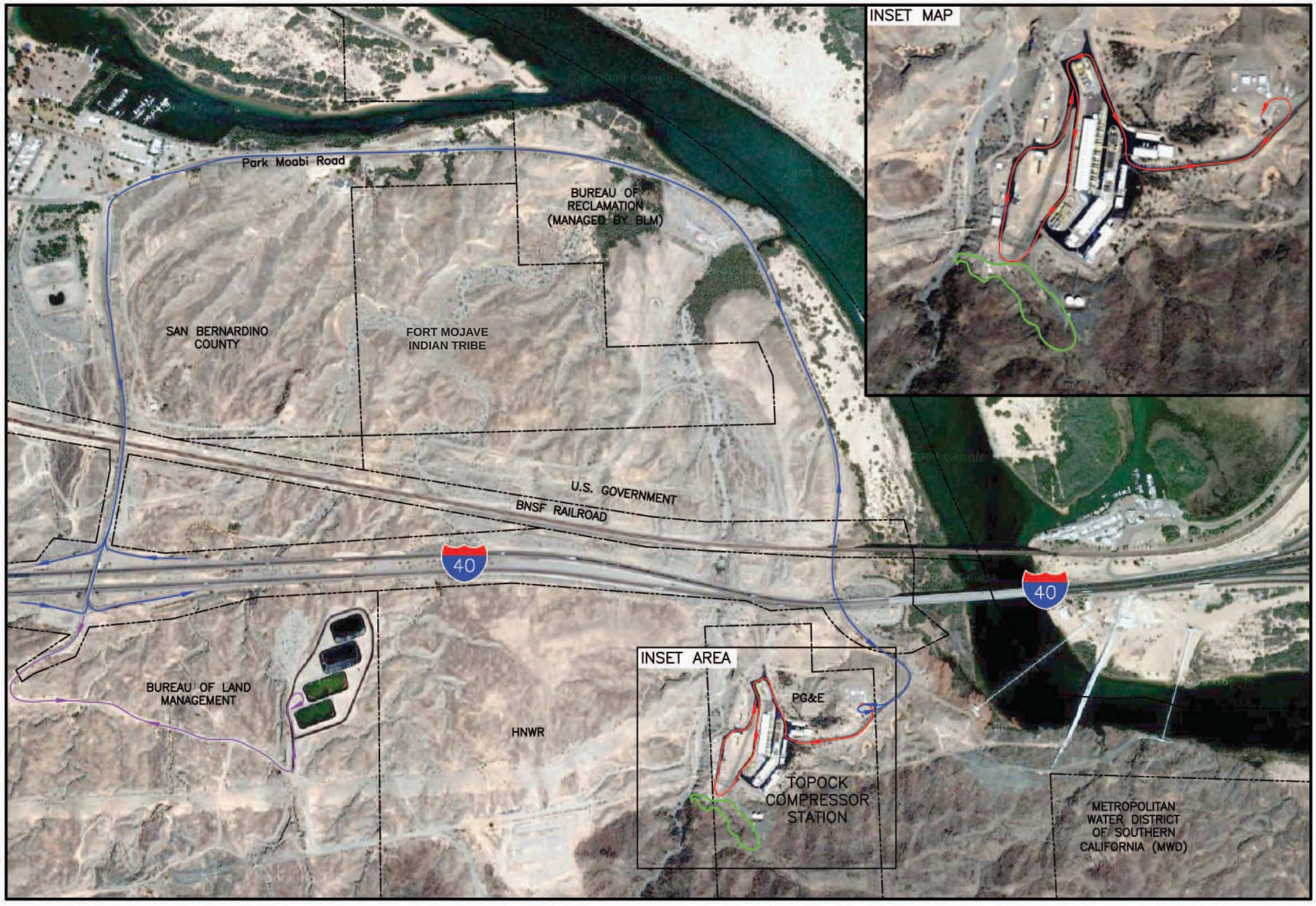
7.1 Plan Update Log

The Contractor shall keep a log of all updates to the Transportation Plan, recording written acknowledgment of any changes or additions.

7.2 Corrective Action Log

The Contractor shall keep a log of all corrective actions taken to accomplish project objectives.

Figure



N

LEGEND:

- ONSITE ROLL–OFF TRUCK PATH
- HIGHWAY BIN TRUCK PATH
- CLEAN BIN STORAGE
- AOC4 LIMITS
- PARCEL BOUNDARY

PRIVILEGED AND CONFIDENTIAL

FIGURE C-1
TRANSPORTATION PLAN
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Appendix D
Waste Management Plan

Appendix D
Waste Management Plan
Topock Compressor Station
AOC 4 Time Critical Removal Action
Topock, California

ARCADIS

TURN-KEY

APPENDIX D

Waste Management

D.1 Waste Profiling Regulatory Requirements

Title 40 of the Code of Federal Regulations (CFR) Section 261.4(c) provides federal waste classification criteria. Two state agencies share responsibility for the classification of wastes in California: (1) the Department of Health Services and (2) the State Water Resources Control Board together with the nine California Regional Water Quality Control Boards (Regional Boards). These agencies classify wastes according to CCR Title 22, Division 4, Chapter 30 "Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes" and CCR Title 23, Chapter 3, Subchapter 15 "Discharges of Waste to Land," respectively (California Regional Water Quality Control Board, Central Valley Region [CVRWQCB], 1986). State regulations are consistent with federal waste identification and classification requirements.

D.1.1 Federal Criteria and Analytical Methods

A generator of solid waste, as defined in 40 CFR 261.2, must determine if that waste is a hazardous waste (40 CFR 262.11). A solid waste is a hazardous waste if the waste is "listed" as a hazardous waste in Subpart D of 40 CFR 261, or if it exhibits a "characteristic" of hazardous waste as described in Subpart C of 40 CFR 261.

Subpart D lists hazardous wastes from non-specific sources, specific sources, and discarded commercial chemical products, chemical intermediates, off-specification species, and container residues and spill residues thereof. To satisfy the definition of a listed waste in Subpart D, the material must derive from an activity or material that corresponds directly with the listed definition.

If the material does not satisfy the Subpart D listed definition, the generator must then determine whether the waste exhibits a characteristic of hazardous waste by testing the waste material or by applying knowledge of the hazardous characteristic of the waste in light of the materials or the processes used. Subpart C provides regulation for defining a solid waste as a hazardous waste using the following criteria:

- Characteristic of ignitability (Section 261.21)
- Characteristic of corrosivity (Section 261.22)
- Characteristic of reactivity (Section 261.23)

Toxicity characteristic (Section 261.24) using the Toxicity characteristic leaching procedure extraction is defined by United States Environmental Protection Agency (USEPA) Method 1311 and comparison to maximum concentration levels. This list is also summarized in CCR Title 22, Division 4.5, Chapter 11, Article 3, Section 66261.24 Characteristic of Toxicity.

D.1.2 State Criteria and Analytical Methods

Under Title 22 and 23 waste management regulations, The California Department of Health Services determines whether a waste is "restricted hazardous" or "hazardous," while

classification of a waste as "designated," "nonhazardous solid," or "inert" is performed by the Regional Boards (CVRWQCB, 1986).

The following criteria facilitate the determination of a hazardous waste according to California regulations:

- Toxicity, ignitability, reactivity, and corrosivity
- Toxicity criteria including acute oral, dermal, inhalation and fish toxicity, carcinogenicity, and compound specific toxicity
- Carcinogenicity criteria include a list of compounds for which the combined concentration in a waste exceeding 0.001 percent by weight makes the waste "hazardous"
- Compound-specific toxicity criteria include soluble threshold limit concentration and total threshold limit concentration limits

The disposal options are driven by the waste profiling and classification. Waste defined as hazardous under CCR Title 22 regulation must be discharged to a Class I management unit unless it is exempt by the governing regulatory agency for a specific reason.

Subchapter 15 requires "designated wastes" to be discharged to Class I or Class II waste management units (CVRWQCB, 1986). A "designated waste" is defined by CCR Title 23, Subchapter 15 Section 2522 as either of the following:

- Non-hazardous waste that consists of or contains pollutants which, under ambient environmental conditions at the waste management unit, could be released at concentrations in excess of applicable water quality objectives or could cause degradation of waters of the state.
- Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Title 22 Section 66410 of CCR.

Non-hazardous solid waste is more commonly referred to as municipal solid waste or refuse. Subchapter 15 allows non-hazardous solid waste to be discharged to a Class III waste management units that are located and/or designed to prevent impairment of beneficial uses of nearby ground and surface waters.

D.1.3 Potential Waste Streams

The segregated wastes discussed in the previous section will be identified using visible indicators, field instruments, and analytical sampling to place the specified waste into one of the following categories:

- RCRA hazardous waste
- Non-RCRA hazardous waste
- Non-hazardous waste
- Asbestos

To establish the appropriate waste stream, the analytical results will be compared to the target compounds listed in Table 1-9 and described in Section 1.3. This table lists the

California total threshold limit concentration, California soluble threshold limit concentration and the RCRA toxicity characteristic.

The list of analytes needed for acceptance of a waste to a specific waste management unit can vary and will ultimately be determined by the waste management facility in accordance with federal and state regulations. Each waste management event should be treated separately and coordination with the waste hauler and waste management facility is imperative for proper completion of the waste profile.

In all cases, the disposal facility shall be consulted. Representative sample profile results shall be used to evaluate waste classification (nonhazardous, California hazardous, or federal hazardous). The number of representative samples to be collected shall be as follows unless otherwise directed by the disposal facility:

Waste Stream Volume	Frequency
0 – 500 cy	4 Point composite per 250 cy
500 – 1,500 cy	4 Point composite per 500 cy
1,500 + cy	4 Point composite per 1,500 cy

Waste profiles will be established and prepared as is practicable prior to the commencement of excavation activities. RCRA hazardous waste and the non-RCRA hazardous waste will require disposal at a Class I landfill facility. Non-RCRA hazardous with an approved profile would be accepted at a Class II landfill facility. Non-hazardous waste with an accepted profile at the selected disposal facility will be transported to a Class III landfill for disposal. Non-regulated waste and refuse generated by construction support will be collected for disposal at municipal landfill.

As required by the disposal facility, representative waste profile samples shall be analyzed for required analytes to complete a federal hazardous waste evaluation. Typically, the total concentration in milligrams per kilogram (mg/kg) of a constituent is divided by 20, converted to milligrams per liter (mg/L) and compared to the Toxicity Characteristic (TC) values in 40 CFR §261.24. If the calculated concentration equals or exceeds the TC value, the sample shall be analyzed using the TCLP extraction defined by USEPA Method 1311 and compared to the TC value. If the TCLP result is equal to or exceeds the TC value for a given constituent, the waste is a federal hazardous waste. This list is also summarized in California Code of Regulations CCR Title 22, Division 4.5, Chapter 11, Article 3, §66261.24 Characteristic of Toxicity

If required by the disposal facility, representative waste profile samples shall be collected and analyzed to perform a California hazardous waste evaluation. A waste is hazardous if any of the extractable concentrations of its toxic constituents (in mg/L of extract) equals or exceeds the STLC value and/or any of the total concentrations of its toxic constituents (in mg/kg of waste) equals or exceeds the TTLC. Total constituent analysis shall be first completed for the analytes requested by the facility. These results are compared to STLC and TTLC values. If the total value for any constituent is greater than the TTLC criteria, the waste is California hazardous waste. If the total value for any constituent is equal to or

greater than the STLC criteria, but less than TTLC criteria, the Waste Extraction Test (WET) must be completed for that constituent. A waste with a WET result for any constituent greater than the STLC criteria is a California hazardous waste. The TTLC and STLC criteria are provided in Title 22 CCR, §66261.24 Tables II and III and §66699. The Waste Extraction Test (WET) is described by Title 22 CCR, §66700.

D.2 Field Segregation

Waste segregation will be overseen by a trained inspector. This full-time inspector will be onsite directing the segregation and appropriate disposal of excavated wastes. If more than one excavator is being used onsite, or if other earth-moving equipment is operating onsite at the same time, one waste segregation person will be assigned to each active excavation face. The waste segregation inspector will continuously observe the excavation and will direct the equipment operators. As waste materials are excavated, they will be segregated based on visual observation into one of the waste categories.

The following subsections describe the categories of wastes that may be encountered at the site, define terms that are applicable for these waste materials, and summarize the process for segregation. All materials will be handled and removed in accordance with the site HSP.

D.2.1 Potential Asbestos-containing Material

Suspected and apparent ACM will be encountered during the removal action at the site. The ACM will be removed by onsite personnel by hand or with equipment and will be encapsulated and placed into appropriate 55-gallon drums or lined/covered roll-off boxes for containerization and transport to an approved facility.

D.2.2 Debris, Fill, and Other Material

Large debris, such as wood pieces, metal cans, machine parts, rebar, and concrete, will be encountered during excavation activities at the site. The majority of this debris will be removed by onsite personnel by hand, hand tools, or by the assistance of a crane/hoist and will be placed separately into appropriate roll-off containers.

Concrete, wood, metal, and other debris greater than 4 feet long will be removed and stockpiled separately. Concrete, wood, metal, and other debris will be assumed to be contaminated and will be binned separately for disposal. Materials that appear burned or were removed from areas known to have elevated concentrations of PAHs will also be binned separately. It may also be necessary to reduce the size of the large debris to properly containerize and transport to an appropriate disposal facility.

Some areas have been identified as having some larger debris (wood, metal, concrete, etc.) that has been buried and will need to be excavated. The larger debris will be removed as is practicable and will be stockpiled with the material described above. The remaining material will be treated as contaminated alluvium. The material will be removed and stockpiled into roll off containers with a minimum of a 10 mil plastic liner.

D.2.3 Personal Protective Clothing and Ground Covers

Used PPE and plastic ground covers that have come into contact with potentially contaminated soil or water shall be disposed of as municipal waste, unless gross

contamination is present. Grossly contaminated PPE or ground covers shall be bagged and stored in a labeled bin or 55-gallon steel drum and will be disposed of as part of the waste stream.

D.2.4 Miscellaneous Waste

Miscellaneous waste such as trash, paper bags, and cardboard boxes shall be disposed of as non-regulated solid waste at a Class III waste management unit, unless affected with potentially contaminated material or water. Potentially contaminated miscellaneous waste will be combined with other hazardous waste. Empty, used 55-gallon steel drums shall be triple-rinsed with a high-temperature pressure washer. Rinsate will be properly stored, manifested, and disposed of. A licensed industry waste transporter will collect the drums from the site and will dispose of the drums by either recycling or permanent disposal.

D.3 Waste Transport and Disposal

Once the waste materials have been excavated, segregated, and processed, materials designated for offsite disposal will be loaded, transported, and disposed as described below. A designated transportation and disposal coordinator will be onsite during transportation and disposal activities. This individual will be responsible for coordinating and overseeing these activities.

The waste materials will be loaded into appropriate transport vehicles/containers for offsite transportation to the designated disposal facility. Following the analytical results of the specific roll-off containers to determine the appropriate disposal facility, trucks will be loaded and the wastes will be transported, as is discussed further in the Transportation Plan (Appendix C). The staging area will be carefully controlled to minimize spillage and fugitive dust. As loading is completed, the roll-offs and trucks will be inspected and brushed as necessary to remove loose materials.

Roll-offs will be lined before loading with the liner draped over the side. Once the container is loaded, the liner will be folded over and secured. A tarp will be secured over the top of the container. Trucks or roll-offs that enter the EZ will pass through a decontamination area to exit the site. Each load will be inspected to ensure that it is secure and that the truck has been properly cleaned/decontaminated as required.

Appropriate documentation (including waste manifests) will be completed and checked. In addition, a truck log will be maintained of loading and transportation information.

The vehicle will proceed to the designated disposal facility in accordance with local, state, and federal transportation requirements. Further information on the transportation of the material is included in the Transportation Plan, provided as Appendix C.

D.3.1 Disposal Facilities

Wastes designated as RCRA or non-RCRA hazardous wastes will be transported and disposed in a Class 1 hazardous waste land disposal facility. Profiles will be established, and acceptance of the waste stream will be established prior to sending any material offsite.

The following facilities have been identified as potential receptors for the RCRA or non-RCRA hazardous wastes:

- Chemical Waste Management
  5251 Old Skyline Road
  Kettleman, California 93239

- US Ecology
  Highway 95, 11 miles South of Beatty
  Beatty, Nevada 89003

- Clean Harbors Buttonwillow
  2500 West Lokern Road
  Buttonwillow, California 93206

- Clean Harbors Westmore
  5295 South Garvey Road
  Westmoreland, California 92281

Appendix E
Data Quality Plan/Data Quality Objectives

Appendix E
Data Quality Plan/Data Quality Objectives
Topock Compressor Station
AOC 4 Time Critical Removal Action
Topock, California

Contents

Acronyms and Abbreviations

PST	planned sampling table
QAPP	Quality Assurance Project Plan
SOP	Standard Operating Procedure
USEPA	United States Environmental Protection Agency
XRF	x-ray fluorescence

Data Quality Plan/Data Quality Objectives

This appendix presents the Data Quality Plan and Data Quality Objectives (DQOs) to be implemented during the removal action to ensure that the project objectives are achieved. This plan applies to soil sample collection activities, field screening analysis, and laboratory analysis for soil samples/investigation-derived waste. This plan does not apply to air monitoring activities.

E.1 Data Quality Objectives

The DQO process is a recognized procedure for defining project objectives and decisions, and optimizing sampling and other information-gathering programs to balance uncertainty, site disturbances, and cost in an acceptable manner. The goal of the DQO process is to ensure that data collected at each stage of the investigation process are of sufficient quantity and quality to enable the specified decisions to be made.

Data quality objectives (DQOs) for screening-level and confirmation sample collection have been developed for this TCRA. These DQOs are specific to this TCRA, and were developed to ensure that data collected during the TCRA are of sufficient quantity and quality to enable the specified decisions of the TCRA to be made, i.e., remove fill and debris, contaminated disturbed alluvium, and native alluvium until target end point concentrations have been achieved.

The DQO process consists of seven steps. A summary of the DQOs for Steps 1 through 7 is provided in Table E-1 and are described below. Figure 2-3 illustrates the decision rules for Step 5.

Step 1: Problem Statement

Problem Definition

AOC 4 – Debris Ravine consists of a debris disposal area where debris and fill material were dumped into a narrow, steep-sided ravine adjacent to the southwestern end of the Topock Compressor Station. Anthropogenic fill and debris and disturbed natural alluvium materials mantle the ravine northern slope with some debris accumulating in the bottom of the ravine. There are two primary areas of fill and debris and disturbed natural alluvium deposition:

- The western portion of the north side (south facing slope) of the ravine
- A smaller area of fill concentrated at the upper end of a service road in the northeastern portion of the AOC

Fill and debris in the ravine are known to contain elevated levels of COPCs, including metals, hexavalent chromium, PAHs, dioxin, and asbestos. Eighteen constituents exhibited maximum concentrations exceeding recognized human health and/or ecological health soil screening levels. In some cases, the maximum concentrations exceed screening levels by several orders of magnitude. All of these constituents have significant human health and/or

ecological receptor toxicity endpoint, and exposure at or in the range of the maximum concentrations could have significant biological impacts.

Contaminated fill and debris are known to be present on the surface of and within the debris pile on the north slope of the Debris Ravine. Past erosion of the loosely consolidated soil and waste on the slope is evident. In the event of severe runoff, substantial erosion and/or slope failure is possible. Contaminated fill and debris transported down the slope is deposited in the bottom of the Debris Ravine, where it can be rapidly transported via stormwater runoff to the adjacent Refuge located only a few hundred feet downstream.

Potential soil exposure pathways for recreational or tribal use receptors at the Refuge include incidental ingestion, dermal contact, and inhalation of dust in ambient air. The principal exposure pathways for ecological receptors in the terrestrial environment are exposure to constituents in surface soil, shallow soil, and subsurface soil via direct contact, incidental ingestion, and/or ingestion of chemically affected biota (PG&E 2008a).

The overall problem statement for the AOC 4 time-Critical Removal Action is:

> Historic practices at the Topock Compressor Station have resulted in the deposition of contaminated fill and debris and potentially contaminated disturbed alluvium and native alluvium within AOC 4.

Actual or threatened releases of hazardous substances from AOC 4 - Debris Ravine, if not addressed by implementing a Time-critical Removal Action may present an imminent and substantial endangerment to public health, or welfare or the environment.

Step 2: Identify the Decisions

Step 2 consists of identifying the decisions to be made. Activities consist of identifying the principal study questions, defining the alternative actions that may be taken based upon the range of possible outcomes, and combining the alternative actions and the principal study questions into decision statements.

The goal of the TCRA is to stabilize the threat of release of contaminated material and mitigate the potential imminent and substantial endangerment. This will be accomplished by removal of contaminated fill and debris and contaminated disturbed alluvium and native alluvium that may pose an imminent threat to human health and the environment.

This time-critical removal action (TCRA) is not intended to be the final remedy for this AOC. After this TCRA, AOC4 will proceed through the normal RCRA/CERCLA process.

The following principal study question and decision statement were identified:

> *Has material been removed necessary to mitigate the potential imminent and substantial endangerment to public human health or welfare or the environment?*
>
> The alternative outcomes of this question are: (a) all material has been removed; or (b) removal of additional material is needed.

<u>Decision Statement</u>: Determine whether material exceeding the target endpoints has been removed which is necessary to mitigate the potential imminent and substantial endangerment to public health or welfare or the environment. If material exceeding

target endpoints has been removed, the TCRA is complete. If not, remove remaining material exceeding target endpoints.

Step 3: Inputs to the Decision

The various inputs and definitions to the decision are shown on Table E-1.

Step 4: Study Boundaries

Study boundaries include spatial (lateral and vertical), temporal, and analytical boundaries. Constraints that could interfere with sampling are also identified in this step and are reflected in the definition of the boundaries. Temporal boundaries are required because a given medium or unit may change over time. Practical constraints may limit the spatial and/or temporal boundaries or regions that will be included in the study. Practical constraints associated with the TCRA consist primarily of access limitations, and presence of native alluvium and bedrock. The study boundaries for the TCRA are described on Table E-1.

Step 5: Decision Rule

Decision rules are "if…, then…" statements that describe the actions to be taken depending on the site-specific findings. The decision rules for the TCRA are depicted on Figure 2-3, and described in Section 2.6.

Step 6: Acceptable Limits on Decision Error

Step 6 is intended to define acceptable limits on decision errors. A decision error would occur if, based on the available data, the project team chooses the wrong response action in the sense that a different response action would have been chosen if the project team had access to "perfect data" or absolute truth. The potential for decision errors and the acceptable limits for decision errors for this TCRA project are discussed in Table E-1.

Step 7: Optimized Sampling Design

Screening level and confirmation sampling are discussed in Table E-1 and planned sampling locations are shown on Figure 2.4.

E.2 Sampling and Analysis Plan

Prior to the start of field work, the designated Data Coordinator will coordinate with the Removal Contractor, who is responsible for sample collection. The Project Chemist will notify the laboratory of the pending sampling event and will arrange for the appropriate type and number of sample containers. A planned sampling table (PST) will list each location to be sampled and the analysis to be performed at each location. The frequency of field duplicates and equipment blanks, along with other quality assurance/quality control requirements will follow the *PG&E Program Quality Assurance Project Plan, Revision 1* (QAPP) (CH2M HILL, 2008a) and the *Addendum to PG&E Program Quality Assurance Project Plan for the RCRA Facility Investigation/Remedial Investigation* (QAPP Addendum) (CH2M HILL, 2008b). Field duplicates will be listed in the PST. A field sampling binder will be given to each field personnel or field team associated with sample collection and will

contain: the PST; number, size, and type of containers required for each sample site; map of sample locations; Standard Operating Procedures (SOPs); chain-of-custody forms (sample chain-of-custody forms will be included to help field personnel complete the chain-of-custody forms provided from the field database); and brief directions outlining the sampling and any special protocols required for this sampling event.

E.3 Analytical Methods

All quality control and data management will follow the QAPP and QAPP Addendum (CH2M HILL, 2008a-b), unless addressed in the Work Plan. Soil samples collected during this effort will be analyzed for parameters listed in Section 2.6 and summarized in Table 1-9 of the Work Plan.

E.4 Field Quality Control

To meet quality control requirements, the sample collection, sample handling, and sample custody procedures will follow the QAPP (CH2M HILL, 2008a) and the appropriate SOPs. Copies of these SOPs will be available in a binder at the project trailer. Due to the importance of obtaining sound data, careful measures, calibrations, and documentation will be performed. Each sample location will be pre-located on a grid generated in the office. Following excavation, each sample location will be flagged using a Global Positioning System (if possible) to locate the position. In general, sample collection will be performed in accordance with *SOP-B14 Standard Operating Procedures for Sample Collection.* After collection, the sample will be homogenized in accordance with SOP-B7, *Homogenization of Sediment and Soil Samples*. However, to prevent any possible cross contamination, dedicated equipment will be used for the collection and homogenization of every sample. Following homogenization, the sample will be field screened for metals by x-ray fluorescence (XRF) in accordance SOP-B16, *Field-portable X-Ray Fluorescence Soil Sampling* (see attached). (For field screening purposes, XRF concentration readings will be adjusted using linear least square fit equations calculated from the RCRA facility investigation/remedial investigation samples analyzed in the lab and by the XRF.) Portions of the homogenized sample will be stored at 4ºC for future laboratory screening and, if applicable (sample results are less than the target end points), for confirmation analysis, as described below.

The proper decontamination procedures and investigation-derived waste management will be followed and are described in *SOP-B5*, *Decontamination of Personnel and Equipment, Well Drilling, and Subsurface Sampling and Investigations*, and *SOP-B6*, *Disposal of Waste Fluids and Solids* (CH2M HILL, 2005).

E.5 Laboratory Quality Control

The QAPP and QAPP Addendum (CH2M HILL, 2008a-b) outline quality control requirements for laboratory analyses to be conducted for PG&E Topock projects, including this Area of Concern Number 4 (AOC 4) Debris Ravine Removal Action project. The Quality Assurance Project Plan addresses data quality objectives; method detection limits, reporting limits, and instrument calibration requirements; laboratory quality control samples; laboratory data management procedures; performance evaluations; preventive

maintenance; corrective action; and quality assurance reports. Project chemists will review laboratory analytical data generated from the soil sampling to assess data quality and identify deviations from analytical requirements. Special screening-level methods will be employed during the screening process and will follow "modified" quality control requirements. Confirmation sample results will be evaluated against the more robust requirements outlined in the QAPP and QAPP Addendum (CH2M HILL, 2008a-b).

E.6 Data Management

The electronic data will be used to generate validation reports, data summary tables, and figures. Management of data generated from soil and groundwater sampling will be conducted in accordance with the *PG&E Program Data Management Plan* (CH2M HILL, 2004). The Data Management Plan outlines standardized procedures for field data collection and review, analytical data loading into the information system (environmental database), verification of uploaded data, quality assurance/quality control procedures associated with data management, and reporting formats.

This program will follow standard procedures for environmental data collection listed in the *PG&E Program Data Management Plan* (CH2M HILL, 2004), the QAPP (CH2M HILL, 2008a), and the QAPP Addendum (CH2M HILL, 2008b). These provide procedures that give data users rapid access to stored data; provide methods of data entry with known accuracy and efficiency; apply well-documented validation procedures to an electronic database; manage sample data using unique sample identification numbers; establish a sample inventory of new data collected and provide methods of sample inventory reconciliation; store and provide sample-specific attributes, including location identifiers, sample type and media, and sample date; and provide reporting and delivery formats to support data analysis and reduction.

E.7 Data Validation

Screening data validation will consist of review by the project chemist of quality control parameters and method compliance and will include:

- XRF data will be adjusted by using linear least square fit equations.
- Review of the "reduced" quality control associated with the screening methods (method blanks, laboratory control samples, matrix spike sample).
- General quality checks, such as verify correct samples analyzed and SOPs followed for sample collection and analysis, assess sample conditions, verify correct units being used.

Confirmation data validation will be carried out when data packages and electrical data deliverables are received from the laboratory using a combination of manual review and automated software. Validation will be performed on an analytical batch basis, using the summary results of calibration and laboratory quality control, as well as those of associated field samples. Data packages will be reviewed for all analytes. Raw data will be reviewed when deemed necessary by the project chemist. Data validation will include:

- Review of the data package for completeness.

- Review of chain-of-custody records for discrepancies that might degrade data quality.
- Review for compliance with holding time and quality control frequency requirements.
- Evaluation of all calibration and quality control summary results against project requirements.
- Verification of analyte identification and calculations for at least 10 percent of the data.
- Qualification of data using appropriate qualifier flags, as necessary, to reflect data usability limitations.
- Initiation of corrective actions, as necessary, based on data review findings.

Data validation will be '**patterned'** after the United States Environmental Protection Agency (USEPA) *Contract Laboratory National Functional Guidelines for Inorganic Data Review* (USEPA, 2002) and *Contract Laboratory National Functional Guidelines for Organic Data Review* (USEPA, 1999), substituting the qualifiers, the calibration and quality control requirements specified in the QAPP and the QAPP Addendum (CH2M HILL, 2008a-b).

E.8 Reporting

Results from the removal action will be documented in a Completion Report for the AOC 4 time-critical removal action. Interim deliverables may include data tables and figures to describe distribution of target analytes and data reports containing similar information. The interim deliverables will be used only to determine whether supplemental or subsequent sampling is required.

E.9 References

CH2M HILL. 2004. *PG&E Program Data Management Plan*.

_____. 2005. *PG&E Topock Monitoring Program Field Procedures Manual*

_____. 2008a. *PG&E Program Quality Assurance Project Plan, Revision 1.*

_____. 2008b. *Addendum to PG&E Program Quality Assurance Project Plan for the RCRA Facility Investigation/Remedial Investigation.*

United States Environmental Protection Agency (USEPA). 1999. *Contract Laboratory National Functional Guidelines for Organic Data Review.* July.

_____. 2002. *Contract Laboratory National Functional Guidelines for Inorganic Data Review.* October.

Table E-1
DATA QUALITY OBJECTIVES– AOC 4 TIME-CRITICAL REMOVAL ACTION
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

STEP 1 Problem Statement	STEP 2 Decision Statement	STEP 3 Inputs to the Decision	STEP 4 Study Area Boundaries	STEP 5 Decision Rules	STEP 6 Acceptable Limits on Decision Errors	STEP 7 Optimized Sampling Design
Historic practices at the Topock Compressor Station have resulted in the deposition of contaminated fill and debris and potentially contaminated disturbed alluvium and native alluvium within AOC 4. Actual or threatened releases of hazardous substances from AOC 4 - Debris Ravine, if not addressed by implementing a Time-critical Removal Action may present an imminent and substantial endangerment to public health, or welfare or the environment.	**Goal**: Stabilize the threat of release of contaminated material and mitigate the potential imminent and substantial endangerment. This will be accomplished by removal of contaminated fill and debris and contaminated disturbed alluvium and native alluvium that may pose an imminent threat to human health and the environment. This time-critical removal action (TCRA) is not intended to be the final remedy for this AOC. After this TCRA, AOC4 will proceed through the normal RCRA/CERCLA process. **Decision Statement**: Determine whether material exceeding the target endpoints has been removed which is necessary to mitigate the potential imminent and substantial endangerment to public health or welfare or the environment. If material exceeding target endpoints has been removed, the TCRA is complete. If not, remove remaining material exceeding target endpoints.	Part A and representative Category 1 and 2 historic RFI/RI COPC and COPEC data. Visual inspection and/or screening/confirmation level analysis of soil samples for COPCs and COPECs Target End Point concentrations for COPCs and COPECs in fill and debris and disturbed alluvium/colluvium defined in Section 1.3 of this work plan. Target End Point concentrations for COPCs and COPECs in native alluvium defined in Section 1.3 of this work plan. AOC 4 Conceptual Site Model (CSMs) including AOC location, use history information, and topographic/geologic/hydrogeologic/hydrologic information Site geological materials expected to be encountered during removal action (see Figure 1-3.): **Fill and Debris** – Anthropogenic materials that may include, but are not limited to, ACM, white powder, ash, industrial scrap (metal, wire, gaskets, pipe, etc), concrete, wood, blasting sand, etc. This designation of material also includes locally-derived unconsolidated alluvium and colluvium that have been re-deposited by anthropogenic mechanisms and exhibit visual evidence of contamination (e.g., staining) and/or contain commingled debris. **Disturbed Alluvium**– Locally-derived unconsolidated alluvium and colluvium that have been re-deposited by anthropogenic mechanisms but exhibit no visible evidence of contamination and are not commingled with debris. This designation includes mixtures of fines, sand, gravel, and boulders representative of materials identified in undisturbed alluvial and bedrock outcrops in the immediate AOC 4 vicinity. These materials are loosely compacted, not cemented, and do not exhibit natural depositional features (e.g., bedding planes and/or preferred clast orientation/arrangement). **Native Alluvium** – Locally-derived	**Spatial Boundaries** Figure 3-1 shows the area to be targeted by the TCRA, consisting of the ravine from a point directly south of the water tanks to the junction with Bat Cave Wash; north slope of ravine directly south from end of small access road west to west side of storage area. For the purposes of this TCRA, AOC 4 has been divided into sub-areas A through F in order to accommodate different excavation approaches, as shown on Figure 3-1. These areas comprise the lateral extent of each of the sub-areas. The vertical extents of the sub-areas are described below. Sub-area A (Eastern Slope and Burned Area) - The area is on a steep slope primarily comprised of bedrock outcrop, which limits heavy equipment access onto the site. Material targeted for removal consists of fill and debris (large debris, rock, and ACM) directly overlying bedrock and, in limited areas, disturbed alluvium and/or native alluvium. The majority of material targeted for removal within this sub-area will be removed down to the bedrock surface with no screening or confirmation sampling of the final excavation surface. Where disturbed alluvium and native alluvium remains after material removal, screening and confirmation samples will be collected from the excavation surface. Sub-area B (Upper Portion of Primary Slope) - This sub-area has moderate slope and is readily accessible from the road and designated loading area. Material targeted for removal consists of fill and debris similar to that described for Sub-area A, overlying disturbed alluvium and/or native alluvium and/or bedrock. Fill and debris directly overlying bedrock will be removed down to the bedrock surface with no screening or confirmation sampling of the final excavation surface. Where disturbed alluvium and/or native alluvium remains after material removal, screening and confirmation samples will be collected from the excavation surface. Sub-area C (Plateau of Primary Slope) - This sub-area is flat to moderately sloped and is readily accessible from the road and designated loading area. Material targeted for removal consists of fill and debris overlying disturbed alluvium and/or native alluvium and/or bedrock. Fill and debris directly overlying bedrock will be removed down to the bedrock surface with no screening or confirmation sampling of the final excavation surface. Where disturbed alluvium	See Figure 2.3 for the Removal Action Process Flow Diagram. The primary decisions are: 1) Was bedrock encountered? If so, excavation is complete. Decision criteria are the presence of indurated bedrock. 2) Was native alluvium encountered? This leads to two different confirmation sampling paths for disturbed alluvium and undisturbed alluvium. Decision criteria are field observations of geologic material consolidation and depositional structures. 3) Do metals concentrations meet target endpoint criteria based on field screening? If so, additional testing is performed for non-metals COPCs and COPECs. If not, additional excavation of affected grid cells is conducted. 4) Do SVOC and/or dioxin concentrations meet target endpoint criteria based on laboratory screening analyses? If so, additional laboratory confirmation level testing is performed for all COPCs and COPECs. If not, additional excavation of affected grid cells is conducted 5) Have target endpoint criteria been achieved based on laboratory confirmation level analyses? If so, excavation is complete. If not, additional excavation of affected grid cells is conducted. If at any time during the TCRA continued removal is deemed unsafe, work will stop in that area and DOI will be informed.	Because of the highly heterogeneous nature of the materials dumped at this site, the distribution of potentially contaminated disturbed alluvium/colluvium and native alluvium after removal of overlying fill and debris is not predictable. Contaminated disturbed alluvium and native alluvium could be spatially localized and limited in areal extent, requiring densely spaced discrete sampling or multi-increment sampling too achieve a high probability of detection. Subarea F cannot be excavated or effectively sampled due to safety concerns from overhanging unstable material. Therefore, there is the potential for contaminated material to remain in place in AOC 4 following removal and confirmation sampling. It is likely that the fill and debris, which will be removed, contain the highest concentrations of contamination potentially posing an imminent and substantial endangerment. Collecting more densely spaced discrete or multi-increment samples on the steep slopes of the ravine would be difficult and potentially unsafe. Balancing these considerations, an acceptable qualitative level of decision error will be achieved by removal of all fill and debris, coupled with confirmation sampling based on a limited number of discrete samples that can be safely and effectively collected.	Screening level and confirmation samples will be collected from excavation surfaces of disturbed alluvium and/or native alluvium on a 25-foot grid pattern, as shown on Figure 2-4. Discrete samples will be collected from the approximate center point of each grid cell to characterize the entire cell.. If a grid cell contains both alluvium and bedrock, samples will be collected from the center of the alluvium. Each sample will initially be screened for metals using field screening methods. If metals concentrations are less than target endpoints, the sample will be screened in an off-site laboratory for pentachlorophenol, PAHs (B[a]P Equivalent), PCBs, and dioxins/furans (TEQ Human). If SVOC, PCB and/or dioxin concentrations are less than target endpoints, then the sample will be analyzed in the off-site laboratory for the full suite of COPCs and COPECs using standard EPA methodologies. Sample collection SOPS will be followed as described in Section 2.6.1.

Table E-1
DATA QUALITY OBJECTIVES– AOC 4 TIME-CRITICAL REMOVAL ACTION
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

STEP 1 Problem Statement	STEP 2 Decision Statement	STEP 3 Inputs to the Decision	STEP 4 Study Area Boundaries	STEP 5 Decision Rules	STEP 6 Acceptable Limits on Decision Errors	STEP 7 Optimized Sampling Design
		undisturbed alluvium, including alluvium and colluvium comprising the original slope. Native alluvium is observed in outcrops at the site as densely compacted and weakly cemented, and exhibiting natural depositional features (e.g., bedding planes and/or preferred clast orientation/arrangement). During previous activities at AOC 4, native alluvium was discerned from disturbed alluvium by the observation of a distinct change in material resistance/penetration rate during trench excavation and/or soil sample collection. **Bedrock** – Indurated rock (cemented or hardened). In the immediate AOC 4 area, bedrock consists of Pre-Tertiary metadiorite, which is a finely crystalline metamorphic rock that is grayish-green in appearance, and locally fractured. Miocene conglomerate bedrock, which is red-brown in appearance, calcite-cemented, and matrix supported, is encountered in the Topock area, but is not anticipated to be encountered at AOC 4. Cultural resource and historic information Biological resource information Excavation and sampling limitations associated with steep slopes and slope stability,	and/or native alluvium remains after material removal, screening and confirmation samples will be collected from the excavation surface. Sub-area D (Lower Portion of Primary Slope) - This sub-area is a steep slope and is not readily accessible. Material targeted for removal consists of fill and debris overlying disturbed alluvium and/or native alluvium and/or bedrock. Fill and debris directly overlying bedrock will be removed down to the bedrock surface with no screening or confirmation sampling of the final excavation surface. Where disturbed alluvium and/or native alluvium remains after material removal, screening and confirmation samples will be collected from the excavation surface.. Sub-area E (Ravine Bottom) - The ravine bottom is a very narrow area with very limited access from a few locations. Sub-area E consists primarily of fill and debris and/or disturbed alluvium and/or native alluvium deposited over bedrock. Fill and debris directly overlying bedrock will be removed down to the bedrock surface with no screening or confirmation sampling of the final excavation surface. Where disturbed alluvium and/or nativealluvium remains after material removal, screening and confirmation samples will be collected from the excavation surface. Subarea F (Ravine Bottom) – The ravine bottom is a very narrow area with very limited access. Sub-area F consists of fill and debris and/or disturbed alluvium and/or native alluvium deposited over bedrock. This sub-area is unsafe to access, therefore only limited removal and sampling will be performed using the excavator to reach into unsafe areas. **Analytical Boundaries** Chemical Parameters (COPCs and COPECs): Title 22 metals, hexavalent chromium, pentachlorophenol, total petroleum hydrocarbons, VOCs, SVOCs, PCBs, dioxins/furans (TEQ Human), PAHs (B[a]P Equivalent), and asbestos, as defined in the Action Memorandum and DOI comments on the draft Work Plan. Analysis of soil samples will include: • Screening-level field analysis for metals • Screening-level laboratory analyses for organics: pentachlorophenol, PAHs (B[a]P Equivalent),			

Table E-1
DATA QUALITY OBJECTIVES– AOC 4 TIME-CRITICAL REMOVAL ACTION
PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

STEP 1 Problem Statement	STEP 2 Decision Statement	STEP 3 Inputs to the Decision	STEP 4 Study Area Boundaries	STEP 5 Decision Rules	STEP 6 Acceptable Limits on Decision Errors	STEP 7 Optimized Sampling Design
			PCBs, and dioxins/furans (TEQ Human), • Confirmation-level laboratory analysis for the full suite (Title 22 metals, hexavalent chromium, pentachlorophenol, total petroleum hydrocarbons, VOCs, SVOCs, PCBs, dioxins/furans, PAHs, and asbestos). **<u>Temporal Boundaries</u>** Conduct of sampling will be concurrent with waste removal activities.			

Notes:

ACM – Asbestos-Containing Material
VOCs – Volatile Organic Compounds
SVOCs – Semi-Volatile Organic Compounds
TPH – Total Petroleum Hydrocarbons
CSMs – Conceptual Site Models
ARARs – Applicable or Relevant and Appropriate Requirements
CMS/FS – Corrective Measures Study/Feasibility Study
PAHs – Polycyclic Aromatic Hydrocarbons

Appendix F
Best Management Practices for Run-on and Run-off Controls

Appendix F
Best Management Practices (BMPs) Plan
Topock Compressor Station
AOC 4 Time-Critical Removal Action PG&E
Topock, California

ARCADIS

TURN-KEY

Contents

APPENDIX F

Best Management Practices (BMPs) Plan, AOC 4 Time-Critical Removal Action, PG&E Topock Compressor Station

F.1 Project Information

F.1.1 Site Location

AOC 4 comprises a narrow, steep-sided arroyo (greater than 30-percent slope) that drains into Bat Cave Wash at the southwest corner of the PG&E Topock compressor station. The Topock Compressor Station is approximately 0.25 mile south of Interstate 40 and 0.25 mile west of the Colorado River and in the vicinity of Historic Route 66.

AOC 4 is located on PG&E property except for a small portion of the westernmost end which extends onto Havasu National Wildlife Refuge (HNWR). The construction site location is presented on Figure F-1. The construction work zones are presented on Figure F-2. The construction staging areas are presented on Figure F-3.

F.1.2 Project Description

PG&E is removing potentially contaminated debris and fill material from AOC4. The operational history at AOC 4 is not well documented; however, over the years, fill material and debris have been deposited over the northern slope and in the bottom of the ravine. Based on observations made during the recent investigation, there are two primary areas of fill material and debris deposition at AOC 4:

1. the western portion of the north side (south-facing slope) of the ravine and
2. a smaller area of fill material concentrated at the upper end of a service road in the northeastern portion of the AOC.

Materials identified in AOC 4 include wood, metal (cans, machine parts, rebar, etc.), concrete, broken transite panels, burned debris, and white powder.

The project area that will be disturbed during construction is approximately –1 - 2 acres.

Disturbed areas include locations where:

- Fill material and debris will be excavated or removed.
- Removal equipment will travel through the project area.
- Temporary access roads and benches will be constructed through the project area.
- Access routes along which removed fill material and debris will be transported to the IDW management area.

- Access routes via which equipment and personnel will access the project area.
- Temporary construction of IDW management area.

Site access and project area demarcation are addressed in detail in Section 2-2.

F.1.3 Site Topography and Stormwater Flows

Site topography is shown in Figure 2-3. Average annual rainfall for the area is 4.4 inches per year. The contractor laydown areas are located on the Topock Compressor Station and surrounding areas. The site drainage patterns will generally follow the steep site topography. Similarly, runoff from the AOC 4 removal area will follow existing slopes.

F.1.4 Runoff Coefficient and Percentage Paved Surface

Most of the construction site is, and will remain, unpaved. The runoff coefficient for exposed soil can vary from 0.2 to 0.9 depending on the soil slope and permeability. The pre-construction runoff coefficient is estimated to be approximately 0.5. The post-construction runoff coefficient is estimated to be approximately 0.75.

F.1.5 Construction Schedule

The following schedule is anticipated for this construction project:

- Mobilization: December 2009 to January 2010
- Debris and fill material removal: January 2010 to May 2010
- Project area stabilization /restoration: December 2009 to May 2010
- Demobilization: June 2010

F.2 Best Management Practices

This section discusses the implementation of pre-construction control practices and stormwater BMPs, where applicable, during construction.

F.2.1 Previous Investigation Results

Past investigation results are summarized in Section 1 and Tables 1-1 to 1-8 of the TCRA work plan.

F.2.2 Pre-construction Control Practices

No pre-construction control practices are proposed for this project.

F.2.3 BMPs Addressing Off-site Run-on to the Construction Site

Although the construction site is in an arid region of California, there can be periods of intense rain. Run-on to the construction site is expected to be minimal but presents a high potential for contaminant and sediment transport because of the intensity of the periodic rains, the susceptibility of the active work areas to erosion, and the potentially contaminated nature of the excavated fill material and debris.

Because of the potential for contaminant and sediment transport out of the project area, offsite run-on will need to be managed by constructing temporary berms above active work areas to route surface water around the work areas.

F.2.4 BMPs Addressing Material and Waste Storage and Handling Areas

The BMPs described in this section address:

- Equipment and vehicle cleaning
- Equipment and vehicle fueling
- Equipment and vehicle maintenance
- Stockpile management
- Spill prevention and control
- Non-hazardous waste management
- Hazardous waste management
- Sanitary and septic waste management

F.2.4.1 Equipment and Vehicle Cleaning

- Train employees and subcontractors in pollution prevention measures.
- Vehicle cleaning will be by dry brushing/wiping. Cleaning cloths will be managed and disposed in accordance with federal, state, and local regulations.
- Soaps and solvents will not be used unless the resulting waste or wastewater is fully contained and disposed of off-site in accordance with federal, state, and local regulations.
- Establish a designated area for equipment cleaning away from drainage courses.

F.2.4.2 Equipment and Vehicle Fueling

- Fuel equipment and vehicles off-site to the extent practicable.
- Only staff trained in proper fueling and cleanup procedures should conduct fueling operations. Trained staff must attend the fueling operation at all times.
- Perform on-site fueling only in locations approved by PG&E, away from storm drains and drainage courses.
- Ensure that spill containment facilities are provided in fueling areas.
- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks; dispose of properly after use.
- Use drip pans, absorbent pads, or splash containment during vehicle and equipment fueling.
- Locate fueling areas a safe distance from stormwater inlets. Fueling will not be allowed within an unsafe distance of any concentrated drainage course.
- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips, and be properly grounded.
- Fueling operations must be in compliance with federal, state, and local requirements.

F.2.4.3 Equipment and Vehicle Maintenance

- Use off-site repair shops to the extent practicable.

- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- If maintenance must occur on-site, use designated areas located a safe distance from downstream drainage facilities and water courses.
- Use drip pans or absorbent pads during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Inspect on-site vehicles and equipment daily at startup for leaks; repair any leaks immediately.
- Keep vehicles and equipment clean; do not allow excessive buildup of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, and hydraulic and transmission fluids.
- Provide secondary containment and covers for these materials if stored on-site.

F.2.4.4 Stockpile Management

- Locate stockpiles of soil or construction materials only in designated areas and a safe distance from stormwater inlets and concentrated drainage courses.
- During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

F.2.4.5 Spill Prevention and Control

- Train employees and subcontractors in proper spill response procedures.
- Stop the source of a spill immediately, if it is safe to do so.
- Clean up spilled material immediately, if it is safe to do so.
- All spills will be reported to PG&E immediately.

F.2.4.6 Non-hazardous Waste Management

- Non-hazardous waste management will be performed in accordance with the Waste Management Plan
- Maintain the site in good order and free of liter and trash.
- Maintain storm drain inlets free of litter and construction wastes.
- Locate storage areas for demolition debris and other non-hazardous solid waste a safe distance from stormwater inlets and drainage courses.

F.2.4.7 Hazardous Waste Management

- Hazardous waste management will be performed in accordance with the Waste Management Plan.
- Hazardous waste storage areas should be located a safe distance from stormwater inlets and any concentrated drainage courses.

F.2.4.8 Sanitary and Septic Waste Management

- Treat or dispose of sanitary or septic wastes in accordance with state and local requirements.
- Locate temporary sanitary facilities a safe distance from storm drain inlets.
- When subjected to high winds or risk of high winds, secure temporary sanitary facilities to prevent overturning.

F.2.5 BMPs for Erosion Control

There is very sparse vegetation in the AOC 4 project area, IDW management area, the support areas, and along the roadways. The main areas of soil disturbance will be the AOC removal area and the IDW management area, which are shown in Figure 2-1. Additional minor areas of soil disturbance also shown in Figure 2-2 include access routes.

Disturbed work areas will be initially stabilized by tracking with heavy equipment to seal the surface. In addition, soil stabilizing agents will be used to stabilize the sealed work surfaces once work is complete in those areas.

Run-on controls, as discussed in previous sections, will be used to minimize the volume of surface water that flows across disturbed areas.

Roadways may also be stabilized by addition of crushed rock or gravel.

F.2.6 BMPs for Wind Erosion Control

Soil piles and other stockpiles will either be wetted or covered by tarpaulins to prevent wind erosion. Areas to be excavated or graded will be conditioned with water, which will limit wind erosion.

Roll-off boxes of soil and debris will be covered when it is not necessary to have them open.

Access roadways may also be covered with crushed rock or gravel and/or will be sprayed with water for dust control as necessary.

F.2.7 BMPs for Sediment Control

Silt fences or berms will be installed above the slopes of the work areas in the arroyo to prevent storm water from running onto the work areas and eroding potentially contaminated fill and debris.

A berm or similar measure will be constructed in the arroyo to prevent high energy storm water flow into the work areas. Another berm or similar measure will be constructed between the arroyo and Bat Cave Wash to prevent sediment transport out of the arroyo.

Other temporary berms may be constructed where appropriate for sediment control at other locations in the work area.

Temporary soil piles will be protected from sediment transport with silt fencing or straw wattles. Similarly, silt fences, straw wattles, or rock collection fencing will be installed as needed below cleared/disturbed slope areas (especially where clean work areas need to be separated from disturbed work areas). Prior to forecasted precipitation events, soil piles may be covered with tarpaulins or the surfaces of soil piles may be treated with a soil stabilizing agents to prevent erosion.

F.2.8 BMPs for Vehicles and Equipment Tracking Control

The BMP for tracking control includes the following controls:

- Vehicles and equipment will be allowed to exit the project site onto public paved roads only at designated locations.
- Construction site access points to paved roads will be inspected on a daily basis and dirt tracked onto public roadways, if any, will be removed.

F.2.9 Description of Non-stormwater Discharge and Associated BMPs

No non-stormwater discharges to receiving waters will occur as a result of this construction project. Water for dust control will be applied at a rate such that there will be no runoff that would reach surface waters.

As described earlier, washing of equipment and tools will be performed off-site to the extent possible Decontamination of personnel, equipment, and tools involved in removal of fill and debris will be decontaminated in the areas prescribed in the Work Plan such that all decontamination water is collected and properly disposed.

F.2.10 Description of Post-construction BMPs

At the completion of this response action, soil stabilization will be conducted using a liquid soil binder. The soil binder may need to be reapplied periodically depending on the final project plan and final design grade.

Figures

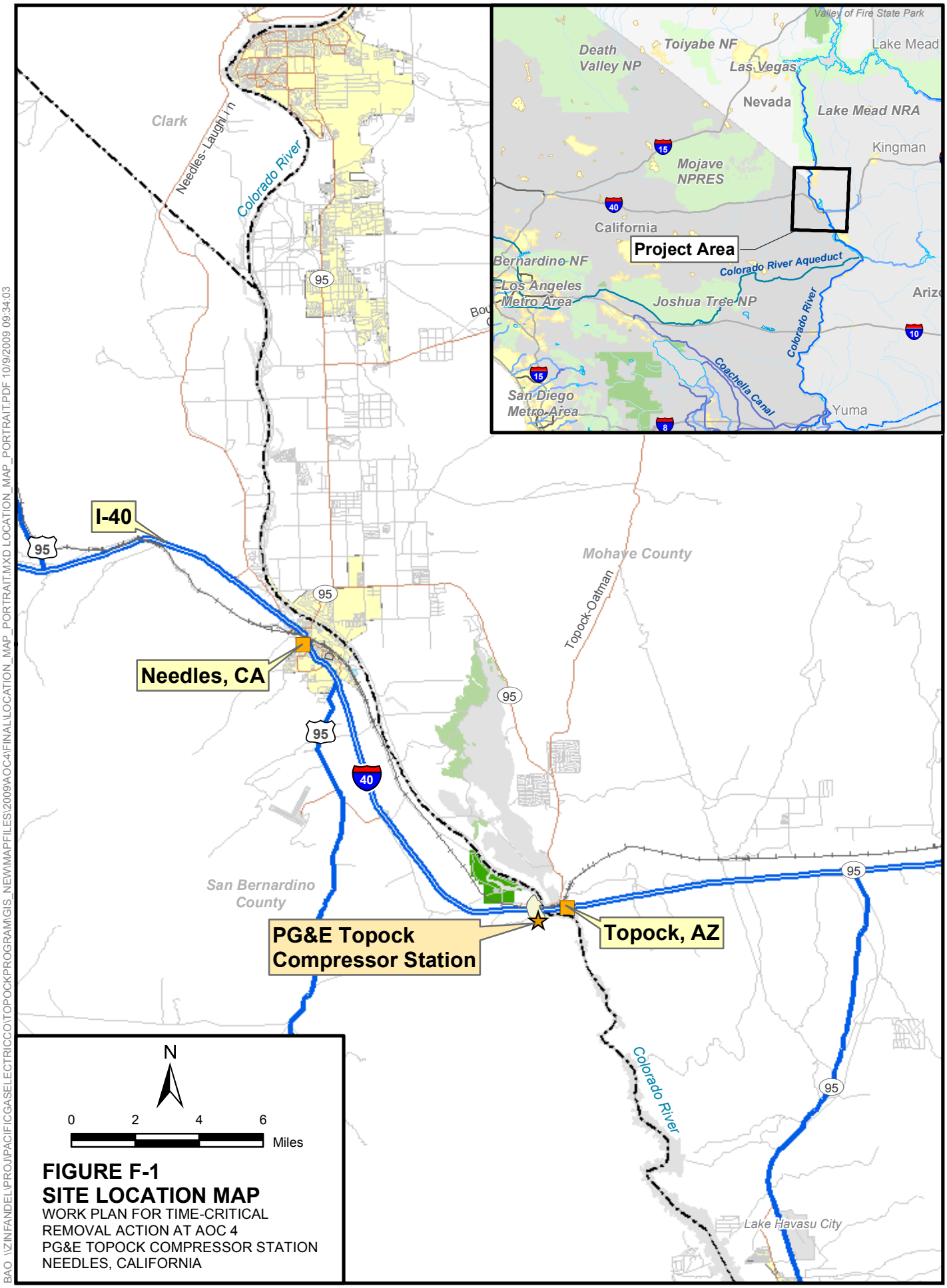
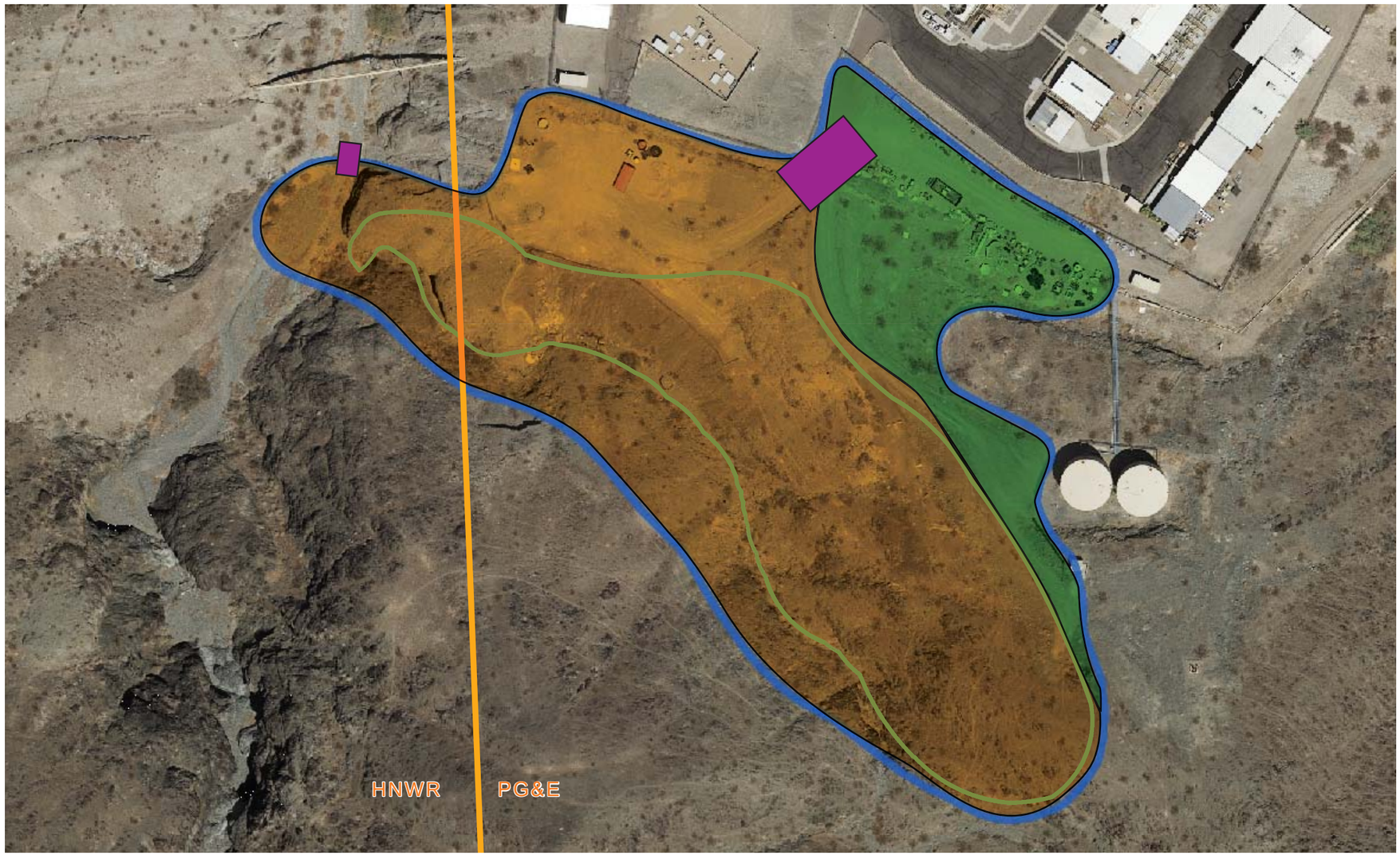
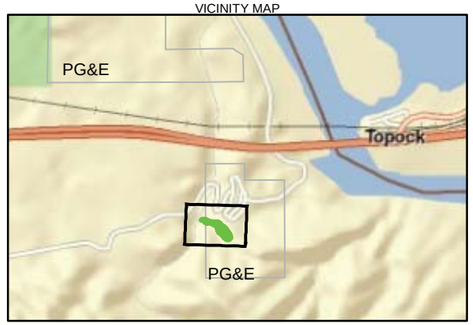


FIGURE F-1
SITE LOCATION MAP
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

BAO \\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS_NEW\MAPFILES\2009\AOC4\FINAL\LOCATION_MAP_PORTRAIT.MXD LOCATION_MAP_PORTRAIT.PDF 10/9/2009 09:34:03



VICINITY MAP



LEGEND

- Property Boundary
- AOC 4 Boundary From RFI (2007)
- Anticipated Primary Work Zone
- Primary Support Zone
- Contaminant Reduction Zones
- General Exclusion Zone Area
- HNWR Havasu National Wildlife Refuge (Managed by U.S. Fish and Wildlife Service)

N

0 25 50 100 150 200

Feet

FIGURE F-2
DESIGNATED WORK ZONES
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

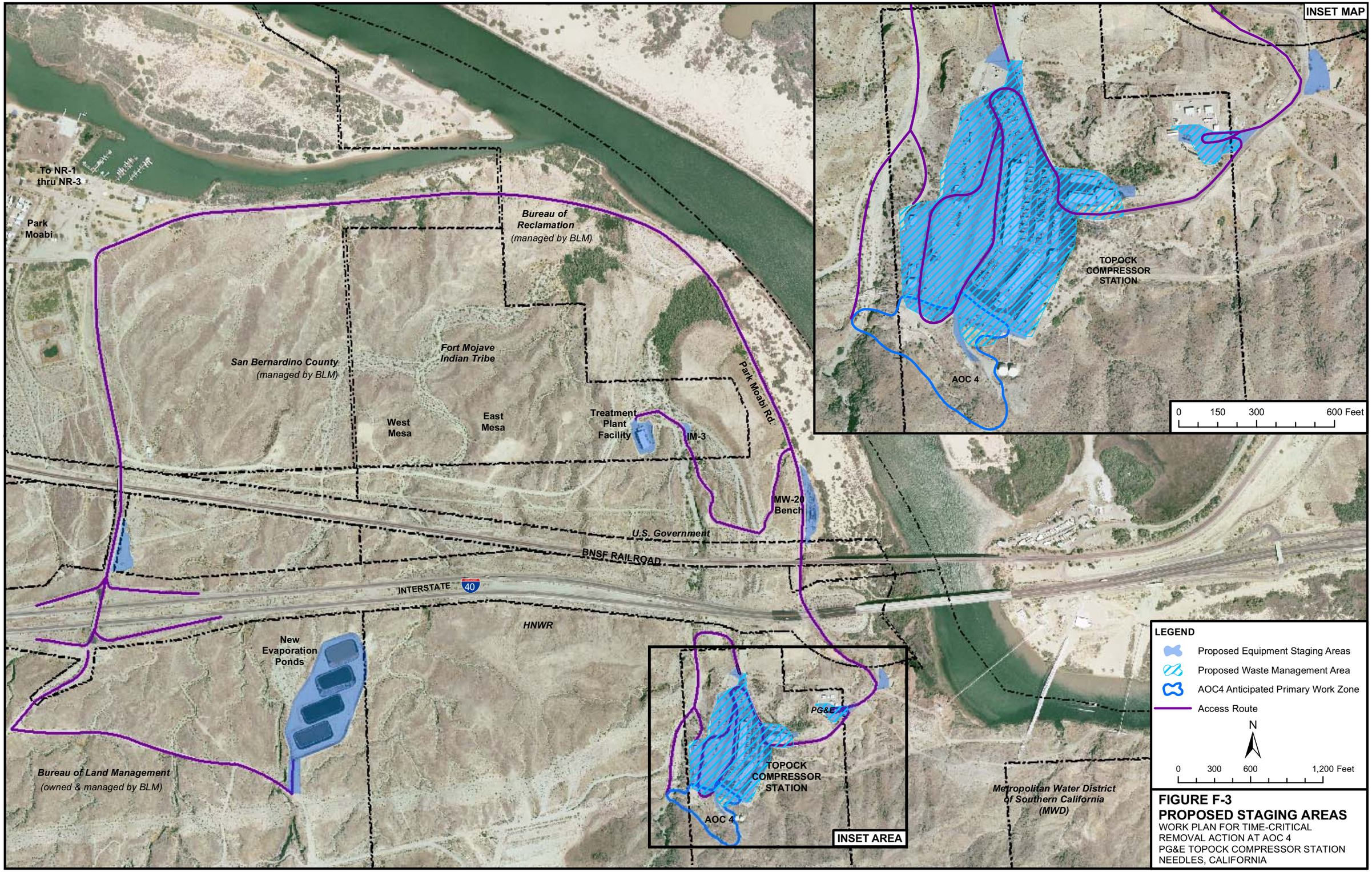


FIGURE F-3
PROPOSED STAGING AREAS
WORK PLAN FOR TIME-CRITICAL
REMOVAL ACTION AT AOC 4
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

BAO \\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS_NEW\MAPFILES\2009\AOC4\FINAL\TCRA_PROPOSED_STAGING_2009.MXD 12/1/2009 16:31:28

Appendix G
BLM Letter Dated December 8, 2009

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Lake Havasu Field Office
2610 Sweetwater Avenue
Lake Havasu City, AZ 86406
www.blm.gov/az/

December 8, 2009

In Reply Refer To:
8100 (AZ030)

Mr. Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
Office of Historic Preservation
P.O. Box 942896
Sacramento, California 94296-0001

Dear Mr. Donaldson:

In continuance of our consultation for the Time-Critical Removal Action Work Plan at AOC4 Debris Ravine, PG&E Topock Compressor Station, Needles, California, we now seek your concurrence on our "no adverse" effect with conditions determination pursuant to 36CFR800.5(d)(1).

The BLM recognizes that this undertaking has the potential to adversely affect the significant cultural, spiritual and archaeological values associated with this undertaking and the cultural landscape surrounding the Maze. In order to address potential effects to these significant values, the following conditions have been developed in response to consultation with Tribes and other consulting parties:

1. Means for protecting cultural and historic properties:
   a. Provide training to equipment operators and others working in the contaminated zone in understanding the cultural resource values associated with this area, what cultural materials to look for, responsibility for immediately reporting suspected cultural materials to monitors, and procedures for suspension of all work in the area of discovery where cultural materials are located. The Tribes will participate in this training.
   b. Provide temporary barriers and/or temporary fencing at archaeological sites CA-SBR-11993, a rock shelter, and CA-SBR-11864, a lithic assay station, to insure that no undertaking activities occur at these two locations. The placement of the fencing or barriers shall be monitored by Tribal and archaeological monitors. The temporary barriers or fencing shall be monitored weekly and will be immediately repaired or reinstalled as needed and removed once removal action has been completed.
   c. The current undertaking as proposed is to have minimal effects to the natural contours of the land through removal of debris and deposited soils. Any deviation from planned activities will require additional consultation with all parties.

2. Implementation of undertaking:
   a. Six staging areas have been proposed for this undertaking all of which currently exist and have been utilized for similar activities in the past. One staging area will be utilized to store the contaminated debris and fill material in closed containers. This staging area, Staging Area 4, is located within the boundaries of the Topock Compressor Station (See attached Proposed Staging Areas Use Description and Map). Staging Area 5, which is also within the boundaries of the Topock Compressor Station, will be utilized for the loading of containers with contaminated

materials for transport to an appropriate disposal area offsite. The containers will be transported from Staging Area 4 for loading.

b. BLM shall assure that activities are being confined to the six staging areas and are being utilized as identified in the attached use descriptions.

c. Per means 1a, provide training to equipment operators in understanding the cultural resource values associated with the area, what cultural materials to look for, responsibility for immediately reporting suspected materials to monitors, and procedures for continuance of work in the discovery area where cultural materials are located.

d. Tribal and archaeologist monitors will not be allowed to enter the contaminated area. Suspected cultural materials will be brought to the monitors in an uncontaminated area for inspection. If the materials are contaminated, photos of the suspected cultural materials shall be brought to the monitors for inspection. This appears to be a reasonable approach as removal of the native alluvium or bedrock shall be avoided to the extent practicable.

e. If cultural materials are identified during undertaking implementation, all work in the area of discovery will cease until such time as BLM in consultation with the Tribal and archaeologist monitors can determine where work will be limited. BLM shall notify the Tribes, SHPO and Advisory Council within 24 hours of the discovery with a plan for treatment. The Advisory Council shall have 48 hours to provide comments on the treatment plan per 36CFR800.13(b)(3).

It will be recommended that PG&E and the Tribes set-up a meeting to address the issue of HAZWOPER training and certification of tribal monitors. It is possible that future remediation activities could require such certification for both Native American and archaeological monitoring.

Through implementation of these conditions, BLM concludes that the undertaking will have an effect; however the effect is not adverse. We now seek your concurrence under 36CFR800.5(d)(1) that this undertaking will have "no adverse" effects to cultural properties.

If you have any questions please contact Craig Johnson, Archaeologist, at 928-718-3731 or Craig_J_Johnson@blm.gov.

Sincerely,

Ramone McCoy, PhD.
Field Manager

Enclosures (2)

I concur in this "no adverse" effect determination with conditions.

Milford Wayne Donaldson, FAIA

Date: 12/8/09