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Area of Concern 1 Data Gaps
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Acronyms and Abbreviations

µg/kg	micrograms per kilogram
AOC	Area of Concern
bgs	below ground surface
BNSF	Burlington Northern Santa Fe
BTV	background threshold value
CHHSL	California human health screening level
CMS/FS	corrective measures study/feasibility study
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
DOI	United States Department of the Interior
DQO	data quality objective
ECV	ecological comparison value
EPC	exposure point concentration
mg/kg	milligrams per kilogram
ng/kg	nanograms per kilogram
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PG&E	Pacific Gas and Electric Company
RFI/RI	RCRA facility investigation/remedial investigation
RSL	regional screening level
SPLP	synthetic precipitation leaching procedure
STLC	soluble threshold limit concentration
SWMU	solid waste management unit
TAL	Target Analyte List
TCL	Target Compound List
TCLP	toxicity characteristic leaching procedure
TCRA	time-critical removal action

TEC	threshold effect concentration
TEQ	toxic equivalency quotient
TPH	total petroleum hydrocarbons
TTLC	total threshold limit concentration
VOC	volatile organic compound

SUBAPPENDIX C2

Area of Concern 1 Data Gaps Evaluation Results

1.0 Introduction and Background

This subappendix presents the results of the data gaps evaluation and the Part A Phase 2 sampling program for Area of Concern (AOC) 1 – Area Around Former Percolation Bed at the Pacific Gas and Electric Company (PG&E) Topock Compressor Station in Needles, California. The process for the data gaps evaluation is outlined in Sections 2.0 through 6.0 in the main text of Appendix A, Part A Phase 1 Data Gaps Evaluation Report, to the Soil RCRA Facility Investigation/Remedial Investigation (RFI/RI) Work Plan

1.1 Background

AOC 1 consists of the area that surrounds Solid Waste Management Unit (SWMU) 1, the former percolation bed. AOC 1 is located outside the facility fence line west of the compressor station within Bat Cave Wash, as shown in Figures C2-1 and C2-2. (All figures and tables appear at the end of this subappendix.) AOC 1 comprises a portion of Bat Cave Wash adjacent to the station and surrounding SWMU 1, as well as the portion of Bat Cave Wash extending to the north toward the Colorado River from SWMU 1. The investigation area is located partially on PG&E property, partially on the Havasu National Wildlife Refuge, partially on Bureau of Reclamation property (managed by Bureau of Land Management), partially on Burlington Northern Santa Fe (BNSF) Railroad land, and partially on Fort Mojave Indian Tribe property with PG&E as the easement holder.

From 1951 to approximately 1971, the facility discharged wastewater containing chromium (cooling-tower blowdown) into Bat Cave Wash. Based on historical aerial photographs, it appears that during the 1950s the facility discharged wastewater into the wash without any impoundment. Wastewater was released to the wash through two pipes that ran from the sludge drying bed (SWMU 5) area in the lower yard downslope into Bat Cave Wash (only the eastern sludge drying bed was present at this time). From about 1964 to 1971, wastewater was discharged to the former percolation bed (SWMU 1), which allowed water to percolate into the ground and/or evaporate. The chromium-containing wastewater was combined with a small quantity (approximately 5 percent) of treated water discharged from the station oily water treatment system. PG&E completed closure of the former water treatment system that consisted of the sludge drying beds (SWMU 5), chromate reduction tank (SWMU 6), process pump tank (SWMU 8), transfer pump (SWMU 9), transfer piping (AOC 18), the oil/water holding tank (Unit 4.3), the oil/water separator (Unit 4.4), and the portable waste-oil storage tank (Unit 4.5). These units are located within the fence line of the compressor station and are addressed in Appendix B to the Soil RFI/RI Work Plan. In the 1955 aerial photograph, an apparent round impoundment area with white powder material is located to the south of the sludge drying bed (SWMU 5). This area has been identified as AOC 21 in the Part B investigation program, as shown on Figure C2-2. Aerial photo review

indicates that, prior to the establishment of the bermed percolation bed, discharges to Bat Cave Wash may have extended as far downstream as the railroad tracks.

Periodic storm (high runoff) events occur in Bat Cave Wash, making it difficult to assess the precise nature of erosion and deposition patterns. A 2006 storm event resulted in substantial erosion in portions of the wash in the vicinity of the compressor station, and a January 2010 storm event resulted in the movement of large gravel and cobbles from the southern area of Bat Cave Wash to the area near where AOC 4 enters Bat Cave Wash and as far north as the L-300A pipeline overcrossing (in the vicinity of SSB-1). North of the pipeline overcrossing, there appeared to be limited scouring and deposition in the wash and limited erosion of the wash walls within SWMU 1/AOC 1. Although there was damage to well MW-38 (installed in Bat Cave Wash), most of the sample location survey markers (1/8-inch lathe stakes) were still in place following the 2010 runoff event. MW-38 is also located immediately downstream of a sizable feeder wash on the west side of Bat Cave Wash. Based on a site reconnaissance conducted following the 2006 event, data from surface and near-surface soil sample locations collected prior to the 2006 storm event may no longer be representative of site conditions. However, deeper soil samples (below 2 to 3 feet below ground surface [bgs]) did not appear to be affected by the 2010 storm event, are still considered reliable, and were used in the data gaps evaluation.

Based on this visual reconnaissance of Bat Cave Wash, most of the soil samples collected during Soil Part A Phase 1 are still considered to be representative. Surficial samples collected from locations within areas of highest energy during the 2010 event may not be representative of current conditions.

1.2 Conceptual Site Model

A graphical conceptual site model has been developed for AOC 1 based on the above site history and background and is shown in Figures C2-3 and C2-4. Table C2-1 presents primary sources, primary source media, potential release mechanisms, secondary source media, and potential secondary release mechanisms for AOC 1. A detailed discussion of the migration pathways, exposure media, exposure routes, and human and ecological receptors is included in the Soil Part A Data Quality Objective (DQO) Technical Memorandum, which is included as Appendix A to the Part A Phase 1 Data Gaps Evaluation Report.

For AOC 1, the primary source of contamination is historical direct discharge of untreated wastewater into Bat Cave Wash and potential overflow or discharges from the SWMU 1 percolation bed. Therefore, surface soil in AOC 1 is the primary source medium. From surface soil, contaminants could have migrated to shallow and deeper soils. Shallow soils may act as a secondary source medium to subsurface soil, and subsurface soil may act as a secondary source medium to groundwater. Some of the contaminated wastewater may have infiltrated to affect subsurface soil and groundwater, as hexavalent chromium contamination is present in groundwater underneath AOC 1. If released, volatile organic compounds (VOCs) in surface soils would be expected to have been degraded by heat and light and are likely no longer present.

Other potential sources of contamination to AOC 1 are:

- Discharge from the Debris Ravine (AOC 4). Contaminants in fill/debris and surface soil in AOC 4 could have been entrained in surface water runoff and deposited in the southern portion of AOC 1 south of SWMU 1.
- Incidental spills and stormwater runoff from the western side of the compressor station (storm drains and/or sheet flow).
- Stormwater runoff from Interstate 40 and the railroad (from culverts discharging to Bat Cave Wash) could have resulted in the release of total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), lead, and wear metals (including barium, chromium, copper, nickel, and zinc) into AOC 1.
- Stormwater runoff from AOC 14 north of Interstate 40.
- Historical dumping and military activities in the vicinity of Bat Cave Wash.
- Runoff from the former Workman's Roadhouse and service station near the mouth of Bat Cave Wash.

Historically, chemicals of potential concern (COPCs) in surface soil in AOC 1 may have been eroded and entrained in stormwater/surface water runoff during flooding events and may have been subsequently re-deposited downstream (further north) in Bat Cave Wash. Repeated erosion and deposition of soil at AOC 1 may have resulted in mixing of surface and near-surface soils in this unit.

The thick vegetation, widening of the channel near the end of Bat Cave Wash, and blockage of flow by National Trails Highway greatly reduces the energy of flow during runoff events, resulting in deposition of entrained soil within the vegetated area near the mouth of Bat Cave Wash. This heavily vegetated portion of Bat Cave Wash is a long-term depositional area that has existed since before the compressor station was built.

For AOC 1, windblown contamination from within the wash (in the southern portion of AOC 1 around SWMU 1), is influenced by the topography of the wash. Windblown contamination, if any, is expected to be limited to surface soils.

Part A Phase 1 and pre-2008 soil samples were collected in AOC 1 primarily from the bed of the wash, with six sample transects in the areas south of the BNSF railroad tracks and in a linear pattern in center of the wash north of the railroad tracks to the south end of the vegetated area at the mouth of the wash.

Sixteen samples were collected from four locations on the upstream side of the vegetated area near the mouth of Bat Cave Wash, and two samples were collected from one location on the downstream side, as shown in Figure C2-2.

Additionally, six samples from four locations were collected south of SWMU 1, where AOC 4 Debris Ravine enters Bat Cave Wash, to assess potential impacts from AOC 4.

Based on the site history, background, and conceptual site models, Part A Phase 1 and historical soil samples were collected in areas within the wash expected to have been impacted by the discharge of chromium-containing wastewater from the facility runoff and transport of material from SWMU 1, as well as runoff from AOC 4, portions of the compressor station, and potentially AOC 14 and AOC 27.

Both soil and sediment data have been collected in AOC 1. These two data sets are discussed separately below.

1.3 AOC 1 Soil Sampling

1.3.1 AOC 1 Soil Data

There are 64 historical soil samples collected from 17 locations (MW-10, MW-11, MW-13, SS-1 through SS-8, SSB-1, SSB-6 through SSB-9, and XMW-9) in AOC 1, as shown in Figures C2-1 and C2-2. Samples were generally collected from 0 to 10 feet bgs; however, at XMW-9, MW-10, and MW-11, samples were collected from up to 82 feet bgs. Historical soil samples were analyzed for five constituents: total chromium, hexavalent chromium, copper, nickel, and zinc. The two samples from SS-1 were collected near the mouth of Bat Cave Wash in an area of soil transitioning to sediment. For the purposes of data evaluation, these two samples were included in both the soil and sediment data sets.

During the 2008 Soil Part A Phase 1 investigation, 105 soil samples (generally collected at sample depths of 0 to 0.5, 2 to 3, 5 to 6, and 9 to 10 feet bgs) were collected from 26 sample locations (AOC1-BCW1 through 6 and AOC1-T1a-c, AOC1-T2a-e, AOC1-T3a-c, AOC1-T4a-c, AOC1-T5a-c and AOC1-T6a-c), as shown in Figures C2-1 and C2-2.

The two samples collected from location AOC1-BCW6 were collected where soil is transitioning into sediment near the mouth of Bat Cave Wash. As with the samples from SS-1, these two samples were included in both the soil and sediment data sets.

Soil Part A Phase 1 soil samples collected in AOC 1 were analyzed for Title 22 metals, hexavalent chromium, VOCs, semivolatile organic compounds, PAHs, TPH, pH, pesticides, and polychlorinated biphenyls (PCBs). Surface soil samples were not analyzed for VOCs. Ten percent of the Phase 1 soil samples collected in AOC 1 (11 soil samples) was analyzed for the full inorganic and organic suites per the CERCLA Target Analyte List and Target Compound List (TAL/TCL). In addition, synthetic precipitation leaching procedure (SPLP) extraction was performed on soil samples collected at 2 to 3 feet bgs and 5 to 6 feet bgs at sample location AOC1-T2d, as shown in Table C2-2. The leachate from the SPLP extractions was analyzed for total and hexavalent chromium. Phase 1 data are included in Appendix D to the Part A Phase 1 Data Gaps Evaluation Report.

All pre-2008 Category 1 and validated Phase 1 soil data were used as inputs to the four DQO decisions; these data are shown on Tables C2-3 through C2-10.

1.3.2 AOC 1 Sediment Data

In addition to the soil and soil-transitioning-to-sediment data discussed above, 18 historical sediment samples (collected at 1 and 2 feet bgs) were collected from 18 sample locations in the mouth of Bat Cave Wash and along the banks of the Colorado River upstream and downstream of the mouth of Bat Cave Wash (DrSed-1 through DrSed-3, SED-1 through SED-12, and SED-27 through SED-29). The sediment samples were analyzed for total chromium, hexavalent chromium, copper, nickel, and zinc. A few of the samples were also analyzed for the full suite of Title 22 metals. Arsenic, cadmium, barium, beryllium, total chromium, cobalt, copper, lead, mercury, molybdenum, nickel, silver, selenium, thallium, vanadium, and zinc were detected in the sediment samples, as shown in Table C2-3.

1.3.3 Soil Data Collected in Bat Cave Wash near AOC 4

Soil sampling was conducted at the mouth of AOC 4 Debris Ravine where it enters Bat Cave Wash near the south end of AOC 1 as part of the AOC 4 time-critical removal action (TCRA). The AOC 4 TCRA is discussed in detail in Appendix C10. Twelve soil samples (AOC4-GB01 through AOC4-GB12) from seven sample locations were collected in this area at various depths, ranging from the surface to 5 feet bgs, and were analyzed for metals, PCBs, dioxins/furans, and PAHs. Prior to the AOC 4 TCRA, three soil samples were collected in this area at sample location AOC4-1 at 0 to 0.5, 0.5 to 1, and 2 to 3 feet bgs, as shown in Figure C2-1. The AOC4-1 samples were analyzed for Title 22 metals, hexavalent chromium, PCBs, and PAHs. Barium, total chromium, hexavalent chromium, copper, lead, and zinc were detected in these soil samples above their respective soil background threshold values (BTVs). The maximum detected concentration of total PCBs was 2,400 micrograms per kilogram (µg/kg) in sample AOC4-GB05 collected at 4 to 5 feet bgs. The maximum detected concentration of dioxin/furan 2,3,7,8-TCDD toxic equivalency quotients (TEQs) was 950 nanograms per kilogram (ng/kg) in surface soil sample AOC4-GB03. All detected concentrations of benzo(a)pyrene equivalents were below screening levels.

During the installation of the gabions near the mouth of Debris Ravine, soil excavation was conducted and soil was removed where samples AOC4-GB01 through AOC4-GB09 were collected. The soil samples collected at AOC4-GB10, AOC4-GB11, AOC4-GB12, and AOC4-1 are the only sample locations remaining, as shown in Figure C2-1. Results for these remaining samples are shown in Table C2-9. All pre-2008 Category 1, representative AOC 4 data (that is, from samples collected following the installation of the gabions) and validated Phase 1 soil data were used as inputs to the four DQO decisions.

2.0 Decision 1 – Nature and Extent

This section describes the nature and extent of residual soil concentrations of COPCs and chemicals of potential ecological concern (COPECs) at AOC 1. Data for AOC 1 were divided into two media: soil and sediment. Laboratory analytical results for historical and Phase 1 soil samples at AOC 1 are presented in Tables C2-2 and C2-4 through C2-10. (As noted above, laboratory analytical results for historical sediment samples at AOC 1 are presented in Table C2-3.) Tables C2-4 through C2-10 also include data for white powder samples. Table C2-11 presents a statistical summary of soil analytical results for COPCs and COPECs that were either (1) detected above the laboratory reporting limits or (2) not detected but where the reporting limits for one more samples was greater than the interim screening value. The soil statistical summary presented in Table C2-11 does not include white powder or sediment samples.

2.1 Summary of AOC 1 Sediment Data

The 2005 *RCRA Investigation/Remedial Investigation Report PG&E Topock Compressor Station, Needles, California* (CH2M HILL, 2005) recommended no further action for sediment in this AOC. Therefore, no additional sediment sampling was proposed as part of the Draft Soil Part A Work Plan. However, since the completion of the Draft Soil Part A Work Plan, consensus-based threshold effect concentrations (TECs) and consensus-based probable

effects concentrations were identified in the *Human Health and Ecological Risk Assessment Work Plan, Topock Compressor Station, Needles, California* as potential screening values for sediment samples, as shown in Table C2-1 (ARCADIS, 2008). To confirm the previous assessment of historical sediment concentrations, the combined AOC 1 sediment data (historical sediment data and data from SS-1 and AOC1-BCW6) were compared to the newly defined interim screening values for sediment.

The interim screening levels for metals in sediment were defined as the TEC, where available, and soil BTV where no TEC was available. TECs are available for arsenic, cadmium, total chromium, copper, lead, mercury, nickel, selenium, silver, and zinc. Soil BTVs are available for all but three of the remaining compounds (antimony, silver, and thallium).

All sediment data were below the applicable interim screening values, with exception of arsenic, chromium, and hexavalent chromium in the shallow sample (0 to 0.5 foot bgs) at AOC1-BCW6, as shown in Table C2-3 and Figures C2-5 through C2-7. In this sample, located in the soil-transitioning-to-sediment zone, arsenic and chromium exceeded the TECs and hexavalent chromium exceeded the soil BTV. Hexavalent chromium was not detected above laboratory reporting limits in any of the historical sediment samples; however, the reporting limits ranged from 0.05 to 6 milligrams per kilogram (mg/kg), some of which are above the soil BTV of 0.83 mg/kg.

A TEC or soil BTV was not available for antimony, silver, or thallium. Antimony was not detected above laboratory reporting limits. All detections of silver are estimated concentrations below or approximately equal to the reporting limits for the nondetect samples. Thallium was detected in only one sample at an estimated concentration below the reporting limit for all the other samples.

2.2 Summary of AOC 1 Soil Data

Pesticides, TPH-gasoline, antimony, beryllium, cadmium, mercury, selenium, silver, thallium, cyanide, and most species of PCBs were not detected in soil samples collected in AOC 1. Table C2-11 lists the 41 constituents detected at AOC 1, including four calculated quantities: benzo(a)pyrene equivalents, total low molecular weight PAHs, total high molecular weight PAHs, and total PCBs. Nine of these constituents (aluminum, calcium, iron, magnesium, manganese, potassium, sodium, Aroclor-1254, and total PCBs) were detected in the TAL/TCL samples.

Twenty-six of these constituents (cobalt, vanadium, aluminum, calcium, iron, magnesium, potassium, sodium, bis(2-ethylhexyl)phthalate, methyl acetate, 2-methyl naphthalene, anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, total low-molecular-weight PAHs, TPH-diesel, TPH-motor-oil, Aroclor-1254, and total PCBs) were detected at concentrations below their respective interim screening levels. Fifteen constituents, including two calculated quantities, were detected one or more times at concentrations exceeding the interim screening levels. These constituents were arsenic, barium, total chromium, hexavalent chromium, copper, lead, manganese, molybdenum, nickel, zinc, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(a)pyrene equivalents, and total high-molecular-weight PAHs. Seven constituents (total chromium, hexavalent

chromium, copper, lead, molybdenum, zinc, and benzo(a)pyrene equivalents) were detected at concentrations exceeding the interim screening level four or more times; the distribution of these constituents are shown in Figures C2-1, C2-2, and C2-5 through C2-19. For ease of review, the figures show the sample locations and results separately for the area south of the railroad tracks and the area north of the railroad tracks.

2.3 Nature and Extent Evaluation

The following subsection discusses the nature and extent of COPCs and COPECs detected in soil at concentrations exceeding the interim screening level. As discussed in Section 3.2 of the Part A Phase 1 Data Gaps Evaluation Report, multiple factors were considered to assess whether the nature and extent of a specific constituent have been adequately delineated. Section 2.4 of this subappendix summarizes the constituents that may require further evaluation, and Section 6.0 of this subappendix provides the recommended follow-up sampling for the Part A Phase 2 soil investigation.

2.3.1 Arsenic

Arsenic was detected in 106 of 111 soil samples collected at AOC 1. Only one detected concentration of arsenic (AOC1-BCW6 at 0 to 0.5 foot bgs) exceeded the interim screening level (11 mg/kg) (BTV); this same sample also exceeded the ecological comparison value (ECV) (11.4 mg/kg), as shown in Tables C2-4 and C2-11. This location is located at the mouth of Bat Cave Wash. No other samples in the vicinity of this location were analyzed for arsenic. At this location, the concentration in the deepest sample is below the screening level.

2.3.2 Barium

Barium was detected in 130 of 130 soil samples collected from AOC 1. Two detected concentration of barium in AOC 1 exceeded the interim screening level (410 mg/kg) (BTV/ECV), as shown in Table C2-4 and C2-11. The highest barium concentration was 1,580 mg/kg in sample XMW-9 at 70 feet bgs. The detected concentration is well below the residential and commercial/industrial California human health screening levels (CHHSLs) (5,200 mg/kg and 63,000 mg/kg, respectively).

The detected concentration of barium exceeding the interim screening level is from the same sample in XMW-9 that also contained an elevated concentration of copper. As with the copper detection, there is a declining trend from 10 feet to 50 feet bgs, and barium concentrations in all samples above 70 feet bgs are below the interim screening level. The elevated concentration of barium detected at depth does not appear to be related to a surface release. Barium was also detected at 440 mg/kg in sample AOC4-1 at 0 to 0.5 foot bgs. This concentration is close to BTV.

2.3.3 Total Chromium

Total chromium was detected in 167 of 167 soil samples collected at AOC 1. Detected concentrations of total chromium exceeded the interim screening level (39.8 mg/kg) (BTV) 23 times (maximum detected concentration of 970 mg/kg at AOC1-T2d at 2 to 3 feet bgs), as shown in Tables C2-4 and C2-11 and Figures C2-1 and C2-2. Three of the detected concentrations of total chromium exceeded the United States Environmental Protection

Agency residential regional screening level for residential use (280 mg/kg); none of the detected concentrations exceeded the residential regional screening level for commercial/ industrial use (1,400 mg/kg). With the exception of the detection of total chromium at AOC 1-BCW6 and SSB-8, samples with concentrations exceeding the screening levels were located south of Interstate 40, primarily in the area immediately north of SWMU 1. The highest detected concentration south of SWMU 1 was 47 mg/kg (at AOC4-1 at 0 to 0.5 foot bgs), which is above the BTV (39.8 mg/kg). At all locations, the deepest samples have concentrations below the screening levels, with the exception of the deepest sample collected at AOC1-T1b; however, this sample contained only 42 mg/kg total chromium, which is very close to the BTV.

2.3.4 Hexavalent Chromium

Hexavalent chromium was detected in 28 of 173 soil samples collected at AOC 1. Detected concentrations of hexavalent chromium exceeded the interim screening level (0.83 mg/kg) (BTV) 12 times (with a maximum detected concentration of 5.73 mg/kg at AOC1-T2d at 2 to 3 feet bgs), as shown in Tables C2-4 and C2-11 and Figures C2-8 and C2-9. None of the detected concentrations of hexavalent chromium exceeded the residential or commercial/ industrial CHHSLs (17 mg/kg and 37 mg/kg, respectively) or the ECV (139.6 mg/kg). With the exception of AOC1-BCW4 at 0 to 0.5 foot bgs and AOC1-BCW6 at 0 to 0.5 foot bgs, AOC 1 samples with concentrations exceeding the screening levels were located south of Interstate 40; the highest concentrations are immediately north of SWMU 1, and concentrations decrease with distance from SWMU 1. All samples collected south of SWMU 1 had hexavalent chromium concentrations below the BTV. At all locations in AOC 1, hexavalent chromium concentrations in the deepest samples are below the screening levels.

2.3.5 Copper

Copper was detected in 166 of 167 soil samples collected at AOC 1. Detected concentrations of copper exceeded the interim screening level (16.8 mg/kg) (BTV) 11 times (with a maximum detected concentration of 170 mg/kg at XMW-9 at 70 feet bgs), as shown in Tables C2-4 and C2-11 and Figures C2-10 and C2-11. Seven detected concentrations exceeded the ECV (20.6 mg/kg), and no detected concentrations of copper exceeded the residential or commercial/industrial CHHSLs (3,000 mg/kg and 38,000 mg/kg, respectively). With the exception of AOC1-BCW6 at 0 to 0.5 foot bgs, all AOC 1 samples with concentrations exceeding the screening levels were located south of Interstate 40. The locations of exceedances of the BTV and ECV were variable, with a slightly higher frequency of exceedance to the north of SWMU 1. With the exception of the deep sample from XMW-9, all detections were below 30 mg/kg. At all locations, concentrations in deepest samples are below the screening levels, with the exception of the deepest sample collected at XMW-9 (at 70 feet bgs). Copper concentrations in XMW-9 above this sample ranged from 12 to 19.7 mg/kg. There is an apparent declining trend from 10 feet bgs to 50 feet bgs, with a copper concentration in the 50 feet bgs sample of 15.6 mg/kg, which is below the background value. Therefore, because the elevated concentration of copper detected at depth does not appear to be related to a surface release, no further characterization is needed for copper in this area.

2.3.6 Lead

Lead was detected in 130 of 130 soil samples collected at AOC 1. Detected concentrations of lead exceeded the interim screening level (8.39 mg/kg) (BTV/ECV) 19 times (with a maximum detected concentration of 32J mg/kg at AOC1 T1c at 2 to 3 feet bgs), as shown in Tables C2-4 and C2-11 and Figures C2-12 and C2-13. None of the detected concentrations exceeded the residential or commercial/industrial CHHSLs (80 mg/kg and 320 mg/kg, respectively). The lateral extent of samples with lead concentrations exceeding the BTV consists of the portions of AOC 1 north and south of the tamarisk thicket, the area between the railroad tracks and sample Transect 3, and the samples collected at the mouth of the debris ravine (AOC 4 samples). With the exception of the samples from AOC1-T1c and AOC1-BCW6, exceedance concentrations were limited to no more than two times the BTV. At all locations except AOC1-T6b (concentration of 12 mg/kg at 9.5 feet bgs), concentrations in the deepest samples are below the BTV. Samples near AOC1-T6b collected at the same depth had concentrations equal to or below the BTV.

2.3.7 Molybdenum

Molybdenum was detected in 38 of 130 soil samples collected at AOC 1. Detected concentrations of molybdenum exceeded the interim screening level (1.37 mg/kg) (BTV) 22 times (maximum detected concentration of 5.5 mg/kg at AOC1-T2b at 5 to 6 feet bgs), as shown in Tables C2-4 and C2-11 and Figures C2-14 and C2-15. Nine detected concentrations exceeded the ECV (2.25 mg/kg), and none of the detected concentrations of molybdenum exceeded residential and commercial CHHSLs (380 mg/kg and 4,800 mg/kg, respectively). The lateral extent of samples with concentrations exceeding the screening levels is limited to the central portions of AOC 1, just north of SWMU 1, with the exception of the exceedance at AOC1-T5a. Samples with concentrations below the screening levels surround the AOC1-T5a location. One sample each collected at locations AOC1-BCW2 (1.5 mg/kg at 5 to 6 feet bgs) and XMW-9 (1.8 mg/kg at 70 feet bgs) slightly exceeded the BTV. At all but three locations, concentrations in deepest samples are below the screening levels. The deepest samples at AOC1-T2d (at 69 to 70 feet bgs) and XMW-9 at (70 feet bgs) exceed the BTV but not the ECV. The deepest sample from AOC1-T1b (at 9 to 10 feet bgs) contains 5 mg/kg molybdenum.

2.3.8 Nickel

Nickel was detected in 167 of 167 soil samples collected from AOC 1. Detected concentrations of nickel exceeded the interim screening level (27.3 mg/kg) (BTV/ECV) three times (with a maximum detected concentration of 35.2 mg/kg at XMW-9 (10 feet bgs)), as shown in Tables C2-4 and C2-11. None of the detected concentrations exceeded residential and commercial/industrial CHHSLs (1,600 mg/kg and 16,000 mg/kg, respectively). All concentrations exceeding the BTV were in soil samples collected at XMW-9; concentrations ranged from 28. 5 to 35.2 mg/kg. Samples with concentrations below the screening levels are located to the west but not to the north, east, or south of XMW-9. At this location, the concentration in the deepest samples is well below the BTV.

2.3.9 Zinc

Zinc was detected in 167 of 167 soil samples collected at AOC 1. Detected concentrations of zinc exceeded the interim screening level (58 mg/kg) (BTV) 13 times (with a maximum

detected concentration of 132 mg/kg at SSB-6 at 6 feet bgs), as shown in Tables C2-4 and C2-10 and Figures C2-16 and C2-17. None of the detected concentrations exceeded residential and commercial/industrial CHHSLs (23,000 mg/kg and 100,000 mg/kg, respectively). With the exception of the surface soil samples from AOC1-BCW4 and AOC1-BCW6, AOC 1 samples with concentrations exceeding the zinc BTV were located south of Interstate 40 and north of SWMU 1.

With the exception of the deepest sample collected at AOC1-T1b (69 to 70 feet bgs), the deepest zinc concentration at all locations is below the BTV.

2.3.10 Benzo(a)pyrene, Benzo(a)pyrene Equivalents, and PAHs

Benzo(a)pyrene was detected in 25 of 111 soil samples collected from AOC 1. Detected concentrations of benzo(a)pyrene exceeded the interim screening level of 38 µg/kg (residential CHHSL) three times (with a maximum detected concentration of 170 µg/kg at AOC1-T4c at 5 to 6 feet bgs). Several other PAHs were detected in soil samples collected from AOC 1; only benzo(a)anthracene and benzo(b)fluoranthene were detected at concentrations above their respective interim screening levels. These constituents were detected above their interim screening levels (residential CHHSLs) once each. At each location, individual constituent concentrations in the deepest samples are below the applicable interim screening levels. To assist with evaluation of PAHs for human health, benzo(a)pyrene equivalents were calculated for each of the soil samples collected at AOC 1, as shown in Table C2-6. Benzo(a)pyrene equivalent values exceeded the interim screening level (38 µg/kg) (residential CHHSL) five times (maximum detected concentration of 290 µg/kg at AOC1-T4c at 5 to 6 feet bgs), as shown in Tables C2-6 and C2-11 and Figures C2-18 and C2-19. Screening level exceedances were limited to five sample locations (AOC1-T1c at 0 to 0.5 foot bgs; AOC1-T4c at 2 to 3, 5 to 6, and 9 to 10 feet bgs; and AOC1-T5c at 5 to 6 feet bgs). At each location, the deepest samples have concentrations below the screening levels, with the exception of sample location AOC1-T4c. The deepest sample at AOC1-T4c (at 9 to 10 feet bgs) had a lower benzo(a)pyrene equivalent concentration than the two samples above this depth.

To assist with evaluation of PAHs for ecological risk, detected concentrations of low molecular weight PAHs and high molecular weight PAHs were summed and compared to the total low-molecular-weight PAHs and total high-molecular-weight PAHs ECVs of 10,000 µg/kg and 1,160 µg/kg, respectively. One total high-molecular-weight PAH sum of detected concentrations exceeded the ECV of 1,160 µg/kg, and none of the totals of detected low-molecular-weight PAH concentrations exceeded the ECVs. The ECV for total high-molecular-weight PAHs was exceeded in sample AOC1-T4c at 5 to 6 feet bgs (2,900 µg/kg); the sum of total high-molecular-weight PAHs was well below the ECV in the deeper sample at this location (9 to 10 feet bgs).

2.3.11 Target Analyte List/Target Compound List Constituents

As described above, aluminum, calcium, iron, magnesium, manganese, potassium, sodium, bis(2-ethylhexyl) phthalate, methyl acetate, Aroclor-1254, and total PCBs were detected in the AOC 1 soil samples analyzed for the complete TAL/TCL suite of compounds. (Some of these constituents, including semivolatile organic compounds and PCBs, were also analyzed at varying frequencies in other samples.) Manganese and total PCBs were the only

constituents in this group that were detected at a concentration exceeding the interim screening levels.

Aluminum was detected in 12 of 12 surface soil samples collected from AOC 1. The detected concentrations did not exceed the BTV (16,400 mg/kg). The maximum detected concentration was 14,000 mg/kg at AOC1-BCW6. Remaining detected concentrations of aluminum ranged from 5,300 to 11,000 mg/kg, as shown in Tables C2-5 and C2-11. None of the detected concentrations exceeded residential and commercial RSLs (77,000 mg/kg and 990,000 mg/kg, respectively). An ECV has not been established for aluminum.

Calcium was detected in 12 of 12 surface soil samples collected from AOC 1. The detected concentrations did not exceed the interim screening level of 66,500 mg/kg (BTV). The maximum detected concentration was 35,000 mg/kg at AOC1-BCW6. Remaining detected concentrations of calcium ranged from 14,000 to 30,000 mg/kg, as shown in Tables C2-5 and C2-11. Residential and commercial/industrial CHHSLs and an ECV have not been established for calcium.

Iron was detected in 31 of 31 soil samples collected from AOC 1. The detected concentrations did not exceed the interim screening value (55,000 mg/kg [residential regional screening level (RSL)]). The maximum detected concentration was 22,600 mg/kg at XMW-9 at 10 feet bgs. Remaining detected concentrations of iron ranged from 3,510 to 22,200 mg/kg, as shown in Tables C2-5 and C2-11. Residential and commercial/industrial CHHSLs and an ECV have not been established for iron.

Magnesium was detected in 12 of 12 surface soil samples collected from AOC 1. Detected concentrations of magnesium were below the interim screening level of 12,100 mg/kg (BTV). The maximum detected concentration was 11,000 mg/kg, at AOC1-BCW6, as shown in Tables C2-5 and C2-11. Remaining detections ranged from 5,300 to 8,100 mg/kg. Residential and commercial/industrial CHHSLs and an ECV have not been established for magnesium.

Manganese was detected in 31 of 31 samples collected from AOC 1. One detected concentration of magnesium (420 mg/kg in AOC1-BCW6 at 0 to 0.5 foot bgs) slightly exceeded the interim screening level of 402 mg/kg (BTV/ECV), as shown in Tables C2-5 and C2-11. The detected concentration did not exceed the residential and commercial/ industrial RSLs (1,800 mg/kg and 23,000 mg/kg, respectively). Only the surface sample at AOC1-BCW6 was analyzed for manganese. Manganese concentrations in the remaining 29 samples were all below the BTV and ranged from 92.1 to 353 mg/kg.

Potassium was detected in 12 of 12 surface soil samples collected from AOC 1. The detected concentrations did not exceed the BTV (4,400 mg/kg). The maximum detected concentration was 4,000 mg/kg at AOC1-BCW6. Remaining detected concentrations of potassium ranged from 1,600 to 3,900 mg/kg, as shown in Tables C2-5 and C2-11. Residential and commercial/industrial CHHSLs and an ECV have not been established for potassium.

Sodium was detected in eight of 12 surface soil samples collected from AOC 1. The maximum detected concentration of sodium was 660 mg/kg at AOC1-BCW6, which is below the interim screening level of 2,070 mg/kg (BTV), as shown in Tables C2-5 and C2-11. Remaining detected concentrations of sodium ranged from non-detect to 340 mg/kg.

Residential and commercial/industrial CHHSLs, RSLs, and an ECV have not been established for sodium.

Bis(2-ethylhexyl)phthalate was detected in two of 108 soil samples collected at AOC 1, both surface and subsurface soil samples were collected, as shown in Tables C2-7 and C2-11. The maximum detected concentration was 810 µg/kg at AOC4-1 (at 2 to 3 feet bgs), which is below the interim screening level of 2,870 µg/kg (ECV), and well below the residential and commercial/industrial RSLs (35,000 µg/kg and 120,000 µg/kg, respectively).

Methyl acetate was detected in two of 12 soil samples collected at AOC 1; all samples were collected at 2 to 3 feet bgs, as shown in Tables C2-7 and C2-11. The maximum detected concentration was 12 µg/kg at AOC4-1 (at 2 to 3 feet bgs), which is below the interim screening level of 22,000,000 µg/kg (residential RSL). An ECV and residential and commercial CHHSLs have not been defined for methyl acetate.

The PCB Aroclor-1254 was detected in seven of 17 soil samples collected from AOC 1; both surface and shallow soil (2 to 3 feet bgs) samples were collected. The maximum detected concentration of Aroclor-1254 of 900 µg/kg was detected at AOC4-GB11 at 0 feet bgs. Remaining detected concentration of Aroclor-1254 range from 24 to 420 µg/kg. None of the detected concentrations of Aroclor-1254 within AOC 1 exceeded the interim screening level of 220 µg/kg (residential RSL). Detected concentrations in AOC 1 samples ranged from 24 to 91 µg/kg, as shown in Table C2-9. All three AOC 4 gabion samples had Aroclor-1254 concentrations above the interim screening level.

To assist with evaluation of PCBs for ecological risk, detected concentrations of the Aroclors (only Aroclor-1254 at AOC 1) were summed, and the total PCB values were compared to the ECV. Total PCB concentrations in the three AOC 4 gabion samples exceeded the total PCB ECV of 204 µg/kg, as shown in Table C2-9. The maximum calculated value for total PCBs was 900 µg/kg. The remaining calculated total PCB concentrations ranged from 24 to 420 µg/kg. All total PCB concentrations within AOC 1 itself were well below the ECV.

As discussed in Section C.2 of the main text of Appendix C, PG&E recommends that PCBs be evaluated further in AOC 1. PG&E also recommends aluminum, calcium, iron, magnesium, manganese, potassium, sodium, methyl acetate, and bis(2-ethylhexyl)phthalate not be considered COPCs/COPECs for this AOC, and no further sampling is proposed for these constituents. These constituents have been fully discussed in Section C.2 of Appendix C.

The three gabion sample locations associated with AOC 4 were also analyzed for dioxins and furans. As shown in Table C2-10, none of the individual dioxin and furan concentrations exceeded the applicable interim screening levels (residential CHHSL). To assist with evaluation of dioxins and furans for human health, 2,3,7,8-TCDD TEQs were calculated for each of the soil samples, as shown in Table C2-10. The TEQs for two of the three samples exceeded the interim screening level of 50 ng/kg. The two detected concentrations exceeding the screening levels were 94.5 ng/kg collected at 5 feet bgs from location AOC4-GB11 and 74.5 ng/kg collected from 5 feet bgs at location AOC4-GB10. The remaining detected concentration was 8.9 ng/kg, which is below the screening level.

2.4 Central Tendency Comparison to Background Threshold Values

Ten metals (arsenic, barium, total chromium, hexavalent chromium, copper, lead, manganese, molybdenum, nickel, and zinc) were detected above their respective BTVs in soil samples. A central tendency comparison was performed for nine of these ten metals (arsenic, barium, total chromium, copper, lead, manganese, molybdenum, nickel, and zinc) to compare the AOC 1 soil data set with the corresponding soil background data set. A central tendency comparison for hexavalent chromium was not conducted because there were insufficient detections of hexavalent chromium in the background data set.

The purpose of this comparison is to determine whether a difference exists between the two populations and if additional sampling is required for a given metal (see Table C2-12 and Figure 3-1 in the Part A Phase 1 Data Gaps Evaluation Report). No statistical difference between the two populations was noted for any of the nine metals evaluated (arsenic, barium, total chromium, copper, lead, manganese, molybdenum, nickel and zinc, as shown in Table C2-12).

2.5 Potential New White Powder Area

A new area of potential white powder material was identified subsequent to the January 2010 rain event. This area is shown in Figure B-5 in Appendix B to the Part A Phase 1 Data Gaps Evaluation Report. While this potential new white powder area has been assigned to AOC 1, it is actually located high on a steep bluff and may represent a natural soil material (no known disposal or use of white powder material occurred in this area).

2.6 Nature and Extent Conclusions

Based on the site history, background, and conceptual site model, qualitative review indicates than decision error has been held to an acceptable level. Sufficient data of acceptable quality have been attained by the collection of historical/Part A soil samples in areas most likely to have been impacted by the waste water discharges to Bat Cave Wash, potential overflows or discharges from the former percolation bed in SWMU 1, stormwater runoff and incidental spills from the western side of the compressor station, stormwater runoff from Interstate 40 (from culverts discharging to Bat Cave Wash), military activities on the mesas in the vicinity of Bat Cave Wash (that is, surface runoff from surrounding areas), and runoff from AOC 14 and potentially AOC 27. Further sampling is required to more closely define the extent of some areas with metals concentrations above the interim screening levels.

Potential impacts from discharges from the Debris Ravine (AOC 4), runoff from the former "Workman's Roadhouse" and service station (near the mouth of Bat Cave Wash), and the potential new white powder area on the bluff above AOC 1 have either not been characterized or have been only partially characterized. Further investigation is also required in the vicinity of AOC1-BCW6 located at the lower end of Bat Cave Wash in the tamarisk area where soil is transitioning to sediment. In addition, the United States Department of the Interior (DOI) has requested (December 15, 2010 email) that PG&E further evaluate and fully characterize the lower end of Bat Cave Wash, specifically in the tamarisk thicket area located near the mouth. This area is a historical and current depositional area of fine-grained materials being transported down the wash during rain events and may have received historical releases from the Topock Compressor Station. The

evaluation of the tamarisk area near the mouth of Bat Cave Wash is discussed in Section 7.0 of this subappendix.

Based on the review of the data for AOC 1 and the Part A DQO, four data gaps were identified to resolve Decision 1 – Nature and Extent, and limited additional sampling is proposed in Phase 2 to fill the following data gaps. Identified data gaps were discussed during data gaps evaluation meetings in October and November 2010 and January 2012. Subsequent revisions to the data gaps have occurred; however, the data gap numbers from those meetings have been retained.

- Data Gap #1 – Lateral and vertical extents of contamination in the bottom of Bat Cave Wash (within the portion of AOC 1 between the northern boundary of SWMU 1 and Interstate 40)
- Data Gap #3 – Evaluation of tamarisk area near the mouth of Bat Cave Wash
- Data Gap #4– Characteristics of the potential white powder material on the eastern slope of Bat Cave Wash
- Data Gap #6 – Assess nature and extent of contamination within impoundment areas near the railroad bridge culvert and Interim Measure No. 3 road crossing

The proposed Phase 2 soil sample locations to fill the identified data gaps are presented in Section 6.0 of this subappendix.

3.0 Decision 2 – Data Sufficiency to Estimate Representative Exposure Point Concentrations

For Decision 2, AOC 1 data were combined with SWMU 1 data to determine whether SWMU 1/AOC 1 data are sufficient to conduct human health and ecological risk assessments. The principal consideration for Decision 2 was whether there were sufficient data to estimate a representative exposure point concentration (EPC) for the combined SWMU 1/AOC 1 area. Data reviewed were all available Category 1 data (including historical data) at SWMU 1/AOC 1. The samples designated as "white powder" were included in the data reviewed as a conservative measure assuming that exposure to white powder areas would not differ significantly from exposure to surrounding soil areas. Category 1 soil sampling results and results from locations SS-1 and AOC1-BCW-6, in an area of soil transitioning to sediment, were included in the data set for the Decision 2 evaluation.

Tables C2-3 and C2-14 summarize the results of the evaluation to determine whether data are sufficient to estimate representative EPCs. Table C2-13 documents the review of all combined AOC 1/SWMU 1 soil data. Table C2-14 presents the review of only those data from locations north of the BNSF railroad corridor on Bureau of Reclamation land managed by the Bureau of Land Management. These data were reviewed separately to evaluate whether there are sufficient data to estimate representative EPCs for a hypothetical residential exposure scenario. Data were reviewed for all chemicals that were detected in at least one sample and exceeded at least one comparison value.

Table C2-15 summarizes the results of the evaluation to determine if sediment data are sufficient to estimate representative ecological EPCs. Samples considered in this evaluation were those from the preliminary AOC 1 sediment exposure area at the mouth of Bat Cave Wash. The sediment exposure area defined for this evaluation extends from the east margin of the Tamarisk thicket near the mouth of Bat Cave Wash to the easternmost end of the wash. Samples from both the west and east side of National Trails Highway at the mouth of Bat Cave Wash were included.

In general, existing data are adequate to support soil and sediment EPC development for detected chemicals that exceeded one or more comparison values in one or both media (12 metals, three Contract Laboratory Program inorganics, and PAHs), as described below. In addition, data are adequate to support human health risk assessment EPC development for arsenic in the area north of the railroad corridor. Arsenic was the only compound that exceeded at least one human health risk-based comparison value in the area north of the railroad corridor, as shown in Table C2-14. Phase 2 data will be added to the existing data set to calculate the final EPC (after Decision 1 is satisfied).

3.1 Metals

Sufficient soil data (numbers of samples and detections) are available to calculate EPCs for arsenic, barium, total chromium, hexavalent chromium, cobalt, copper, lead, molybdenum, nickel, vanadium, and zinc using the ProUCL software; these data are presented in Tables C2-13 and C2-14. For selenium, additional soil data collection is not expected to significantly change the results of the risk assessment because the compound is very infrequently detected (i.e., additional non-detects would be expected).

Sufficient sediment data are available to calculate EPCs for chromium using the ProUCL software, as shown in Table C2-15. For arsenic, additional data collection is not expected to significantly change the results of the risk assessment because the maximum detected concentration (13 mg/kg) is comparable to soil background (11 mg/kg), a conservative estimate of the sediment background value. Therefore, additional data collection would be anticipated to yield similar results. Similarly, for hexavalent chromium, additional data collection may not significantly change the results of the risk assessment because the compound is very infrequently detected in sediment. However, as noted in Section 2.0 of this subappendix, historical reporting limits for hexavalent chromium were elevated relative to the soil BTV, and no TEC is available for this compound. Therefore, the potential effect of additional sampling on the EPC is uncertain. To reduce this uncertainty and to provide further data to resolve Decision 1, an additional sediment sampling location is proposed and is discussed in Section 6.0.

3.2 Inorganics

Sufficient data (numbers of samples and detections) are available to calculate EPCs for calcium, magnesium, and potassium using ProUCL, although additional data are not available for deeper locations associated with the scouring scenarios. No additional data collection appears warranted because it is reasonable to assume that the nature and extent of these inorganics in the shallow exposure intervals (0 to 0.5 or 0 to 3 feet bgs) are representative of the deeper depths. In addition, maximum concentrations of calcium, magnesium, and potassium detected in the standard exposure intervals (0 to 0.5, 0 to 3,

0 to 6, and 0 to 10 feet bgs) are comparable to background (all detections were below the BTV, as shown in Tables C2-5 and C2-11).

3.3 Polycyclic Aromatic Hydrocarbons

Sufficient data (numbers of samples and detections) are available to calculate EPCs for benzo(a)pyrene toxicity equivalents and high molecular weights PAHs using ProUCL.

4.0 Decision 3 – Potential Threat to Groundwater from Residual Soil Concentrations

A conservative, three-tiered approach was used in the evaluation to assess the potential impact to groundwater from source areas in the vadose zone. A full description of the three-tiered approach is provided in Section 5.0 of the Part A Phase 1 Data Gaps Evaluation Report. For this analysis, AOC 1 was separated into a northern and a southern portion as shown in Figure C-1 in the main text of Appendix C. The potential threat to groundwater analysis in this subappendix focuses on the northern portion. A similar analysis for the southern portion is combined with the SWMU 1 analysis presented in Appendix C1 to Appendix C.

The following preliminary analysis was performed with the existing data set to assess the potential threat to groundwater and to assess if additional data, above and beyond that necessary for Decision 1, are needed to resolve Decision 3. Additional evaluation will be performed as appropriate, as data are collected to resolve Decision 1. Data collected to satisfy Decision 1 – Nature and Extent evaluation will provide the final representative data set that will be used to assess the threat to groundwater. No current or potential threat to groundwater was identified for the northern portion of AOC 1. The preliminary conclusions regarding the threat to groundwater are based on available data and will be revisited after the implementation of the soil investigation. The combined data set will then be evaluated for data gaps, and further conclusions regarding the threat to groundwater will be provided to the agencies and stakeholders for review prior to submittal of the RFI/RI Volume 3.

The results of the tiered analysis presented in Table C2-16 show that seven metals had soil concentrations exceeding their BTVs. Of those seven metals, only hexavalent chromium and molybdenum had concentrations above the calculated soil screening levels, as shown in Table C2-17. Based on the initial screening model, the potential for hexavalent chromium and molybdenum to leach to groundwater was ruled out. Consequently, based on existing data it appears that none of the metals detected in soil in AOC 1 north presents a threat to current or future groundwater, and no further sampling is required to address Decision 3 for AOC 1.

5.0 Decision 4 – Data Sufficiency to Support the Corrective Measures Study/Feasibility Study

As discussed in Section 6.0 of the Part A Phase 1 Data Gaps Evaluation Report, various types of data will be needed to support the evaluation of technologies/remedial actions for the corrective measures study/feasibility study (CMS/FS). The types of data needed vary

somewhat depending on the specific technology to be evaluated. The categories of data required for technologies that may be applicable to the areas outside the fence line include:

- Extent of COPCs/COPECs above action levels (required for all technologies).
- Waste characterization parameters (required if soil may be disposed of offsite).
- Constituent leachability (required to assess the need for fixation of leachable compounds and/or the feasibility of certain soil-washing technologies).
- Soil physical properties (required for all technologies; however, the properties required vary among the different technologies).
- Surface and subsurface features (required to determine whether there are physical impediments to implementing specific technologies and/or remediating specific areas).
- If present, volumes of white powder and debris.

The following is a summary of data for AOC 1 that are currently available to support CMS/FS. Data gaps identified for Decision 4 will be filled using samples being collected to fill data gaps identified for other decisions. Data will not be collected to solely fill Decision 4 data gaps.

5.1 Extent of COPCs and COPECs

A summary of the nature and extent of detected COPCs/COPECs is presented in Section 2.0 Decision 1 – Nature and Extent. The lateral and vertical extent of the COPCs/COPECs is discussed in Section 2.3 above. Data results for selected constituents are shown in Figures C2-1, C2-2, and C2-4 through C2-10, and data gaps associated with lateral and vertical delineation are discussed in Section 6.0 of this subappendix.

5.2 Waste Characterization Parameters

Only partial waste characterization data are available to characterize the soil and other materials to be potentially removed for remedial action and disposed in an offsite permitted facility. While none of the soils or other materials is considered ignitable, corrosive, or reactive, data are lacking to complete the evaluation of the toxicity characteristic. Total chemical concentrations are available to characterize the soil, certain debris, and white powder material relative to California Title 22 total threshold limit concentrations (TTLCs). The maximum concentrations of these metals for each of the units were compared to the TTLCs, as shown in Table C2-18. The maximum detected concentrations were also compared to the soluble threshold limit concentrations (STLCs). Concentrations of barium exceeded 10 times the STLC once, and total chromium exceeded 10 times the STLC 13 times, respectively, as shown in Table C2-18. In addition, total chromium also exceeded 20 times the toxicity characteristic leaching procedure (TCLP) in six samples, as indicated in Table C2-18. Because these metals have the potential to exceed STLC or TCLP thresholds, additional leachability testing for waste characterization purposes may be required if soil excavation and offsite disposal is chosen as a remedy. For the purposes of supporting the CMS/FS, the lack of STLC or TCLP analysis is not considered a data gap, for the existing total concentrations are sufficient for the purposes of evaluating various remedial alternatives. Additional data regarding potential COPC/COPEC leachability include SPLP

analysis for total and hexavalent chromium, as shown in Table C2-2. SPLP analysis was conducted only for soil samples (no white powder or debris samples were tested using SPLP).

5.3 Soil Physical Properties

Soil physical property data collected during the Part A Phase 1 soil investigation was limited to grain size analysis only. Specific soil physical properties data (that is, porosity, grain size, density, organic carbon content) are required to support the CMS/FS, as described in Table 6-1 in the Part A Phase 1 Data Gaps Evaluation Report. Additional soil physical parameter data are needed to support the CMS/FS.

5.4 Surface and Subsurface Features

While there is extensive information regarding surface and subsurface features at AOC 1, additional information may be required once areas requiring remediation have been defined. Nearby roads and road structures, vegetation, and the location of bedrock are known for AOC 1. However, subsurface utilities, including gas transmission pipelines and any culverts or other features, may have to be more precisely defined to evaluate the feasibility and cost of certain remedial alternatives and to prepare construction specifications.

6.0 Summary of Data Gaps, Proposed Phase 2 Soil Sample Locations to Fill Identified Gaps, and Access Restrictions

Based on the Part A DQOs, five data gaps were identified for two of the four decisions and are summarized below by decisions. Identified data gaps were discussed during data gaps evaluation meetings in October and November 2010 and January 2012. Subsequent revisions to the data gaps have occurred; however, the data gap numbers from those meetings have been retained.

- **Decision 1 – Nature and Extent**. The following data gaps were identified to resolve this decision:
  - Data Gap #1 – Lateral and vertical extents of contamination in the bottom of Bat Cave Wash (within the portion of AOC 1 between the northern boundary of SWMU 1 and Interstate 40)
  - Data Gap #3 – Evaluation of tamarisk thicket area near the mouth of Bat Cave Wash
  - Data Gap #4 – Characteristics of the potential white powder material on the eastern slope of Bat Cave Wash
  - Data Gap #6 – Assess nature and extent of contamination within impoundment areas near the railroad bridge culvert and IM-3 road crossing
- **Decision 2 (Data Sufficient to Estimate Representative EPCs)**. No data gap was identified for this decision.

- **Decision 3 (Potential Threat to Groundwater from Residual Soil Concentrations)**. No data gap was identified to resolve this decision.
- **Decision 4 (Data Sufficient to Estimate Soil Properties and Contaminant Distribution in Support of the CMS/FS).** The following data gap was identified to resolve this decision**:**
  - Data gap #5 – Soil physical parameters to support the CMS/FS

Table C2-19 summarizes the proposed Phase 2 sample locations, depths, description/ rationale for each proposed location, and analytes. Proposed Phase 2 sample locations are also shown in Figures C2-20 and C2-21.

6.1 Access Restrictions

The following access restrictions apply and may impact soil sampling in AOC 1:

- Proposed Phase 2 sample locations AOC1-1 through AOC1-4 are located on a plateau approximately 10 feet in elevation from the bottom of Bat Cave Wash. Possible road improvement and/or minor grading may be necessary to access these samples.
- Proposed Phase 2 sample location AOC1-6d is located in Bat Cave Wash between two culverts (Interstate 40 and BNSF railroad tracks). To access this location a drill rig will need to pass through the railroad culvert; a BNSF railroad permit is required for this activity.
- A significant storm event occurred in early January 2010, which deposited a large amount of material (i.e., large and small cobbles) in the southern reaches of Bat Cave Wash near the confluence of AOC 4 – Debris Ravine. This material will need to be cleared prior to collection of the proposed Phase 2 sample locations near the mouth of AOC 4 – Debris Ravine (AOC4-BCW1 through AOC4-BCW6).

7.0 Tamarisk Area Evaluation

The thick vegetation, widening of the channel near the end of Bat Cave Wash, and blockage of flow by National Trails Highway greatly reduces the energy of flow during runoff events, resulting in deposition of entrained soil within the vegetated area at the lower end of Bat Cave Wash. This area is heavily vegetated, predominately with salt cedar (also known as tamarisk), which is an invasive, exotic plant species. This heavily vegetated portion of Bat Cave Wash is a long-term depositional area that existed before the compressor station was built. Depositional history and patterns within this area are not known with certainty. As requested by DOI in the December 15, 2010 email, PG&E is proposing grid-based sampling near the mouth of Bat Cave Wash in the tamarisk area to assess the potential for historical deposition of potentially contaminated fine-grained materials that may have been transported down Bat Cave Wash during rain events.

Twenty-three borings are proposed to be advanced in an approximate 100-foot grid pattern across the tamarisk area near the mouth of Bat Cave Wash, as shown in Figure C2-21. Soil samples will be collected from each of the borings at 0 to 0.5, 2, 5, and 9 feet bgs and analyzed for hexavalent chromium and Title 22 metals, and soil physical parameters. In

addition, PG&E and the agencies agreed that soil samples collected from 10 randomly chosen sample locations and sample location AOC1-BCW29 (same location as AOC1-BCW6) will be analyzed for pesticides, PCBs, and dioxins/furans at all sample depth intervals. These 11 locations are also shown on Figure C2-21. Soil samples that are not analyzed for pesticides, PCBs, and dioxins/furans will be stored, archived, and made available for analysis at a future date in the event that data indicate that additional characterization for pesticides, PCBs, and dioxins/furans is needed. The storage and archive methods for these samples are described in the *Revised Soil Addendum for the Topock Compressor Station, RCRA Facility Investigation/Remedial Investigation* presented in Appendix H to the Soil RFI/RI Work Plan.

The random sampling approach for these infrequently detected organic compounds (pesticides, PCBs, and dioxins/furans) provides adequate data for assessing EPCs. Data being collected within the tamarisk area are being evaluated as a separate area during this phase of the investigation will be combined into sub area *AOC 1- Upland BCW* (see the data usability matrix, Table A-1 in the main text of Appendix A). Part of the sampling objective is to assess if this area has served as a sediment sink, and may comprise a hot spot. If this area does not appear to be a hot spot, for Decision 2 purposes, these data will likely be incorporated into either the riparian area, or the hypothetical residential area as appropriate for their location and the soil/sediment conditions.

After results of the initial round of sampling for pesticides, PCBs, and dioxins/furans is validated and tabulated, tables and figures will be provided to the California Environmental Protection Agency, Department of Toxic Substances Control and DOI for review. Data will be evaluated using a widely used geostatistical interpolation technique known as kriging. Kriging is a linear least squares regression technique that is used to estimate the value of a variable (such as contaminant concentration) at an unsampled location. In contrast to classical linear regression, kriging does not assume that the variable is independent, instead, it is assumed the variable is spatially correlated over short distances. With knowledge of this spatial variance, a variable's value at an unsampled location can be extrapolated from known values at sampled locations. PG&E will schedule a data discussion (conference call) to review results of the evaluation and assess if additional analyses of held samples are needed to refine characterization. Due to the thick vegetation in this area, a path will need to be cut through the vegetation to allow passage of necessary drilling equipment, where possible the path will be staggered to prevent a straight line flood flow. The path will be up to 25 feet wide to accommodate a track-mounted spider rig (or equivalent) and necessary support vehicles (pickup truck or all-terrain vehicles). The approximate location of the paths are show on Figure C2-21; however, the exact path may change based on field conditions (i.e., boulders, large pieces of debris, sink holes, and low areas filled with water) and to save larger trees and species of interest (that is, palo verde and mesquite). Therefore, the area of potential impact includes the entire vegetated area at the lower end of Bat Cave Wash, as shown on Figure C2-21. Every effort will be made to remove as little vegetation as possible. The amount of vegetation removal will be less than 2 acres.

The vegetation will cut as close to the soil surface as possible to allow for vehicle access while retaining the root masses in the soil. This will help stabilize the soil in this area, and facilitate regrowth of vegetation. Vegetation removed to allow access for the investigation will most likely be left in place, and may be chipped, in accordance with direction provided

by DOI in the comments on the Draft Soil RFI/RI Work Plan. The final decision regarding disposition of the vegetation that is removed will be made in conjunction with DOI and the tribes at the time the vegetation is removed. Due to the vigorous growth habit of tamarisk, a revegetation plan has not been prepared.

8.0 References

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Tables

TABLE C2-1
Conceptual Site Model – AOC 1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
PG&E Topock Compressor Station, Needles, California

Primary Source	Primary Source Media	Potential Release Mechanism	Secondary Source Media	Potential Secondary Release Mechanism
Runoff from compressor station, AOC 4, SWMU 1, and potentially AOC 14	Surface Soil	Percolation and/or infiltration	Surface Soil	Wind erosion and atmospheric dispersion of surface soil
		Potential entrainment in stormwater/surface water runoff	Shallow Soil	Potential volatilization and atmospheric dispersion
			Potential Sediment	Potential discharge of groundwater to surface water [a]
			Potential Groundwater	Potential extracted groundwater[b]
Discharge of wastewater from compressor station to Bat Cave Wash	Surface Soil	Percolation and/or infiltration	Surface Soil	Wind erosion and atmospheric dispersion of surface soil
		Potential entrainment in stormwater/surface water runoff	Shallow Soil	Potential volatilization and atmospheric dispersion
			Potential Sediment	Potential discharge of groundwater to surface water [a]
			Potential Groundwater	Potential extracted groundwater[b]

[a] Discharge to surface water is an insignificant transport pathway as evaluated in the groundwater risk assessment (ARCADIS, 2009).

[b] Quantitative evaluation of the groundwater pathway was completed in the groundwater risk assessment (ARCADIS, 2009); Part A Phase I data will be reviewed in the data gaps assessment to evaluate potential fate impacts or current localized impacts to groundwater from soil.

TABLE C2-2
Synthetic Precipitation Leaching Procedure (SPLP) Extraction Results
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Topock Compressor Station, Needles, California

Location	Sample Date	Depth (ft bgs)	SPLP Results in mg/L	
			Hexavalent Chromium	Chromium (total)
AOC1				
AOC1-T2d	10/07/08	5-6	0.0106 J	0.168
AOC1-T2d	10/07/08	2-3	0.0188 J	0.238

Notes:

ft bgs feet below ground surface
mg/L milligrams per liter
J concentration estimated by laboratory or data validation

TABLE C2-3
Sediment Sample Results: Metals
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)															
Interim Screening Level [1]:				NE	NE	9.79	NE	410	NE	0.672	NE	0.99	NE	43.4	NE	0.83	NE	12.7	NE	31.6	NE
Soil Background [2]:				NE	NE	11	NE	410	NE	0.672	NE	1.1	NE	39.8	NE	0.83	NE	12.7	NE	16.8	NE
Consensus-based Threshold effect concentration [3]:				NE	NE	9.79	NE	NE	NE	NE	NE	0.99	NE	43.4	NE	NE	NE	NE	NE	31.6	NE
Consensus-based Probable effect concentration [3]:				NE	NE	33	NE	NE	NE	NE	NE	4.98	NE	111	NE	NE	NE	NE	NE	149	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Antimony**	**Arsenic**	**Arsenic**	**Barium**	**Barium**	**Beryllium**	**Beryllium**	**Cadmium**	**Cadmium**	**Chromium**	**Chromium**	**Chromium, Hexavalent**	**Chromium, Hexavalent**	**Cobalt**	**Cobalt**	**Copper**	**Copper**
AOC1-BCW6	08/22/08 [4]	0 - 0.5	N	ND (5.7) *	ND (5.7) *	(13)	13	320	320	ND (2.8) *	ND (2.8) *	ND (2.8) *	ND (2.8) *	(71)	71	(2.63)	2.63	7.7	7.7	22	22
	08/22/08 [4]	2 - 3	N	ND (5.8) *	ND (5.8) *	9.3	9.3	230	230	ND (2.9) *	ND (2.9) *	ND (2.9) *	ND (2.9) *	21	21	ND (0.608)	ND (0.608)	6.3	6.3	14	14
DrSed-1	02/18/03	1	N	ND (1.56) *	ND (1.56) *	1.57	1.57	92.6	92.6	0.105 J	0.105 J	ND (0.39)	ND (0.39)	2.27	2.27	ND (4.2) *	ND (4.2) *	1.14	1.14	1.26	1.26
DrSed-2	02/18/03	1	N	ND (1.58) *	ND (1.58) *	1.27	1.27	65.9	65.9	0.0963 J	0.0963 J	ND (0.394)	ND (0.394)	1.78	1.78	ND (4.2) *	ND (4.2) *	1.07	1.07	1.07	1.07
DrSed-3	02/19/03	1	N	ND (1.81) *	ND (1.81) *	1.67	1.67	45.8	45.8	0.101 J	0.101 J	ND (0.453)	ND (0.453)	1.75	1.75	ND (4.2) *	ND (4.2) *	1.02	1.02	1.38	1.38
SED-01	02/18/03	2	N	---	---	---	---	---	---	---	---	---	---	3.33	3.33	ND (5.5) *	ND (5.5) *	---	---	2.5	2.5
SED-10	02/17/03	2	N	ND (2.79) *	ND (2.79) *	2.72	2.72	100	100	0.219 J	0.219 J	0.0789 J	0.0789 J	6.79	6.79	ND (5.7) *	ND (5.7) *	2.07	2.07	5.17	5.17
SED-11	02/17/03	2	N	---	---	---	---	---	---	---	---	---	---	15.7	15.7	ND (5.6) *	ND (5.6) *	---	---	7.88	7.88
SED-12	02/17/03	2	N	ND (2.15) *	ND (2.15) *	3.58	3.58	170	170	0.506 J	0.506 J	0.158 J	0.158 J	21.4	21.4	ND (4.9) *	ND (4.9) *	8.1	8.1	15.2	15.2
SED-02	02/18/03	2	N	---	---	---	---	---	---	---	---	---	---	4.61	4.61	ND (5) *	ND (5) *	---	---	3.39	3.39
SED-27	02/19/03	2	N	ND (2.86) *	ND (2.86) *	3.68	3.68	151	151	0.338 J	0.338 J	0.198 J	0.198 J	6.87	6.87	ND (6) *	ND (6) *	2.7	2.7	6.84	6.84
SED-28	02/19/03	2	N	ND (2.19) *	ND (2.19) *	1.58	1.58	69.3	69.3	0.156 J	0.156 J	0.0772 J	0.0772 J	4.62	4.62	ND (5.4) *	ND (5.4) *	1.47	1.47	2.8	2.8
SED-29	02/19/03	2	N	ND (2.11) *	ND (2.11) *	1.54	1.54	170	170	0.17 J	0.17 J	0.0666 J	0.0666 J	4.48	4.48	ND (5.3) *	ND (5.3) *	1.65	1.65	2.93	2.93
SED-03	02/18/03	2	N	---	---	---	---	---	---	---	---	---	---	3.64	3.64	ND (5) *	ND (5) *	---	---	3.12	3.12
SED-04	02/18/03	2	N	---	---	---	---	---	---	---	---	---	---	5.48	5.48	ND (5.8) *	ND (5.8) *	---	---	4.46	4.46
SED-05	02/17/03	2	N	---	---	---	---	---	---	---	---	---	---	2.41	2.41	ND (5) *	ND (5) *	---	---	1.95	1.95
SED-06	02/17/03	2	N	---	---	---	---	---	---	---	---	---	---	5.1	5.1	ND (4.9) *	ND (4.9) *	---	---	2.13	2.13
SED-07	02/17/03	2	N	---	---	---	---	---	---	---	---	---	---	22.1	22.1	ND (6) *	ND (6) *	---	---	11.7	11.7
SED-08	02/17/03	2	N	ND (2.38) *	ND (2.38) *	1.54	1.54	64.3	64.3	0.215 J	0.215 J	ND (0.595)	ND (0.595)	8.27	8.27	ND (4.8) *	ND (4.8) *	2.53	2.53	5.71	5.71
SED-09	02/17/03	2	N	ND (4.2) *	ND (4.2) *	ND (1.05)	ND (1.05)	135	135	0.614	0.614	0.0822 J	0.0822 J	19.1	19.1	ND (4.9) *	ND (4.9) *	7.44	7.44	25.6	25.6
SS-1	06/29/97 [4]	0.5	N	---	---	---	---	---	---	---	---	---	---	38.2	38.2	ND (0.05)	ND (0.05)	---	---	16.5	16.5
	06/29/97 [4]	1.5	N	---	---	---	---	---	---	---	---	---	---	25.3	25.3	ND (0.05)	ND (0.05)	---	---	13.6	13.6

[1] Interim screening level is equal to the to the lower value between the TEC and PEC. If neither is available, then the soil background value, if available, is used.

[2] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California". May.

[3] MacDonald et al. (2000)

[4] This location is in an area where soil is transitioning into sediment.

Results greater than or equal to the interim screening level are circled; however, if the interim screening level is equal to the background value, only results greater than the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
NE	not established
mg/kg	milligrams per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C2-4
Soil Sample Results: Metals
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
AOC1-BCW1	09/20/08	0 - 0.5	N	ND (2) *	4.3	160	ND (1) *	ND (1)	ND (0.401)	23	6.4	11	7.5	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	26	44
	09/20/08	2 - 3	N	ND (2) *	8.4	160	ND (1) *	ND (1)	ND (0.404)	25	9.4	15	2	ND (0.1) *	ND (1)	19	ND (1)	ND (1)	ND (2)	40	28
AOC1-BCW2	10/04/08	0 - 0.5	N	ND (2) *	3.4	96	ND (1) *	ND (1)	ND (0.403)	21	6	7.6	3.7	ND (0.1) *	ND (1)	10	ND (1)	ND (1)	ND (2)	23	40
	10/04/08	2 - 3	N	ND (2) *	3.1	110	ND (1) *	ND (1)	ND (0.407)	34	7.1	9.2	18	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	30	39
	10/04/08	5 - 6	N	ND (2) *	3.1	100	ND (1) *	ND (1)	ND (0.404)	35	7.1	8.8	4.4	ND (0.1) *	1.5	12	ND (1)	ND (1)	ND (2)	28	41
	10/04/08	9 - 10	N	ND (2.1) *	3.8	120	ND (1.1) *	ND (1.1) *	ND (0.426)	20	8.7	8.1	3.8	ND (0.1) *	ND (1.1)	14	ND (1.1)	ND (1.1)	ND (2.1)	38	39
AOC1-BCW3	10/04/08	0 - 0.5	N	ND (2) *	4.4	140	ND (1) *	ND (1)	0.416	25	6.4	11	7.3	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	27	51
	10/04/08	2 - 3	N	ND (2) *	3.2	99	ND (1) *	ND (1)	ND (0.404)	25	7.5	9.8	4	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	30	38
	10/04/08	5 - 6	N	ND (2.1) *	4.2	170	ND (2.1) *	ND (1)	ND (0.415)	23	11	9.6	2.2	ND (0.1) *	ND (2.1) *	14	ND (1)	ND (2.1)	ND (4.1) *	36	43
	10/04/08	9 - 10	N	ND (2.1) *	4	120	ND (1.1) *	ND (1.1) *	ND (0.421)	21	9	8.5	2.2	ND (0.11) *	ND (1.1)	13	ND (1.1)	ND (1.1)	ND (2.1)	36	38
	10/04/08	9 - 10	FD	ND (2.1) *	4.2	130	ND (1.1) *	ND (1.1) *	ND (0.424)	22	9.3	8.8	2.3	ND (0.11) *	ND (1.1)	14	ND (1.1)	ND (1.1)	ND (2.1)	37	41
AOC1-BCW4	10/04/08	0 - 0.5	N	ND (2) *	4.4	180	ND (1) *	ND (1)	1.3	36	8.3	13	9.4	ND (0.1) *	ND (1)	16	ND (1)	ND (1)	ND (2)	33	61
	10/04/08	2 - 3	N	ND (2) *	2.9	76	ND (1) *	ND (1)	ND (0.407)	24	5.8	8.3	3.6	ND (0.1) *	ND (1)	9.5	ND (1)	ND (1)	ND (2)	23	33
	10/04/08	5 - 6	N	ND (2.1) *	4	60	ND (1) *	ND (1)	ND (0.416)	23	9.4	8.4	2.7	ND (0.1) *	ND (1)	14	ND (1)	ND (1)	ND (2.1)	37	45
	10/04/08	9 - 10	N	ND (2.1) *	5.1	81	ND (2.1) *	ND (1.1) *	ND (0.426)	22	9.7	7.6	2.3	ND (0.11) *	ND (2.1) *	15	ND (1.1)	ND (2.1)	ND (4.3) *	35	42
AOC1-BCW5	10/04/08	0 - 0.5	N	ND (2) *	3.7	160	ND (1) *	ND (1)	0.445	35	8.7	12	6	ND (0.099) *	ND (1)	15	ND (1)	ND (1)	ND (2)	34	46
	10/04/08	2 - 3	N	ND (2) *	3.5	130	ND (1) *	ND (1)	ND (0.407)	31	7.4	9.6	7	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	30	42
	10/04/08	5 - 6	N	ND (2.1) *	3.9	120	ND (1) *	ND (1)	ND (0.42)	26	9.9	8.4	2.7	ND (0.1) *	ND (1)	15	ND (1)	ND (1)	ND (2.1)	41	44
	10/04/08	9 - 10	N	ND (2.1) *	4.7	110	ND (2.1) *	ND (1)	ND (0.425)	22	9.2	ND (7.4)	3.2	ND (0.11) *	ND (2.1) *	15	ND (1)	ND (2.1)	ND (4.2) *	35	40
	10/04/08	9 - 10	FD	ND (2.1) *	4.7	110	ND (2.1) *	ND (1.1) *	ND (0.427)	24	9	ND (7.3)	3	ND (0.11) *	ND (2.1) *	15	ND (1.1)	ND (2.1)	ND (4.2) *	34	40
AOC1-BCW6	08/22/08 [6]	0 - 0.5	N	ND (5.7) *	13	320	ND (2.8) *	ND (2.8) *	2.63	71	7.7	22	23	ND (0.14) *	ND (2.8) *	18	ND (2.8) *	ND (2.8)	ND (5.7) *	37	81
	08/22/08 [6]	2 - 3	N	ND (5.8) *	9.3	230	ND (2.9) *	ND (2.9) *	ND (0.608)	21	6.3	14	8.7	ND (0.14) *	ND (2.9) *	13	ND (2.9) *	ND (2.9)	ND (5.8) *	31	50
AOC1-T1a	10/16/08	0 - 0.5	N	ND (2) *	6.5	100	ND (2) *	ND (1)	ND (0.406)	19	7.3	11	4.9	ND (0.1) *	ND (2) *	14	ND (1)	ND (2)	ND (4) *	30	38
	10/16/08	2 - 3	N	ND (2) *	3.2	120	ND (1) *	ND (1)	ND (0.404)	27	7.7	8.6	3.8	ND (0.1) *	2	13	ND (1)	ND (1)	ND (2)	29	37
	10/16/08	5 - 6	N	ND (2) *	3.5	110	ND (1) *	ND (1)	ND (0.405)	26	7.2	9.5	3.4	ND (0.1) *	2	12	ND (1)	ND (1)	ND (2)	29	34
	10/16/08	9 - 10	N	ND (2) *	2.4	88	ND (1) *	ND (1)	ND (0.404)	14	7.3	7.5	1.4	ND (0.1) *	ND (1)	9.5	ND (1)	ND (1)	ND (2)	29	32
AOC1-T1b	10/16/08	0 - 0.5	N	ND (2) *	2.9	88	ND (1) *	ND (1)	ND (0.405)	43 J	8.4	9	3.1	ND (0.1) *	ND (1)	14	ND (1)	ND (1)	ND (2)	36	31
	10/16/08	0 - 0.5	FD	ND (2) *	2.8	86	ND (1) *	ND (1)	ND (0.405)	33 J	8.2	10	3.2	ND (0.1) *	ND (1)	16	ND (1)	ND (1)	ND (2)	35	32
	10/16/08	2 - 3	N	ND (2.1) *	2.9	210	ND (1) *	ND (1)	ND (1.94) *	98	7.5	12	3.9	ND (0.1) *	ND (1)	16	ND (1)	ND (1)	ND (2.1)	33	67
	10/16/08	5 - 6	N	ND (2) *	3	99	ND (1) *	ND (1)	0.402	28	7.2	9	3.2	ND (0.1) *	1.7	12	ND (1)	ND (1)	ND (2)	31	31
	10/16/08	9 - 10	N	ND (2) *	2.6	120	ND (1) *	ND (1)	ND (0.402)	42	8	11	2.6	ND (0.1) *	5	14	ND (1)	ND (1)	ND (2)	30	32
AOC1-T1c	10/16/08	0 - 0.5	N	ND (2) *	3.2	120	ND (1) *	ND (1)	0.601	44	7.4	13	7.5	ND (0.1) *	1.9	11	ND (1)	ND (1)	ND (2)	33	53
	10/16/08	2 - 3	N	ND (2.1) *	2.6	150	ND (1) *	ND (1)	4.77 J	140	8	26	20 J	ND (0.1) *	2.5	11 J	ND (1)	ND (1)	ND (2.1)	33	82 J
	10/16/08	2 - 3	FD	ND (2.1) *	3	170	ND (1) *	ND (1)	3.58 J	150	8.2	29	32 J	ND (0.1) *	2.2	14 J	ND (1)	ND (1)	ND (2.1)	29	110 J
	10/16/08	5 - 6	N	ND (2) *	3.1	97	ND (1) *	ND (1)	0.446	46	7.2	15	5	ND (0.1) *	3	12	ND (1)	ND (1)	ND (2)	27	44
	10/16/08	9 - 10	N	ND (2.1) *	2.8	120	ND (1) *	ND (1)	ND (0.418)	20	8.6	11	1.9	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2.1)	33	38

TABLE C2-4
Soil Sample Results: Metals
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
AOC1-T2a	10/05/08	0 - 0.5	N	ND (2) *	4	110	ND (1) *	ND (1)	ND (0.403)	26	7.1	10	4.8	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	30	38
	10/16/08	2 - 3	N	ND (2) *	6	120	ND (2) *	ND (1)	ND (0.407)	28	8.7	10	4	ND (0.1) *	ND (2) *	15	ND (1)	ND (2)	ND (4) *	32	42
	10/16/08	5 - 6	N	ND (2) *	2.7	110	ND (1) *	ND (1)	ND (0.405)	19	8.1	8.3	2.4	ND (0.1) *	1.1	11	ND (1)	ND (1)	ND (2)	28	35
	10/16/08	9 - 10	N	ND (2.1) *	2.9	110	ND (1) *	ND (1)	ND (0.416)	15	7.4	7.1	2.1	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2.1)	27	36
AOC1-T2b	10/16/08	0 - 0.5	N	ND (2) J*	3.6	120	ND (1) *	ND (1)	ND (0.408)	26	7.3	9.3	3.2	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	28	39
	10/16/08	2 - 3	N	ND (2.1) *	3	93	ND (1) *	ND (1)	ND (0.414)	26	6.9	10	3	ND (0.1) *	2.4	11	ND (1)	ND (1)	ND (2.1)	23	33
	10/16/08	5 - 6	N	ND (2) *	3	89	ND (1) *	ND (1)	ND (0.407)	53	6.7	8.7	2.4	ND (0.1) *	5.5	12	ND (1)	ND (1)	ND (2)	25	32
	10/16/08	9 - 10	N	ND (2.1) *	2.4	99	ND (1) *	ND (1)	ND (0.415)	18	8.4	8.5	1.8	ND (0.1) *	1.3	12	ND (1)	ND (1)	ND (2.1)	27	33
	10/16/08	9 - 10	FD	ND (2.1) *	2.3	110	ND (1) *	ND (1)	ND (0.413)	18	8.2	9.6	1.6	ND (0.1) *	1.2	13	ND (1)	ND (1)	ND (2.1)	29	35
AOC1-T2c	10/08/08	0 - 0.5	N	ND (2) J*	3.7	88	ND (1) *	ND (1)	1.26	60	6.3	10	5.1	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	26	44
	10/08/08	2 - 3	N	ND (2) *	3.1	130	ND (1) *	ND (1)	ND (0.416)	42	8.4	11	3.3	ND (0.1) *	ND (1)	15	ND (1)	ND (1)	ND (2)	34	33
	10/08/08	5 - 6	N	ND (2) *	2.3	81	ND (1) *	ND (1)	ND (0.412)	22	7.2	9.1	1.8	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	31	28
	10/08/08	9 - 10	N	ND (2.1) *	3.7	40	ND (1) *	ND (1)	ND (0.419)	24	9.3	9.7	2.6	ND (0.1) *	ND (1)	15	ND (1)	ND (1)	ND (2.1)	35	40
AOC1-T2d	10/07/08	0 - 0.5	N	ND (2) *	3	100	ND (1) *	ND (1)	ND (0.408)	46	8.2	10	2.9	ND (0.1) *	2.9	14	ND (1)	ND (1)	ND (2)	36	36
	10/07/08	2 - 3	N	ND (2.1) *	ND (1)	120	ND (1) *	ND (1)	5.73	970	7.5	13	4.7	ND (0.1) *	1.5	11	ND (1)	ND (1)	ND (2.1)	34	98
	10/07/08	5 - 6	N	ND (2.1) *	ND (1)	84	ND (1) *	ND (1)	4.34	370	6.9	11	3.9	ND (0.1) *	1.1	11	ND (1)	ND (1)	ND (2.1)	26	130
	10/07/08	9 - 10	N	ND (2.1) *	4.5	86	ND (2.1) *	ND (1)	2.92	140	10	14	3.1	ND (0.1) *	ND (2.1) *	15	ND (1)	ND (2.1)	ND (4.2) *	33	68
	10/07/08	19 - 20	N	ND (2.1) *	5.8	56	ND (2.1) *	ND (1.1) *	ND (0.423)	26	10	9.2	3	ND (0.11) *	ND (2.1) *	16	ND (1.1)	ND (2.1)	ND (4.2) *	38	45
	10/07/08	29 - 30	N	ND (2.1) *	6.2	38	ND (2.1) *	ND (1)	ND (0.424)	21	8.5	8.9	2.7	ND (0.1) *	ND (2.1) *	14	ND (1)	ND (2.1)	ND (4.2) *	31	37
	10/07/08	29 - 30	FD	ND (2.1) *	9.7	40	ND (5.3) *	ND (1.1) *	ND (0.423)	24	8.7	ND (11)	2.2	ND (0.11) *	ND (5.3) *	16	ND (1.1)	ND (5.3) *	ND (11) *	34	36
	10/07/08	39 - 40	N	ND (2.1) *	6.4	79	ND (2.1) *	ND (1.1) *	ND (0.431)	22	8.9	11	3.6	ND (0.11) *	ND (2.1) *	16	ND (1.1)	ND (2.1)	ND (4.3) *	34	42
	10/07/08	49 - 50	N	ND (2.1) *	4.1	62	ND (1.1) *	ND (1.1) *	ND (0.425)	28	9.3	10	2.1	ND (0.11) *	ND (1.1)	17	ND (1.1)	ND (1.1)	ND (2.1)	36	38
	10/08/08	59 - 60	N	ND (2) *	5.3	36	ND (2) *	ND (1)	ND (0.406)	39	9	9.8	2.2	ND (0.1) *	4.7	13	ND (1)	ND (2)	ND (4) *	33	32
	10/08/08	69 - 70	N	ND (2.2) *	4.4	41	ND (1.1) *	ND (1.1) *	ND (0.435)	18	9.1	9.8	2.8	ND (0.11) *	2.2	13	ND (1.1)	ND (1.1)	ND (2.2)	31	31
AOC1-T2e	10/16/08	0 - 0.5	N	ND (2) *	2.9	98	ND (1) *	ND (1)	ND (0.405)	34	7.5	9.3	3.4	ND (0.1) *	2.2	13	ND (1)	ND (1)	ND (2)	29	36
	10/16/08	2 - 3	N	ND (2) *	2.9	87	ND (1) *	ND (1)	ND (0.408)	30	6.9	8.4	3.2	ND (0.1) *	1.4	12	ND (1)	ND (1)	ND (2)	27	30
	10/16/08	2 - 3	FD	ND (2) *	3.1	90	ND (1) *	ND (1)	ND (0.408)	32	7.1	8	3.2	ND (0.1) *	1.3	12	ND (1)	ND (1)	ND (2)	27	33
	10/16/08	5 - 6	N	ND (2) *	2.6	98	ND (1) *	ND (1)	ND (0.402)	44	7	8.4	2.3	ND (0.1) *	5.4	12	ND (1)	ND (1)	ND (2)	26	32
	10/16/08	9 - 10	N	ND (2.1) *	2.5	100	ND (1) *	ND (1)	ND (0.415)	20	6.4	4.9	1.1	ND (0.1) *	1.1	9	ND (1)	ND (1)	ND (2.1)	24	27
AOC1-T3a	10/05/08	0 - 0.5	N	ND (2) *	4.1	150	ND (1) *	ND (1)	ND (0.403)	24	7.8	11	8.4	ND (0.1) *	ND (1)	14	ND (1)	ND (1)	ND (2)	33	47
	10/17/08	2 - 3	N	ND (2) *	4.4	110	ND (1) *	ND (1)	ND (0.407)	19	7.1	9	4.2	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	29	37
	10/17/08	5 - 6	N	ND (2) *	4.2	110	ND (1) *	ND (1)	ND (0.405)	23	7	12	14	ND (0.1) *	1.7	12	ND (1)	ND (1)	ND (2)	28	39
	10/17/08	9 - 10	N	ND (2) *	2.9	99	ND (1) *	ND (1)	ND (0.406)	15	7.2	10	1.9	ND (0.1) *	ND (1)	9.8	ND (1)	ND (1)	ND (2)	26	33
AOC1-T3b	10/05/08	0 - 0.5	N	ND (2) *	2.6	78	ND (1) *	ND (1)	ND (0.402)	23	7	8	3.1	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	35	29
	10/17/08	2 - 3	N	ND (2.1) *	3.1	120	ND (1) *	ND (1)	2.77	170	6.5	13	9.1	ND (0.11) *	ND (1)	12	ND (1)	ND (1)	ND (2.1)	26	120
	10/17/08	5 - 6	N	ND (2) *	2.3	92	ND (1) *	ND (1)	ND (0.405)	46	7	8.6	2.3	ND (0.1) *	4.6	12	ND (1)	ND (1)	ND (2)	25	34
	10/17/08	9 - 10	N	ND (2) *	2.7	110	ND (1) *	ND (1)	ND (0.41)	17	7.3	7.7	1.7	ND (0.1) *	1.1	9.4	ND (1)	ND (1)	ND (2)	28	31
	10/17/08	9 - 10	FD	ND (2.1) *	2.5	110	ND (1) *	ND (1)	ND (0.412)	16	7.2	6.5	1.9	ND (0.1) *	1.1	9.5	ND (1)	ND (1)	ND (2.1)	29	32

TABLE C2-4
Soil Sample Results: Metals
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
AOC1-T3c	10/05/08	0 - 0.5	N	ND (2) *	4.6	130	ND (1) *	ND (1)	0.42	27	6.5	11	7	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	29	46
	10/05/08	2 - 3	N	ND (2) *	3.5	98	ND (1) *	ND (1)	ND (0.41)	30	8.9	9.7	3.4	ND (0.1) *	ND (1)	14	ND (1)	ND (1)	ND (2)	33	39
	10/05/08	5 - 6	N	ND (2) *	3.7	130	ND (1) *	ND (1)	1.65	89	8.8	12	5.8	ND (0.1) *	1.4	14	ND (1)	ND (1)	ND (2)	34	65
	10/05/08	9 - 10	N	ND (2) *	2.7	94	ND (1) *	ND (1)	ND (0.403)	19	8.2	10	2.4	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	32	36
AOC1-T4a	10/03/08	0 - 0.5	N	ND (2) *	4.2	120	ND (1) *	ND (1)	ND (0.402)	28	7.3	11	5.5	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	26	51
	10/03/08	2 - 3	N	ND (2) *	3.9	99	ND (1) *	ND (1)	ND (0.407)	26	7.7	10	4	ND (0.1) *	ND (1)	14	ND (1)	ND (1)	ND (2)	31	40
	10/03/08	5 - 6	N	ND (2) *	4	89	ND (1) *	ND (1)	ND (0.409)	25	8.3	11	3.3	ND (0.1) *	ND (1)	14	ND (1)	ND (1)	ND (2)	34	40
	10/03/08	9 - 10	N	ND (2) *	3.7	160	ND (1) *	ND (1)	0.525	26	6.9	9.6	4.3	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	28	36
AOC1-T4b	10/02/08	0 - 0.5	N	ND (2) *	2.9	83	ND (1) *	ND (1)	1.26	21	6.3	7.5	2.6	ND (0.1) *	ND (1)	10	ND (1)	ND (1)	ND (2)	22	29
	10/02/08	2 - 3	N	ND (2) *	3.7	120	ND (1) *	ND (1)	ND (0.412)	29	7.6	12	8.8 J	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	33	46
	10/02/08	2 - 3	FD	ND (2) *	3.5	110	ND (1) *	ND (1)	ND (0.408)	28	7.2	11	7 J	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	31	50
	10/02/08	5 - 6	N	ND (2.1) *	3.6	110	ND (1) *	ND (1)	ND (0.419)	24	9.9	9.6	3.2	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2.1)	33	39
	10/02/08	9 - 10	N	ND (2.1) *	3.2	100	ND (1) *	ND (1)	ND (0.415)	19	7.7	8.8	2.4	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2.1)	31	37
AOC1-T4c	10/04/08	0 - 0.5	N	ND (2) J*	4.2	100	ND (1) *	ND (1)	ND (0.403)	19	5.5	22	5.9	ND (0.1) *	ND (1)	9.4	ND (1)	ND (1)	ND (2)	25	33
	10/04/08	2 - 3	N	ND (2) *	3.8	130	ND (1) *	ND (1)	0.816	27	8.9	19	14	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	38	67
	10/04/08	5 - 6	N	ND (2) *	3.3	150	ND (1) *	ND (1)	0.868	28	9.2	21	19	ND (0.1) *	1.3	13	ND (1)	ND (1)	ND (2)	36	71
	10/04/08	9 - 10	N	ND (2.1) *	3.1	120	ND (1) *	ND (1)	ND (0.413)	27	8.3	13	5.8	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2.1)	35	47
AOC1-T5a	10/04/08	0 - 0.5	N	ND (2) *	3.1	150	ND (1) *	ND (1)	ND (0.402)	21	7.8	13	4	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	33	41
	10/04/08	2 - 3	N	ND (2) *	2.8	95	ND (1) *	ND (1)	ND (0.403)	39	9	10	3.2	ND (0.099) *	ND (1)	13	ND (1)	ND (1)	ND (2)	32	38
	10/04/08	5 - 6	N	ND (2) *	3.8	99	ND (1) *	ND (1)	ND (0.405)	35	9	24	3.4	ND (0.1) *	2.2	17	ND (1)	ND (1)	ND (2)	32	38
	10/04/08	9 - 10	N	ND (2) *	2.6	110	ND (1) *	ND (1)	ND (0.411)	24	7.4	11	3.6	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	30	38
	10/04/08	9 - 10	FD	ND (2) *	2.4	110	ND (1) *	ND (1)	ND (0.409)	27	7.8	11	3.1	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	30	38
AOC1-T5b	10/04/08	0 - 0.5	N	ND (2) J*	2.4	73	ND (1) *	ND (1)	ND (0.402)	26	6.8	11	4.9	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	28	33
	10/04/08	2 - 3	N	ND (2) *	3.3	110	ND (1) *	ND (1)	0.452	41	7.2	9.5	4.4	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	32	38
	10/04/08	5 - 6	N	ND (2) *	3.4	120	ND (1) *	ND (1)	0.596	61	7.9	9.8	4.8	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	31	41
	10/04/08	9 - 10	N	ND (2) *	3.5	120	ND (1) *	ND (1)	ND (0.409)	23	9.6	13	3.4	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	39	41
AOC1-T5c	10/04/08	0 - 0.5	N	ND (2) *	3.7	140	ND (1) *	ND (1)	ND (0.403)	15	6.7	8.8	5.8	ND (0.1) *	ND (1)	8.7	ND (1)	ND (1)	ND (2)	27	37
	10/04/08	2 - 3	N	ND (2) *	3.3	150	ND (1) *	ND (1)	0.875	31	8.6	12	7.5	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	35	53
	10/04/08	5 - 6	N	ND (2) *	3.1	130	ND (1) *	ND (1)	0.641	36	7.2	12	11	ND (0.099) *	ND (1)	11	ND (1)	ND (1)	ND (2)	31	49
	10/04/08	9 - 10	N	ND (2) *	3.5	130	ND (1) *	ND (1)	0.478	21	7.7	9.8	3.9	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	32	39
AOC1-T6a	09/30/08	0 - 0.5	N	ND (2) *	3.2	96	ND (1) *	ND (1)	ND (0.402)	20	6.3	11	5.6	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	28	47
	09/30/08	2.5 - 3	N	ND (2) *	3.2	110	ND (1) *	ND (1)	ND (0.408)	20	6.9	8.9	5.6	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	29	36
	09/30/08	2.5 - 3	FD	ND (2) *	3.1	100	ND (1) *	ND (1)	ND (0.407)	21	6.6	8.8	5.4	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	31	40
	09/30/08	5.5 - 6	N	ND (2) *	2.3	94	ND (1) *	ND (1)	ND (0.408)	16	7.2	7.9	3.9	ND (0.1) *	ND (1)	10	ND (1)	ND (1)	ND (2)	33	34
	09/30/08	9.5 - 10	N	ND (2) *	3.2	110	ND (1) *	ND (1)	ND (0.41)	20	7	8.7	12	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	32	40

TABLE C2-4
Soil Sample Results: Metals
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
AOC1-T6b	09/30/08	0 - 0.5	N	ND (2) *	3	110	ND (1) *	ND (1)	ND (0.401)	26	6.3	9	5.5	ND (0.1) *	ND (1)	10	ND (1)	ND (1)	ND (2)	31	41
	09/30/08	2.5 - 3	N	ND (2) *	3.4	130	ND (1) *	ND (1)	ND (0.404)	18	5.7	7.1	4.4	ND (0.1) *	ND (1)	8.5	ND (1)	ND (1)	ND (2)	25	29
	09/30/08	5.5 - 6	N	ND (2) *	2.9	100	ND (1) *	ND (1)	ND (0.404)	22	7.3	10	3.2	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2)	30	36
	09/30/08	9.5 - 10	N	ND (2) *	2.8	94	ND (1) *	ND (1)	ND (0.405)	25	7	9.3	3.1 J	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	30	37
	09/30/08	9.5 - 10	FD	ND (2) *	3	110	ND (1) *	ND (1)	ND (0.404)	27	7.9	10	8.5 J	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	33	39
AOC1-T6c	09/30/08	0 - 0.5	N	ND (2) *	2.9	81	ND (1) *	ND (1)	ND (0.401)	18	6.4	8.7	3.2	ND (0.1) *	ND (1)	10	ND (1)	ND (1)	ND (2)	25	39
	09/30/08	2.5 - 3	N	ND (2) *	5.1	94	ND (1) *	ND (1)	ND (0.407)	26	6.6	9.7	5.1	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	29	37
	09/30/08	5.5 - 6	N	ND (2) *	2.4	110	ND (1) *	ND (1)	ND (0.406)	21	9	9.4	2.9	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	32	37
AOC4-1	10/14/08	0 - 0.5	N	ND (2) J*	3.7	440 J	ND (1) *	ND (1)	0.49	47	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)	ND (0.404)	32	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)	ND (0.405)	20	7.4	12	17	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	30	39
AOC4-GB10	02/10/10	0 - 0.5	N	ND (2.2) *	ND (1.1)	160 J	ND (1.1) *	ND (1.1) *	ND (0.44)	35 J	8.5	16	14	ND (0.11) *	ND (1.1)	20	ND (1.1)	ND (1.1)	ND (2.2)	40 J	71 J
AOC4-GB11	02/10/10	0 - 0.5	N	ND (2.2) *	ND (1.1)	170	ND (1.1) *	ND (1.1) *	ND (0.43)	31	9.1	13	7.2 J	ND (0.11) *	ND (1.1)	17	ND (1.1)	ND (1.1)	ND (2.2)	38	46
	02/10/10	0 - 0.5	FD	ND (2.2) *	ND (1.1)	160	ND (1.1) *	ND (1.1) *	0.57	29	8.1	14	16 J	ND (0.11) *	ND (1.1)	16	ND (1.1)	ND (1.1)	ND (2.2)	38	47
AOC4-GB12	02/10/10	0 - 0.5	N	ND (2.2) *	ND (1.1)	160	ND (1.1) *	ND (1.1) *	ND (0.44)	35	9.1	15	5.5	ND (0.11) *	ND (1.1)	24	ND (1.1)	ND (1.1)	ND (2.2)	42	43
MW-10	06/27/97	1	N	---	---	---	---	---	ND (0.05)	14.2	---	14.1	---	---	---	8.8	---	---	---	---	20.9
	06/27/97	3	N	---	---	---	---	---	ND (0.05)	13.4	---	8.3	---	---	---	9	---	---	---	---	26.6
	06/27/97	6	N	---	---	---	---	---	ND (0.05)	19	---	8.4	---	---	---	10.7	---	---	---	---	23.3
	06/27/97	10	N	---	---	95.3	---	---	ND (0.05)	26.7	---	9.6	2.8	---	0.62	14.1	---	---	---	26.9	30.4
	06/27/97	20	N	---	---	---	---	---	ND (0.05)	14.7	---	7.7	---	---	---	10.2	---	---	---	---	27.1
	06/27/97	25	N	---	---	---	---	---	ND (0.05)	16.1	---	10.6	---	---	---	13.4	---	---	---	---	34.1
	06/27/97	30	N	---	---	---	---	---	ND (0.05)	13.8	---	9.4	---	---	---	11.5	---	---	---	---	31.5
	06/27/97	35	N	---	---	87	---	---	---	---	---	---	3.6	---	ND (0.2)	---	---	---	---	29.9	---
	06/27/97	40	N	---	---	---	---	---	ND (0.05)	14.5	---	9.2	---	---	---	12.6	---	---	---	---	29.4
	06/28/97	50	N	---	---	---	---	---	ND (0.05)	14.3	---	8.5	---	---	---	12.2	---	---	---	---	31.2
	06/27/97	60	N	---	---	---	---	---	ND (0.05)	9.1	---	6	---	---	---	6.6	---	---	---	---	16.3
	06/27/97	70	N	---	---	110	---	---	ND (0.05)	11.7	---	8.8	2.2	---	ND (0.2)	9.4	---	---	---	20.1	24.2
	06/27/97	75	N	---	---	---	---	---	ND (0.05)	11.5	---	6.4	---	---	---	8.2	---	---	---	---	24.9
	06/27/97	75	FD	---	---	---	---	---	0.1	9.6	---	6.97	---	---	---	8.1	---	---	---	---	21.6
	06/27/97	82	N	---	---	115	---	---	ND (0.05)	9.9	---	6.3	2.3	---	ND (0.2)	8.7	---	---	---	21.5	26.6

TABLE C2-4
Soil Sample Results: Metals
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
MW-11	06/29/97	1	N	---	---	---	---	---	ND (0.05)	12.2	---	7.5	---	---	---	8.4	---	---	---	---	24.8
	06/29/97	3	N	---	---	---	---	---	ND (0.05)	31.1	---	6.6	---	---	---	7.3	---	---	---	---	29.5
	06/29/97	6	N	---	---	---	---	---	ND (0.05)	26.9	---	5.3	---	---	---	5.6	---	---	---	---	23.2
	06/29/97	10	N	---	---	101	---	---	ND (0.05)	13.5	---	8.3	6.3	---	0.32	7.7	---	---	---	18.9	38.5
	06/29/97	20	N	---	---	---	---	---	ND (0.05)	5.9	---	6	---	---	---	4.9	---	---	---	---	19.9
	06/29/97	30	N	---	---	91.4	---	---	ND (0.05)	12.6	---	6.9	1.8	---	0.8	8.2	---	---	---	22	28.4
	06/29/97	40	N	---	---	---	---	---	ND (0.05)	9.8	---	9.8	---	---	---	8.6	---	---	---	---	28.4
	06/29/97	50	N	---	---	---	---	---	ND (0.05)	13.6	---	6.9	---	---	---	10.1	---	---	---	---	29.8
	06/29/97	60	N	---	---	27.4	---	---	ND (0.05)	9.6	---	5.8	3	---	0.088 J	8.3	---	---	---	18.1	26.2
	06/29/97	60	FD	---	---	---	---	---	ND (0.05)	10	---	5.74	---	---	---	8.6	---	---	---	---	19.8
	06/29/97	69	N	---	---	370	---	---	ND (0.05)	16.9	---	13.8	5	---	ND (0.2)	11.3	---	---	---	23.2	35.7
MW-13	07/09/97	10	N	---	---	---	---	---	ND (0.05)	10.8	---	9.3	---	---	---	8.1	---	---	---	---	27.2
	07/09/97	20	N	---	---	94.2	---	---	ND (0.05)	10.5	---	7.1	2.4	---	0.14 J	8.9	---	---	---	21.1	28.3
	07/09/97	25	N	---	---	124	---	---	---	---	---	---	2.8	---	ND (0.2)	---	---	---	---	26.4	---
	07/09/97	30	N	---	---	---	---	---	ND (0.05)	12.2	---	8.6	---	---	---	8.2	---	---	---	---	33.3
	07/09/97	40	N	---	---	---	---	---	ND (0.05)	10.7	---	8.1	---	---	---	9.4	---	---	---	---	30.4
	07/09/97	40	FD	---	---	---	---	---	ND (0.05)	6.4	---	5.6	---	---	---	5.6	---	---	---	---	17.7
DS-1	06/24/88	1 - 3	N	---	---	---	---	---	6.8	80	---	---	---	---	---	---	---	---	---	---	---
DS-2	06/24/88	0 - 3	N	---	---	---	---	---	0.7	43	---	---	---	---	---	---	---	---	---	---	---
DS-3	06/24/88	0 - 3	N	---	---	---	---	---	ND (0.5)	25	---	---	---	---	---	---	---	---	---	---	---
DS-4	06/24/88	0 - 3	N	---	---	---	---	---	ND (0.5)	28	---	---	---	---	---	---	---	---	---	---	---
SS-1	06/29/97 [6]	0.5	N	---	---	---	---	---	ND (0.05)	38.2	---	16.5	---	---	---	17.9	---	---	---	---	55
	06/29/97 [6]	1.5	N	---	---	---	---	---	ND (0.05)	25.3	---	13.6	---	---	---	12.5	---	---	---	---	43.4
SS-2	06/29/97	0.5	N	---	---	---	---	---	ND (0.05)	18.9	---	14.1	---	---	---	13.2	---	---	---	---	48.3
	06/29/97	1.5	N	---	---	---	---	---	ND (0.05)	10.2	---	12.9	---	---	---	9.4	---	---	---	---	42.2
SS-3	06/29/97	0.5	N	---	---	---	---	---	ND (0.05)	---	---	---	---	---	---	---	---	---	---	---	---
SS-4	06/29/97	0.5	N	---	---	---	---	---	ND (0.05)	---	---	---	---	---	---	---	---	---	---	---	---
SS-5	06/29/97	0.5	N	---	---	---	---	---	ND (0.05)	---	---	---	---	---	---	---	---	---	---	---	---
SS-6	06/29/97	0.5	N	---	---	---	---	---	ND (0.05)	---	---	---	---	---	---	---	---	---	---	---	---
SS-7	06/29/97	0.5	N	---	---	---	---	---	ND (0.05)	---	---	---	---	---	---	---	---	---	---	---	---
SS-8	06/29/97	0.5	N	---	---	---	---	---	ND (0.05)	---	---	---	---	---	---	---	---	---	---	---	---
SSB-1	06/25/97	1	N	---	---	---	---	---	ND (0.05)	13.7	---	14.9	---	---	---	11.6	---	---	---	---	35.7
	06/25/97	3	N	---	---	---	---	---	ND (0.05)	13.6	---	11	---	---	---	12	---	---	---	---	29.6
	06/25/97	6	N	---	---	---	---	---	ND (0.05)	16.7	---	16.9	---	---	---	12.2	---	---	---	---	34.5
	06/25/97	10	N	---	---	97.3	---	---	ND (0.05)	16.5	---	8.2	1.3	---	ND (0.2)	12.9	---	---	---	24.6	31.9
SSB-6	06/30/97	1	N	---	---	---	---	---	ND (0.05)	13.7	---	8.6	---	---	---	8.9	---	---	---	---	29.1
	06/30/97	3	N	---	---	---	---	---	ND (0.05)	27.5	---	6.6	---	---	---	8.2	---	---	---	---	24.8
	06/30/97	6	N	---	---	---	---	---	0.06	467	---	33.8	---	---	---	5.5	---	---	---	---	132
	06/30/97	10	N	---	---	100	---	---	ND (0.05)	14.8	---	9.6	3.1	---	0.79	10.3	---	---	---	22.7	33.4

TABLE C2-4
Soil Sample Results: Metals
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
SSB-7	06/30/97	1	N	---	---	---	---	---	ND (0.05)	19.8	---	7.7	---	---	---	8.4	---	---	---	---	28.1
	06/30/97	3	N	---	---	---	---	---	ND (0.05)	24.9	---	6.5	---	---	---	7	---	---	---	---	29.4
	06/30/97	6	N	---	---	---	---	---	ND (0.05)	8.6	---	14.7	---	---	---	6.3	---	---	---	---	23
	06/30/97	10	N	---	---	77.5	---	---	ND (0.05)	8.1	---	5.8	1.8	---	ND (0.2)	6.5	---	---	---	16.2	23.4
SSB-8	07/10/97	1	N	---	---	---	---	---	ND (0.05)	(53.1)	---	15.1	---	---	---	15.3	---	---	---	---	38.3
	07/10/97	3	N	---	---	---	---	---	ND (0.05)	13.6	---	14.1	---	---	---	10.6	---	---	---	---	35.3
	07/10/97	6	N	---	---	---	---	---	ND (0.05)	15.3	---	7.3	---	---	---	10	---	---	---	---	33.5
	07/10/97	10	N	---	---	43.9	---	---	ND (0.05)	17.1	---	10.7	2.8	---	0.071 J	13.9	---	---	---	26.8	35.8
	07/10/97	10	FD	---	---	---	---	---	ND (0.05)	13.7	---	8	---	---	---	11.1	---	---	---	---	30
SSB-9	07/10/97	1	N	---	---	---	---	---	ND (0.05)	17.3	---	8.6	---	---	---	10.1	---	---	---	---	35.5
	07/10/97	3	N	---	---	---	---	---	ND (0.05)	11	---	6.1	---	---	---	7	---	---	---	---	31.8
	07/10/97	6	N	---	---	---	---	---	ND (0.05)	9.6	---	6.4	---	---	---	7.8	---	---	---	---	25.3
	07/10/97	10	N	---	---	102	---	---	ND (0.05)	15.7	---	7.7	3	---	0.096 J	11.4	---	---	---	25.7	33.1
XMW-9	06/25/97	3	N	---	---	---	---	---	ND (0.05)	18.4	---	12	---	---	---	9	---	---	---	---	25.8
	06/25/97	10	N	---	---	257	---	---	ND (0.05)	(45.7)	---	(19.7)	5.7	---	0.075 J	(35.2)	---	---	---	44.5	44.2
	06/25/97	10	FD	---	---	---	---	---	ND (0.05)	31.1	---	16.7	---	---	---	27	---	---	---	---	38.7
	06/25/97	30	N	---	---	88.1	---	---	ND (0.05)	35.6	---	(17.2)	7.2	---	0.11 J	(32.1)	---	---	---	42.9	50.3
	06/25/97	50	N	---	---	57.4	---	---	ND (0.05)	36.3	---	15.6	4.5	---	ND (0.2)	(28.5)	---	---	---	37.7	54.2
	06/25/97	70	N	---	---	(1,580)	---	---	ND (0.05)	6.7	---	(170)	6.1	---	(1.8)	7.4	---	---	---	19.7	54.6

1 Interim screening level is background value. If background value is not available then the lesser of the DTSC residential CHHSL or the ecological comparison value is used. If CHHSL is not available, it is the lesser of the USEPA residential regional screening level or the ecological comparison value.

2 USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

3 California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

4 ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28.

5 CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

6 This location is in an area where soil is transitioning into sediment.

Results greater than or equal to the interim screening level are circled; however, if the interim screening level is equal to the background value, only results greater than the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
mg/kg	milligrams per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C2-5

Sample Results: Contract Laboratory Program Inorganics
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Contract Laboratory Program (CLP) Inorganics (mg/kg)							
Interim Screening Level[1] :				**16,400**	**66,500**	**55,000**	**12,100**	**402**	**4,400**	**2,070**	**0.9**
Residential Regional Screening Levels[2] :				**77,000**	**NE**	**55,000**	**NE**	**1,800**	**NE**	**NE**	**1,600**
Residential DTSC CHHSL[3] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Ecological Comparison Values[4] :				**NE**	**NE**	**NE**	**NE**	**220**	**NE**	**NE**	**0.9**
Background[5] :				**16,400**	**66,500**	**NE**	**12,100**	**402**	**4,400**	**2,070**	**NE**
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) *
AOC1-BCW1	09/20/08	0 - 0.5	N	8,100	21,000	14,000	6,400	260	2,800	300	ND (1) *
AOC1-BCW5	10/04/08	0 - 0.5	N	9,500	20,000	18,000	7,700	300	3,900	ND (360)	ND (1.01) *
AOC1-BCW6	08/22/08[6]	0 - 0.5	N	14,000	35,000	20,000	11,000	420	4,000	660	ND (6.69) *
MW-10	06/27/97	10	N	---	---	15,300	---	231	---	---	---
	06/27/97	35	N	---	---	15,300	---	226	---	---	---
	06/27/97	70	N	---	---	10,400	---	284	---	---	---
	06/27/97	82	N	---	---	11,000	---	312	---	---	---
MW-11	06/29/97	10	N	---	---	11,300	---	201	---	---	---
	06/29/97	30	N	---	---	12,900	---	201	---	---	---
	06/29/97	60	N	---	---	10,100	---	138	---	---	---
	06/29/97	69	N	---	---	14,900	---	276	---	---	---
MW-13	07/09/97	20	N	---	---	12,200	---	218	---	---	---
	07/09/97	25	N	---	---	15,400	---	270	---	---	---
SED-10	02/17/03[7]	2	N	---	---	5,610	---	122	---	---	---
SED-12	02/17/03[7]	2	N	---	---	18,400	---	353	---	---	---
SED-27	02/19/03[7]	2	N	---	---	7,270	---	202 B	---	---	---
SED-28	02/19/03[7]	2	N	---	---	3,510	---	92.1 B	---	---	---
SED-29	02/19/03[7]	2	N	---	---	4,630	---	113 B	---	---	---
SED-08	02/17/03[7]	2	N	---	---	6,660	---	127	---	---	---
SED-09	02/17/03[7]	2	N	---	---	19,600	---	224	---	---	---
AOC1-T1a	10/16/08	0 - 0.5	N	9,800	30,000	17,000	8,100	270	2,600	260	ND (1.02) *
AOC1-T1b	10/16/08	0 - 0.5	N	7,700	16,000	19,000	6,000	230	2,300	250	ND (1.01) *
	10/16/08	0 - 0.5	FD	8,100	15,000	19,000	6,500	240	2,500	250	ND (1.01) *

TABLE C2-5

Sample Results: Contract Laboratory Program Inorganics
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Contract Laboratory Program (CLP) Inorganics (mg/kg)							
Interim Screening Level[1] :				**16,400**	**66,500**	**55,000**	**12,100**	**402**	**4,400**	**2,070**	**0.9**
Residential Regional Screening Levels[2] :				**77,000**	**NE**	**55,000**	**NE**	**1,800**	**NE**	**NE**	**1,600**
Residential DTSC CHHSL[3] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Ecological Comparison Values[4] :				**NE**	**NE**	**NE**	**NE**	**220**	**NE**	**NE**	**0.9**
Background[5] :				**16,400**	**66,500**	**NE**	**12,100**	**402**	**4,400**	**2,070**	**NE**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Aluminum**	**Calcium**	**Iron**	**Magnesium**	**Manganese**	**Potassium**	**Sodium**	**Cyanide**
AOC1-T1c	10/16/08	0 - 0.5	N	9,100	22,000	16,000	6,600	250	3,800	340	ND (1.02) *
AOC1-T2b	10/16/08	0 - 0.5	N	8,900	24,000	19,000	7,800	280	3,000 J	310	ND (1.02) *
AOC1-T3a	10/05/08	0 - 0.5	N	11,000	24,000	18,000	7,700	290	2,900	ND (250)	ND (1.01) *
AOC1-T4c	10/04/08	0 - 0.5	N	5,700	18,000	16,000	5,300	200	1,700	ND (240)	ND (1.01) *
AOC1-T5b	10/04/08	0 - 0.5	N	6,500	15,000	16,000	5,600	210	1,800	ND (210)	ND (1) *
AOC1-T6c	09/30/08	0 - 0.5	N	6,300	14,000	15,000	5,300	200	1,600	210	ND (1) *
SSB-1	06/25/97	10	N	---	---	15,300	---	248	---	---	---
SSB-6	06/30/97	10	N	---	---	14,700	---	273	---	---	---
SSB-7	06/30/97	10	N	---	---	10,100	---	186	---	---	---
SSB-8	07/10/97	10	N	---	---	15,600	---	270	---	---	---
SSB-9	07/10/97	10	N	---	---	14,200	---	205	---	---	---
XMW-9	06/25/97	10	N	---	---	22,600	---	345	---	---	---
	06/25/97	30	N	---	---	22,200	---	344	---	---	---
	06/25/97	50	N	---	---	19,700	---	280	---	---	---
	06/25/97	70	N	---	---	22,000	---	203	---	---	---

TABLE C2-5

Sample Results: Contract Laboratory Program Inorganics
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

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[1] Interim screening level is background value. If background value is not available then the lesser of the DTSC residential CHHSL or the ecological comparison value is used. If CHHSL is not available, it is the lesser of the USEPA residential regional screening level or the ecological comparison value.

[2] USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

[3] California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil" November 2004 (January 2005 Revision). January.

[4] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil". May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison Values for Additional Detected Chemicals in Soil." July 1.

[5] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

[6] This location is in an area where soil is transitioning into sediment.

[7] sediment sample

Results greater than or equal to the interim screening level are circled; however, if the interim screening level is equal to the background value, only results greater than the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
mg/kg	milligrams per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C2-6
Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polycyclic Aromatic Hydrocarbons (µg/kg)																			
Interim Screening Level[1] :				**22,000**	**310,000**	**1,700,000**	**3,400,000**	**17,000,000**	**380**	**38**	**380**	**1,700,000**	**380**	**3,800**	**110**	**2,300,000**	**2,300,000**	**380**	**3,600**	**1,700,000**	**1,700,000**	**10,000**	**1,160**	**38**
Residential Regional Screening Levels[2] :				**22,000**	**310,000**	**1,700,000**	**3,400,000**	**17,000,000**	**380**	**15**	**380**	**1,700,000**	**380**	**3,800**	**110**	**2,300,000**	**2,300,000**	**380**	**3,600**	**1,700,000**	**1,700,000**	**NE**	**NE**	**15**
Residential DTSC CHHSL[3] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**38**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**38**
Ecological Comparison Values[4] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**10,000**	**1,160**	**NE**
Background[5] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
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-GB10	02/10/10	0	N	ND (5.6)	ND (5.6)	ND (5.6)	ND (5.6)	ND (5.6)	28 J	15 J	33 J	9.6 J	ND (5.6)	25 J	ND (5.6)	45 J	ND (5.6)	10 J	ND (5.6)	13 J	36 J	13	201.6	22.35
AOC4-GB11	02/10/10	0	N	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	ND (5.4)	13	7.9	16	5.4	ND (5.4)	ND (5.4)	ND (5.4)	21	ND (5.4)	5.4	ND (5.4)	9	19	9	87.7	11.34
	02/10/10	0	FD	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	13	11	20	8	ND (5.5)	13	ND (5.5)	28	ND (5.5)	7.6	ND (5.5)	13	23	13	123.6	15.19
AOC4-GB12	02/10/10	0	N	ND (5.6)	ND (5.6)	ND (5.6)	ND (5.6)	ND (5.6)	12	12	19	9	ND (5.6)	ND (5.6)	ND (5.6)	7.8	ND (5.6)	8.6	ND (5.6)	ND (5.6)	7.8	ND	76.2	15.96
AOC1-BCW1	09/20/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	8.5	11	9.4	10	10	12	ND (5)	17	ND (5)	7.8	ND (5)	6.2	15	6.2	100	16
	09/20/08	2 - 3	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)
AOC1-BCW2	10/04/08	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)
	10/04/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	7.9 J	10 J	9.7 J	7.7 J	11 J	10 J	ND (5.1)	19 J	ND (5.1)	7.3 J	ND (5.1)	6.2 J	16 J	6.2	99	15
	10/04/08	5 - 6	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)	8	ND (5)	ND (5)	ND (5)	ND (5)	6.4	ND	14	4.4
	10/04/08	9 - 10	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (4.9)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
AOC1-BCW3	10/04/08	0 - 0.5	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	22	20	24	17	27	29	5.9	34	ND (5.1)	14	ND (5.1)	14	30	14	220	31
	10/04/08	2 - 3	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)
	10/04/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.1)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/04/08	9 - 10	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (4.7)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
	10/04/08	9 - 10	FD	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (4.9)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
AOC1-BCW4	10/04/08	0 - 0.5	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	12	18	27	16	16	22	6.1	31	ND (5.1)	14	ND (5.1)	11	27	11	190	27
	10/04/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/04/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.8)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/04/08	9 - 10	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (4.4)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
AOC1-BCW5	10/04/08	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)
	10/04/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	5.7	7.9	ND (5.1)	5.5	ND (5.1)	8.1	ND (5.1)	9.3	ND (5.1)	5.1	ND (5.1)	ND (5.1)	9.3	ND	51	10
	10/04/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.1)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/04/08	9 - 10	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
	10/04/08	9 - 10	FD	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
AOC1-BCW6	08/22/08[6]	0 - 0.5	N	ND (7.1)	ND (7.1)	ND (7.1)	ND (7.1)	ND (7.1)	ND (7.1)	ND (7.1)	11	ND (7.1)	ND (7.1)	7.3	ND (7.1)	10	ND (7.1)	ND (7.1)	ND (7.1)	ND (7.1)	10	ND	38	7
	08/22/08[6]	2 - 3	N	ND (7.2)	ND (7.2)	ND (7.2)	ND (7.2)	ND (7.2)	ND (7.2)	ND (7.2)	10	ND (7.2)	ND (7.2)	7.7	ND (7.2)	19	ND (7.2)	ND (7.2)	ND (6.4)	10	15	10	52	7
AOC1-T1a	10/16/08	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)
	10/16/08	2 - 3	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)
	10/16/08	5 - 6	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)
	10/16/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)

TABLE C2-6
Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polycyclic Aromatic Hydrocarbons (µg/kg)																			
Interim Screening Level[1] :				22,000	310,000	1,700,000	3,400,000	17,000,000	380	38	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	10,000	1,160	38
Residential Regional Screening Levels[2] :				22,000	310,000	1,700,000	3,400,000	17,000,000	380	15	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	NE	NE	15
Residential DTSC CHHSL[3] :				NE	NE	NE	NE	NE	NE	38	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	38
Ecological Comparison Values[4] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	10,000	1,160	NE
Background[5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
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**
AOC1-T1b	10/16/08	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)
	10/16/08	0 - 0.5	FD	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)
	10/16/08	2 - 3	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.9)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/16/08	5 - 6	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)
	10/16/08	9 - 10	N	ND (5)	5.2	ND (5)	ND (5)	9.7	8.1	ND (5)	ND (5)	ND (5)	ND (5)	7.8	ND (5)	28	7.9	ND (5)	ND (4.8)	75	26	98	70	5
AOC1-T1c	10/16/08	0 - 0.5	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	24	26	26	23	31	32	9.1	48	ND (5.1)	21	ND (5.1)	20	42	20	280	40
	10/16/08	2 - 3	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	8.1	7.7	8	6.1	10	9.7	ND (5.2)	16	ND (5.2)	ND (5.2)	ND (5.2)	6.4	14	6.4	80	12
	10/16/08	2 - 3	FD	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	9.4	8.3	12	6.3	8.1	12	ND (5.2)	21	ND (5.2)	5.6	ND (5)	7.1	17	7.1	100	13
	10/16/08	5 - 6	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	6	7.3	7.8	7.5	10	9.6	ND (5.1)	11	ND (5.1)	6.4	ND (4.1)	ND (5.1)	10	ND	76	11
	10/16/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC1-T2a	10/05/08	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)	5.8	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND	5.8	4.4
	10/16/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/16/08	5 - 6	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)
	10/16/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC1-T2b	10/16/08	0 - 0.5	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/16/08	2 - 3	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/16/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/16/08	9 - 10	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 (4.6)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/16/08	9 - 10	FD	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.5)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC1-T2c	10/08/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	22	20	28	16	17	25	ND (5)	41	ND (5)	14	ND (5)	7.9	40	7.9	220	29
	10/08/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	6.5	8	9.5	7.5	6.3	8.1	ND (5.1)	15	ND (5.1)	6.3	ND (5)	5.4	13	5.4	80	12
	10/08/08	5 - 6	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 (4.3)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/08/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC1-T2d	10/07/08	0 - 0.5	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/07/08	2 - 3	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	9	5.7	7.2	ND (5.2)	7.3	9.5	ND (5.2)	18	ND (5.2)	ND (5.2)	ND (4.2)	5.4	16	5.4	73	9.3
	10/07/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.5)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/07/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/07/08	19 - 20	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (4.9)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
	10/07/08	29 - 30	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.5)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/07/08	29 - 30	FD	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
	10/07/08	39 - 40	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)
	10/07/08	49 - 50	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (4.9)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
	10/08/08	59 - 60	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 (4.3)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/08/08	69 - 70	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 (4.5)	ND (5.4)	ND (5.4)	ND	ND	ND (4.7)

TABLE C2-6
Sample Results: Polycyclic Aromatic Hydrocarbons
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				Polycyclic Aromatic Hydrocarbons (µg/kg)																			
Interim Screening Level[1] :				22,000	310,000	1,700,000	3,400,000	17,000,000	380	38	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	10,000	1,160	38
Residential Regional Screening Levels[2] :				22,000	310,000	1,700,000	3,400,000	17,000,000	380	15	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	NE	NE	15
Residential DTSC CHHSL[3] :				NE	NE	NE	NE	NE	NE	38	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	38
Ecological Comparison Values[4] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	10,000	1,160	NE
Background[5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
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**
AOC1-T2e	10/16/08	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)
	10/16/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/16/08	2 - 3	FD	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/16/08	5 - 6	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)
	10/16/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC1-T3a	10/05/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	6.5	8.4	11	7.6	12	14	ND (5)	25	ND (5)	7	ND (5)	9.2	21	9.2	110	13
	10/17/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/17/08	5 - 6	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)
	10/17/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC1-T3b	10/05/08	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)
	10/17/08	2 - 3	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	15	16	14	13	21	20	ND (5.3)	25	ND (5.3)	12	ND (5.3)	6.8	23	6.8	160	23
	10/17/08	5 - 6	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 (4.7)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/17/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/17/08	9 - 10	FD	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC1-T3c	10/05/08	0 - 0.5	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	5.9	7.9	7.4	8.6	11	ND (5.1)	14	ND (5.1)	5.3	ND (5.1)	ND (5.1)	12	ND	72	9.3
	10/05/08	2 - 3	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)
	10/05/08	5 - 6	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)	6.3	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	5.8	ND	12	4.5
	10/05/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC1-T4a	10/03/08	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)	7.1	ND (5)	ND (5)	ND (5)	ND (5)	6.8	ND	14	4.4
	10/03/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/03/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/03/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC1-T4b	10/02/08	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)
	10/02/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	5.4	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	5.4	4.7
	10/02/08	2 - 3	FD	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/02/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/02/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC1-T4c	10/04/08	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)	5.4	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND	5.4	4.4
	10/04/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	59	55	69	38	41	64	11	82	ND (5.1)	34	ND (5.1)	16	82	16	540	80
	10/04/08	5 - 6	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	32	380	170	410	81	190	400	37	560	ND (5.1)	78	ND (5.1)	150	560	180	2,900	290
	10/04/08	9 - 10	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	6.4	58	34	32	19	40	72	6.3	84	ND (5.1)	17	ND (5.1)	20	81	26	440	52
AOC1-T5a	10/04/08	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)
	10/04/08	2 - 3	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)
	10/04/08	5 - 6	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)
	10/04/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/04/08	9 - 10	FD	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)

TABLE C2-6
Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 1 - Area Around Former Percolation Bed
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Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polycyclic Aromatic Hydrocarbons (µg/kg)																			
Interim Screening Level[1] :				**22,000**	**310,000**	**1,700,000**	**3,400,000**	**17,000,000**	**380**	**38**	**380**	**1,700,000**	**380**	**3,800**	**110**	**2,300,000**	**2,300,000**	**380**	**3,600**	**1,700,000**	**1,700,000**	**10,000**	**1,160**	**38**
Residential Regional Screening Levels[2] :				**22,000**	**310,000**	**1,700,000**	**3,400,000**	**17,000,000**	**380**	**15**	**380**	**1,700,000**	**380**	**3,800**	**110**	**2,300,000**	**2,300,000**	**380**	**3,600**	**1,700,000**	**1,700,000**	**NE**	**NE**	**15**
Residential DTSC CHHSL[3] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**38**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**38**
Ecological Comparison Values[4] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**10,000**	**1,160**	**NE**
Background[5] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
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**
AOC1-T5b	10/04/08	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)
	10/04/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	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	4.7
	10/04/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/04/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC1-T5c	10/04/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	5.4	6.6	5.7	7.7	7.3	ND (5)	8.8	ND (5)	ND (5)	ND (5)	ND (5)	8	ND	50	8.3
	10/04/08	2 - 3	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	6.1	8.3	7.6	6.6	11	9.7	ND (5)	14	ND (5)	6.1	ND (5)	ND (5)	13	ND	82	12
	10/04/08	5 - 6	N	ND (5)	ND (5)	ND (5)	ND (5)	16	84	45	58	25	58	91	8.8	220	ND (5)	26	ND (5)	62	150	78	770	72
	10/04/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC1-T6a	09/30/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	5.4	6.3	10	8.8	6.1	9.2	ND (5)	10	ND (5)	5.6	ND (5)	ND (5)	10	ND	71	10
	09/30/08	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 (4.2)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/30/08	2.5 - 3	FD	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 (3.8)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/30/08	5.5 - 6	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 (4.3)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/30/08	9.5 - 10	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 (3.7)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC1-T6b	09/30/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	5.7	6	ND (5)	5.2	ND (5)	5.9	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND	23	4.7
	09/30/08	2.5 - 3	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 (4)	ND (5)	ND (5)	ND	ND	ND (4.4)
	09/30/08	5.5 - 6	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 (3.7)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/30/08	9.5 - 10	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)
	09/30/08	9.5 - 10	FD	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 (4)	ND (5)	ND (5)	ND	ND	ND (4.4)
AOC1-T6c	09/30/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	5.5	ND (5)	6.1	ND (5)	5.6	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND	17	4.4
	09/30/08	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 (5)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/30/08	5.5 - 6	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 (4.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)

TABLE C2-6

Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 1 - Area Around Former Percolation Bed
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1 Interim screening level is DTSC residential CHHSL. If CHHSL is not available, the USEPA residential regional screening level is used. If an ecological comparison value has been calculated, then the lowest between the ecological comparison value or the CHHSL/regional screening level is used.

2 USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

3 California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

4 ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28.

5 CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

6 This location is in an area where soil is transitioning into sediment.

Results greater than or equal to the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
µg/kg	micrograms per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C2-7
Sample Results: VOCs, SVOCs, TPHs, and General Chemistry
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				SVOCs (µg/kg)	VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry									
									meq/100g	mV	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
Interim Screening Level[1]:				2,870	22,000,000	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Residential Regional Screening Levels[2]:				35,000	22,000,000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Residential DTSC CHHSL[3]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
RWQCB Environmental Screening Levels[4]:				NE	NE	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Ecological Comparison Values[5]:				2,870	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Background[6]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Bis (2-ethylhexyl) phthalate**	**Methyl acetate**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Cation Exchange Capacity**	**Electric Conductance**	**Orthophosphate**	**pH**	**Phosphate**	**Sulfide**	**Total organic carbon**	**Fluoride**	**Sulfate**	
AOC4-1	10/14/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	---	---	---	---	---	---	
	10/14/08	0.5 - 1	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	---	---	---	---	---	---	
	10/14/08	2 - 3	N	810	12	ND (0.98)	ND (10)	ND (10)	---	---	---	---	---	---	---	---	---	
AOC1-BCW1	09/20/08	0 - 0.5	N	ND (330)	---	---	12.6	31.8	---	---	---	8.21	---	---	---	---	---	
	09/20/08	2 - 3	N	ND (330)	ND (5.2)	ND (2.2)	ND (10)	ND (10)	---	---	---	9.02	---	---	---	---	---	
AOC1-BCW2	10/04/08	0 - 0.5	N	ND (330)	---	---	ND (10)	31 J	---	---	---	8.85	---	---	---	---	---	
	10/04/08	2 - 3	N	ND (340)	---	ND (0.92)	ND (10)	11.1 J	---	---	---	8.35	---	---	---	---	---	
	10/04/08	5 - 6	N	ND (330)	---	ND (0.91)	ND (10)	17.6 J	---	---	---	8.72	---	---	---	---	---	
	10/04/08	9 - 10	N	ND (350)	---	ND (1)	ND (10)	ND (10)	---	---	---	8.68	---	---	---	---	---	
AOC1-BCW3	10/04/08	0 - 0.5	N	ND (340)	---	---	ND (10)	21.6 J	---	---	---	8.76	---	---	---	---	---	
	10/04/08	2 - 3	N	ND (330)	---	ND (1.1)	ND (10)	10.7 J	---	---	---	8.68	---	---	---	---	---	
	10/04/08	5 - 6	N	ND (340)	---	ND (1.2)	ND (10)	ND (10)	---	---	---	8.58	---	---	---	---	---	
	10/04/08	9 - 10	N	ND (350)	---	ND (0.99)	ND (10)	ND (10)	---	---	---	9.5	---	---	---	---	---	
	10/04/08	9 - 10	FD	ND (350)	---	ND (0.95)	ND (10)	ND (10)	---	---	---	9.54	---	---	---	---	---	
AOC1-BCW4	10/04/08	0 - 0.5	N	ND (340)	---	---	15.8	17.8 J	---	---	---	8.06	---	---	---	---	---	
	10/04/08	2 - 3	N	ND (330)	---	ND (0.92)	ND (10)	ND (10)	---	---	---	8.28	---	---	---	---	---	
	10/04/08	5 - 6	N	ND (340)	---	ND (1)	ND (10)	ND (10)	---	---	---	8.69	---	---	---	---	---	
	10/04/08	9 - 10	N	ND (350)	---	ND (1)	ND (10)	ND (10)	---	---	---	8.94	---	---	---	---	---	
AOC1-BCW5	10/04/08	0 - 0.5	N	ND (330)	---	---	28.9	30.1 J	---	---	---	9.43	---	---	---	---	---	
	10/04/08	2 - 3	N	ND (330)	ND (5.2)	ND (0.98)	10.5	22.6 J	---	---	---	8.58	---	---	---	---	---	
	10/04/08	5 - 6	N	ND (340)	---	ND (0.92)	ND (10)	ND (10)	---	---	---	8.26	---	---	---	---	---	
	10/04/08	9 - 10	N	ND (350)	---	ND (1.2)	ND (10)	ND (10)	---	---	---	9.55	---	---	---	---	---	
	10/04/08	9 - 10	FD	ND (350)	---	ND (1.2)	ND (10)	ND (10)	---	---	---	9.48	---	---	---	---	---	
AOC1-BCW6	08/22/08[7]	0 - 0.5	N	ND (470)	---	---	ND (10)	17.5	---	---	---	7.74	---	---	---	---	---	
	08/22/08[7]	2 - 3	N	ND (480)	ND (6.4)	ND (1.3)	ND (10)	16.3	---	---	---	7.89	---	---	---	---	---	
DrSed-1	02/18/03[8]	1	N	---	---	---	---	---	---	---	---	9.3	---	---	---	---	---	
DrSed-2	02/18/03[8]	1	N	---	---	---	---	---	---	---	---	8.8	---	---	---	---	---	
DrSed-3	02/19/03[8]	1	N	---	---	---	---	---	---	---	---	9	---	---	---	---	---	

TABLE C2-7
Sample Results: VOCs, SVOCs, TPHs, and General Chemistry
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				SVOCs (µg/kg)	VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry								
									meq/100g	mV	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Interim Screening Level[1]:				2,870	22,000,000	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential Regional Screening Levels[2]:				35,000	22,000,000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC CHHSL[3]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
RWQCB Environmental Screening Levels[4]:				NE	NE	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE
Ecological Comparison Values[5]:				2,870	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Background[6]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Bis (2-ethylhexyl) phthalate**	**Methyl acetate**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Cation Exchange Capacity**	**Electric Conductance**	**Orthophosphate**	**pH**	**Phosphate**	**Sulfide**	**Total organic carbon**	**Fluoride**	**Sulfate**
MW-10	06/27/97	1	N	---	---	---	---	---	---	---	---	9.03	---	---	---	---	---
	06/27/97	3	N	---	---	---	---	---	---	---	---	8.84	---	---	---	---	---
	06/27/97	6	N	---	---	---	---	---	---	---	---	8.73	---	---	---	---	---
	06/27/97	10	N	---	---	---	---	---	---	120	311	8.75	---	ND (0.4)	520	---	9.2 J
	06/27/97	20	N	---	---	---	---	---	---	---	---	8.87	---	---	---	---	---
	06/27/97	25	N	---	---	---	---	---	10	---	---	9.38	---	---	---	---	---
	06/27/97	30	N	---	---	---	---	---	---	---	---	9.85	---	---	---	---	---
	06/27/97	35	N	---	---	---	---	---	---	116	271	---	---	ND (0.4)	630	---	35
	06/27/97	40	N	---	---	---	---	---	---	---	---	9.2	---	---	---	---	---
	06/28/97	50	N	---	---	---	---	---	10	---	---	9.28	---	---	---	---	---
	06/27/97	60	N	---	---	---	---	---	---	---	---	9.26	---	---	---	---	---
	06/27/97	70	N	---	---	---	---	---	---	115	324	9.28	---	ND (0.4)	420	---	8.5 J
	06/27/97	75	N	---	---	---	---	---	12	---	---	8.09	---	---	---	---	---
	06/27/97	75	FD	---	---	---	---	---	---	---	---	9.29	---	---	---	---	---
	06/27/97	82	N	---	---	---	---	---	9	111	291	9.07	---	ND (0.4)	340	---	25
MW-11	06/29/97	1	N	---	---	---	---	---	---	---	---	8.62	---	---	---	---	---
	06/29/97	3	N	---	---	---	---	---	---	---	---	9.03	---	---	---	---	---
	06/29/97	6	N	---	---	---	---	---	---	---	---	8.83	---	---	---	---	---
	06/29/97	10	N	---	---	---	---	---	---	110	299	8.92	---	ND (0.4)	410	---	11
	06/29/97	20	N	---	---	---	---	---	0.7	---	---	9.09	---	---	---	---	---
	06/29/97	30	N	---	---	---	---	---	---	120	307	9.07	---	ND (0.4)	110	---	17
	06/29/97	40	N	---	---	---	---	---	10	---	---	9.03	---	---	---	---	---
	06/29/97	50	N	---	---	---	---	---	---	---	---	9.69	---	---	---	---	---
	06/29/97	60	N	---	---	---	---	---	11	112	291	9.25	---	ND (0.4)	330	---	18
	06/29/97	60	FD	---	---	---	---	---	---	---	---	9.46	---	---	---	---	---
	06/29/97	69	N	---	---	---	---	---	10	117	257	9.04	---	ND (0.4)	360	---	20
MW-13	07/09/97	10	N	---	---	---	---	---	---	---	---	8.66	---	---	---	---	---
	07/09/97	20	N	---	---	---	---	---	4.07	136.6	208	8.44	---	ND (0.4)	270	---	71
	07/09/97	25	N	---	---	---	---	---	4.16	138.5	224	---	---	ND (0.4)	ND (100)	---	93
	07/09/97	30	N	---	---	---	---	---	4.01	---	---	8.45	---	---	---	---	---
	07/09/97	40	N	---	---	---	---	---	---	---	---	8.7	---	---	---	---	---
	07/09/97	40	FD	---	---	---	---	---	---	---	---	8.72	---	---	---	---	---
SED-01	02/18/03[8]	2	N	---	---	---	---	---	---	---	---	8.8	---	---	---	---	---
SED-10	02/17/03[8]	2	N	---	---	---	---	---	---	---	---	8.1	ND (2.79)	---	10,100 J	1.63	---
SED-11	02/17/03[8]	2	N	---	---	---	---	---	---	---	---	7.9	---	---	---	---	---

TABLE C2-7
Sample Results: VOCs, SVOCs, TPHs, and General Chemistry
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				SVOCs (µg/kg)	VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry									
									meq/100g	mV	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
Interim Screening Level[1]:				2,870	22,000,000	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Residential Regional Screening Levels[2]:				35,000	22,000,000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Residential DTSC CHHSL[3]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
RWQCB Environmental Screening Levels[4]:				NE	NE	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Ecological Comparison Values[5]:				2,870	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Background[6]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Bis (2-ethylhexyl) phthalate**	**Methyl acetate**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Cation Exchange Capacity**	**Electric Conductance**	**Orthophosphate**	**pH**	**Phosphate**	**Sulfide**	**Total organic carbon**	**Fluoride**	**Sulfate**	
SED-12	02/17/03[8]	2	N	---	---	---	---	---	---	---	---	8.1	ND (2.45)	---	13,400 J	1.44	---	
SED-02	02/18/03[8]	2	N	---	---	---	---	---	---	---	---	8.8	---	---	---	---	---	
SED-27	02/19/03[8]	2	N	---	---	---	---	---	---	---	---	8.6	ND (3.03)	---	17,700 J	2.68	---	
SED-28	02/19/03[8]	2	N	---	---	---	---	---	---	---	---	8.4	ND (2.8)	---	4,770 J	0.918 J	---	
SED-29	02/19/03[8]	2	N	---	---	---	---	---	---	---	---	8.7	ND (2.66)	---	ND (2,640) J	0.54 J	---	
SED-03	02/18/03[8]	2	N	---	---	---	---	---	---	---	---	8.7	---	---	---	---	---	
SED-04	02/18/03[8]	2	N	---	---	---	---	---	---	---	---	8.7	---	---	---	---	---	
SED-05	02/17/03[8]	2	N	---	---	---	---	---	---	---	---	8.5	---	---	---	---	---	
SED-06	02/17/03[8]	2	N	---	---	---	---	---	---	---	---	7.4	---	---	---	---	---	
SED-07	02/17/03[8]	2	N	---	---	---	---	---	---	---	---	7.5	---	---	---	---	---	
SED-08	02/17/03[8]	2	N	---	---	---	---	---	---	---	---	8	ND (2.48)	---	9,650 J	1.48	---	
SED-09	02/17/03[8]	2	N	---	---	---	---	---	---	---	---	8.5	ND (2.44)	---	1,380 J	0.582 J	---	
AOC1-T1a	10/16/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	8.66	---	---	---	---	---	
	10/16/08	2 - 3	N	ND (330)	ND (7)	ND (1.3)	ND (10)	ND (10)	---	---	---	8.85	---	---	---	---	---	
	10/16/08	5 - 6	N	ND (330)	---	ND (63)	ND (10)	15.5	---	---	---	8.83	---	---	---	---	---	
	10/16/08	9 - 10	N	ND (330)	---	ND (1)	ND (10)	ND (10)	---	---	---	9.03	---	---	---	---	---	
AOC1-T1b	10/16/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	9.18	---	---	---	---	---	
	10/16/08	0 - 0.5	FD	ND (330)	---	---	ND (10)	ND (10)	---	---	---	9.08	---	---	---	---	---	
	10/16/08	2 - 3	N	ND (340)	ND (4.9)	ND (1.2)	21.3	276	---	---	---	9.04	---	---	---	---	---	
	10/16/08	5 - 6	N	ND (330)	---	ND (1.2)	ND (10)	21	---	---	---	8.87	---	---	---	---	---	
	10/16/08	9 - 10	N	ND (330)	---	ND (0.89)	ND (10)	34.4	---	---	---	9.66	---	---	---	---	---	
AOC1-T1c	10/16/08	0 - 0.5	N	ND (340)	---	---	ND (10)	26.2	---	---	---	9.24	---	---	---	---	---	
	10/16/08	2 - 3	N	ND (340)	ND (5.2)	ND (1.1)	11.8	82.8	---	---	---	9.47	---	---	---	---	---	
	10/16/08	2 - 3	FD	ND (350)	ND (5)	ND (1.1)	15	104	---	---	---	9.44	---	---	---	---	---	
	10/16/08	5 - 6	N	ND (340)	---	ND (0.96)	ND (10)	36.5	---	---	---	8.94	---	---	---	---	---	
	10/16/08	9 - 10	N	ND (340)	---	ND (0.89)	ND (10)	ND (10)	---	---	---	9.15	---	---	---	---	---	
AOC1-T2a	10/05/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	8.26	---	---	---	---	---	
	10/16/08	2 - 3	N	ND (330)	---	ND (1)	ND (10)	ND (10)	---	---	---	8.63	---	---	---	---	---	
	10/16/08	5 - 6	N	ND (330)	---	ND (1.2)	ND (10)	ND (10)	---	---	---	8.7	---	---	---	---	---	
	10/16/08	9 - 10	N	ND (340)	---	ND (1.1)	ND (10)	ND (10)	---	---	---	8.75	---	---	---	---	---	

TABLE C2-7
Sample Results: VOCs, SVOCs, TPHs, and General Chemistry
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				SVOCs (µg/kg)	VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry								
									meq/100g	mV	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Interim Screening Level[1]:				2,870	22,000,000	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential Regional Screening Levels[2]:				35,000	22,000,000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC CHHSL[3]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
RWQCB Environmental Screening Levels[4]:				NE	NE	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE
Ecological Comparison Values[5]:				2,870	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Background[6]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Bis (2-ethylhexyl) phthalate**	**Methyl acetate**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Cation Exchange Capacity**	**Electric Conductance**	**Orthophosphate**	**pH**	**Phosphate**	**Sulfide**	**Total organic carbon**	**Fluoride**	**Sulfate**
AOC1-T2b	10/16/08	0 - 0.5	N	ND (340)	---	---	ND (10)	12.9	---	---	---	9.29	---	---	---	---	---
	10/16/08	2 - 3	N	ND (340)	ND (5.2)	ND (0.94)	ND (10)	14.4	---	---	---	9.18	---	---	---	---	---
	10/16/08	5 - 6	N	ND (330)	---	ND (0.92)	ND (10)	10.9	---	---	---	9.33	---	---	---	---	---
	10/16/08	9 - 10	N	ND (340)	---	ND (0.95)	ND (10)	ND (10)	---	---	---	9.4	---	---	---	---	---
	10/16/08	9 - 10	FD	ND (340)	---	ND (0.87)	ND (10)	ND (10)	---	---	---	9.29	---	---	---	---	---
AOC1-T2c	10/08/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	8.89	---	---	---	---	---
	10/08/08	2 - 3	N	ND (330)	---	ND (1)	ND (10)	ND (10)	---	---	---	9.15	---	---	---	---	---
	10/08/08	5 - 6	N	ND (330)	---	ND (0.91)	ND (10)	ND (10)	---	---	---	9.43	---	---	---	---	---
	10/08/08	9 - 10	N	ND (340)	---	ND (0.96)	ND (10)	ND (10)	---	---	---	9.36	---	---	---	---	---
AOC1-T2d	10/07/08	0 - 0.5	N	ND (340)	---	---	ND (10)	ND (10)	---	---	---	9.31	---	---	---	---	---
	10/07/08	2 - 3	N	ND (340)	---	ND (0.89)	ND (10)	17.5	---	---	---	8.86	---	---	---	---	---
	10/07/08	5 - 6	N	ND (340)	---	ND (0.98)	ND (10)	ND (10)	---	---	---	8.95	---	---	---	---	---
	10/07/08	9 - 10	N	ND (340)	---	ND (1.5)	21.4	25.2	---	---	---	9.23	---	---	---	---	---
	10/07/08	19 - 20	N	ND (350)	---	ND (1.3)	ND (10)	ND (10)	---	---	---	9.68	---	---	---	---	---
	10/07/08	29 - 30	N	ND (340)	---	ND (1)	ND (10)	ND (10)	---	---	---	9.73	---	---	---	---	---
	10/07/08	29 - 30	FD	ND (350)	---	ND (1.1)	ND (10)	ND (10)	---	---	---	9.78	---	---	---	---	---
	10/07/08	39 - 40	N	ND (350)	---	ND (1.2)	ND (10)	ND (10)	---	---	---	9.29	---	---	---	---	---
	10/07/08	49 - 50	N	ND (350)	---	ND (1)	ND (10)	ND (10)	---	---	---	9.35	---	---	---	---	---
	10/08/08	59 - 60	N	ND (330)	---	ND (1)	ND (10)	ND (10)	---	---	---	9.39	---	---	---	---	---
	10/08/08	69 - 70	N	ND (360)	---	ND (0.95)	ND (10)	ND (10)	---	---	---	9.5	---	---	---	---	---
AOC1-T2e	10/16/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	9.17	---	---	---	---	---
	10/16/08	2 - 3	N	ND (330)	---	ND (1.3)	ND (10)	11.9	---	---	---	9.28	---	---	---	---	---
	10/16/08	2 - 3	FD	ND (340)	---	ND (1)	ND (10)	10.9	---	---	---	9.26	---	---	---	---	---
	10/16/08	5 - 6	N	ND (330)	---	ND (0.89)	ND (10)	41.1	---	---	---	9.13	---	---	---	---	---
	10/16/08	9 - 10	N	ND (340)	---	ND (1.1)	ND (10)	14.5	---	---	---	9.14	---	---	---	---	---
AOC1-T3a	10/05/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	8.49	---	---	---	---	---
	10/17/08	2 - 3	N	ND (330)	6.6	ND (0.93)	ND (10)	11	---	---	---	9.32	---	---	---	---	---
	10/17/08	5 - 6	N	ND (330)	---	ND (0.95)	ND (10)	14.4	---	---	---	8.94	---	---	---	---	---
	10/17/08	9 - 10	N	ND (330)	---	ND (1)	ND (10)	ND (10)	---	---	---	8.35	---	---	---	---	---
AOC1-T3b	10/05/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	8.85	---	---	---	---	---
	10/17/08	2 - 3	N	ND (350)	---	ND (1.1)	ND (10)	24.9	---	---	---	9.11	---	---	---	---	---
	10/17/08	5 - 6	N	ND (330)	---	ND (1)	ND (10)	17.6	---	---	---	8.99	---	---	---	---	---
	10/17/08	9 - 10	N	ND (340)	---	ND (0.99)	ND (10)	11.1	---	---	---	9.22	---	---	---	---	---
	10/17/08	9 - 10	FD	ND (340)	---	ND (0.95)	ND (10)	ND (10)	---	---	---	9.05	---	---	---	---	---

TABLE C2-7
Sample Results: VOCs, SVOCs, TPHs, and General Chemistry
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				SVOCs (µg/kg)	VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry									
									meq/100g	mV	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
Interim Screening Level[1]:				2,870	22,000,000	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Residential Regional Screening Levels[2]:				35,000	22,000,000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Residential DTSC CHHSL[3]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
RWQCB Environmental Screening Levels[4]:				NE	NE	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Ecological Comparison Values[5]:				2,870	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Background[6]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Bis (2-ethylhexyl) phthalate**	**Methyl acetate**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Cation Exchange Capacity**	**Electric Conductance**	**Orthophosphate**	**pH**	**Phosphate**	**Sulfide**	**Total organic carbon**	**Fluoride**	**Sulfate**	
AOC1-T3c	10/05/08	0 - 0.5	N	ND (330)	---	---	ND (10)	11.2	---	---	---	8.44	---	---	---	---	---	
	10/05/08	2 - 3	N	ND (330)	---	ND (1.3)	ND (10)	ND (10)	---	---	---	9.2	---	---	---	---	---	
	10/05/08	5 - 6	N	370	---	ND (1.2)	ND (10)	19	---	---	---	9.05	---	---	---	---	---	
	10/05/08	9 - 10	N	ND (330)	---	ND (1.5)	ND (10)	10	---	---	---	9.14	---	---	---	---	---	
AOC1-T4a	10/03/08	0 - 0.5	N	ND (330)	---	---	21	25 J	---	---	---	8.06	---	---	---	---	---	
	10/03/08	2 - 3	N	ND (330)	---	ND (1.3)	ND (10)	15.6 J	---	---	---	8.7	---	---	---	---	---	
	10/03/08	5 - 6	N	ND (330)	---	ND (1.4)	ND (10)	ND (10)	---	---	---	8.83	---	---	---	---	---	
	10/03/08	9 - 10	N	ND (330)	---	ND (1.4)	ND (10)	ND (10)	---	---	---	8.76	---	---	---	---	---	
AOC1-T4b	10/02/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	9.02	---	---	---	---	---	
	10/02/08	2 - 3	N	ND (340)	---	ND (1.1)	ND (10)	ND (10)	---	---	---	9.13	---	---	---	---	---	
	10/02/08	2 - 3	FD	ND (340)	---	ND (1.2)	ND (10)	34.3	---	---	---	9.11	---	---	---	---	---	
	10/02/08	5 - 6	N	ND (340)	---	ND (1.5)	ND (10)	ND (10)	---	---	---	9.89	---	---	---	---	---	
	10/02/08	9 - 10	N	ND (340)	---	ND (0.99)	ND (10)	ND (10)	---	---	---	9.99	---	---	---	---	---	
AOC1-T4c	10/04/08	0 - 0.5	N	ND (330)	---	---	ND (10) J	ND (10) J	---	---	---	9.35	---	---	---	---	---	
	10/04/08	2 - 3	N	ND (340)	ND (6.9)	ND (1.4)	ND (10) J	ND (10) J	---	---	---	8.9	---	---	---	---	---	
	10/04/08	5 - 6	N	ND (340)	---	ND (1.3)	ND (10) J	ND (10) J	---	---	---	9.1	---	---	---	---	---	
	10/04/08	9 - 10	N	ND (340)	---	ND (1.9)	---	---	---	---	---	9.41	---	---	---	---	---	
AOC1-T5a	10/04/08	0 - 0.5	N	ND (330)	---	---	ND (10) J	ND (10) J	---	---	---	8.87	---	---	---	---	---	
	10/04/08	2 - 3	N	ND (330)	---	ND (1.2)	---	---	---	---	---	9.17	---	---	---	---	---	
	10/04/08	5 - 6	N	ND (330)	---	ND (1.4)	ND (10)	ND (10)	---	---	---	9.44	---	---	---	---	---	
	10/04/08	9 - 10	N	ND (340)	---	ND (1.6)	ND (10)	ND (10)	---	---	---	9.25	---	---	---	---	---	
	10/04/08	9 - 10	FD	ND (340)	---	ND (1.7)	ND (10)	16.5 J	---	---	---	9.3	---	---	---	---	---	
AOC1-T5b	10/04/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	8.98	---	---	---	---	---	
	10/04/08	2 - 3	N	ND (340)	ND (7.4)	ND (1.5)	ND (10)	ND (10)	---	---	---	9.13	---	---	---	---	---	
	10/04/08	5 - 6	N	ND (330)	---	ND (1.3)	ND (10)	ND (10)	---	---	---	9.05	---	---	---	---	---	
	10/04/08	9 - 10	N	ND (340)	---	ND (1.3)	ND (10) J	ND (10) J	---	---	---	9.14	---	---	---	---	---	
AOC1-T5c	10/04/08	0 - 0.5	N	ND (330)	---	---	ND (10)	ND (10)	---	---	---	8.91	---	---	---	---	---	
	10/04/08	2 - 3	N	ND (330)	---	ND (1.7)	ND (10)	ND (10)	---	---	---	8.82	---	---	---	---	---	
	10/04/08	5 - 6	N	ND (330)	---	ND (1.1)	ND (10)	ND (10)	---	---	---	9.01	---	---	---	---	---	
	10/04/08	9 - 10	N	ND (330)	---	ND (1.2)	ND (10)	ND (10)	---	---	---	8.83	---	---	---	---	---	
AOC1-T6a	09/30/08	0 - 0.5	N	ND (330)	---	---	ND (10)	21.4	---	---	---	8.19	---	---	---	---	---	
	09/30/08	2.5 - 3	N	ND (340)	---	ND (0.7)	ND (10)	13.5	---	---	---	8.6	---	---	---	---	---	
	09/30/08	2.5 - 3	FD	ND (340)	---	ND (0.78)	ND (10)	13.7	---	---	---	8.81	---	---	---	---	---	
	09/30/08	5.5 - 6	N	ND (340)	---	ND (0.71)	ND (10)	ND (10)	---	---	---	8.78	---	---	---	---	---	
	09/30/08	9.5 - 10	N	ND (340)	---	ND (0.73)	ND (10)	10.5	---	---	---	8.71	---	---	---	---	---	

TABLE C2-7
Sample Results: VOCs, SVOCs, TPHs, and General Chemistry
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				SVOCs (µg/kg)	VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry									
									meq/100g	mV	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
Interim Screening Level[1]:				2,870	22,000,000	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Residential Regional Screening Levels[2]:				35,000	22,000,000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Residential DTSC CHHSL[3]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
RWQCB Environmental Screening Levels[4]:				NE	NE	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Ecological Comparison Values[5]:				2,870	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Background[6]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Bis (2-ethylhexyl) phthalate**	**Methyl acetate**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Cation Exchange Capacity**	**Electric Conductance**	**Orthophosphate**	**pH**	**Phosphate**	**Sulfide**	**Total organic carbon**	**Fluoride**	**Sulfate**	
AOC1-T6b	09/30/08	0 - 0.5	N	ND (330)	---	---	ND (10)	10.9	---	---	---	8.54	---	---	---	---	---	
	09/30/08	2.5 - 3	N	ND (330)	---	ND (0.91)	ND (10)	ND (10)	---	---	---	8.89	---	---	---	---	---	
	09/30/08	5.5 - 6	N	ND (330)	---	ND (0.88)	ND (10)	ND (10)	---	---	---	8.76	---	---	---	---	---	
	09/30/08	9.5 - 10	N	ND (330)	---	ND (0.86)	ND (10)	ND (10)	---	---	---	8.59	---	---	---	---	---	
	09/30/08	9.5 - 10	FD	ND (330)	---	ND (0.8)	ND (10)	ND (10)	---	---	---	8.79	---	---	---	---	---	
AOC1-T6c	09/30/08	0 - 0.5	N	ND (330)	---	---	ND (10)	13.5	---	---	---	8.6	---	---	---	---	---	
	09/30/08	2.5 - 3	N	ND (330)	ND (5)	ND (1.1)	ND (10)	ND (10)	---	---	---	9.42	---	---	---	---	---	
	09/30/08	5.5 - 6	N	ND (330)	---	ND (0.71)	ND (10)	ND (10)	---	---	---	8.85	---	---	---	---	---	
SS-1	06/29/97[7]	0.5	N	---	---	---	---	---	---	---	---	8.56	---	---	---	---	---	
	06/29/97[7]	1.5	N	---	---	---	---	---	---	---	---	8.3	---	---	---	---	---	
SS-2	06/29/97	0.5	N	---	---	---	---	---	---	---	---	8.05	---	---	---	---	---	
	06/29/97	1.5	N	---	---	---	---	---	---	---	---	8.46	---	---	---	---	---	
SSB-1	06/25/97	1	N	---	---	---	---	---	---	---	---	8.51	---	---	---	---	---	
	06/25/97	3	N	---	---	---	---	---	---	---	---	8.79	---	---	---	---	---	
	06/25/97	6	N	---	---	---	---	---	---	---	---	8.57	---	---	---	---	---	
	06/25/97	10	N	---	---	---	---	---	---	157	327	8.35	---	ND (0.4)	140	---	20	
SSB-6	06/30/97	1	N	---	---	---	---	---	---	---	---	8.74	---	---	---	---	---	
	06/30/97	3	N	---	---	---	---	---	---	---	---	9.04	---	---	---	---	---	
	06/30/97	6	N	---	---	---	---	---	---	---	---	8.8	---	---	---	---	---	
	06/30/97	10	N	---	---	---	---	---	---	120	295	8.94	---	ND (0.4)	310	---	22	
SSB-7	06/30/97	1	N	---	---	---	---	---	---	---	---	8.61	---	---	---	---	---	
	06/30/97	3	N	---	---	---	---	---	---	---	---	8.76	---	---	---	---	---	
	06/30/97	6	N	---	---	---	---	---	---	---	---	8.95	---	---	---	---	---	
	06/30/97	10	N	---	---	---	---	---	---	122	284	9.48	---	ND (0.4)	ND (100)	---	34	
SSB-8	07/10/97	1	N	---	---	---	---	---	---	---	---	8.46	---	---	---	---	---	
	07/10/97	3	N	---	---	---	---	---	---	---	---	8.53	---	---	---	---	---	
	07/10/97	6	N	---	---	---	---	---	---	---	---	8.2	---	---	---	---	---	
	07/10/97	10	N	---	---	---	---	---	---	147.9	204	8.9	---	ND (0.4)	ND (100)	---	12	
	07/10/97	10	FD	---	---	---	---	---	---	---	---	8.5	---	---	---	---	---	
SSB-9	07/10/97	1	N	---	---	---	---	---	---	---	---	7.95	---	---	---	---	---	
	07/10/97	3	N	---	---	---	---	---	---	---	---	8.52	---	---	---	---	---	
	07/10/97	6	N	---	---	---	---	---	---	---	---	8.44	---	---	---	---	---	
	07/10/97	10	N	---	---	---	---	---	---	141.4	252	8.82	---	ND (0.4)	ND (100)	---	9.2 J	

TABLE C2-7
Sample Results: VOCs, SVOCs, TPHs, and General Chemistry
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				SVOCs (µg/kg)	VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry								
									meq/100g	mV	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Interim Screening Level[1]:				2,870	22,000,000	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential Regional Screening Levels[2]:				35,000	22,000,000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC CHHSL[3]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
RWQCB Environmental Screening Levels[4]:				NE	NE	540	540	1,800	NE	NE	NE	NE	NE	NE	NE	NE	NE
Ecological Comparison Values[5]:				2,870	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Background[6]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Bis (2-ethylhexyl) phthalate**	**Methyl acetate**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Cation Exchange Capacity**	**Electric Conductance**	**Orthophosphate**	**pH**	**Phosphate**	**Sulfide**	**Total organic carbon**	**Fluoride**	**Sulfate**
XMW-9	06/25/97	3	N	---	---	---	---	---	---	---	---	8.47	---	---	---	---	---
	06/25/97	10	N	---	---	---	---	---	---	144	359	9.27	---	ND (0.4)	140	---	21
	06/25/97	10	FD	---	---	---	---	---	---	---	---	9.13	---	---	---	---	---
	06/25/97	30	N	---	---	---	---	---	16.7	140	363	8.53	---	ND (0.4)	110	---	33
	06/25/97	50	N	---	---	---	---	---	---	188	305	8.42	---	ND (0.4)	260	---	21
	06/25/97	70	N	---	---	---	---	---	3.4	97	238	8.56	---	ND (0.4)	ND (100)	---	17

TABLE C2-7

Sample Results: VOCs, SVOCs, TPHs, and General Chemistry
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

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[1] For SVOCs and VOCs, interim screening level is DTSC residential CHHSL. If CHHSL is not available, the USEPA residential regional screening level is used. If an ecological comparison value has been calculated, then the lowest between the ecological comparison value or the CHHSL/regional screening level is used. For TPHs, interim screening level is the Regional Water Quality Control Board environmental screening level.

[2] USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites". http://epaprgs.ornl.govchemicals/index.shtml. December.

[3] California EPA, "Office of Environmental Health Hazard Assessment. 2005. Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil, November 2004 (January 2005 Revision)". January.

[4] Water Board. 2008. "Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater" (Table K-1). May 27.

[5] ARCADIS. 2008."Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil". May 28 and ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison Values for Additional Detected Chemicals in Soil". July 1.

[6] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California". May.

[7] This location is in an area where soil is transitioning into sediment.

[8] Sediment Sample

Results greater than the interim screening level are circled.

Only detected SVOCs and VOCs are presented.

VOCs	volatile organic compounds
SVOCs	semivolatile organic compounds
TPH	total petroleum hydrocarbon
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
Water Board	Regional Water Quality Control Board
NE	not established
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
meg/100g	milli-equivalent per 100 grams
mV	milli volts
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C2-8
Sample Results: Pesticides
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Pesticides (µg/kg)																		
Interim Screening Level [1] :				2.1	2.1	2.1	33	77	430	270	77	5	370,000	370,000	370,000	21,000	21,000	21,000	500	430	130	53	340,000	460
Residential Regional Screening Levels [2] :				2,000	1,400	1,700	29	77	1,600	270	77	30	370,000	370,000	370,000	18,000	18,000	18,000	520	1,600	110	53	310,000	440
Residential DTSC CHHSL [3] :				2,300	1,600	1,600	33	NE	430	NE	NE	35	NE	NE	NE	21,000	21,000	21,000	500	430	130	NE	340,000	460
Ecological Comparison Values [4] :				2.1	2.1	2.1	NE	NE	470	NE	NE	5	NE	NE	NE	NE	NE	NE	NE	470	NE	NE	NE	NE
Background [5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
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)
AOC1-BCW1	09/20/08	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)
AOC1-BCW5	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)
AOC1-BCW6 [6]	08/22/08	0 - 0.5	N	ND (2.8) *	ND (2.8) *	ND (2.8) *	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	ND (2.8)	ND (1.4)	ND (2.8)	ND (2.8)	ND (2.8)	ND (2.8)	ND (2.8)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	ND (7.1)	ND (71)
AOC1-T1a	10/16/08	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)
AOC1-T1b	10/16/08	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)
	10/16/08	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)
AOC1-T1c	10/16/08	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 (5.1)	ND (51)
AOC1-T2b	10/16/08	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 (5.1)	ND (51)
AOC1-T3a	10/05/08	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)
AOC1-T4c	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)
AOC1-T5b	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)
AOC1-T6c	09/30/08	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)

1 Interim screening level is DTSC residential CHHSL. If CHHSL is not available, the USEPA residential regional screening level is used. If an ecological comparison value has been calculated, then the lowest between the ecological comparison value or the CHHSL/regional screening level is used.

2 USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

3 California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

4 ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison values for Additional Chemicals in Soil." July 1.

5 CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

6 This location is in an area where soil is transitioning into sediment.

Results greater than or equal to the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
µg/kg	micrograms per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C2-9

Sample Results: Polychlorinated Biphenyls
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polychlorinated biphenyls (µg/kg)									
Interim Screening Level[1]:				**3,900**	**140**	**140**	**220**	**220**	**220**	**220**	**220**	**220**	**204**
Residential Regional Screening Levels[2]:				**3,900**	**140**	**140**	**220**	**220**	**220**	**220**	**220**	**220**	**NE**
Residential DTSC CHHSL[3]:				**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**NE**
Ecological Comparison Values[4]:				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**204**
Background[5]:				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
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)	32.5
AOC4-GB10	02/10/10	0	N	ND (18)	ND (37)	ND (18)	ND (18)	ND (18)	350	ND (18)	---	---	350
AOC4-GB11	02/10/10	0	N	ND (18)	ND (36)	ND (18)	ND (18)	ND (18)	350 J	ND (18)	---	---	350 J
	02/10/10	0	FD	ND (18)	ND (36)	ND (18)	ND (18)	ND (18)	900 J	ND (18)	---	---	900 J
AOC4-GB12	02/10/10	0	N	ND (18)	ND (37)	ND (18)	ND (18)	ND (18)	420	ND (18)	---	---	420
AOC1-BCW1	09/20/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	91	ND (17)	ND (17)	ND (17)	91
	09/20/08	2 - 3	N	ND (17) J	ND (33) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (8.5)
AOC1-BCW5	10/04/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
AOC1-BCW6	08/22/08[6]	0 - 0.5	N	ND (23)	ND (47)	ND (23)	ND (23)	ND (23)	ND (23)	ND (23)	ND (23)	ND (23)	ND (11.5)
AOC1-T1a	10/16/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
AOC1-T1b	10/16/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
	10/16/08	0 - 0.5	FD	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
AOC1-T1c	10/16/08	0 - 0.5	N	ND (17)	ND (34)	ND (17)	ND (17)	ND (17)	75	ND (17)	ND (17)	ND (17)	75
AOC1-T2b	10/16/08	0 - 0.5	N	ND (17)	ND (34)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
AOC1-T3a	10/05/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	63	ND (17)	ND (17)	ND (17)	63
	10/17/08	2 - 3	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
AOC1-T4c	10/04/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
AOC1-T5b	10/04/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
AOC1-T6c	09/30/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)

TABLE C2-9

Sample Results: Polychlorinated Biphenyls
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

[1] Interim screening level is the USEPA residential regional screening level.

[2] USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

[3] California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

[4] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison Values for Additional Dectected Chemicals in Soil." July 1.

[5] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

[6] This location is in an area where soil is transitioning into sediment.

Results greater than or equal to the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
µg/kg	micrograms per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C2-10
Sample Results: Dioxins and Furans
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Dioxin/Furans (ng/kg)																
Interim Screening Level [1] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	4.6	NE	NE	NE	4.6	NE	NE	NE	1.6
Residential Regional Screening Levels [2] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC GOALS [3] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	4.6	NE	NE	NE	4.6	NE	NE	NE	50
Ecological Comparison Values [4] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	1.6
Background [5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**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 [6]**
AOC4-GB10	02/10/10	0	N	4,200	140	14	16	ND (21)	88	ND (13)	29	ND (12.5)	ND (12.5) *	ND (12.5)	ND (12.5)	6.5 J	ND (5) *	ND (5)	52,000	260	(74.5)
AOC4-GB11	02/10/10	0	N	4,700	180	ND (12.5)	ND (13)	ND (28)	110	ND (17)	34	ND (12.5)	ND (12.5) *	3.7 J	ND (14)	6.7 J	1.2 J	ND (5)	33,000	610	(76.6)
	02/10/10	0	FD	5,300	230	ND (12.5)	21	ND (43)	160	ND (23)	39	ND (12.5)	ND (12.5) *	ND (12.5)	22	14	1.7 J	ND (5)	30,000	440	(94.5)
AOC4-GB12	02/10/10	0	N	490	26	ND (12.5)	5.5 J	ND (12.5)	14	ND (12.5)	ND (12.5)	ND (12.5)	ND (12.5) *	ND (12.5)	ND (12.5)	1.4 J	ND (5) *	ND (5)	4,400	66	(8.9)

[1] Interim screening level is equal to the appropriate background value, if a background value is not available then the lesser of the soil ecological comparison values, the EPA Regional Screening Level, or DTSC CHHSL is used.

[2] US EPA. 2008. Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://epaprgs.ornl.govchemicals/index.shtml. September 12.

[3] California EPA, Office of Environmental Health Hazard Assessment. 2009. Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil, November 2004 (January 2005 Revision). January.

[4] ARCADIS. 2008. Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil. May 28 and ARCADIS. 2009. Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison values for Additional Chemicals in Soil. July 1.

[5] CH2M HILL. 2009. Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California. May.

[6] 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.

Results greater than or equal to the Interim Screening Level are circled.

* Reporting Limits greater than or equal to the Interim Screening Level.
TEQ 2,3,7,8 TCDD toxicity equivalency quotient = Σ (Concentration x TEF)
ND not detected at the listed reporting limit
--- 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
NE not established

TABLE C2-11

Constituent Concentrations in Soil Compared to Screening Values
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Parameter	Units	Frequency of detection	Maximum Detected Value	Background Threshold Value (BTV) [1] # of Exceedences [7]	(BTV)	Ecological Comparison Value (ECV) [2] # of Exceedences [8]	(ECV)	Residential Screening Level (Res SL) [3] # of Exceedences [8]	(Res SL)	RWQCB Environmental Screening Levels (ESL) [4] # of Exceedences [8]	(ESL)	Commercial Screening Level (Com SL) [5] # of Exceedences [8]	(Com SL)	Interim Screening Level (Int SL) [6] # of Exceedences [8]	(Int SL)
Metals															
Antimony	mg/kg	0 / 111 (0%)	ND (5.8) ‡	NA	(NE)	0	(0.285)	0	(30)	NA	(NE)	0	(380)	0	(0.285)
Arsenic	mg/kg	106 / 111 (95%)	13	1	(11)	1	(11.4)	1	(0.07) *	NA	(NE)	1	(0.24) *	1	(11)
Barium	mg/kg	130 / 130 (100%)	1,580	2	(410)	2	(330) *	0	(5,200)	NA	(NE)	0	(63,000)	2	(410)
Beryllium	mg/kg	0 / 111 (0%)	ND (2.9) ‡	0	(0.672)	0	(23.3)	0	(16)	NA	(NE)	0	(190)	0	(0.672)
Cadmium	mg/kg	0 / 111 (0%)	ND (2.9) ‡	0	(1.1)	0	(0.0151) *	0	(39)	NA	(NE)	0	(500)	0	(1.1)
Chromium, Hexavalent	mg/kg	28 / 173 (16%)	5.73	12	(0.83)	0	(139.6)	0	(17)	NA	(NE)	0	(37)	12	(0.83)
Chromium, total	mg/kg	167 / 167 (100%)	970	24	(39.8)	24	(36.3) *	3	(280)	NA	(NE)	0	(1,400)	24	(39.8)
Cobalt	mg/kg	111 / 111 (100%)	11	0	(12.7)	0	(13)	0	(23)	NA	(NE)	0	(300)	0	(12.7)
Copper	mg/kg	166 / 167 (99%)	170	11	(16.8)	7	(20.6)	0	(3,000)	NA	(NE)	0	(38,000)	11	(16.8)
Lead	mg/kg	130 / 130 (100%)	32	19	(8.39)	19	(0.0166) *	0	(80)	NA	(NE)	0	(320)	19	(8.39)
Mercury	mg/kg	0 / 111 (0%)	ND (0.14) ‡	NA	(NE)	0	(0.0125)	0	(18)	NA	(NE)	0	(180)	0	(0.0125)
Molybdenum	mg/kg	38 / 130 (29%)	5.5	22	(1.37)	9	(2.25)	0	(380)	NA	(NE)	0	(4,800)	22	(1.37)
Nickel	mg/kg	167 / 167 (100%)	35.2	3	(27.3)	3	(0.607) *	0	(1,600)	NA	(NE)	0	(16,000)	3	(27.3)
Selenium	mg/kg	0 / 111 (0%)	ND (2.9) ‡	0	(1.47)	0	(0.177) *	0	(380)	NA	(NE)	0	(4,800)	0	(1.47)
Thallium	mg/kg	0 / 111 (0%)	ND (5.8) ‡	NA	(NE)	0	(2.32)	0	(5)	NA	(NE)	0	(63)	0	(2.32)
Vanadium	mg/kg	130 / 130 (100%)	44.5	0	(52.2)	0	(13.9) *	0	(390)	NA	(NE)	0	(5,200)	0	(52.2)
Zinc	mg/kg	167 / 167 (100%)	132	13	(58)	13	(0.164) *	0	(23,000)	NA	(NE)	0	(100,000)	13	(58)
Contract Laboratory Program Inorganics															
Aluminum	mg/kg	12 / 12 (100%)	14,000	0	(16,400)	NA	(NE)	0	(77,000)	NA	(NE)	0	(990,000)	0	(16,400)
Calcium	mg/kg	12 / 12 (100%)	35,000	0	(66,500)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	0	(66,500)
Iron	mg/kg	31 / 31 (100%)	22,600	NA	(NE)	NA	(NE)	0	(55,000)	NA	(NE)	0	(720,000)	0	(55,000)
Magnesium	mg/kg	12 / 12 (100%)	11,000	0	(12,100)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	0	(12,100)
Manganese	mg/kg	31 / 31 (100%)	420	1	(402)	1	(220)	0	(1,800)	NA	(NE)	0	(23,000)	1	(402)
Potassium	mg/kg	12 / 12 (100%)	4,000	0	(4,400)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	0	(4,400)
Sodium	mg/kg	8 / 12 (67%)	660	0	(2,070)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	0	(2,070)
Cyanide	mg/kg	0 / 12 (0%)	ND (6.69) ‡	NA	(NE)	0	(0.9)	0	(1,600)	NA	(NE)	0	(20,000)	0	(0.9)
Semivolatile Organic Compounds															
Bis (2-ethylhexyl) phthalate	µg/kg	2 / 108 (1.9%)	810	NA	(NE)	0	(2,870)	0	(35,000)	NA	(NE)	0	(120,000)	0	(2,870)
Volatile Organic Compounds															
Methyl acetate	µg/kg	2 / 12 (17%)	12	NA	(NE)	NA	(NE)	0	(22,000,000)	NA	(NE)	0	(92,000,000)	0	(22,000,000)
Polycyclic Aromatic Hydrocarbons															
2-Methyl naphthalene	µg/kg	1 / 111 (0.9%)	5.2	NA	(NE)	NA	(NE)	0	(310,000)	NA	(NE)	0	(4,100,000)	0	(310,000)
Anthracene	µg/kg	4 / 111 (3.6%)	32	NA	(NE)	NA	(NE)	0	(17,000,000)	NA	(NE)	0	(170,000,000)	0	(17,000,000)
Benzo (a) anthracene	µg/kg	24 / 111 (22%)	380	NA	(NE)	NA	(NE)	1	(380)	NA	(NE)	0	(1,300)	1	(380)
Benzo (a) pyrene	µg/kg	25 / 111 (23%)	170	NA	(NE)	NA	(NE)	3	(38)	NA	(NE)	1	(130)	3	(38)
Benzo (b) fluoranthene	µg/kg	29 / 111 (26%)	410	NA	(NE)	NA	(NE)	1	(380)	NA	(NE)	0	(1,300)	1	(380)
Benzo (ghi) perylene	µg/kg	26 / 111 (23%)	81	NA	(NE)	NA	(NE)	0	(1,700,000)	NA	(NE)	0	(17,000,000)	0	(1,700,000)
Benzo (k) fluoranthene	µg/kg	21 / 111 (19%)	190	NA	(NE)	NA	(NE)	0	(380)	NA	(NE)	0	(1,300)	0	(380)
Chrysene	µg/kg	29 / 111 (26%)	400	NA	(NE)	NA	(NE)	0	(3,800)	NA	(NE)	0	(13,000)	0	(3,800)
Dibenzo (a,h) anthracene	µg/kg	7 / 111 (6.3%)	37	NA	(NE)	NA	(NE)	0	(110)	NA	(NE)	0	(380)	0	(380)
Fluoranthene	µg/kg	35 / 111 (32%)	560	NA	(NE)	NA	(NE)	0	(2,300,000)	NA	(NE)	0	(22,000,000)	0	(2,300,000)

TABLE C2-11

Constituent Concentrations in Soil Compared to Screening Values
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Parameter	Units	Frequency of detection	Maximum Detected Value	Background Threshold Value (BTV) [1]		Ecological Comparison Value (ECV) [2]		Residential Screening Level (Res SL) [3]		RWQCB Environmental Screening Levels (ESL) [4]		Commercial Screening Level (Com SL) [5]		Interim Screening Level (Int SL) [6]	
				# of Exceedences [7]	(BTV)	# of Exceedences [8]	(ECV)	# of Exceedences [8]	(Res SL)	# of Exceedences [8]	(ESL)	# of Exceedences [8]	(Com SL)	# of Exceedences [8]	(Int SL)
Polycyclic Aromatic Hydrocarbons															
Fluorene	µg/kg	1 / 111 (0.9%)	7.9	NA	(NE)	NA	(NE)	0	(2,300,000)	NA	(NE)	0	(22,000,000)	0	(2,300,000)
Indeno (1,2,3-cd) pyrene	µg/kg	23 / 111 (21%)	78	NA	(NE)	NA	(NE)	0	(380)	NA	(NE)	0	(1,300)	0	(380)
Phenanthrene	µg/kg	20 / 111 (18%)	150	NA	(NE)	NA	(NE)	0	(1,700,000)	NA	(NE)	0	(17,000,000)	0	(1,700,000)
Pyrene	µg/kg	31 / 111 (28%)	560	NA	(NE)	NA	(NE)	0	(1,700,000)	NA	(NE)	0	(17,000,000)	0	(1,700,000)
PAH Low molecular weight	µg/kg	20 / 111 (18%)	180	NA	(NE)	0	(10,000)	NA	(NE)	NA	(NE)	NA	(NE)	0	(10,000)
PAH High molecular weight	µg/kg	37 / 111 (33%)	2,900	NA	(NE)	1	(1,160)	NA	(NE)	NA	(NE)	NA	(NE)	1	(1,160)
B(a)P Equivalent	µg/kg	37 / 111 (33%)	290	NA	(NE)	NA	(NE)	5	(38)	NA	(NE)	1	(130)	5	(38)
Polychlorinated biphenyls															
Aroclor 1254	µg/kg	7 / 17 (41%)	900	NA	(NE)	NA	(NE)	3	(220)	NA	(NE)	1	(740)	3	(220)
Total PCBs	µg/kg	7 / 17 (41%)	920	NA	(NE)	3	(204)	NA	(NE)	NA	(NE)	NA	(NE)	3	(204)
Total Petroleum Hydrocarbons															
TPH as diesel	mg/kg	8 / 106 (7.5%)	28.9	NA	(NE)	NA	(NE)	NA	(NE)	0	(540)	NA	(NE)	0	(540)
TPH as motor oil	mg/kg	43 / 106 (41%)	276	NA	(NE)	NA	(NE)	NA	(NE)	0	(1,800)	NA	(NE)	0	(1,800)

Notes:

[1] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

[2] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison Values for Additional Detected Chemicals in Soil" July 1

[3] Residential screening level - residential DTSC CHHSL. If the residential DTSC CHHSL is not established, the USEPA regional screening level is used. (PCBs are an exception to this rule since their final screening levels are equal to the EPA regional screening levels).

[4] Water Board. 2008. "Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater" (Table K-1). May 27.

[5] Commercial screening level - commercial DTSC CHHSL. If the commercial DTSC CHHSL is not established, the USEPA regional screening level is used. (PCBs are an exception to this rule since their final screening levels are equal to the EPA regional screening levels).

[6] Interim screening level is equal to the appropriate background value, if a background value is not available then the lesser of the soil ecological comparison values and DTSC CHHSL is used, if the DTSC CHHSL is not available, the USEPA regional screening level is used.

[7] Number of exceedences are the number of detections exceeding the background threshold value (BTV).

[8] Number of exceedences are the number of detections that are equal to or exceeds the screening level (ecological comparison value, residential reporting limit, commercial reporting limit or interim screening level) or otherwise noted.

* Number of exceedances are calculated using background threshold value because it is greater than the respective screening level.

‡ Maxiumum Reporting Limit greater than or equal to the interim screening level

USEPA regional screening level - USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

CHHSL - California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

mg/kg	miligrams per kilogram
µg/kg	micrograms per kilogram
ng/kg	nanograms per kilogram
NA	not applicable
ND	not detected in any of the samples
NE	not established
SL	screening level

USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
Water Board	Regional Water Quality Control Board

TABLE C2-12
Central Tendency Comparisons (Site to Background)
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Parameter	Comparison Test Used	Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Significance Level	Mean of Site Detects	Mean of Bkgd Detects	Median of Site Detects	Median of Bkgd Detects	Number of Site Detects	Number of Site Samples	Number of Bkgd Detects	Number of Bkgd Samples	Percent Detects Site	Percent Detects Bkgd
Arsenic	Gehan	0.444	nsd	3.77	4.01	3.3	3.5	106	111	58	59	95	95
Barium	Gehan	1.000	nsd	124	165	110	135	130	130	60	60	100	100
Chromium	Gehan	0.141	nsd	38	22.3	23	21.9	167	167	70	70	100	100
Copper	Gehan	0.816	nsd	11.6	10.5	9.7	10.1	166	167	70	70	99	100
Lead	Gehan	0.609	nsd	4.87	4.38	3.6	3.5	130	130	59	60	100	98
Manganese	Gehan	0.989	nsd	254	298	255	281	31	31	59	59	100	100
Molybdenum	Gehan	0.999	nsd	1.83	1.03	1.5	1	38	130	11	60	29	18
Nickel	Gehan	1.000	nsd	12.1	15.4	12	15	167	167	70	70	100	100
Zinc	Gehan	0.439	nsd	40.1	36.8	37	35.5	167	167	70	70	100	100

Bkgd = background

nsd = no statistical difference
< = less than

TABLE C2-13
Decision 2 Data Gaps Summary - AOC1 and SWMU1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Metals							
Arsenic				**11 mg/kg (bckg)**	**11.4 mg/kg**		
0-0.5 ft bgs	Y	53 of 54	13 mg/kg	Y	Y	None	Compound exceeds HHCV and ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	104 of 108	13 mg/kg	Y	Y		
0-6 ft bgs	Y	152 of 160	13 mg/kg	Y	Y		
0-10 ft bgs	Y	206 of 215	13 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	51 of 54	9.7 mg/kg	N	N		
Scouring Scenario 1: 2-6 ft bgs	Y	99 of 106	12 mg/kg	Y	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	153 of 161	12 mg/kg	Y	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	158 of 166	12 mg/kg	Y	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	47 of 51	12 mg/kg	Y	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	101 of 106	12 mg/kg	Y	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	113 of 118	12 mg/kg	Y	Y		
Barium				**5200 mg/kg**	**410 mg/kg (bckg)**		
0-0.5 ft bgs	Y	54 of 54	320 mg/kg	N	N	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	108 of 108	1900 mg/kg	N	Y		
0-6 ft bgs	Y	160 of 160	1900 mg/kg	N	Y		
0-10 ft bgs	Y	228 of 228	1900 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	54 of 54	1900 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	106 of 106	1900 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	174 of 174	1900 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	179 of 179	1900 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	51 of 51	180 mg/kg	N	N		
Scouring Scenario 2: 5-10 ft bgs	Y	119 of 119	257 mg/kg	N	N		
Scouring Scenario 2: 5-15 ft bgs	Y	131 of 131	257 mg/kg	N	N		
Chromium-Total				**280 mg/kg**	**39.8 mg/kg (bckg)**		
0-0.5 ft bgs	Y	77 of 77	2600 mg/kg	Y	Y	None	Compound exceeds HHCV and ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	151 of 151	2600 mg/kg	Y	Y		
0-6 ft bgs	Y	218 of 218	3200 mg/kg	Y	Y		
0-10 ft bgs	Y	287 of 287	3200 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	67 of 67	1520 mg/kg	Y	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	134 of 134	3200 mg/kg	Y	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	203 of 203	3200 mg/kg	Y	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	208 of 208	3200 mg/kg	Y	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	63 of 63	3200 mg/kg	Y	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	132 of 132	3200 mg/kg	Y	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	144 of 144	3200 mg/kg	Y	Y		

TABLE C2-13
Decision 2 Data Gaps Summary - AOC1 and SWMU1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Chromium - Hexavalent				**17 mg/kg**	**139.6 mg/kg**		
0-0.5 ft bgs	Y	26 of 83	47.5 mg/kg	Y	N	None	Compound exceeds HHCV. Existing data adequate for EPC.
0-3 ft bgs	Y	48 of 157	47.5 mg/kg	Y	N		
0-6 ft bgs	Y	65 of 224	47.5 mg/kg	Y	N		
0-10 ft bgs	Y	75 of 293	47.5 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	17 of 67	22.3 mg/kg	Y	N		
Scouring Scenario 1: 2-6 ft bgs	Y	34 of 134	22.7 mg/kg	Y	N		
Scouring Scenario 1: 2-10 ft bgs	Y	44 of 203	22.8 mg/kg	Y	N		
Scouring Scenario 1: 2-12 ft bgs	Y	44 of 208	22.8 mg/kg	Y	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	15 of 63	22.7 mg/kg	Y	N		
Scouring Scenario 2: 5-10 ft bgs	Y	25 of 132	22.8 mg/kg	Y	N		
Scouring Scenario 2: 5-15 ft bgs	Y	25 of 144	22.8 mg/kg	Y	N		
Cobalt				**23 mg/kg**	**13 mg/kg**		
0-0.5 ft bgs	Y	54 of 54	12 mg/kg	N	N	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	108 of 108	19 mg/kg	N	Y		
0-6 ft bgs	Y	160 of 160	19 mg/kg	N	Y		
0-10 ft bgs	Y	215 of 215	19 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	54 of 54	19 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	106 of 106	19 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	161 of 161	19 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	166 of 166	19 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	51 of 51	15 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	106 of 106	15 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	118 of 118	16 mg/kg	N	Y		
Copper				**3000 mg/kg**	**20.6 mg/kg**		
0-0.5 ft bgs	Y	77 of 77	27.2 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	151 of 151	61 mg/kg	N	Y		
0-6 ft bgs	Y	218 of 218	61 mg/kg	N	Y		
0-10 ft bgs	Y	286 of 287	61 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	67 of 67	61 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	134 of 134	61 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	202 of 203	61 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	207 of 208	61 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	63 of 63	33.8 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	131 of 132	35 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	143 of 144	35 mg/kg	N	Y		

TABLE C2-13
Decision 2 Data Gaps Summary - AOC1 and SWMU1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Lead				**80 mg/kg**	**8.39 mg/kg (bckg)**		
0-0.5 ft bgs	Y	54 of 54	23 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	108 of 108	32 mg/kg	N	Y		
0-6 ft bgs	Y	160 of 160	32 mg/kg	N	Y		
0-10 ft bgs	Y	228 of 228	32 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	54 of 54	32 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	106 of 106	32 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	174 of 174	32 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	179 of 179	32 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	51 of 51	19 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	119 of 119	19 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	131 of 131	19 mg/kg	N	Y		
Molybdenum				**380 mg/kg**	**2.25 mg/kg**		
0-0.5 ft bgs	Y	11 of 54	7.1 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	28 of 108	7.1 mg/kg	N	Y		
0-6 ft bgs	Y	47 of 160	7.8 mg/kg	N	Y		
0-10 ft bgs	Y	59 of 228	7.8 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	17 of 54	4 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	36 of 106	7.8 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	48 of 174	7.8 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	49 of 179	7.8 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	19 of 51	7.8 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	31 of 119	7.8 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	32 of 131	7.8 mg/kg	N	Y		
Nickel				**1600 mg/kg**	**27.3 mg/kg (bckg)**		
0-0.5 ft bgs	Y	77 of 77	19 mg/kg	N	N	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	151 of 151	20 mg/kg	N	N		
0-6 ft bgs	Y	218 of 218	42 mg/kg	N	Y		
0-10 ft bgs	Y	287 of 287	45 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	67 of 67	20 mg/kg	N	N		
Scouring Scenario 1: 2-6 ft bgs	Y	134 of 134	42 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	203 of 203	45 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	208 of 208	51 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	63 of 63	42 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	132 of 132	45 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	144 of 144	51 mg/kg	N	Y		

TABLE C2-13
Decision 2 Data Gaps Summary - AOC1 and SWMU1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Selenium				**360 mg/kg**	**1.47 mg/kg (bckg)**		
0-0.5 ft bgs	NA	0 of 54	NA mg/kg	N	N	None	Compound exceeds ECV. Although there are insufficient detections to allow calculation of a 95% UCL on the mean, additional data collection is not expected to yield sufficient detections to strongly influence the EPC as additional sampling would likely result in additional non-detect values.
0-3 ft bgs	N	2 of 108	2.5 mg/kg	N	Y		
0-6 ft bgs	N	4 of 160	2.5 mg/kg	N	Y		
0-10 ft bgs	N	4 of 215	2.5 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	N	2 of 54	2.5 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	N	4 of 106	2.5 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	N	4 of 161	2.5 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	N	4 of 166	2.5 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	N	2 of 51	1.6 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	N	2 of 106	1.6 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	N	2 of 118	1.6 mg/kg	N	Y		
Vanadium				**390 mg/kg**	**52.2 mg/kg (bckg)**		
0-0.5 ft bgs	Y	54 of 54	47 mg/kg	N	N	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	108 of 108	47 mg/kg	N	N		
0-6 ft bgs	Y	160 of 160	56 mg/kg	N	Y		
0-10 ft bgs	Y	228 of 228	56 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	54 of 54	40 mg/kg	N	N		
Scouring Scenario 1: 2-6 ft bgs	Y	106 of 106	56 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	174 of 174	56 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	179 of 179	56 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	51 of 51	56 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	119 of 119	56 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	131 of 131	56 mg/kg	N	Y		
Zinc				**23000 mg/kg**	**58 mg/kg (bckg)**		
0-0.5 ft bgs	Y	77 of 77	673 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	151 of 151	673 mg/kg	N	Y		
0-6 ft bgs	Y	218 of 218	673 mg/kg	N	Y		
0-10 ft bgs	Y	287 of 287	673 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	67 of 67	360 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	134 of 134	360 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	203 of 203	360 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	208 of 208	360 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	63 of 63	190 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	132 of 132	190 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	144 of 144	190 mg/kg	N	Y		

TABLE C2-13
Decision 2 Data Gaps Summary - AOC1 and SWMU1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Contract Laboratory Program Inorganics							
Calcium				**66500 mg/kg (bckg)**	**66500 mg/kg (bckg)**		
0-0.5 ft bgs	Y	30 of 30	280000 mg/kg	Y	Y	None	Compound may exceed HHCV and ECV (both background). Existing data adequate for EPC. Under the scouring scenarios, very limited data are available. However, additional data collection to support the scouring scenarios does not appear warranted given that the concentrations are comparable to background (Attachment 1, Section 3.3). In addition, it is reasonable to assume that the nature and extent of the calcium detected in the 0 to 3.0 ft interval is representative of concentrations at deeper depths.
0-3 ft bgs	Y	30 of 30	280000 mg/kg	Y	Y		
0-6 ft bgs	Y	31 of 31	280000 mg/kg	Y	Y		
0-10 ft bgs	Y	31 of 31	280000 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-6 ft bgs	N	1 of 1	255000 mg/kg	Y	Y		
Scouring Scenario 1: 2-10 ft bgs	N	1 of 1	255000 mg/kg	Y	Y		
Scouring Scenario 1: 2-12 ft bgs	N	1 of 1	255000 mg/kg	Y	NA		
Scouring Scenario 2: 5-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-15 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Magnesium				**12100 mg/kg (bckg)**	**12100 mg/kg (bckg)**		
0-0.5 ft bgs	Y	30 of 30	14300 mg/kg	Y	Y	None	Compound may exceed HHCV and ECV (both background). Existing data adequate for EPC. Under the scouring scenarios, very limited data are available. However, additional data collection to support the scouring scenarios does not appear warranted given that the maximum concentration is slightly greater than background. In addition, it is reasonable to assume that the nature and extent of the magnesium detected in the 0 to 3.0 ft interval is representative of concentrations at deeper depths.
0-3 ft bgs	Y	30 of 30	14300 mg/kg	Y	Y		
0-6 ft bgs	Y	31 of 31	14700 mg/kg	Y	Y		
0-10 ft bgs	Y	31 of 31	14700 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-6 ft bgs	N	1 of 1	14700 mg/kg	Y	Y		
Scouring Scenario 1: 2-10 ft bgs	N	1 of 1	14700 mg/kg	Y	Y		
Scouring Scenario 1: 2-12 ft bgs	N	1 of 1	14700 mg/kg	Y	NA		
Scouring Scenario 2: 5-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-15 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Potassium				**4400 mg/kg (bckg)**	**4400 mg/kg (bckg)**		
0-0.5 ft bgs	Y	30 of 30	4900 mg/kg	Y	Y	None	Compound may exceed HHCV and ECV (both background). Existing data adequate for EPC. Under the scouring scenarios, very limited data are available. However, additional data collection to support the scouring scenarios does not appear warranted given that the maximum concentration is slightly greater than background. In addition, it is reasonable to assume that the nature and extent of the potassium detected in the 0 to 3.0 ft interval is representative of concentrations at deeper depths.
0-3 ft bgs	Y	30 of 30	4900 mg/kg	Y	Y		
0-6 ft bgs	Y	31 of 31	4900 mg/kg	Y	Y		
0-10 ft bgs	Y	31 of 31	4900 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-6 ft bgs	N	1 of 1	1520 mg/kg	N	N		
Scouring Scenario 1: 2-10 ft bgs	N	1 of 1	1520 mg/kg	N	N		
Scouring Scenario 1: 2-12 ft bgs	N	1 of 1	1520 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-15 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		

TABLE C2-13
Decision 2 Data Gaps Summary - AOC1 and SWMU1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Polycylic Aromatic Hydrocarbons							
PAHs (BaP TEQ)				**38 µg/kg**	**NA**		
0-0.5 ft bgs	Y	23 of 54	40 µg/kg	Y	NA	None	Compound exceeds HHCV. Existing data adequate for EPC.
0-3 ft bgs	Y	37 of 108	80 µg/kg	Y	NA		
0-6 ft bgs	Y	42 of 160	290 µg/kg	Y	NA		
0-10 ft bgs	Y	45 of 215	290 µg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	14 of 54	80 µg/kg	Y	NA		
Scouring Scenario 1: 2-6 ft bgs	Y	19 of 106	290 µg/kg	Y	NA		
Scouring Scenario 1: 2-10 ft bgs	Y	22 of 161	290 µg/kg	Y	NA		
Scouring Scenario 1: 2-12 ft bgs	Y	22 of 166	290 µg/kg	Y	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	5 of 51	290 µg/kg	Y	NA		
Scouring Scenario 2: 5-10 ft bgs	Y	8 of 106	290 µg/kg	Y	NA		
Scouring Scenario 2: 5-15 ft bgs	Y	8 of 118	290 µg/kg	Y	NA		
HMW PAHs				**NA**	**1160 µg/kg**		
0-0.5 ft bgs	Y	23 of 54	900 µg/kg	NA	N	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	37 of 108	900 µg/kg	NA	N		
0-6 ft bgs	Y	42 of 160	2900 µg/kg	NA	Y		
Scouring Scenario 1: 2-3 ft bgs	Y	14 of 54	540 µg/kg	NA	N		
Scouring Scenario 1: 2-6 ft bgs	Y	19 of 106	2900 µg/kg	NA	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	22 of 161	2900 µg/kg	NA	Y		
Scouring Scenario 2: 5-6 ft bgs	Y	5 of 51	2900 µg/kg	NA	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	8 of 106	2900 µg/kg	NA	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	8 of 118	2900 µg/kg	NA	Y		

Footnotes:

[1] The higher value of either the HHCV/ECV or background was selected as the screening criteria and are included in these columns for the respective compound in **BOLDED BLUE FONT**. Values based on background are indicated with "(bckg)" next to the value.
[2] AOC1/SWMU1 soil data was evaluated for sufficiency to support the ecological risk assessment including sampling locations in areas of soil transitioning to sediment. These locations are BCW-6 and SS-1.

Acronyms and Abbreviations:

AOC - area of concern
BaP TEQ - benzo(a)pyrene toxic equivalents
ECV - ecological comparison values
EPC - exposure point concentration
ft bgs - feet below ground surface
HHCV - human health comparison values
HMW PAH - high molecular weight polycyclic aromatic hydrocarbons
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
N - no
NA - not applicable
Y - yes

TABLE C2-14
Decision 2 Data Gaps Summary - AOC1 North of Railroad
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	Proposed Sample ID	Notes
Metals						
Arsenic				**11 mg/kg (bckg)**		
0-0.5 ft bgs	Y	6 of 6	13 mg/kg	Y	None	Compound may exceed HHCV. Existing data adequate for EPC.
0-3 ft bgs	Y	12 of 12	13 mg/kg	Y		
0-6 ft bgs	Y	16 of 16	13 mg/kg	Y		
0-10 ft bgs	Y	20 of 20	13 mg/kg	Y		
Scouring Scenario 1: 2-3 ft bgs	Y	6 of 6	9.3 mg/kg	N		
Scouring Scenario 1: 2-6 ft bgs	Y	10 of 10	9.3 mg/kg	N		
Scouring Scenario 1: 2-10 ft bgs	Y	14 of 14	9.3 mg/kg	N		
Scouring Scenario 1: 2-12 ft bgs	Y	14 of 14	9.3 mg/kg	N		
Scouring Scenario 2: 5-6 ft bgs	N	4 of 4	4.2 mg/kg	N		
Scouring Scenario 2: 5-10 ft bgs	Y	8 of 8	5.1 mg/kg	N		
Scouring Scenario 2: 5-15 ft bgs	Y	8 of 8	5.1 mg/kg	N		

Footnotes:
[1] The higher value of either the HHCV or background was selected as the screening criteria and are included in these columns for the respective compound in **BOLDED BLUE FONT**. Values based on background are indicated with "(bckg)" next to the value.

Acronyms and Abbreviations:
AOC - Area of Concern
EPC - exposure point concentration
ft bgs - feet below ground surface
HHCV - human health comparison values
mg/kg - milligrams per kilogram
N - no
NA - not applicable
Y - yes

TABLE C2-15
Decision 2 Data Gaps Summary - AOC1 Sediment Samples
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth[1]	Adequate EPC? [2] Y or N	Det/# results	Maximum Detected Value	> TEC or Soil Background[1] Y or N	Proposed Sample ID	Notes
Metals						
Arsenic				**9.79 mg/kg (TEC)**		
0-0.5 ft bgs	N	4 of 5	13 mg/kg	Y	None	Compound exceeds TEC and is less than PEC (33 mg/kg). Existing data not adequate to calculate UCL using ProUCL. Maximum is within two time the TEC and may be naturally occurring at this concentration. Additional sampling is expected to yield comparable concentrations and not significantly change the EPC.
0-2 ft bgs	N	4 of 5	13 mg/kg	Y		
0-3 ft bgs	N	5 of 6	13 mg/kg	Y		
Chromium-Total				**43.4 mg/kg (TEC)**		
0-0.5 ft bgs	N	11 of 11	71 mg/kg	Y	None	Compound exceeds TEC and is less than PEC (111 mg/kg). Existing data adequate to calculate UCL using ProUCL.
0-2 ft bgs	Y	11 of 11	71 mg/kg	Y		
0-3 ft bgs	Y	12 of 12	71 mg/kg	Y		
Chromium-Hexavalent				**0.83 mg/kg (soil background)**		
0-0.5 ft bgs	N	1 of 11	2.63 mg/kg	Y	None	Compound exceeds soil background used as a conservative estimate of sediment background. Existing data are not adequate to calculate UCL using ProUCL; however, collecting additional samples is likely to yield additional non-detected values. Additional data collected to satisfy Decision 1 will be included in the EPC calculations as appropriate. Data for the surface interval include historical sediment samples collected from 0 to 2 feet below sediment surface.
0-2 ft bgs	N	1 of 11	2.63 mg/kg	Y		
0-3 ft bgs	N	1 of 12	2.63 mg/kg	Y		

Footnotes:

[1] Compounds included are those that exceed the TEC. If a TEC was unavailable, soil background was applied as a conservative estimate of sediment background values. The 0 to 0.5 ft exposure interval includes samples collected from 0 to 2 ft below sediment surface.

[2] Samples considered in this evaluation were those from the preliminary AOC-1 sediment exposure area at the mouth of Bat Cave Wash. Samples included were those in sediment or soil transitioning to sediment within the exposure area: AOC1-BCW6-122, AOC1-BCW6-123, SED-10, SED-11, SED-12, SED-5, SED-6, SED-7, SED-8, SED-9, SS-1-0.5, SS-1-1.5. Samples from upriver and downriver (i.e., DrSed-1, DrSed-2, DrSed-3, SED-1, SED-2, SED-3, SED-4, SED-27, SED-28, and SED-29) were not included.

c. The TEC or soil background value is included in this column for the respective compound in **BOLDED BLUE FONT**.

Acronyms and Abbreviations:
AOC - area of concern
EPC - exposure point concentration
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
N - no
NA - not applicable
PEC - probable effects concentration
TEC - threshold effects concentration
UCL - upper confidence limit
Y - yes

TABLE C2-16
Results of Tiered Analysis at AOC 1 – North
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
PG&E Topock Compressor Station, Needles, California

Metal	Step 1 Do COPCs/COPECs Exceed Background?	Step 2 Do COPCs/COPECs Exceed SSL?	Step 3 Does Screening Model Eliminate Potential for Leaching to Groundwater?
Arsenic	√		
Chromium	√		
Chromium, Hexavalent	√	√	Yes
Copper	√		
Lead	√		
Molybdenum	√	√	Yes
Zinc	√		

✓ = Constituents concentration exceeds background and/or SSL.
SSL = soil screening level.

TABLE C2-17

Sample Results Compared to the Calculated Soil Screening Levels

AOC1

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report

Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)						
	Soil Screening Levels : [1]			**39**	**5,500**	**0.36**	**21,000**	**3,400**	**0.73**	**130,000**
	Background : [2]			**11**	**39.8**	**0.83**	**16.8**	**8.39**	**1.37**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Molybdenum**	**Zinc**
AOC1-BCW1	09/20/08	0 - 0.5	N	4.3	23	ND (0.401)	11	7.5	ND (1)	44
	09/20/08	2 - 3	N	8.4	25	ND (0.404)	15	2	ND (1)	28
AOC1-BCW2	10/04/08	0 - 0.5	N	3.4	21	ND (0.403)	7.6	3.7	ND (1)	40
	10/04/08	2 - 3	N	3.1	34	ND (0.407)	9.2	18	ND (1)	39
	10/04/08	5 - 6	N	3.1	35	ND (0.404)	8.8	4.4	1.5	41
	10/04/08	9 - 10	N	3.8	20	ND (0.426)	8.1	3.8	ND (1.1)	39
AOC1-BCW3	10/04/08	0 - 0.5	N	4.4	25	0.416	11	7.3	ND (1)	51
	10/04/08	2 - 3	N	3.2	25	ND (0.404)	9.8	4	ND (1)	38
	10/04/08	5 - 6	N	4.2	23	ND (0.415)	9.6	2.2	ND (2.1)	43
	10/04/08	9 - 10	N	4	21	ND (0.421)	8.5	2.2	ND (1.1)	38
	10/04/08	9 - 10	FD	4.2	22	ND (0.424)	8.8	2.3	ND (1.1)	41
AOC1-BCW4	10/04/08	0 - 0.5	N	4.4	36	1.3	13	9.4	ND (1)	61
	10/04/08	2 - 3	N	2.9	24	ND (0.407)	8.3	3.6	ND (1)	33
	10/04/08	5 - 6	N	4	23	ND (0.416)	8.4	2.7	ND (1)	45
	10/04/08	9 - 10	N	5.1	22	ND (0.426)	7.6	2.3	ND (2.1)	42
AOC1-BCW5	10/04/08	0 - 0.5	N	3.7	35	0.445	12	6	ND (1)	46
	10/04/08	2 - 3	N	3.5	31	ND (0.407)	9.6	7	ND (1)	42
	10/04/08	5 - 6	N	3.9	26	ND (0.42)	8.4	2.7	ND (1)	44
	10/04/08	9 - 10	N	4.7	22	ND (0.425)	ND (7.4)	3.2	ND (2.1)	40
	10/04/08	9 - 10	FD	4.7	24	ND (0.427)	ND (7.3)	3	ND (2.1)	40
AOC1-BCW6	08/22/08[6]	0 - 0.5	N	13	71	2.63	22	23	ND (2.8)	81
	08/22/08[6]	2 - 3	N	9.3	21	ND (0.608)	14	8.7	ND (2.9)	50
MW-11	06/29/97	1	N	---	12.2	ND (0.05)	7.5	---	---	24.8
	06/29/97	3	N	---	31.1	ND (0.05)	6.6	---	---	29.5
	06/29/97	6	N	---	26.9	ND (0.05)	5.3	---	---	23.2
	06/29/97	10	N	---	13.5	ND (0.05)	8.3	6.3	0.32	38.5
	06/29/97	20	N	---	5.9	ND (0.05)	6	---	---	19.9
	06/29/97	30	N	---	12.6	ND (0.05)	6.9	1.8	0.8	28.4

TABLE C2-17

Sample Results Compared to the Calculated Soil Screening Levels

AOC1

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report

Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)						
	Soil Screening Levels : [1]			**39**	**5,500**	**0.36**	**21,000**	**3,400**	**0.73**	**130,000**
	Background : [2]			**11**	**39.8**	**0.83**	**16.8**	**8.39**	**1.37**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Molybdenum**	**Zinc**
MW-11	06/29/97	40	N	---	9.8	ND (0.05)	9.8	---	---	28.4
	06/29/97	50	N	---	13.6	ND (0.05)	6.9	---	---	29.8
	06/29/97	60	N	---	9.6	ND (0.05)	5.8	3	0.088 J	26.2
	06/29/97	60	FD	---	10	ND (0.05)	5.74	---	---	19.8
	06/29/97	69	N	---	16.9	ND (0.05)	13.8	5	ND (0.2)	35.7
MW-13	07/09/97	10	N	---	10.8	ND (0.05)	9.3	---	---	27.2
	07/09/97	20	N	---	10.5	ND (0.05)	7.1	2.4	0.14 J	28.3
	07/09/97	25	N	---	---	---	---	2.8	ND (0.2)	---
	07/09/97	30	N	---	12.2	ND (0.05)	8.6	---	---	33.3
	07/09/97	40	N	---	10.7	ND (0.05)	8.1	---	---	30.4
	07/09/97	40	FD	---	6.4	ND (0.05)	5.6	---	---	17.7
AOC1-T2a	10/05/08	0 - 0.5	N	4	26	ND (0.403)	10	4.8	ND (1)	38
	10/16/08	2 - 3	N	6	28	ND (0.407)	10	4	ND (2)	42
	10/16/08	5 - 6	N	2.7	19	ND (0.405)	8.3	2.4	1.1	35
	10/16/08	9 - 10	N	2.9	15	ND (0.416)	7.1	2.1	ND (1)	36
AOC1-T2b	10/16/08	0 - 0.5	N	3.6	26	ND (0.408)	9.3	3.2	ND (1)	39
	10/16/08	2 - 3	N	3	26	ND (0.414)	10	3	2.4	33
	10/16/08	5 - 6	N	3	53	ND (0.407)	8.7	2.4	5.5	32
	10/16/08	9 - 10	N	2.4	18	ND (0.415)	8.5	1.8	1.3	33
	10/16/08	9 - 10	FD	2.3	18	ND (0.413)	9.6	1.6	1.2	35
AOC1-T2c	10/08/08	0 - 0.5	N	3.7	60	1.26	10	5.1	ND (1)	44
	10/08/08	2 - 3	N	3.1	42	ND (0.416)	11	3.3	ND (1)	33
	10/08/08	5 - 6	N	2.3	22	ND (0.412)	9.1	1.8	ND (1)	28
	10/08/08	9 - 10	N	3.7	24	ND (0.419)	9.7	2.6	ND (1)	40
AOC1-T2e	10/16/08	0 - 0.5	N	2.9	34	ND (0.405)	9.3	3.4	2.2	36
	10/16/08	2 - 3	N	2.9	30	ND (0.408)	8.4	3.2	1.4	30
	10/16/08	2 - 3	FD	3.1	32	ND (0.408)	8	3.2	1.3	33
	10/16/08	5 - 6	N	2.6	44	ND (0.402)	8.4	2.3	5.4	32

TABLE C2-17

Sample Results Compared to the Calculated Soil Screening Levels

AOC1

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report

Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)						
	Soil Screening Levels : [1]			**39**	**5,500**	**0.36**	**21,000**	**3,400**	**0.73**	**130,000**
	Background : [2]			**11**	**39.8**	**0.83**	**16.8**	**8.39**	**1.37**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Molybdenum**	**Zinc**
AOC1-T2e	10/16/08	9 - 10	N	2.5	20	ND (0.415)	4.9	1.1	1.1	27
AOC1-T3a	10/05/08	0 - 0.5	N	4.1	24	ND (0.403)	11	8.4	ND (1)	47
	10/17/08	2 - 3	N	4.4	19	ND (0.407)	9	4.2	ND (1)	37
	10/17/08	5 - 6	N	4.2	23	ND (0.405)	12	14	1.7	39
	10/17/08	9 - 10	N	2.9	15	ND (0.406)	10	1.9	ND (1)	33
AOC1-T3b	10/05/08	0 - 0.5	N	2.6	23	ND (0.402)	8	3.1	ND (1)	29
	10/17/08	2 - 3	N	3.1	170	2.77	13	9.1	ND (1)	120
	10/17/08	5 - 6	N	2.3	46	ND (0.405)	8.6	2.3	4.6	34
	10/17/08	9 - 10	N	2.7	17	ND (0.41)	7.7	1.7	1.1	31
	10/17/08	9 - 10	FD	2.5	16	ND (0.412)	6.5	1.9	1.1	32
AOC1-T3c	10/05/08	0 - 0.5	N	4.6	27	0.42	11	7	ND (1)	46
	10/05/08	2 - 3	N	3.5	30	ND (0.41)	9.7	3.4	ND (1)	39
	10/05/08	5 - 6	N	3.7	89	1.65	12	5.8	1.4	65
	10/05/08	9 - 10	N	2.7	19	ND (0.403)	10	2.4	ND (1)	36
AOC1-T4a	10/03/08	0 - 0.5	N	4.2	28	ND (0.402)	11	5.5	ND (1)	51
	10/03/08	2 - 3	N	3.9	26	ND (0.407)	10	4	ND (1)	40
	10/03/08	5 - 6	N	4	25	ND (0.409)	11	3.3	ND (1)	40
	10/03/08	9 - 10	N	3.7	26	0.525	9.6	4.3	ND (1)	36
AOC1-T4b	10/02/08	0 - 0.5	N	2.9	21	1.26	7.5	2.6	ND (1)	29
	10/02/08	2 - 3	N	3.7	29	ND (0.412)	12	8.8 J	ND (1)	46
	10/02/08	2 - 3	FD	3.5	28	ND (0.408)	11	7 J	ND (1)	50
	10/02/08	5 - 6	N	3.6	24	ND (0.419)	9.6	3.2	ND (1)	39
	10/02/08	9 - 10	N	3.2	19	ND (0.415)	8.8	2.4	ND (1)	37
AOC1-T4c	10/04/08	0 - 0.5	N	4.2	19	ND (0.403)	22	5.9	ND (1)	33
	10/04/08	2 - 3	N	3.8	27	0.816	19	14	ND (1)	67
	10/04/08	5 - 6	N	3.3	28	0.868	21	19	1.3	71
	10/04/08	9 - 10	N	3.1	27	ND (0.413)	13	5.8	ND (1)	47

TABLE C2-17

Sample Results Compared to the Calculated Soil Screening Levels
AOC1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)						
	Soil Screening Levels : [1]			**39**	**5,500**	**0.36**	**21,000**	**3,400**	**0.73**	**130,000**
	Background : [2]			**11**	**39.8**	**0.83**	**16.8**	**8.39**	**1.37**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Molybdenum**	**Zinc**
AOC1-T5a	10/04/08	0 - 0.5	N	3.1	21	ND (0.402)	13	4	ND (1)	41
	10/04/08	2 - 3	N	2.8	39	ND (0.403)	10	3.2	ND (1)	38
	10/04/08	5 - 6	N	3.8	35	ND (0.405)	24	3.4	2.2	38
	10/04/08	9 - 10	N	2.6	24	ND (0.411)	11	3.6	ND (1)	38
	10/04/08	9 - 10	FD	2.4	27	ND (0.409)	11	3.1	ND (1)	38
AOC1-T5b	10/04/08	0 - 0.5	N	2.4	26	ND (0.402)	11	4.9	ND (1)	33
	10/04/08	2 - 3	N	3.3	41	0.452	9.5	4.4	ND (1)	38
	10/04/08	5 - 6	N	3.4	61	0.596	9.8	4.8	ND (1)	41
	10/04/08	9 - 10	N	3.5	23	ND (0.409)	13	3.4	ND (1)	41
AOC1-T5c	10/04/08	0 - 0.5	N	3.7	15	ND (0.403)	8.8	5.8	ND (1)	37
	10/04/08	2 - 3	N	3.3	31	0.875	12	7.5	ND (1)	53
	10/04/08	5 - 6	N	3.1	36	0.641	12	11	ND (1)	49
	10/04/08	9 - 10	N	3.5	21	0.478	9.8	3.9	ND (1)	39
AOC1-T6a	09/30/08	0 - 0.5	N	3.2	20	ND (0.402)	11	5.6	ND (1)	47
	09/30/08	2.5 - 3	N	3.2	20	ND (0.408)	8.9	5.6	ND (1)	36
	09/30/08	2.5 - 3	FD	3.1	21	ND (0.407)	8.8	5.4	ND (1)	40
	09/30/08	5.5 - 6	N	2.3	16	ND (0.408)	7.9	3.9	ND (1)	34
	09/30/08	9.5 - 10	N	3.2	20	ND (0.41)	8.7	12	ND (1)	40
AOC1-T6b	09/30/08	0 - 0.5	N	3	26	ND (0.401)	9	5.5	ND (1)	41
	09/30/08	2.5 - 3	N	3.4	18	ND (0.404)	7.1	4.4	ND (1)	29
	09/30/08	5.5 - 6	N	2.9	22	ND (0.404)	10	3.2	ND (1)	36
	09/30/08	9.5 - 10	N	2.8	25	ND (0.405)	9.3	3.1 J	ND (1)	37
	09/30/08	9.5 - 10	FD	3	27	ND (0.404)	10	8.5 J	ND (1)	39
AOC1-T6c	09/30/08	0 - 0.5	N	2.9	18	ND (0.401)	8.7	3.2	ND (1)	39
	09/30/08	2.5 - 3	N	5.1	26	ND (0.407)	9.7	5.1	ND (1)	37
	09/30/08	5.5 - 6	N	2.4	21	ND (0.406)	9.4	2.9	ND (1)	37
SS-1	06/29/97[6]	0.5	N	---	38.2	ND (0.05)	16.5	---	---	55
	06/29/97[6]	1.5	N	---	25.3	ND (0.05)	13.6	---	---	43.4

TABLE C2-17

Sample Results Compared to the Calculated Soil Screening Levels

AOC1

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report

Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)						
	Soil Screening Levels : [1]			**39**	**5,500**	**0.36**	**21,000**	**3,400**	**0.73**	**130,000**
	Background : [2]			**11**	**39.8**	**0.83**	**16.8**	**8.39**	**1.37**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Molybdenum**	**Zinc**
SS-2	06/29/97	0.5	N	---	18.9	ND (0.05)	14.1	---	---	48.3
	06/29/97	1.5	N	---	10.2	ND (0.05)	12.9	---	---	42.2
SS-4	06/29/97	0.5	N	---	---	ND (0.05)	---	---	---	---
SS-5	06/29/97	0.5	N	---	---	ND (0.05)	---	---	---	---
SS-6	06/29/97	0.5	N	---	---	ND (0.05)	---	---	---	---
SS-7	06/29/97	0.5	N	---	---	ND (0.05)	---	---	---	---
SS-8	06/29/97	0.5	N	---	---	ND (0.05)	---	---	---	---
SSB-6	06/30/97	1	N	---	13.7	ND (0.05)	8.6	---	---	29.1
	06/30/97	3	N	---	27.5	ND (0.05)	6.6	---	---	24.8
	06/30/97	6	N	---	467	0.06	33.8	---	---	132
	06/30/97	10	N	---	14.8	ND (0.05)	9.6	3.1	0.79	33.4
SSB-7	06/30/97	1	N	---	19.8	ND (0.05)	7.7	---	---	28.1
	06/30/97	3	N	---	24.9	ND (0.05)	6.5	---	---	29.4
	06/30/97	6	N	---	8.6	ND (0.05)	14.7	---	---	23
	06/30/97	10	N	---	8.1	ND (0.05)	5.8	1.8	ND (0.2)	23.4
SSB-8	07/10/97	1	N	---	53.1	ND (0.05)	15.1	---	---	38.3
	07/10/97	3	N	---	13.6	ND (0.05)	14.1	---	---	35.3
	07/10/97	6	N	---	15.3	ND (0.05)	7.3	---	---	33.5
	07/10/97	10	N	---	17.1	ND (0.05)	10.7	2.8	0.071 J	35.8
	07/10/97	10	FD	---	13.7	ND (0.05)	8	---	---	30
SSB-9	07/10/97	1	N	---	17.3	ND (0.05)	8.6	---	---	35.5
	07/10/97	3	N	---	11	ND (0.05)	6.1	---	---	31.8
	07/10/97	6	N	---	9.6	ND (0.05)	6.4	---	---	25.3
	07/10/97	10	N	---	15.7	ND (0.05)	7.7	3	0.096 J	33.1

TABLE C2-17

Sample Results Compared to the Calculated Soil Screening Levels
AOC1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

[1] Soil Screening Level (SSL) calculation was provided in the technical memorandum entitled "Calculation of Soil Screening Levels for Protection of Groundwater at the PGE Topock Compressor Station", CH2MHill 2008.
[2] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the SSL and greater than or equal to the background value are circled.

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

TABLE C2-18

Constituent Concentrations in Soil Compared to Total Threshold Limit Concentration (TTLC), Soluble Threshold Limit Concentration (STLC), and Toxic Characteristic Leaching Procedure (TCLP)
AOC 1 - Area Around Former Percolation Bed
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Topock Compressor Station, Needles, California

Parameter	Frequency of detection	Maximum Detected Value (mg/kg)	TTLC in mg/kg[1]		STLC in mg/L[1]			TCLP in mg/L[1]		
			# of Exceedences	TTLC	# of Exceedences of STLC x 10	STLC x 10	STLC	# of Exceedences of TCLP x 20	TCLP x 20	TCLP
Antimony	0 / 111 (0%)	ND (5.8)	0	500	0	150	15	0	NE	NE
Arsenic	106 / 111 (95%)	13	0	500	0	50	5	0	100	5
Barium	130 / 130 (100%)	1,580	0	10000	1	1000	100	0	2000	100
Beryllium	0 / 111 (0%)	ND (2.9)	0	75	0	7.5	0.75	0	NE	NE
Cadmium	0 / 111 (0%)	ND (2.9)	0	100	0	10	1	0	20	1
Chromium	167 / 167 (100%)	970	0	2500	13	50	5	6	100	5
Chromium, Hexavalent	28 / 173 (16%)	5.73	0	500	0	50	5	0	NE	NE
Cobalt	111 / 111 (100%)	11	0	8000	0	800	80	0	NE	NE
Copper	166 / 167 (99%)	170	0	2500	0	250	25	0	NE	NE
Lead	130 / 130 (100%)	32	0	1000	0	50	5	0	100	5
Mercury	0 / 111 (0%)	ND (0.14)	0	20	0	2	0.2	0	4	0.2
Molybdenum	38 / 130 (29%)	5.5	0	3500	0	3500	350	0	NE	NE
Nickel	167 / 167 (100%)	35.2	0	2000	0	200	20	0	NE	NE
Selenium	0 / 111 (0%)	ND (2.9)	0	100	0	10	1	0	20	1
Silver	0 / 111 (0%)	ND (2.9)	0	500	0	50	5	0	100	5
Thallium	0 / 111 (0%)	ND (5.8)	0	700	0	70	7	0	NE	NE
Vanadium	130 / 130 (100%)	44.5	0	2400	0	240	24	0	NE	NE
Zinc	167 / 167 (100%)	132	0	5000	0	2500	250	0	NE	NE

Notes:

[1] Code of Regulations, Title 22, Chapter 11, Article 3

mg/kg miligrams per kilogram
mg/L milligrams per liter
ND not detected in any of the samples
NE not established
‡ maximum reporting limit greater than or equal to the STLC x 10.

TABLE C2-19
Proposed Phase 2 Sampling Locations at AOC 1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
PG&E Topock Compressor Station, Needles, California

Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Proposed Collection Method[b]
AOC1-BCW7	0. 2, 5, 9, 14, and 20	To resolve Data Gaps #5 and #6 - Assess potential impoundment area at Interim Measure No. 3 road crossing and support the CMS/FS.	Hexavalent chromium, Title 22 metals, PAHs, PCBs, soil physical parameters (Atterberg limits, relative compaction, alkalinity, cation exchange, capacity, and particle size distribution) – 3 samples from boring	Rotosonic
AOC1-BCW8	0, 2, 5, and 9	To resolve Data Gaps #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW9	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW10	0, 2, 5, and 9	To resolve Data Gaps #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PCBs, pesticides, dioxins/furans	Rotosonic
AOC1-BCW11	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PCBs; pesticides, dioxins/furans	Rotosonic
AOC1-BCW12	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW13	0, 2, 5, and 9	To resolve Data Gaps #3, and #6 - Evaluation of tamarisk area near the mouth of Bat Cave Wash and support the CMS/FS.	Hexavalent chromium, Title 22 metals, PAHs, PCBs; pesticides, dioxins/furans, soil physical parameters (Atterberg limits, relative compaction, alkalinity, cation exchange, capacity, and particle size distribution) – 3 samples from boring	Rotosonic
AOC1-BCW14	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW15	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW16	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PCBs; pesticides, dioxins/furans,	Rotosonic
AOC1-BCW17	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW18	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PCBs; pesticides, dioxins/furans	Rotosonic

TABLE C2-19
Proposed Phase 2 Sampling Locations at AOC 1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
PG&E Topock Compressor Station, Needles, California

Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Proposed Collection Method[b]
AOC1-BCW19	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW20	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PCBs; pesticides, dioxins/furans	Rotosonic
AOC1-BCW21	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PCBs; pesticides, dioxins/furans	Rotosonic
AOC1-BCW22	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW23	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW24	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW25	0, 2, 5, and 9	To resolve Data Gaps #3, and #6 - Evaluation of tamarisk area near the mouth of Bat Cave Wash and support the CMS/FS.	Hexavalent chromium, Title 22 metals, PAHs, PCBs; pesticides, dioxins/furans, soil physical parameters (Atterberg limits, relative compaction, alkalinity, cation exchange, capacity, and particle size distribution) – 3 samples from boring	Rotosonic
AOC1-BCW26	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic
AOC1-BCW27	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PCBs; pesticides, dioxins/furans	Rotosonic or backhoe
AOC1-BCW28	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PCBs; pesticides, dioxins/furans	Rotosonic or backhoe
AOC1-BCW29	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PCBs; pesticides, dioxins/furans	Rotosonic or backhoe
AOC1-BCW30	0, 2, 5, and 9	To resolve Data Gap #3 - Evaluation of tamarisk area near the mouth of Bat Cave Wash.	Hexavalent chromium, Title 22 metals	Rotosonic or backhoe
AOC1-1	0, 2, 5, 9, 14, 20, and 30	To resolve Data Gap #1 - Define lateral extent of contamination in bottom of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PAHs, pH, PCBs[a]	Rotosonic

TABLE C2-19
Proposed Phase 2 Sampling Locations at AOC 1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
PG&E Topock Compressor Station, Needles, California

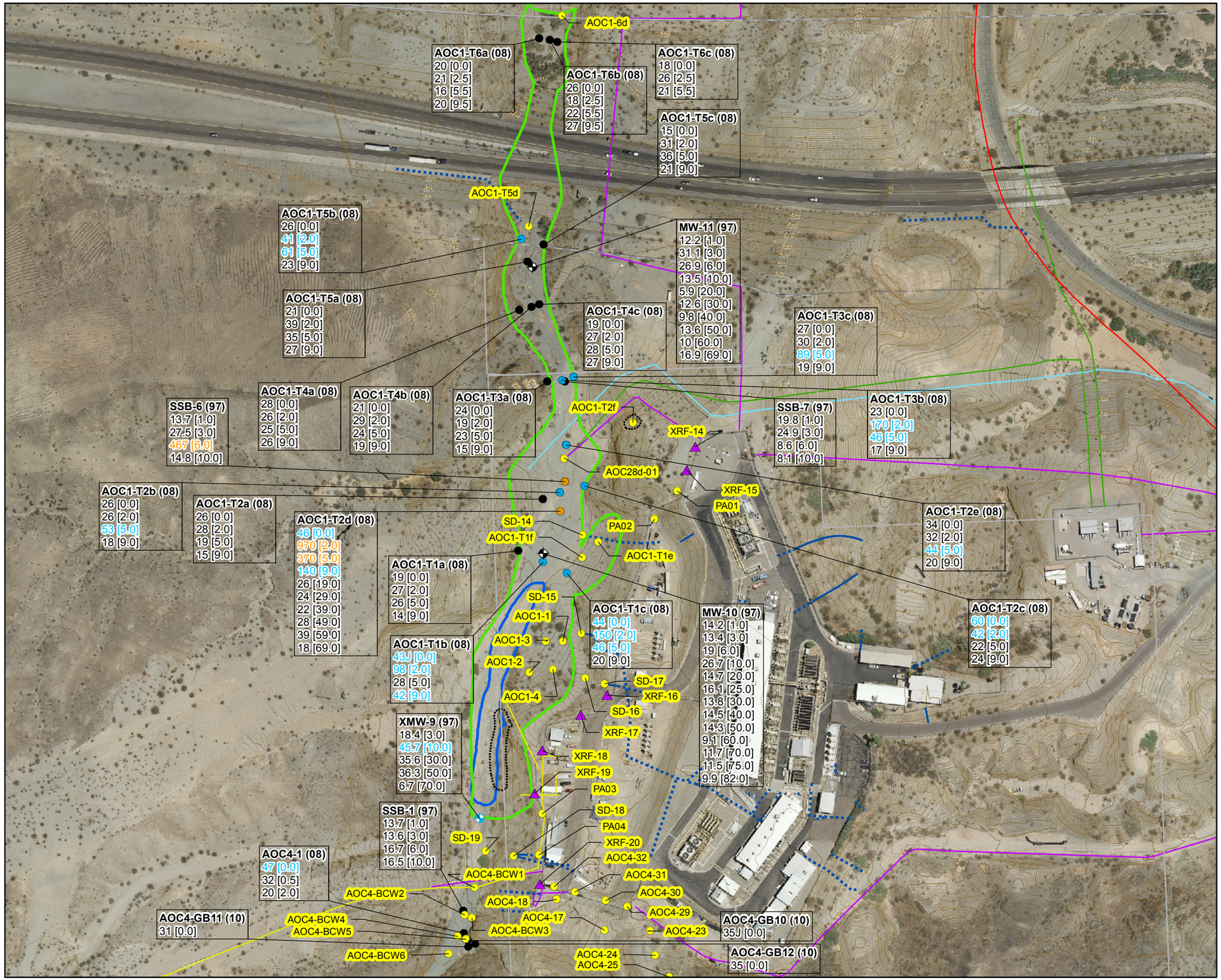
Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Proposed Collection Method[b]
AOC1-2	0, 2, 5, 9, 14, 20, and 30	To resolve Data Gap #1 - Define lateral extent of contamination in bottom of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PCBs[a]	Rotosonic
AOC1-3	0, 2, 5, 9, 14, 20, 30, 40, 50, 60, 70, and 80	To resolve Data Gap #1 - Define lateral extent of contamination in bottom of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PAHs, pH, PCBs[a]	Rotosonic
AOC1-4	0, 2, 5, 9, 14, 20, and 30	To resolve Data Gap #1 - Define lateral extent of contamination in bottom of Bat Cave Wash.	Hexavalent chromium, Title 22 metals, PAHs, pH, PCBs[a]	Rotosonic
AOC1-T1e	0, 2, 5, 9, and 14	To resolve Data Gap #1 - Define lateral extent of contamination at AOC1-T1c.	Hexavalent chromium, Title 22 metals, PAHs, pH, PCBs[a]	Rotosonic
AOC1-T1f	0, 2, 5, 9, and 14	To resolve Data Gap #1 - Define lateral extent of contamination at AOC1-T1c.	Hexavalent chromium, Title 22 metals, PAHs, pH, PCBs[a]	Rotosonic
AOC1-T2f	0, 2	To resolve Data Gap #4 - Evaluate potential white powder.	Title 22 metals, hexavalent chromium, pH, PCBs[a]	Hand tools/ Repelling
AOC1-T5d	0, 2, 5, 9, 14, and 20	To resolve Data Gaps #1 and #5- Define lateral extent of contamination near sample transect AOC1-T5 and support CMS/FS.	Hexavalent chromium, Title 22 metals, PAHs, PCBs[a]; soil physical parameters (Atterberg limits, relative compaction, alkalinity, cation exchange, capacity, and particle size distribution) – 3 samples from boring	Rotosonic
AOC1-T6d	0, 2, 5, 9, 14, and 20	To resolve Data Gaps #5 and #6 – Assess potential impoundment area near railroad bridge culvert and support CMS/FS.	Hexavalent chromium, Title 22 metals, PAHs, PCBs[a]; soil physical parameters (Atterberg limits, relative compaction, alkalinity, cation exchange, capacity, and particle size distribution) – 3 samples from boring	Rotosonic

Notes:

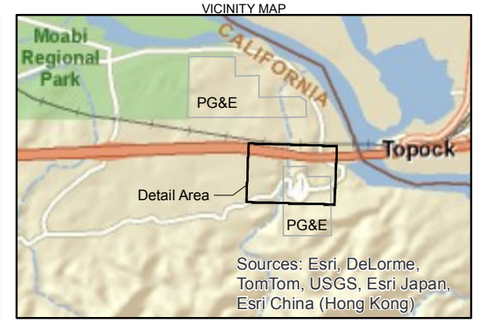
[a] PCB analysis only on soil samples collected at 0 and 2 feet bgs.

[b] Proposed collection methods listed on this table are based on experience and knowledge of the site; actual collection method will be chosen in the field based on field conditions and site access restrictions.

Figures



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Property Boundary
- Caltrans ROW
- SWMU1 Boundary
- AOC 1 Boundary
- White Powder Area
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Historical Discharge Piping
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location / Installation Date
20 [1] — Sample Beginning Depth (ft bgs) / Soil Concentration (mg/kg)

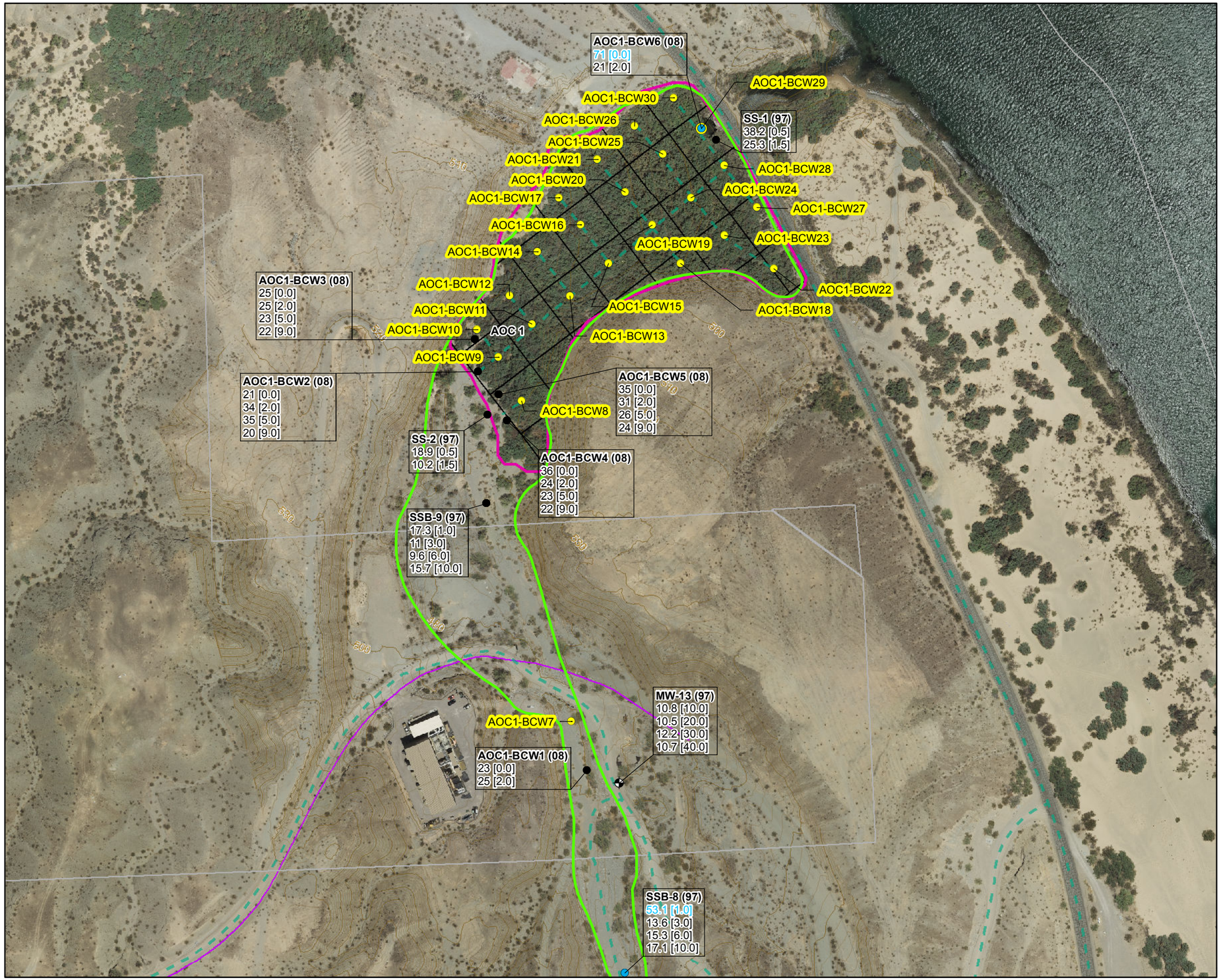
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (39.8 mg/kg) are shown in BLUE.
5. Results greater than or equal to the U.S. Environmental Protection Agency Residential Regional Screening Level (280 mg/kg) are shown in ORANGE.
6. J = Estimated Result.
7. Ecological Comparison Value (36.3 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours shown are in 2 foot intervals.

N

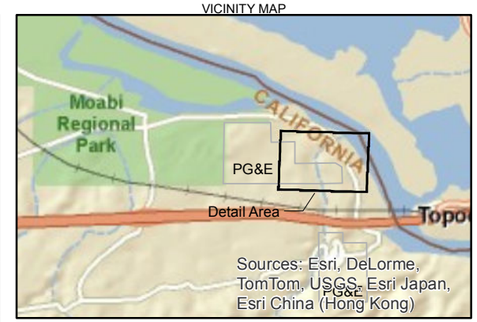
0 — 400 Feet

FIGURE C2-1
Total Chromium
Soil Sample Results
AOC1

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Soil Sample Location
- Monitoring Well
- Access Routes
- Property Boundary
- Area of Concern
- 100-Foot Sampling Grid
- Area of Possible Disturbance
- PG&E Pipeline

SSB-7 (08) — Sample Location / Installation Date
20 [1] — Sample Beginning Depth (ft bgs) / Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (39.8 mg/kg) are shown in BLUE.
5. Results greater than or equal to the U.S. Environmental Protection Agency Residential Regional Screening Level (280 mg/kg) are shown in ORANGE.
6. J = Estimated Result.
7. Ecological Comparison Value (36.3 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours shown are in 2 foot intervals.

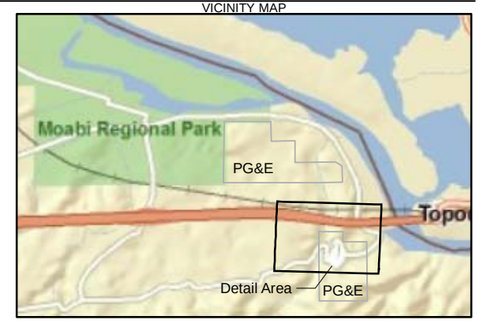
N

0 200 400
Feet

FIGURE C2-2
Total Chromium
Soil Sample Results
AOC1 North

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

VICINITY MAP



LEGEND

- Soil Boring
- Property Boundary
- Caltrans Right Of Way
- SWMU1 Boundary
- AOC Boundary
- Potential New Investigation Area
- White Powder Area
- SWMU Area
- Transwestern Pipeline
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Historical Discharge Piping
- Potential Locations of Stormwater Piping Below Ground
- Potential Location of Stormwater Piping Above Ground

Potential Release Mechanisms

- Infrequent Surface Water Runoff
- Infiltration (Site-wide)
- Windblown Dispersion of Soil (Site-wide)
- Volatilization (Site-wide)
- Degradation by Heat/Light (Site-wide)
- Surface Soil Scouring & Redeposition (Possible Throughout the Wash)
- Downstream Movement During Flow Events
- Historic Waste Water Flow

Note:
Topographic contours shown are in 2 foot intervals.

N

0 50 100 200 300 400 500
Feet

FIGURE C2-3
Conceptual Site Model for AOC-1
Soil Investigation Part A
Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

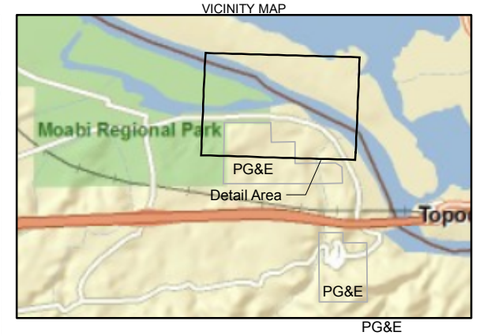
CH2MHILL

FIGURE C2-4
Conceptual Site Model for AOC-1 North
Soil Investigation Part A Phase 1 Data Summary Report
PG&E Topock Compressor Station
Needles, California

ES051410163258BAO AOC-1_North_conceptual_site_model_v2.ai 091312_lho

CH2MHILL

VICINITY MAP



PG&E

LEGEND

- Soil Boring
- Sediment Sample
- Property Boundary
- Transwestern Pipeline

SED-9 (08) — Sample Location / Installation Date
20 [1] — Sample Beginning Depth (ft bgs) / Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (11 mg/kg) are shown in BLUE.
5. Results greater than or equal to Consensus-based Threshold effect concentration (9.79 mg/kg) are shown in GREEN.
6. Topographic contours shown are in 2 foot intervals.

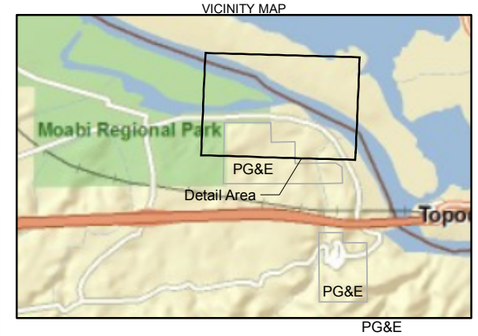
N

0 200 400
Feet

FIGURE C2-5
Arsenic
Sediment Sample Results
AOC1 North

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

VICINITY MAP



PG&E

LEGEND

- ▲ Sediment Sample Location
- ● Soil Boring
- Property Boundary
- Transwestern Pipeline

SED-9 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (39.8 mg/kg) are shown in BLUE.
5. Results greater than or equal to Consensus-based Threshold effect concentration (43.4 mg/kg) are shown in GREEN.
6. Topographic contours shown are in 2 foot intervals.

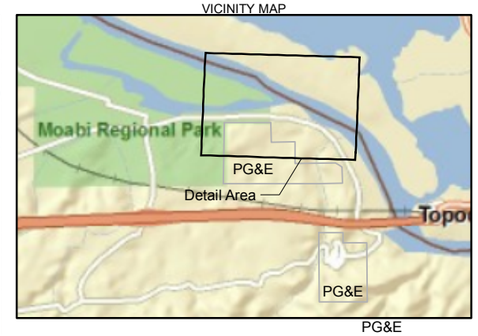
N

0 200 400
Feet

FIGURE C2-6
Total Chromium
Sediment Sample Results
AOC1 North

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

VICINITY MAP



PG&E

LEGEND

- Soil Boring
- Sediment Sample
- Property Boundary
- Transwestern Pipeline

SED-9 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (0.83 mg/kg) are shown in BLUE.
5. No Consensus-based Threshold effect concentration has been established for Hexavalent Chromium.
6. * = Laboratory reporting limit exceeds screening levels.
7. Topographic contours shown are in 2 foot intervals.

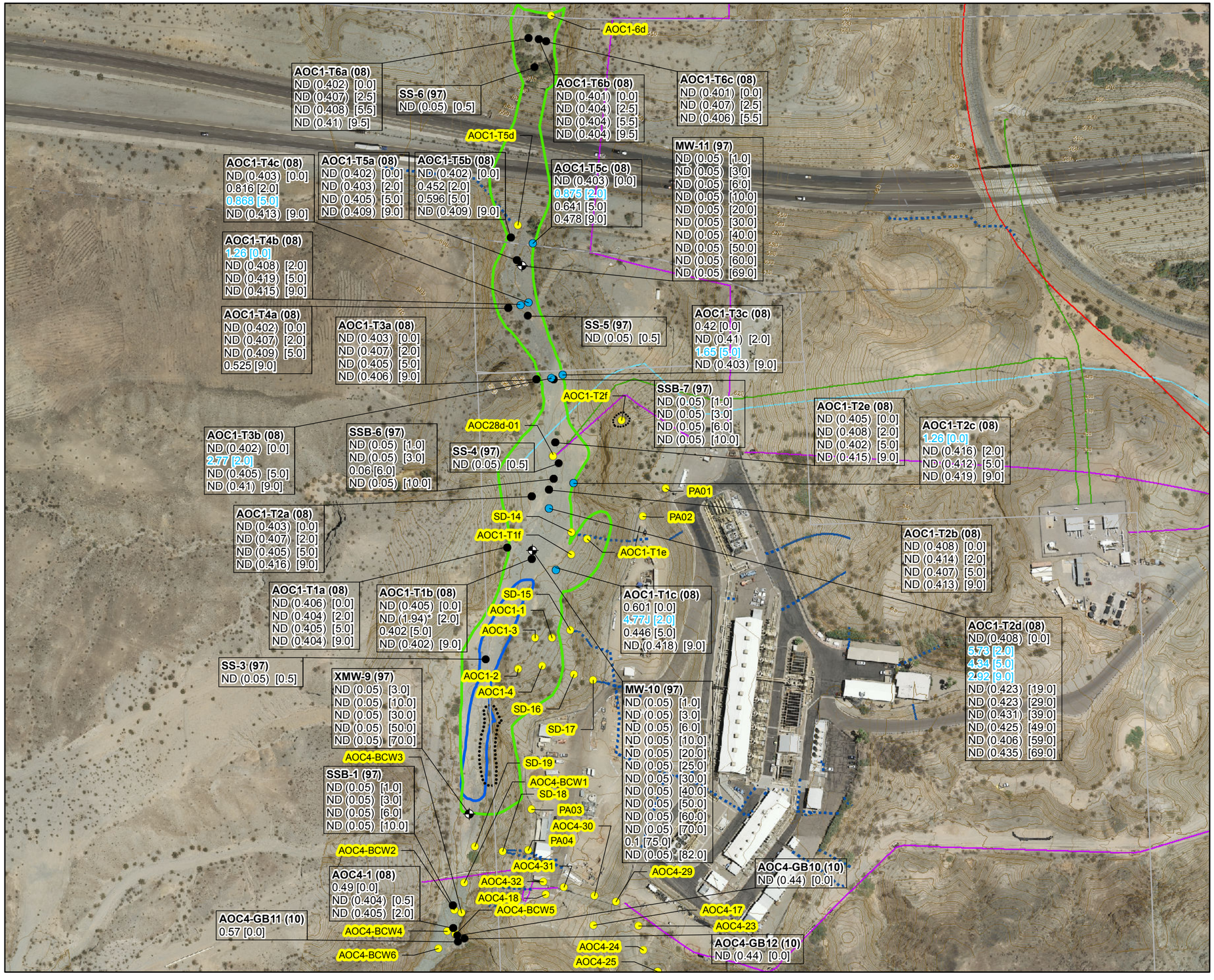
N

0 200 400

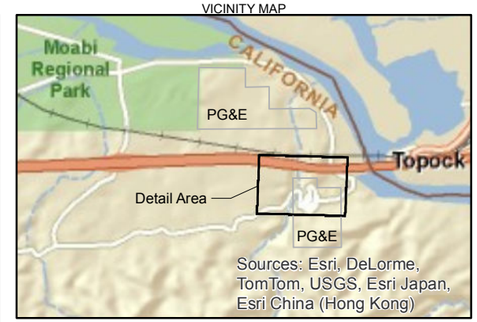
Feet

FIGURE C2-7
Hexavalent Chromium
Sediment Sample Results
AOC1 North

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Soil Boring
- Monitoring Well
- Property Boundary
- Caltrans ROW
- SWMU1 Boundary
- AOC 1 Boundary
- White Powder Area
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

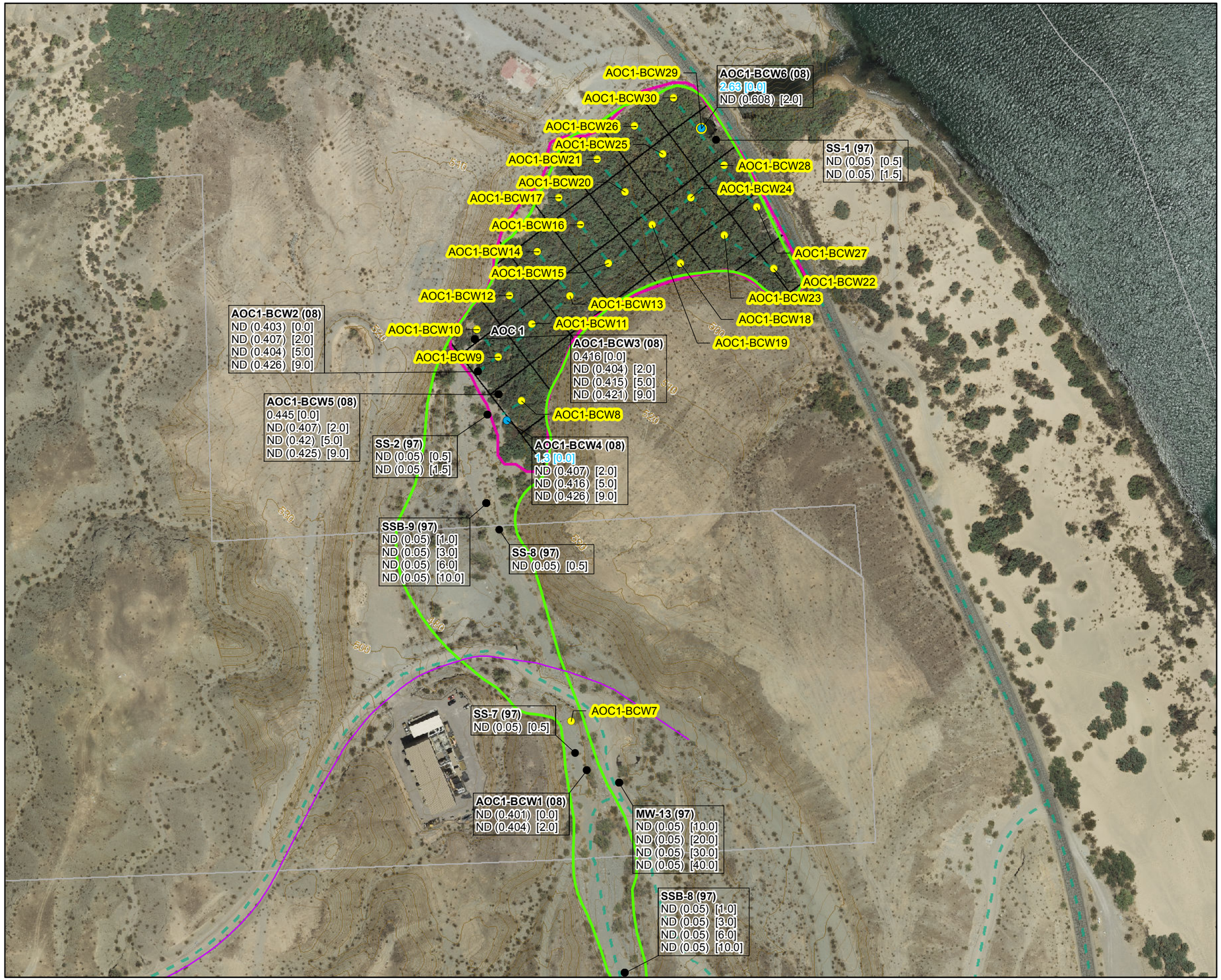
SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (0.83 mg/kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparrison Value (139.6 mg/kg) are shown in PURPLE.
6. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (17 mg/kg) are shown in ORANGE.
7. J = Estimated Result.
8. * = Laboratory reporting limit exceeds screening levels.
9. Topographic contours shown are in 2 foot intervals.

N

0 200 400
Feet

FIGURE C2-8
Hexavalent Chromium Soil Sample Results AOC1
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



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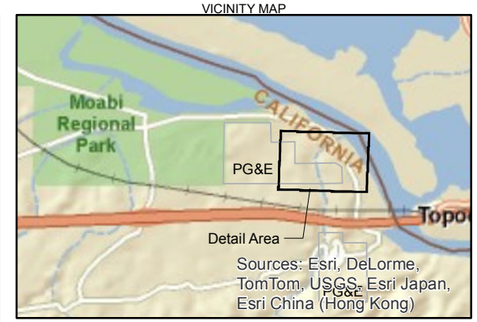


LEGEND

- Proposed Phase 2 Soil Sample Location
- Soil Boring
- Access Routes
- Property Boundary
- Area of Concern
- 100-Foot Sampling Grid
- Area of Possible Disturbance
- PG&E Pipeline

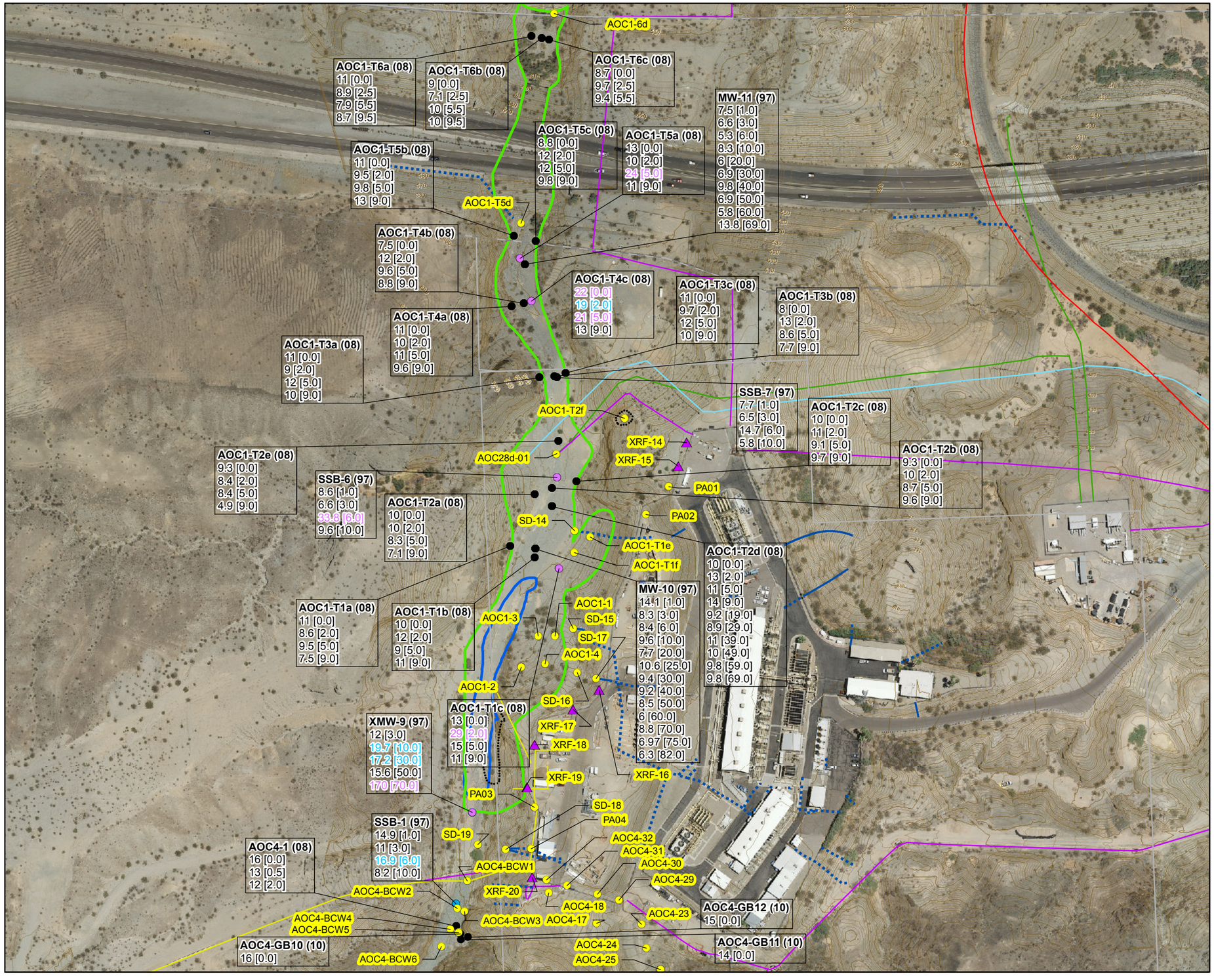
SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (0.83 mg/kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparrison Value (139.6 mg/kg) are shown in PURPLE.
6. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Levell (17 mg/kg) are shown in ORANGE.
7. J = Estimated Result.
8. * = Laboratory reporting limit exceeds screening levels.
9. Topographic contours shown are in 2 foot intervals.

N

0 200 400
Feet

FIGURE C2-9
Hexavalent Chromium Soil Sample Results AOC1 North
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



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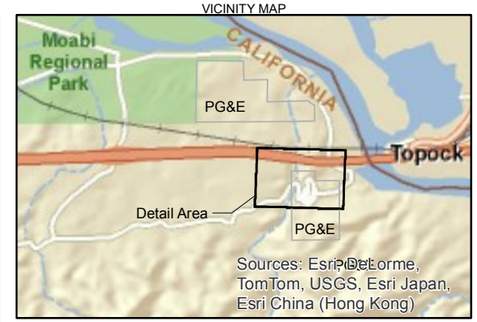


LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Monitoring Well
- Soil Boring
- Property Boundary
- Caltrans ROW
- SWMU1 Boundary
- AOC 1 Boundary
- White Powder Area
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Historical Discharge Piping
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location / Installation Date
20 [1] — Sample Beginning Depth (ft bgs) / Soil Concentration (mg/kg)

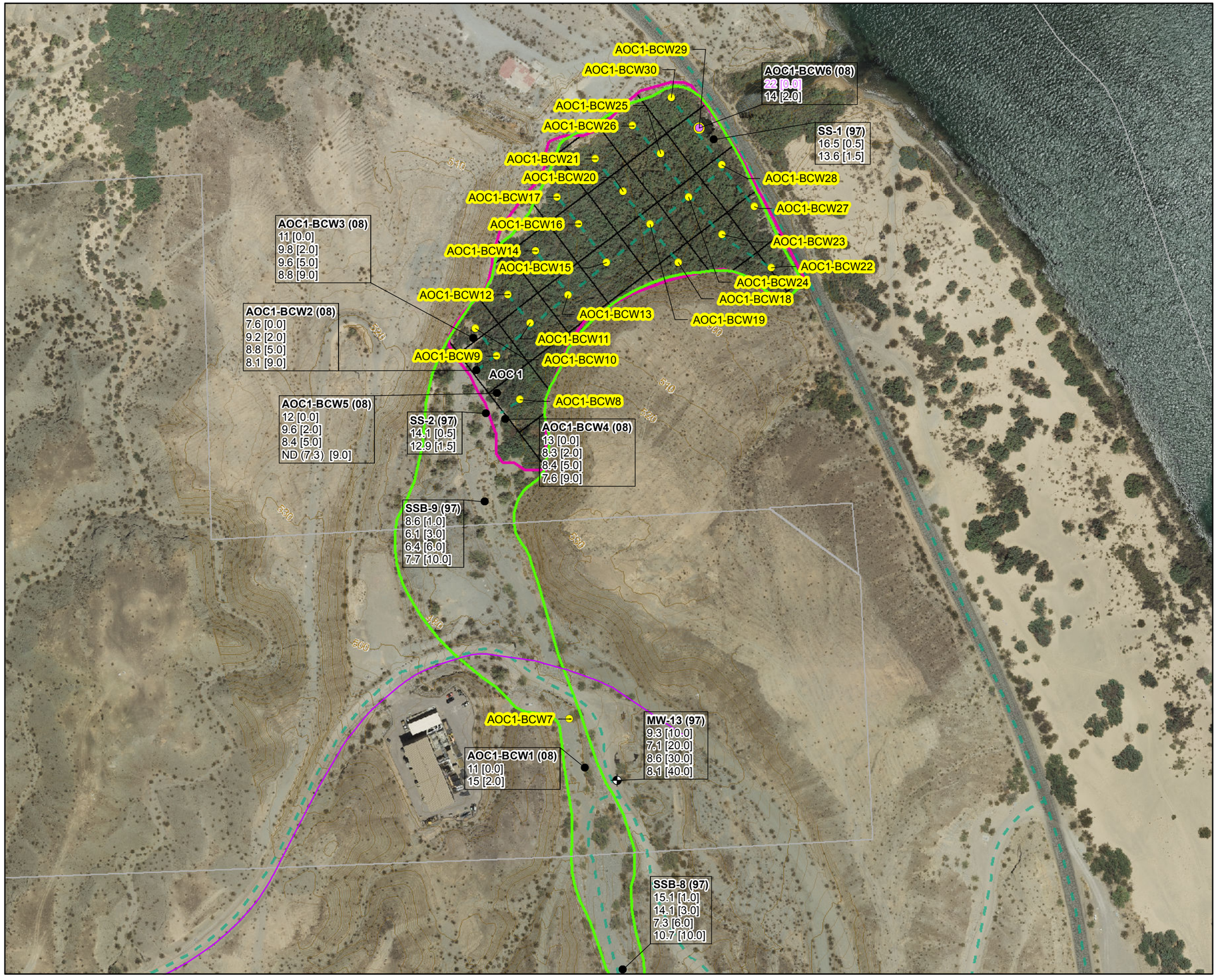
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (16.8 mg/kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparison Value (20.6 mg/kg) are shown in PURPLE.
6. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (3,000 mg/kg) are shown in ORANGE.
7. J = Estimated Result.
8. Topographic contours shown are in 2 foot intervals

0 200 400
Feet

N

FIGURE C2-10
Copper
Soil Sample Results
AOC1

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



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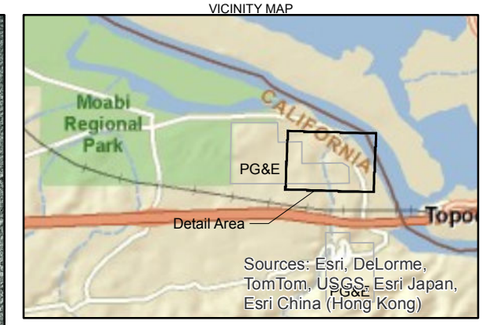

LEGEND

- Proposed Phase 2 Soil Sample Location
- Monitoring Well
- Sediment Sample
- Soil Boring
- Access Routes
- Property Boundary
- Area of Concern
- 100-Foot Sampling Grid
- Area of Possible Disturbance
- PG&E Pipeline

SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft), Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft = feet below ground surface
4. Results greater than Background (16.8 mg/kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparison Value (20.6 mg/kg) are shown in PURPLE.
6. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (3,000 mg/kg) are shown in ORANGE.
7. J = Estimated Result.
8. Topographic contours shown are in 2 foot intervals.

N

0 200 400
Feet

FIGURE C2-11
Copper
Soil Sample Results
AOC1 North

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

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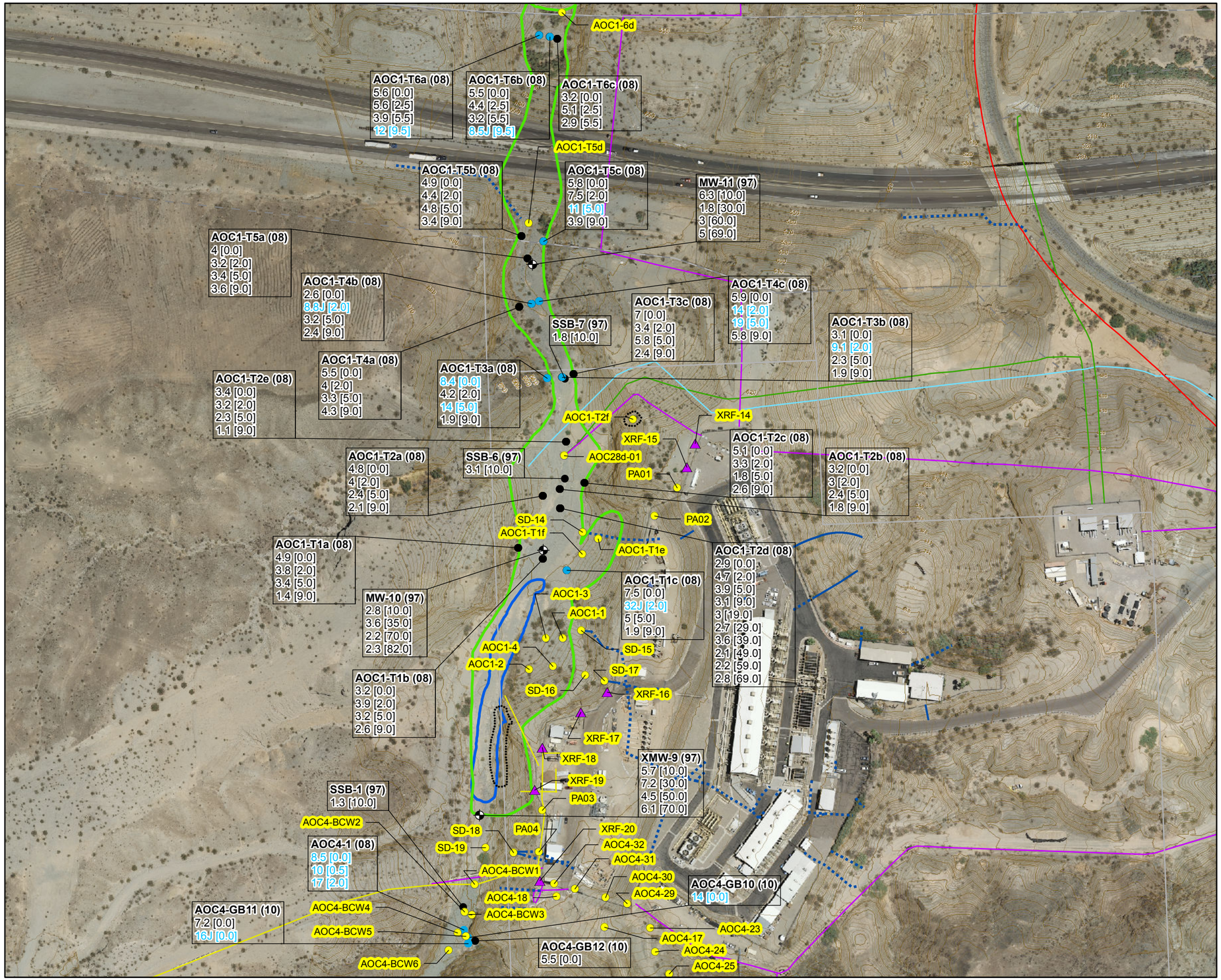

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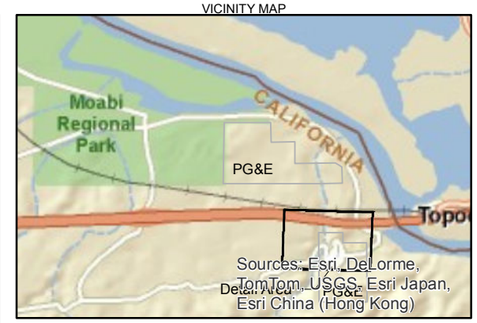


LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Monitoring Well
- Soil Boring
- Property Boundary
- Caltrans ROW
- SWMU1 Boundary
- AOC 1 Boundary
- White Powder Area
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Historical Discharge Piping
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location
20 [1] — Installation Date
Sample Beginning Depth (ft bgs)
Soil Concentration (mg/kg)

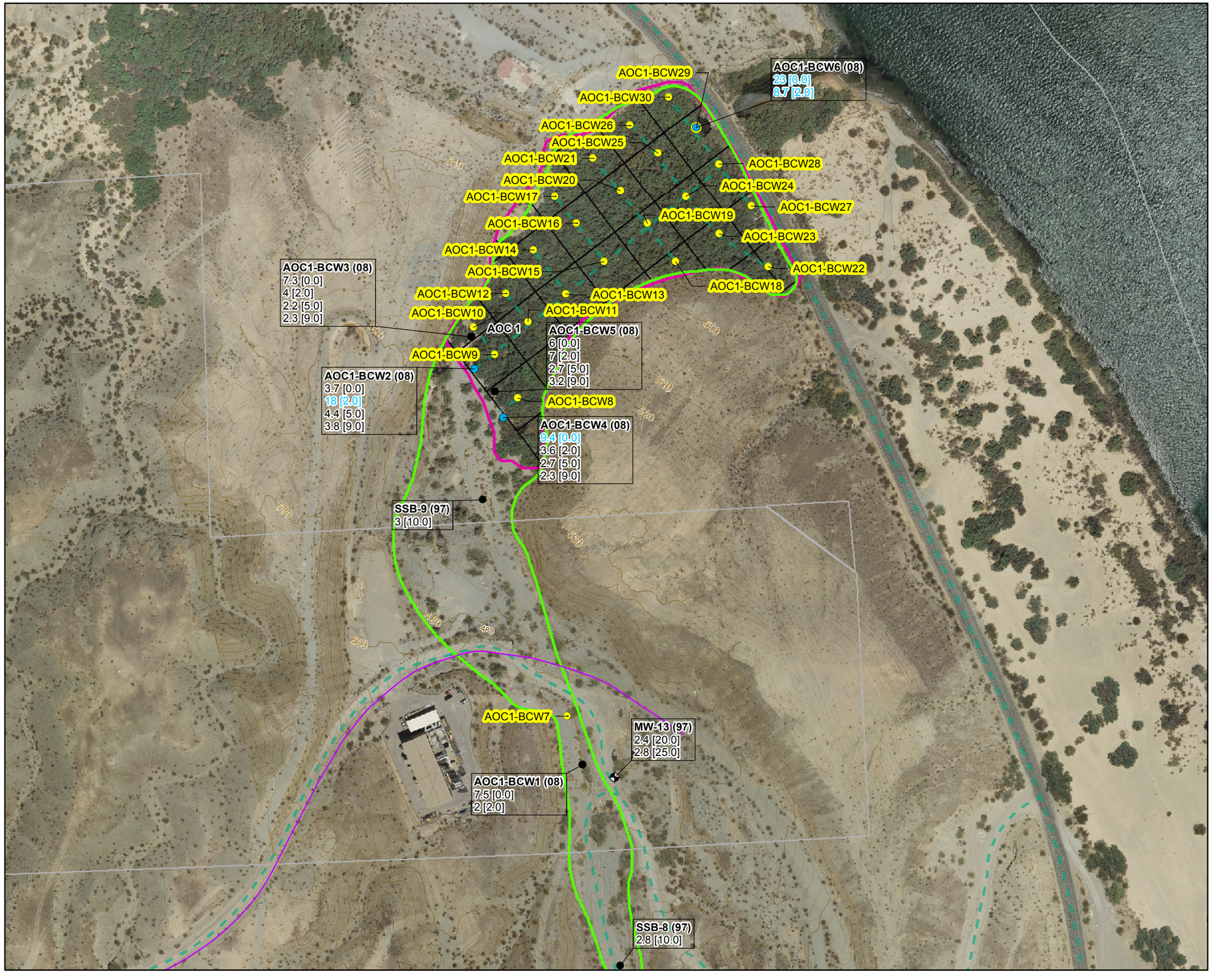
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (8.39 mg/kg) are shown in BLUE.
5. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (150 mg/kg) are shown in ORANGE.
6. J = Estimated Result.
7. Ecological Comparison Value (0.0166 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours shown are in 2 foor intervals.

0 200 400
Feet

N

FIGURE C2-12
Lead
Soil Sample Results
AOC1

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



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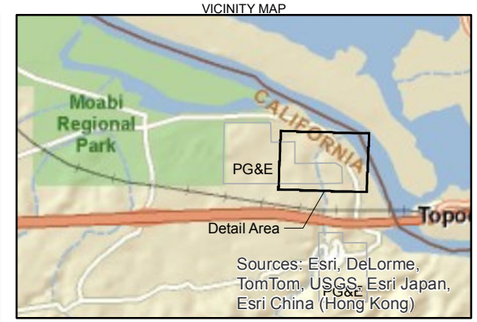

LEGEND

- Proposed Phase 2 Soil Sample Location
- Monitoring Well
- Soil Boring
- Access Routes
- Property Boundary
- Area of Concern
- 100-Foot Sampling Grid
- Area of Possible Disturbance
- PG&E Pipeline

SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (8.39 mg/kg) are shown in BLUE.
5. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (150 mg/kg) are shown in ORANGE.
6. J = Estimated Result.
7. Ecological Comparison Value (0.0166 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours shown are at 2 foot intervals.

N

0 200 400
Feet

FIGURE C2-13
Lead
Soil Sample Results
AOC1 North

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

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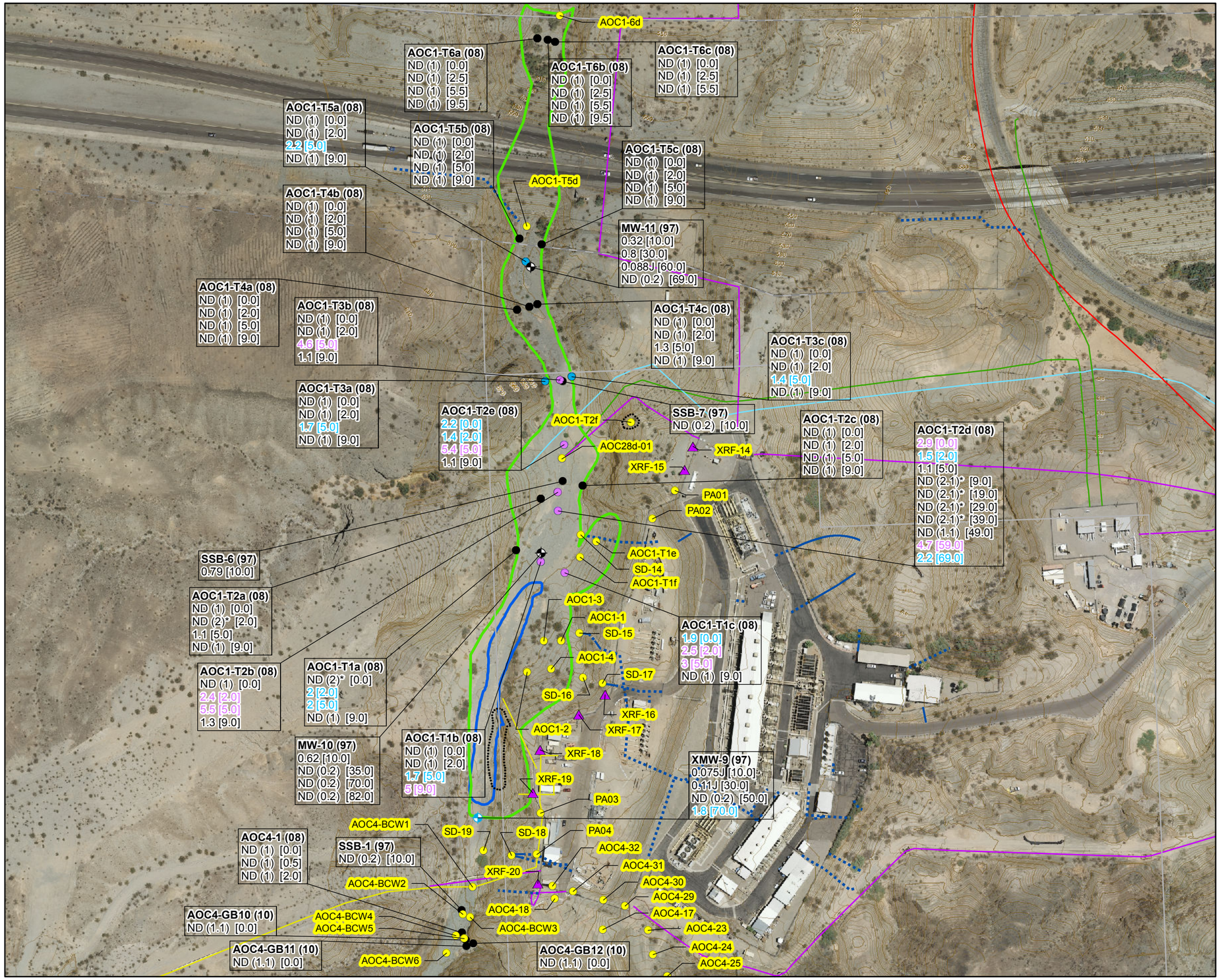

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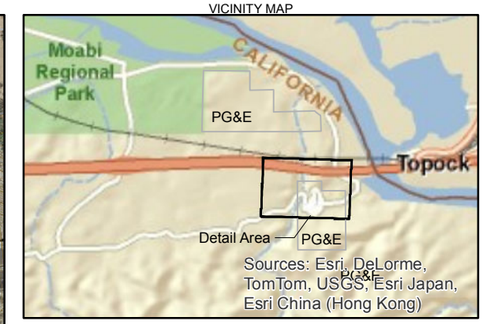


LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Montoring Well
- Soil Boring
- Property Boundary
- Caltrans ROW
- SWMU1 Boundary
- AOC 1 Boundary
- White Powder Area
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Historical Discharge Piping
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location / Installation Date
20 [1] — Sample Beginning Depth (ft bgs) / Soil Concentration (mg/kg)

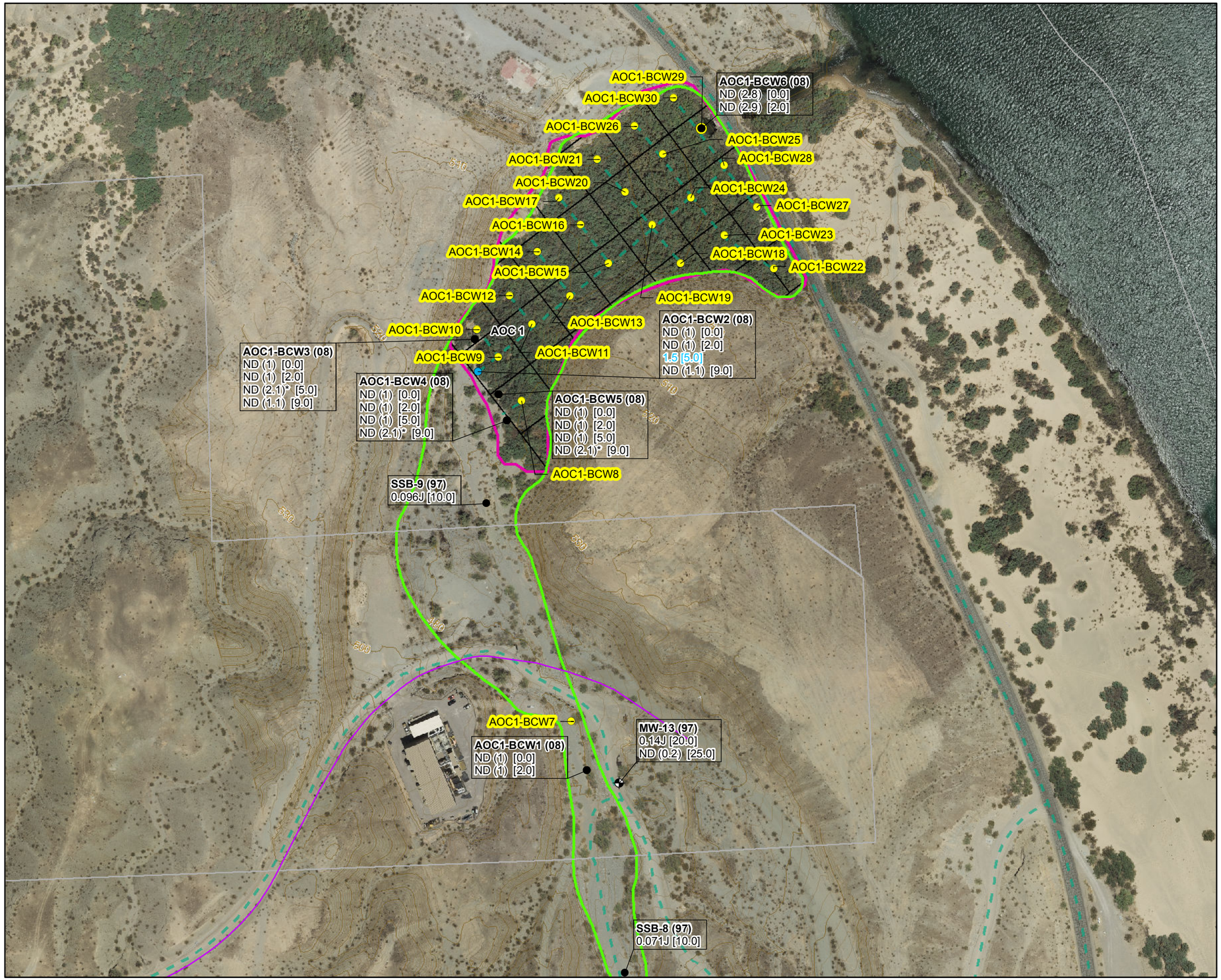
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (1.37 mg/kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparison Value (2.25 mg/kg) are in PURPLE.
6. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (380 mg/kg) are shown in ORANGE.
7. J = Estimated Result.
8. *= Laboratory reporting limit exceeds screening levels.
9. Topographic contours shown are in 2 foot intervals.

0 200 400
Feet

N

FIGURE C2-14
Molybdenum Soil Sample Results AOC1

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



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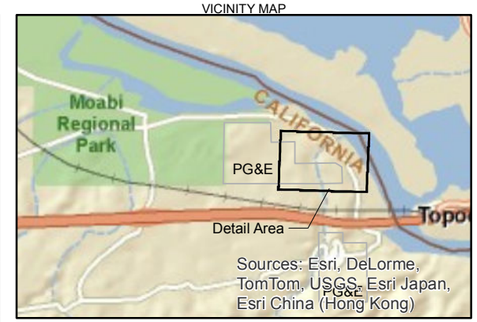


LEGEND

- Proposed Phase 2 Soil Sample Location
- Monitoring Well
- Soil Boring
- Access Routes
- Property Boundary
- Area of Concern
- 100-Foot Sampling Grid
- Area of Possible Disturbance
- PG&E Pipeline

SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

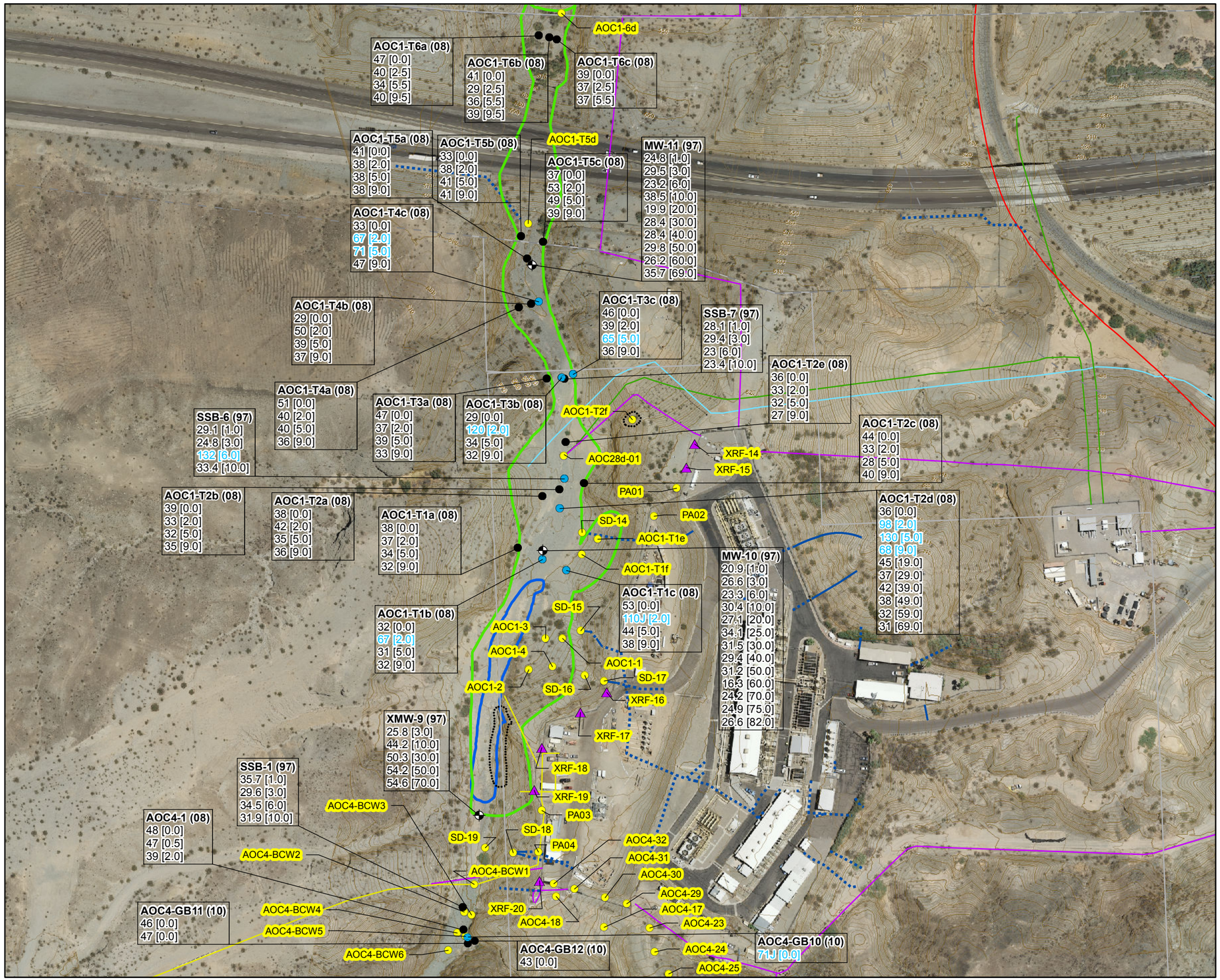
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (1.37 mg/kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparison Value (2.25 mg/kg) are in PURPLE.
6. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (380 mg/kg) are shown in ORANGE.
7. J = Estimated Result.
8. * = Laboratory reporting limit exceeds screening levels.
9. Topographic contours shown are in 2 foot intervals.

N

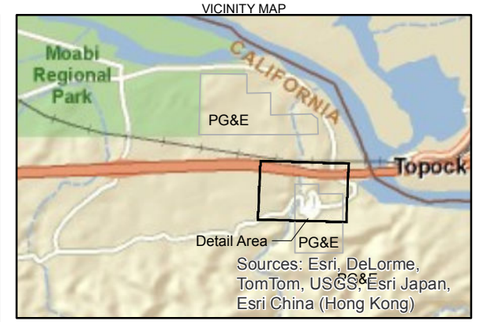
0 200 400
Feet

FIGURE C2-15
Molybdenum
Soil Sample Results
AOC1 North

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Monitoring Well
- Soil Boring
- Property Boundary
- Caltrans ROW
- SWMU1 Boundary
- AOC 1 Boundary
- White Powder Area
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Historical Discharge Piping
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location
20 [1] — Installation Date
Sample Beginning Depth (ft bgs)
Soil Concentration (mg/kg)

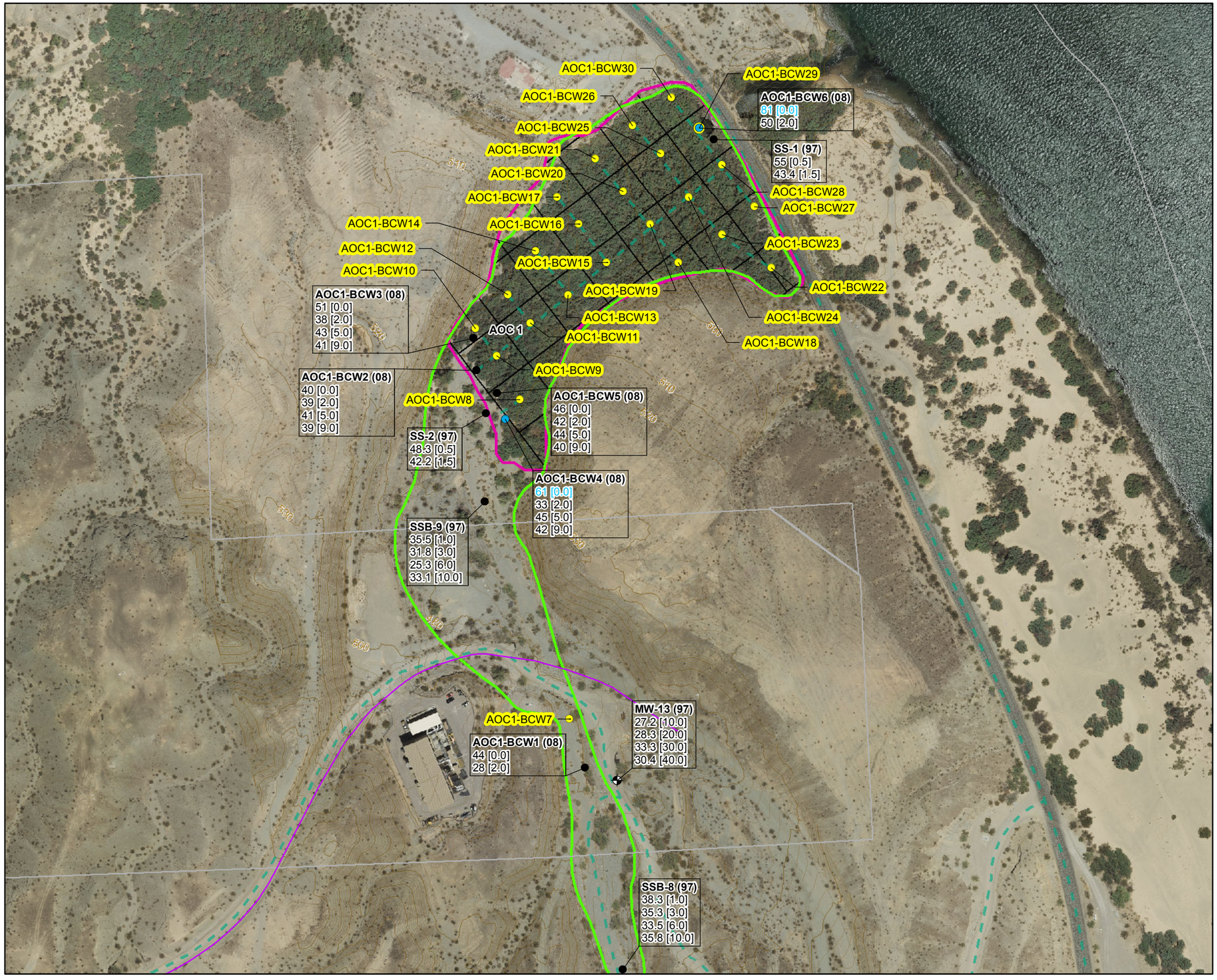
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (58 mg/kg) are shown in BLUE.
5. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Levell (23,000 mg/kg) are shown in ORANGE.
6. J = Estimated Result.
7. Ecological Comparison Value (0.164 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours shown are in 2 foot intervals.

0 200 400
Feet

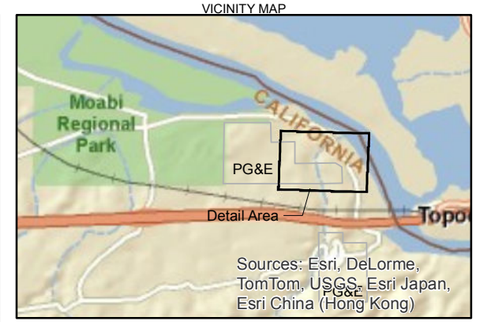
N

FIGURE C2-16
Zinc
Soil Sample Results
AOC1

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Soil Sample Location
- Monitoring Well
- Soil Boring
- Access Routes
- Property Boundary
- Area of Concern
- 100-Foot Sampling Grid
- Area of Possible Disturbance
- PG&E Pipeline

SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (58 mg/kg) are shown in BLUE.
5. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Levell (23,000 mg/kg) are shown in ORANGE.
6. J = Estimated Result.
7. Ecological Comparison Value (0.164 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours shown are in 2 foot intervals.

N

0 200 400
Feet

FIGURE C2-17
Zinc
Soil Sample Results
AOC1 North

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California

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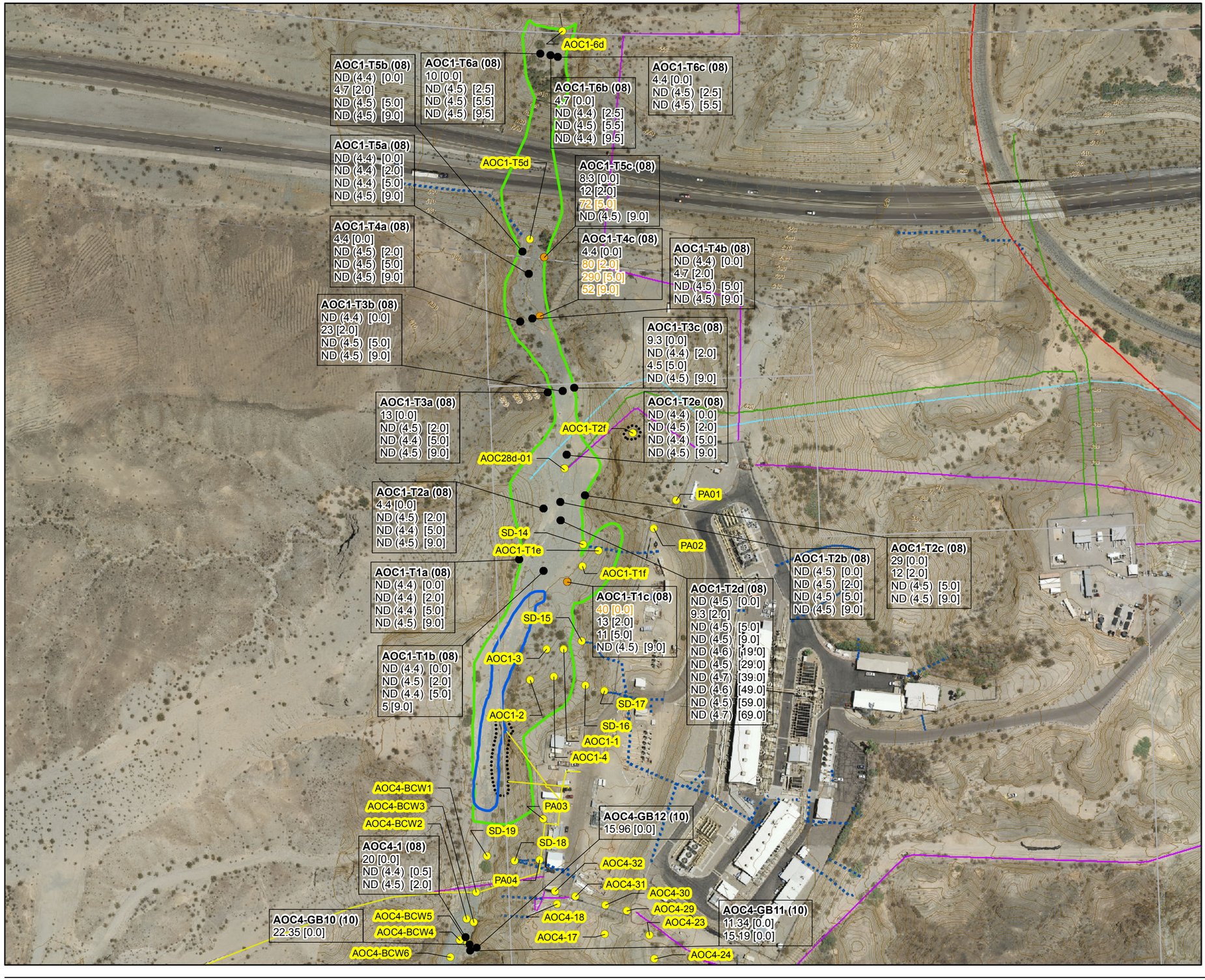
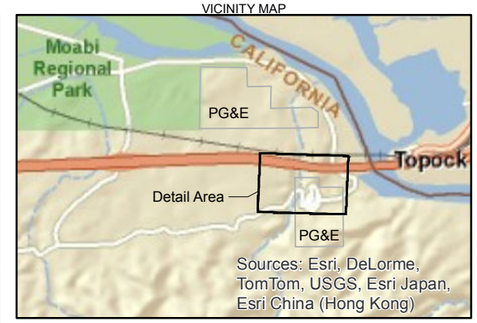


VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Soil Boring
- Property Boundary
- Caltrans ROW
- SWMU1 Boundary
- AOC 1 Boundary
- White Powder Area
- Historical Discharge Piping
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

Sample Location
Installation Date
SSB-7 (08)
20 [1]
Sample Beginning Depth (ft bgs)
Soil Concentration (µg/kg)

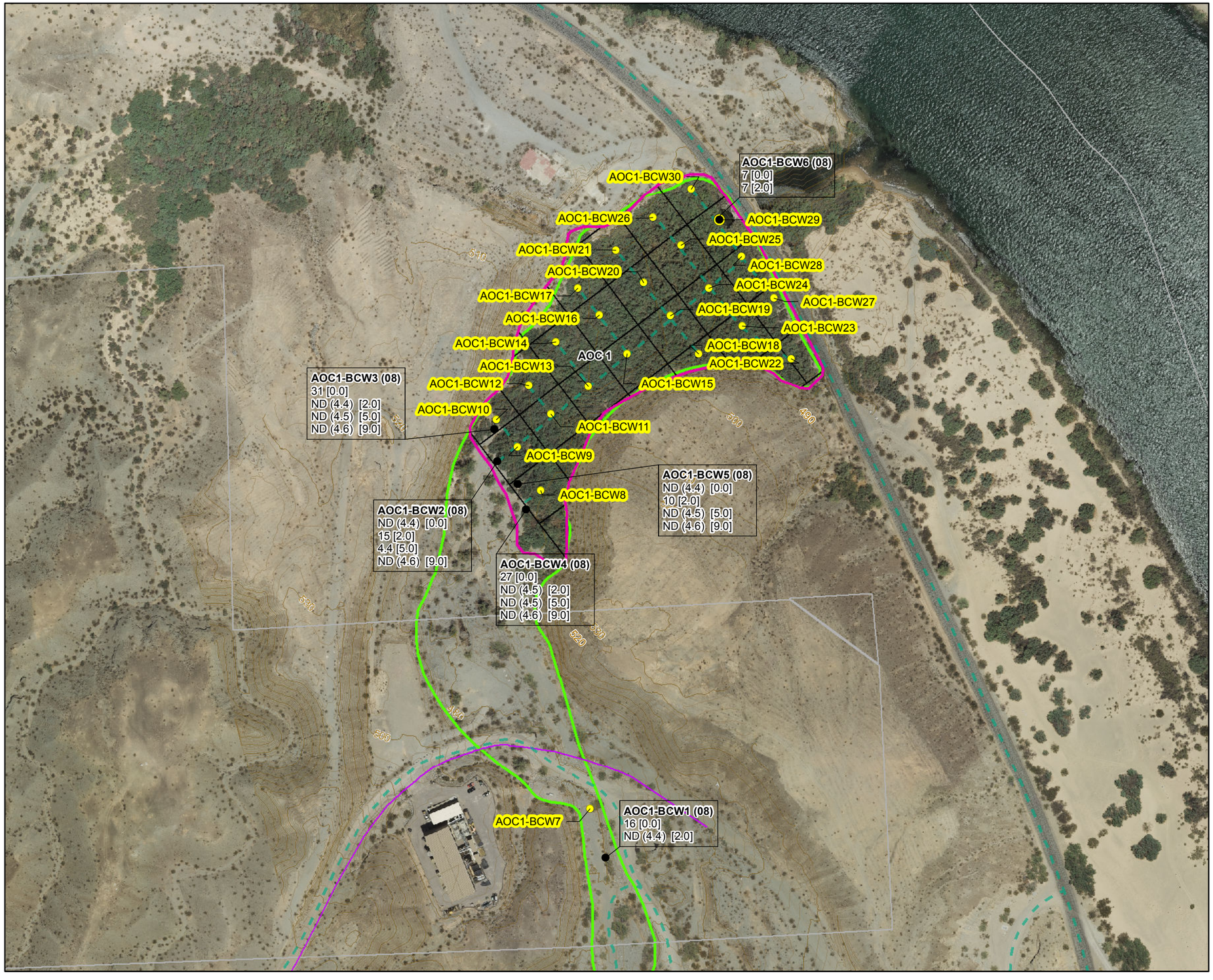
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. µg/kg = micrograms per kilogram
3. ft bgs = feet below ground surface
4. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (38 mg/kg) are shown in ORANGE.
5. J = Estimated Result.
6. Topographic contours shown are in 2 foot intervals.

N

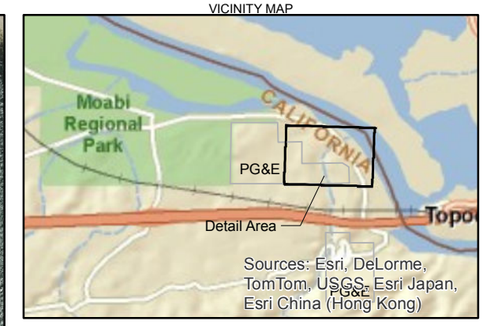
0 50 100 200 300 400
Feet

FIGURE C2-18
Benzo(A)pyrene Equivalent Soil Sample Results AOC1

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Soil Sample Location
- Soil Boring
- Access Routes
- Property Boundary
- Area of Concern
- Area of Possible Disturbance
- 100-Foot Sampling Grid
- PG&E Pipeline

SSB-7 (08) — Sample Location; Installation Date
20 [1] — Sample Beginning Depth (ft bgs); Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (38 µg/kg) are in ORANGE.
5. J = Estimated Result.
6. Topographic contours shown are in 2 foot intervals.

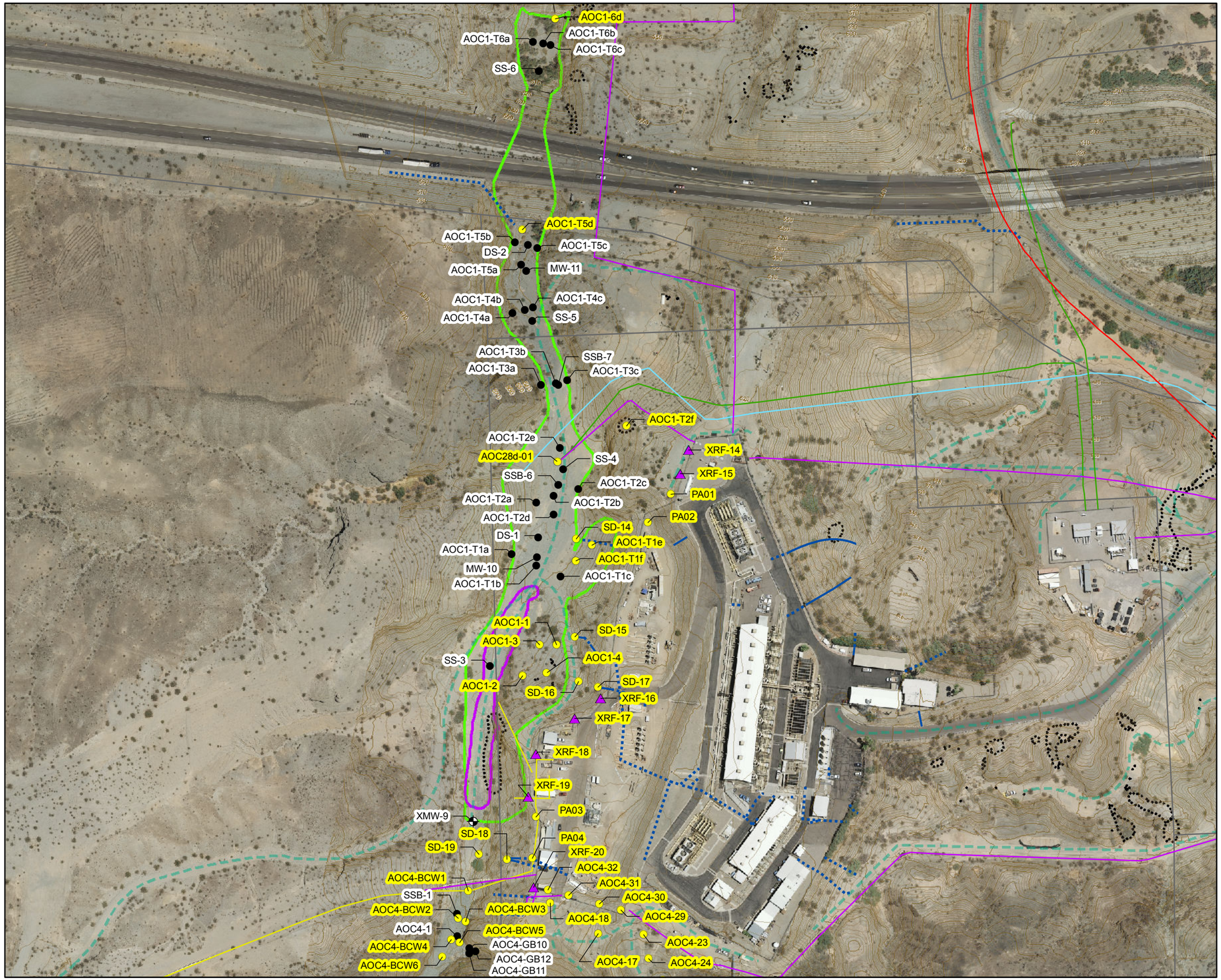
N

0 100 200 400
Feet

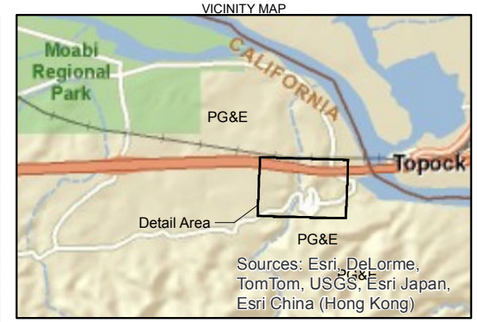
FIGURE C2-19
Benzo(A)pyrene
Soil Sample Results
AOC1 North

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

CH2MHILL



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Monitoring Well
- Soil Boring
- Property Boundary
- Access Routes
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline
- Historical Discharge Piping
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- AOC 1 Boundary
- SWMU 1 Boundary

Note:

Topographic contours shown are in 2 foot intervals

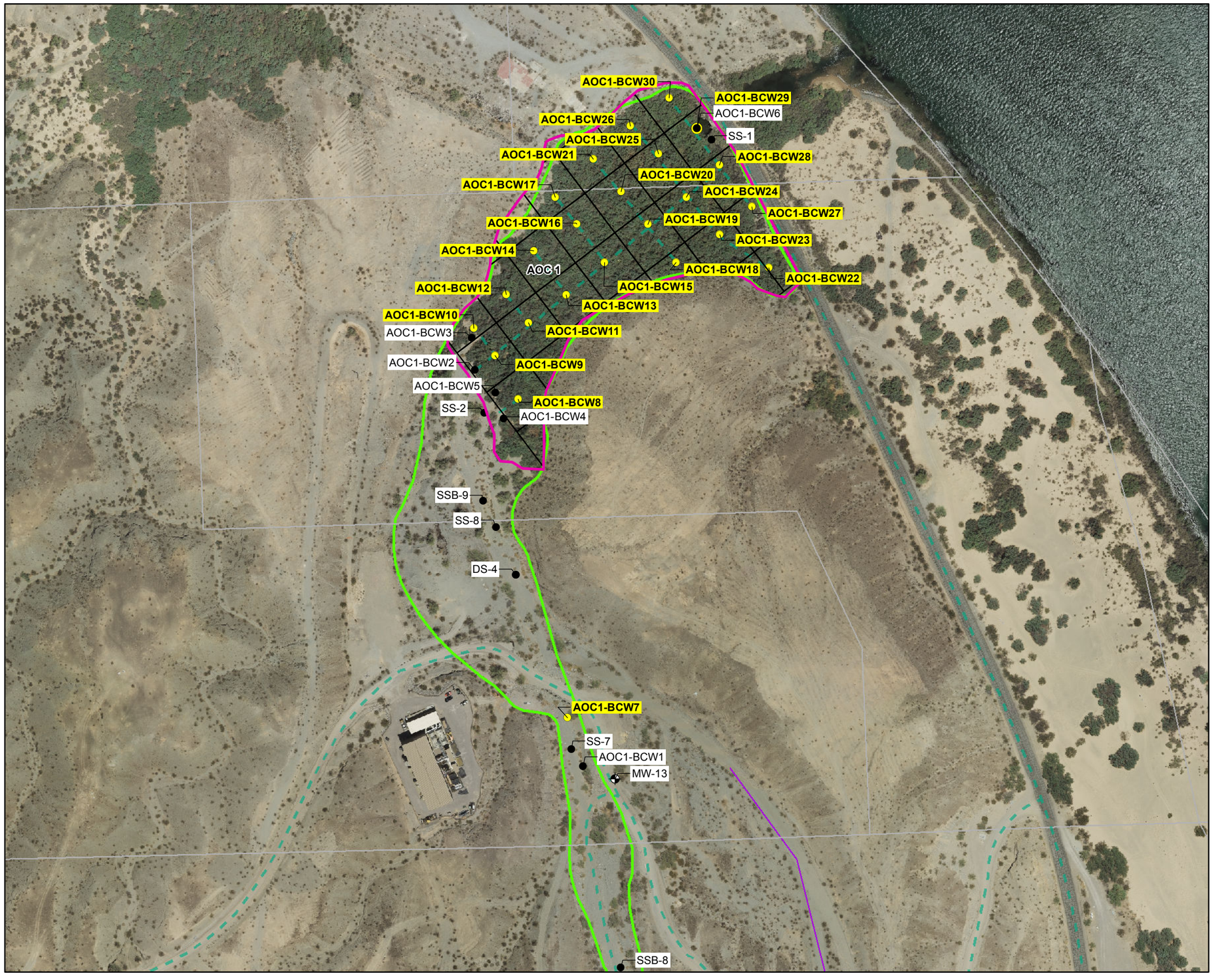
N

0 100 200

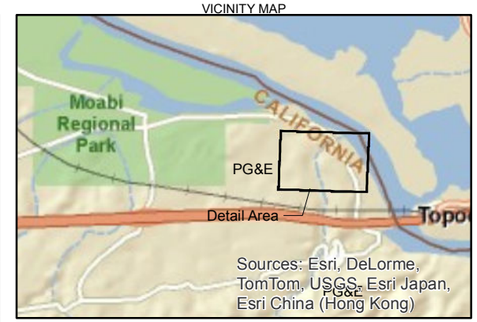
Feet

FIGURE C2- 20
Proposed Phase 2
Soil Sample Locations
AOC1

Soil Investigation Part A
Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Soil Sample Location
- Monitoring Well
- Soil Boring
- Access Routes
- Property Boundary
- PG&E Pipeline
- 100-Foot Sampling Grid
- Area of Possible Disturbance
- Area of Concern

Note:

Topographic contours shown are in 2 foot intervals.

N

0 100 200 400

Feet

FIGURE C2-21
Proposed Phase 2
Soil and Sediment Sample Locations
AOC1 North

Soil Investigation Part A
Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

CH2MHILL

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Subappendix C3
Area of Concern 9 Data Gaps
Evaluation Results

Contents

Tables

Figures

Acronyms and Abbreviations

µg/kg	micrograms per kilogram
AOC	Area of Concern
bgs	below ground surface
BTV	background threshold value
CHHSL	California human health screening level
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
CMS/FS	corrective measures study/feasibility study
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DQO	data quality objective
ECV	ecological comparison value
EPC	exposure point concentration
mg/kg	milligrams per kilogram
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PG&E	Pacific Gas and Electric Company
RFI/RI	RCRA facility investigation/remedial investigation
RSL	regional screening level
SPLP	synthetic precipitation leaching procedure
STLC	soluble threshold limit concentrations
SVOC	semivolatile organic compound
TAL	Target Analyte List
TCL	Target Compound List
TPH	total petroleum hydrocarbons
VOC	volatile organic compound

SUBAPPENDIX C3

Area of Concern 9 Data Gaps Evaluation Results

1.0 Introduction and Background

This subappendix presents the results of the data gaps evaluation and Part A Phase 2 Sampling Program for Area of Concern (AOC) 9 – Southeast Fence Line at the Pacific Gas and Electric Company (PG&E) Topock Compressor Station in Needles, California. The process for the data gaps evaluation is outlined in Sections 2.0 through 6.0 of the main text of Appendix A, Part A Phase 1 Data Gaps Evaluation Report, to the Soil RCRA Facility Investigation/Remedial Investigation (RFI/RI) Work Plan.

1.1 Background

AOC 9 is located in the southeast portion of Topock Compressor Station east of the facility fence line and just south of the visitor parking lot, as shown in Figure C3-1. It is located entirely on PG&E-owned property. The original extent of AOC 9 consisted of a small area of discolored soil that had been uncovered due to erosion. A broken stormwater discharge pipe was located in the same area of the stained soil, and information from former employees indicated that the pipe trench leading to the storm drain may have received runoff from leaks originating near the Auxiliary Building. The approximate location of the storm drain is shown on Figure C3-2.

On April 6, 2000, approximately 1.5 cubic yards of the stained soil were excavated and shipped offsite for disposal. The approximate location and size of the excavation is shown in Figure C3-2. After the majority of the stained soil was removed, a new stormwater drainage pipe was installed, and the area was backfilled with clean soil to prevent erosion of the slope. Sampling was conducted after the majority of the stained soil had been removed (PG&E, 2000). Due to the extremely steep slope at AOC 9, removal of additional soil was not feasible at the time. The excavated area was covered with 1 to 2 feet of clean fill (PG&E, 2000).

The approximate location of the storm drain and the April 2000 excavation shown on Figure C3-2 are based on historical employee interviews, site walk observations (that is, depression in the excavation area where backfill had settled), and the April 2000 excavation letter report (PG&E, 2000). However, recent employee interviews have revealed a possible alternate location for this storm drain located further south of the original location. This alternate location of the storm drain is also shown on Figure C3-2.

The AOC 9 boundary was extended to include additional sampling locations in response to California Environmental Protection Agency, Department of Toxic Substances Control comments on the *Draft RCRA Facility Investigation/Remedial Investigation Soil Investigation Work Plan, Part A, PG&E Topock Compressor Station, Needles, California,* referred to as the Soil Part A Work Plan (CH2M HILL, 2006). The extension was approximately 100 feet north to south and 50 feet east to west, centered on the alignment of the storm drain.

A graphical conceptual site model has been developed for AOC 9 based on the above site history and background, as shown in Figure C3-2. Table C3-1 presents primary sources, primary source media, potential release mechanisms, secondary source media, and potential secondary release mechanisms for AOC 9. (All tables and figures appear at the end of this subappendix.) A detailed discussion of the migration pathways, exposure media, exposure routes, and human and ecological receptors is included in the Soil Part A Data Quality Objective [DQO] Technical Memorandum, presented as Appendix A to the Part A Phase 1 Data Gaps Evaluation Report.

The primary source of contamination at AOC 9 is historical liquid discharge from a broken storm drain to shallow soil. While the actual depth of the pipe break is not known with certainty, based on similar site facilities and the limitations due to the steep slope at this location, it is expected to have been between 1 to 3 feet below ground surface (bgs). The quantity of liquid released from the broken storm drain is expected to be relatively small since—with the exception of storm events—the drain would have only captured small incidental leaks or spills from various systems at the Topock Compressor Station. The area could also have received surface runoff from the compressor station. Dark soil—what appears to be stained soil—is present along the west side of AOC 9 in a May 19, 1955 aerial photograph. This area is shown in Figure C3-2.

The primary source media at AOC 9 are surface and shallow soils. Liquids released to these areas could have infiltrated to deeper soils and/or flowed downhill in surface or shallow subsurface runoff. These flows would have entered the East Ravine and are addressed as part of AOC 10. Due to the steep angle of the slope at AOC 9, infiltration is likely to be a lesser pathway than surface runoff. Chemicals of potential concern (COPCs) in residual contamination in the area of the former broken stormwater discharge pipe could have migrated to deeper soils. Due to the relatively small quantity of liquid released, the angle of the slope, and shallow depth of the release of cooling water, leaching to groundwater from this area is unlikely; however, this pathway is assessed as part of DQO Decision 3. If present, organic constituents in surface soils would be expected to have been degraded by heat and light.

For AOC 9, a potential secondary release pathway is windblown dust contamination, which could have occurred as a result of dust being transported from the AOC. Windblown contamination, if any, would be limited to surface soils.

Because potential sources of COPCs to this unit are runoff from the compressor station and discharge of chromium-containing cooling water from the facility via a broken stormwater discharge pipe, Part A Phase 1 and historical soil were collected throughout AOC 9, including at the top of the slope near the compressor station, near the bottom of the slope, as confirmation samples following the excavation, and near the broken storm drain pipe and excavation.

1.2 AOC 9 Data

Nine historical soil samples (0 to 0.5 foot bgs) were collected from nine locations (#4 through #12) in AOC 9 prior to the Part A Phase 1 investigation, as shown in Figure C3-1. These historical samples may have been collected along the alternate location of the storm drain shown on Figure C3-2. Historical soil samples were analyzed for five constituents: total chromium, hexavalent chromium, copper, nickel, and zinc.

During the 2008 Part A Phase 1 soil investigation, 30 soil samples (from 0 to 0.5, 2 to 3, and 5 to 6 feet bgs) were collected from 14 sample locations (AOC9-1 through AOC9-14), as shown in Figure C3-1. Part A Phase 1 soil samples collected in AOC 9 were generally analyzed for Title 22 metals, hexavalent chromium, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), pH, asbestos, pesticides, and polychlorinated biphenyls (PCBs). Ten percent of the Phase 1 soil samples collected in AOC 9 (three soil samples) was analyzed for the full inorganic and organic suites per the CERCLA Target Analyte List and Target Compound List (TAL/TCL). Surface soil samples were not analyzed for VOCs. In addition, synthetic precipitation leaching procedure extraction was conducted on surface soil samples (collected from 0 to 0.5 foot bgs) at sample locations AOC9-7 and AOC9-8. The leachate from the synthetic precipitation leaching procedure extractions was analyzed for total and hexavalent chromium. The leachate results from the synthetic precipitation leaching procedure extractions are presented in Table C3-2. Soil results were validated, and the data quality evaluation is included in Appendix D to the Part A Phase 1 Data Gaps Evaluation Report.

A small area of surficial white powder material was observed in AOC 9 in the immediate vicinity of AOC9-14. A sample of this white powder material was collected at 0.5 foot bgs at sample location AOC9-14. A soil sample was also collected at 2 to 3 feet bgs, beneath the white powder. The white powder sample was analyzed for Title 22 metals, hexavalent chromium, SVOCs, PAHs, asbestos, and pH, and the soil sample was analyzed for Title 22 metals, hexavalent chromium, PAHs, asbestos, and pH.

All historical and Part A Phase 1 data considered Category 1 were used as inputs to the four DQO decisions for AOC 9.

2.0 Decision 1 – Nature and Extent

This section describes the nature and extent of residual soil concentrations of COPCs and chemicals of potential ecological concern (COPECs) at AOC 9. Laboratory analytical results for historical and Phase 1 soil samples and the white powder sample at AOC 9 are presented in Tables C3-3 through C3-9. Table C3-10 presents a statistical summary of soil analytical results for COPCs and COPECs that were either detected above the laboratory reporting limits or not detected but where the reporting limits for one or more samples was greater than the interim screening value. The white powder sample results are not included in the statistical summary of soil data. The soil data are discussed first, followed by the data for the white powder sample.

2.1 Summary of AOC 9 Soil Data

Antimony, beryllium, cadmium, selenium, silver, cyanide, TPH-gasoline, VOCs, and SVOCs were not detected in soil samples collected in AOC 9. Table C3-10 lists the 44 detected constituents, including four calculated quantities (benzo(a)pyrene equivalents, total low-molecular-weight PAHs, total high-molecular-weight PAHs, and total PCBs). Ten of these constituents (aluminum, calcium, iron, magnesium, manganese, potassium, sodium, Aroclor-1254, total PCBs, and 4,4-dichlorodiphenyldichloroethylene [4,4-DDE]) were detected in the TAL/TCL samples.

Thirty-two of the constituents detected at AOC 9 (arsenic, barium, cobalt, vanadium, aluminum, calcium, iron, magnesium, manganese, potassium, sodium, Aroclor-1254, 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene, total PCBs, total low-molecular-weight PAHs, total high-molecular-weight PAHs, TPH-diesel, and TPH-motor-oil) were detected at concentrations below their respective interim screening levels. Twelve constituents (total chromium, hexavalent chromium, copper, lead, mercury, molybdenum, nickel, thallium, zinc, benzo(a)pyrene, benzo(a)pyrene equivalents, and 4,4-DDE) were detected one or more times at concentrations exceeding the interim screening levels.

Eight constituents (total chromium, hexavalent chromium, copper, lead, mercury, zinc, benzo(a)pyrene, and benzo(a)pyrene equivalents) were detected four or more times at concentrations exceeding the interim screening level; the distributions of these constituents are shown in Figures C3-1 and C3-3 to C3-8.

One sample associated with AOC 10 (AOC 10a-1) is located within approximately 30 feet of the AOC 9 boundary and slightly down/cross-slope. This sample was collected in a stained area below a stormwater pipe outfall. To provide further context for the evaluation of potential data gaps, the data for this sample are also shown in Figures C3-1 and C3-3 to C3-8. Two proposed AOC 10 Phase 2 sample locations (AOC10a-2 and AOC10a-3) associated with sample location AOC10a-1 are reflected in the AOC 9 data gaps evaluation since these proposed AOC 10 Phase 2 sample locations are downslope of AOC 9.

2.2 Nature and Extent Evaluation for Soil

The following subsection discusses the nature and extent of detected COPCs and COPECs detected above interim screening levels at AOC 9. As discussed in Section 3.2 of the Part A Phase 1 Data Gaps Evaluation Report, multiple factors were considered to assess whether the nature and extent of a specific constituent has been adequately delineated. Section 2.5 of this subappendix summarizes the constituents that may require further evaluation, and Section 6.0 of this subappendix provides the recommended follow-up sampling for the Part A Phase 2 soil investigation needed to fill quantitative data gaps, meet agency requirements, and further progress toward decision-making for soil remediation.

2.2.1 Total Chromium

Total chromium was detected in 38 of 38 soil samples collected at AOC 9. Detected concentrations of total chromium exceeded the interim screening level (39.8 milligrams per kilogram [mg/kg]) (background threshold value [BTV]/ecological comparison value [ECV]) eight times (maximum detected concentration of 398 mg/kg at #10), as shown in Tables C3-3 and C3-10 and Figure C3-1. Only one of the detected concentrations of total chromium (old sample location #10 collected at 0.5 foot bgs) exceeded the United States Environmental Protection Agency 2008 regional screening level (RSL) for residential use (280 mg/kg) but was well below the commercial/industrial regional screening level (1,400 mg/kg). The lateral extent of concentrations exceeding the interim screening level is generally limited to the western AOC 9 boundary, with the exception of two locations (#10 and AOC9-7). Location #10 is located in the north central portion of AOC 9, and AOC9-7 is located outside the AOC boundary and downslope from the AOC.

2.2.2 Hexavalent Chromium

Hexavalent chromium was detected in 22 of 38 soil samples collected at AOC 9. Detected concentrations of hexavalent chromium exceeded the interim screening level (0.83 mg/kg) (BTV) 16 times (maximum detected concentration of 114 mg/kg at #10), as shown in Tables C3-3 and C3-10 and Figure C3-2. Only two of the detected concentrations of hexavalent chromium exceeded the residential California Environmental Protection Agency, Department of Toxic Substances Control residential California human health screening level (CHHSL) of 17 mg/kg and commercial/industrial CHHSL of 37 mg/kg; no detected concentrations exceeded the ECV (139.6 mg/kg). The lateral extent of samples with concentrations exceeding the interim screening level is limited to the northern portion of AOC 9 and areas downslope of this AOC. At many locations, the deepest samples have concentrations exceeding the interim screening level; however, in most cases, only shallow samples (maximum depth of 6 feet bgs) were collected during the Part A Phase 1 and previous investigations.

2.2.3 Copper

Copper was detected in 38 of 38 soil samples collected at AOC 9. Detected concentrations of copper exceeded the interim screening level (16.8 mg/kg) (BTV) 10 times (maximum detected concentration of 50.4 mg/kg at #9), as shown in Tables C3-3 and C3-10 and Figure C3-3. Four samples exceeded the ECV (20.6 mg/kg). The maximum sample result of 50.4 mg/kg at #9 exceeded two times the ECV. None of the detected concentrations exceeded residential or commercial/industrial CHHSLs (3,000 mg/kg and 38,000 mg/kg, respectively). This location is located near the northwest portion of the AOC near the compressor station fence line and the historical broken stormwater discharge pipe. Samples with concentrations below the interim screening level surround this location laterally and vertically. Remaining detected concentrations exceeding the interim screening level ranged from 17 to 35.6 mg/kg.

2.2.4 Lead

Lead was detected in 29 of 29 soil samples collected at AOC 9. Detected concentrations of lead exceeded the interim screening level (8.39 mg/kg) (BTV/ECV) 19 times (maximum detected concentration of 59 mg/kg at AOC9-8), as shown in Tables C3-3 and C3-10 and Figure C3-4. None of the detected concentrations exceeded the residential or commercial/ industrial CHHSLs (80 mg/kg and 320 mg/kg, respectively). Lead concentrations exceeded the interim screening level across most of AOC 9. At many locations, the deepest samples, collected at 2 feet bgs, have concentrations exceeding the interim screening level.

2.2.5 Mercury

Mercury was detected in four of 29 samples collected at AOC 9. Detected concentrations of mercury exceeded the interim screening level (0.0125 mg/kg) (ECV) four times (maximum detected concentration of 0.27 mg/kg at AOC9-5), as shown in Tables C3-3 and C3-10 and Figure C3-5. None of the detected concentrations exceeded the residential and commercial/ industrial CHHSLs (18 mg/kg and 180 mg/kg, respectively). The ECV of 0.0125 mg/kg is below the capability of the instrumentation to detect mercury. As a result, the 25 nondetected sample results had reporting limits that exceeded the ECV. These reporting limits ranged from 0.099 to 0.1 mg/kg. The four sample locations with detectable concentrations of mercury are located in the central portion of AOC 9. Samples with

concentrations below the detection limits are located to the north and south of these locations but not the east and west. At two of the four locations, only the deeper samples, collected at 2 feet bgs, have detectable concentrations exceeding the interim screening level; mercury concentrations in the surface samples were below the detection limit.

2.2.6 Molybdenum

Molybdenum was detected in two of 29 soil samples collected from AOC 9, both from boring AOC9-8. One detected concentration of 4.5 mg/kg exceeded the interim screening level of 1.37 mg/kg (BTV) and the ECV (2.25 mg/kg), as shown in Tables C3-3 and C3-10. Neither detected concentration exceeded residential and commercial/industrial CHHSLs (380 mg/kg and 4,800 mg/kg, respectively). AOC9-8 is located in the northwestern portion of the AOC near the compressor station fence line and the historical broken stormwater discharge pipe. Samples with concentrations below the interim screening level are located to the north, east, and south of this location. Samples were not collected west of this sample location (closer to the compressor station fence line). The deepest sample at AOC9-8 has a molybdenum concentration below the interim screening level.

2.2.7 Nickel

Nickel was detected in 38 of 38 soil samples collected from AOC 9. As shown in Tables C3-3 and C3-10, one detected concentration of 29 mg/kg at AOC 9-12 slightly exceeded the interim screening level (27.3 mg/kg) (BTV/ECV) but did not exceed the residential and commercial/industrial CHHSLs (1,600 mg/kg and 16,000 mg/kg, respectively). This location is located in the southwestern portion of the AOC near the compressor station fence line. Samples with concentrations below the interim screening level are located to the north and east of this location. Samples were not collected to the west (on the compressor station) or to the south of this location. The exceedance was detected in the deepest soil sample collected at this location.

2.2.8 Thallium

Thallium was detected in one of 29 soil samples collected from AOC 9. As shown in Tables C3-3 and C3-10, the detected concentration of thallium (4.1 mg/kg at AOC9-8) exceeded the interim screening level (2.32 mg/kg) (ECV) but did not exceed the residential and commercial/industrial CHHSLs (5 mg/kg and 63 mg/kg, respectively). This location is located in the northwestern portion of the AOC near the compressor station fence line and the historical broken stormwater discharge pipe. Samples with concentrations below the interim screening level are located to the north, east, and south of this location but were not collected to the west closer to the compressor station fence line. At location AOC9-8, the deepest sample has a nickel concentration below the interim screening level.

2.2.9 Zinc

Zinc was detected in 38 of 38 soil samples collected at AOC 9. Detected concentrations of zinc exceeded the interim screening level (58 mg/kg) (BTV/ECV) 18 times (maximum detected concentration of 1,000 mg/kg at AOC9-8), as shown in Tables C3-3 and C3-10 and Figure C3-6. None of the detected concentrations exceeded residential and commercial/ industrial CHHSLs (23,000 mg/kg and 100,000 mg/kg, respectively). The lateral extent of samples with concentrations exceeding interim screening level is limited to the central portion of AOC 9 and areas downslope of this AOC. Samples with concentrations below the interim screening level are located to the north and south of these locations but not to the

west or to the east. At many locations, the deepest samples have concentrations exceeding the interim screening level; however, in most cases, only shallow samples (maximum depth of 6 feet bgs) were collected during the Part A Phase 1 and previous investigation.

2.2.10 Benzo(a)pyrene, Benzo(a)pyrene Equivalents, and PAHs

Benzo(a)pyrene was detected in 24 of 29 soil samples collected from AOC 9. Detected concentrations of benzo(a)pyrene exceeded the interim screening level (38 micrograms per kilograms [µg/kg]) (residential CHHSL) six times. Several other PAHs were detected in soil samples collected from AOC 9 but had concentrations below respective interim screening levels. To assist with evaluation of PAHs for human health, benzo(a)pyrene equivalents were calculated for each of the soil samples collected at AOC 9, as shown in Table C3-5. Benzo(a)pyrene equivalents values exceeded the interim screening level of 38 µg/kg (residential CHHSL) seven times (maximum calculated concentration of 110 µg/kg at AOC 9-5 and AOC 9-6), as shown in Tables C3-5 and C3-10 and Figure C3-7. The lateral extent of samples with concentrations exceeding interim screening level is limited to the eastern, southern, and western portions of AOC 9. Samples with concentrations below the interim screening level are located to the north but not to the east, south, or west. At two locations (AOC9-5 and AOC9-10), the deepest samples (collected at 3 feet bgs) have concentrations exceeding interim screening level.

To assist with evaluation of PAHs for ecological risk, detected concentrations of low-molecular-weight PAHs and high-molecular-weight PAHs were summed and compared to the PAH low-molecular-weight and PAH high-molecular-weight ECVs (10,000 µg/kg and 1,160 µg/kg, respectively). None of the sums of detected concentrations exceeded the PAH low-molecular-weight and PAH high-molecular-weight ECVs.

2.2.11 Target Analyte List/Target Compound List Constituents

Aluminum, calcium, magnesium, potassium, sodium, Aroclor-1254, and 4,4-DDE were detected in the AOC 9 surface soil samples analyzed for the complete TAL/TCL suite of compounds. These constituents are discussed below.

Aluminum was detected in three of three surface soil samples collected from AOC 9. The maximum detected concentration of aluminum was 13,000 mg/kg at AOC9-12, which is below the interim screening level (16,400 mg/kg) (BTV), as shown in Tables C3-4 and C3-10. Remaining detected concentrations of aluminum are 6,900 and 10,000 mg/kg. None of the detected concentrations exceeded residential and commercial CHHSLs (77,000 mg/kg and 990,000 mg/kg, respectively). An ECV has not been established for aluminum.

Calcium was detected in three of three surface soil samples collected from AOC 9. The maximum detected concentration of calcium was 38,000 mg/kg at AOC9-12, which is below the interim screening level (66,500 mg/kg) (background value), as shown in Tables C3-4 and C3-10. Remaining detected concentrations of calcium are both 26,000 mg/kg. Residential and commercial/industrial CHHSLs and an ECV have not been established for calcium.

Iron was detected in three of three surface soil samples collected from AOC 9. The maximum detected concentration of iron was 22,000 mg/kg at AOC9-12, which is below the interim screening level of 55,000 mg/kg (residential RSL), as shown in Tables C3-4 and C3-10. Remaining detected concentrations of iron are 12,000 and 17,000 mg/kg. Residential and commercial/industrial CHHSLs and an ECV have not been established for iron.

Magnesium was detected in three of three surface soil samples collected from AOC 9. The maximum detected concentration of magnesium was 9,600 mg/kg at AOC9-12, which is below the interim screening level (12,100 mg/kg) (background value), as shown in Tables C3-4 and C3-10. Remaining detected concentrations of magnesium are 5,700 and 7,400 mg/kg. Residential and commercial/industrial CHHSLs and an ECV have not been established for magnesium.

Manganese was detected in three of three surface soil samples collected from AOC 9. The maximum detected concentration of manganese was 310 mg/kg at AOC9-12, which is below the interim screening level (402 mg/kg) (BTV/ECV), as shown in Tables C3-4 and C3-10. None of the detected concentrations exceeded residential and commercial/industrial CHHSLs (1,800 mg/kg and 23,000 mg/kg, respectively).

Potassium was detected in three of three surface soil samples collected from AOC 9. The maximum detected concentration of potassium was 2,500 mg/kg at AOC9-12, which is below the interim screening level of 4,400 mg/kg (BTV), as shown in Tables C3-4 and C3-10. Remaining detected concentrations of potassium are 1,500 and 2,300 mg/kg. Residential and commercial/industrial CHHSLs, RSLs, and an ECV have not been established for potassium.

Sodium was detected in three of three surface soil samples collected from AOC 9. The maximum detected concentration of sodium was 810 mg/kg at AOC9-5, which is below the interim screening level of 2,070 mg/kg (BTV), as shown in Tables C3-4 and C3-10. Remaining detected concentrations of sodium are 450 and 620 mg/kg. Residential and commercial/industrial CHHSLs, RSLs, and an ECV have not been established for sodium.

Aroclor-1254 was detected in three of five soil samples collected from AOC 9; both surface and subsurface soil (2 to 3 feet bgs) samples were collected. The maximum detected concentration of Aroclor-1254 was 160 µg/kg at AOC9-5 at 2 to 3 feet bgs, which is below the interim screening level of 220 µg/kg (residential RSL). Remaining detected concentrations of Aroclor-1254 are 44 and 160 µg/kg. To assist with evaluation of PCBs for ecological risk, detected concentrations of the Aroclors detected (only Aroclor-1254 was detected at AOC 9) were summed and the total PCB values were compared to the ECV. The maximum calculated value for total PCBs was 160 µg/kg, which is below the total PCB ECV of 204 µg/kg, as shown in Table C3-8. The remaining calculated total PCB concentrations are 44 and 160 µg/kg (both surface and shallow soil samples at AOC9-5 contained 160 µg/kg total PCBs).

4,4-DDE (3.2 µg/kg at AOC9-11), the daughter product of pesticide 4,4-dichlorodipheynyl-trichloroethane (4,4-DDT), was the only pesticide detected, which was above the interim screening level (2.1 µg/kg, ECV), as shown in Tables C3-7 and C3-10. The detected concentration did not exceed the residential or commercial/industrial CHHSLs (1,600 µg/kg and 6,300 µg/kg, respectively).

The only possible historical source of 4,4-DDT and its daughter products in the area would have been pest (insect) control. As such, any presence of 4,4-DDT and its daughter products would represent a nonpoint source and should be evaluated as such. 4,4-DDE was detected very infrequently in two other AOCs (AOC 11 and AOC 14) in addition to AOC 9. Sitewide, 4,4-DDE was only detected three times above its interim screening value (out of 72 total samples analyzed for this compound).

As discussed in Section C.2 of the main text of this appendix, PG&E recommends that 4,4-DDE not be considered COPC/COPEC for this AOC, and no further sampling is recommended for this constituents. Pesticides and other TAL/TCL constituents have been fully discussed in Section C.2.

2.3 White Powder Sample

As previously mentioned, a sample of white powder material (location AOC9-14 at 0 to 0.5 foot bgs) was collected and sent to the laboratory for analysis. White powder material was encountered only in this one location and only in the surface sample. In addition, a soil sample was collected beneath the white powder at 2 to 3 feet bgs and sent to the laboratory for analysis. The following compounds were detected in the white powder material sample: arsenic, barium, total chromium, hexavalent chromium, copper, lead, nickel, vanadium, zinc, and TPH-motor-oil. Of those compounds detected, arsenic (12 mg/kg), hexavalent chromium (1.7 mg/kg), copper (24 mg/kg), lead (34 mg/kg), and zinc (81 mg/kg) were detected above their respective interim screening levels.

The following compounds were detected in the soil sample collected at 2 to 3 feet bgs, beneath the white powder material: arsenic, barium, total chromium, cobalt, copper, lead, nickel, vanadium, zinc, several PAHs, TPH-diesel, and TPH-motor-oil. Of those compounds detected, only copper (17 mg/kg), lead (13 mg/kg), and zinc (61 mg/kg) were detected above their respective interim screening levels.

The lateral and vertical extents of the white powder material at AOC 9 have been defined. The nature and extent discussion presented above incorporates all of the constituents detected at this location that exceeded the lowest interim screening value, with the exception of arsenic. This was the only location where the arsenic concentration exceeded the interim screening value, and the lateral and vertical extents of arsenic at AOC 9 has been defined.

The white powder sample and the underlying soil sample were also analyzed for asbestos. Bulk samples analyzed by polarized light microscopy indicated that asbestos fibers were present in both samples. To confirm the presence of asbestos fibers, the white powder sample was also analyzed by California Air Resource Board Method 435 and transmission electron microscopy. California Air Resource Board Method 435 did indicate that very low levels of asbestos were present in the soil sample (detected concentration of less than 0.1 percent, where the detection limit was less than 0.1 percent); however, the transmission electron microscopy analysis indicated that asbestos was not detected above the detection limit. Based on these results, a very small percentage of asbestos fibers (less than 0.1 percent) are present in the white powder and soil samples.

2.4 Central Tendency Comparison to Background Threshold Values

Seven metals (total chromium, hexavalent chromium, copper, lead, molybdenum, nickel, and zinc) were detected above their respective Topock site-specific BTVs in soil samples collected from AOC 9. A central tendency comparison was performed for five of these seven metals (total chromium, copper, lead, nickel, and zinc) to compare the AOC 9 soil data set for these metals with the corresponding Topock soil background data set to determine whether a difference exists between the two populations and if additional sampling is required for a given metal (see Table C3-11 at the end of this subappendix and Figure 3-1 in the Part A Phase 1 Data Gaps Evaluation Report).

Metals in either the AOC 9 data set or background data set that were detected infrequently (less than five detects) or had a limited number of results (less than eight) were not tested. There were insufficient detections of molybdenum at AOC 9 to conduct the test, and there were insufficient detections of hexavalent chromium in the background data set to allow for a central tendency comparison.

No statistical difference between the two populations was noted for nickel, as shown in Table C3-11. Results from the Gehan test indicated that site concentrations for total chromium, copper, lead, and zinc may exceed background. The lateral and vertical extents of copper have been adequately defined, and additional sampling is proposed for total chromium, lead, and zinc.

2.5 Nature and Extent Conclusions

Based on the site history, background, and conceptual site model, qualitative review indicates than decision error has been held to an acceptable level. Although a recent employee interview presented a possible alternate location for the storm drain, sufficient data of acceptable quality have been attained through collection of historical/Part A Phase 1 soil samples in areas most likely to have been impacted by incidental leaks and stormwater from the facility via a broken stormwater discharge pipe (for example, downslope of the approximate location of the broken stormwater pipe and in the former stained soil removal area). Detections of PAHs, lead, pesticides, and PCBs in soils outside of the expected area impacted by the broken discharge pipe may be related to the compressor station runoff or other factors. Evaluation of potential impacts to soil from compressor station runoff or other factors will be addressed in the Perimeter Area investigation program described in Appendix C of the Soil RFI/RI Work Plan.

Review of the nature and extent discussions above indicates that the lateral extent of samples with concentrations exceeding the interim screening level is confined primarily to the area near the eastern downslope portion of AOC 9 and along the bottom of the ravine in AOC 10; the vertical extent is confined primarily to the area in and downslope of the former stained soil removal area, and the central portion of AOC 9 near the top of the slope close to the fence line. Within these areas, the lateral and/or vertical extents of hexavalent chromium, lead, mercury, PAHs, total chromium, and zinc have not been defined.

Based on the DQO, the following data gaps were identified to resolve Decision 1:

- Data Gap #1 - Vertical extent of contamination in and downslope of the previous stained soil removal area
- Data Gap #2 - Vertical extent of contamination outside of the previous stained soil removal area near the top of the AOC 9 slope
- Data Gap #3 - Lateral and vertical extents of contamination near the eastern (downslope) portion of AOC 9 and along the bottom of the ravine

The proposed Phase 2 soil sample locations to fill the identified data gaps are presented in Section 6.0.

3.0 Decision 2 – Data Sufficient to Estimate Representative Exposure Point Concentrations

For Decision 2, data were evaluated to determine if the AOC 9 data are sufficient to conduct human health and ecological risk assessments based on the criteria described in Section 4.0 of the Part A Phase 1 Data Gaps Evaluation Report. The principal consideration for Decision 2 was whether there were sufficient data to estimate a representative exposure point concentration (EPC). All available data (including historical data) at AOC 9 were reviewed. The sample designated as "white powder" (AOC9-14 at 0 to 0.5 foot bgs) was included in the data reviewed as a conservative measure, assuming that exposure to material described as "white powder" would not differ significantly from exposure to surrounding soil. Data from AOC 10a-1 were also included in the evaluation to support the ecological risk assessment because this sample location is within approximately 30 feet of the AOC 9 boundary and slightly down/cross-slope. The data for AOC 10a-1 are provided in Appendix C4.

Table C3-10 summarizes the results of the evaluation to determine if data are sufficient to estimate a representative EPC. Data were reviewed for all chemicals that were detected in at least one sample and exceeded at least one comparison value. In general, existing data are adequate to support EPC development for detected chemicals that exceeded one or more comparison values (10 metals, PAHs, and total DDT [that is, DDT-R]), as described below. Phase 2 data will be added to the existing data set to calculate the final EPC (that is, after Decision 1 is satisfied).

3.1 Metals

Sufficient data (numbers of samples and detections) are available to calculate EPCs for arsenic, total chromium, hexavalent chromium, copper, lead, nickel, and zinc using ProUCL. For the remaining metals (mercury, molybdenum, and thallium), additional data collection is not expected to significantly change the results of the risk assessment for one or both of the following reasons:

- The compound is very infrequently detected (mercury, molybdenum, and thallium) and additional nondetects would be expected.
- The maximum detected concentration is within two times the lowest risk-based comparison value (thallium).

3.2 Polycyclic Aromatic Hydrocarbons

Sufficient data (numbers of samples and detections) are available to calculate EPCs for benzo(a)pyrene toxicity equivalents and high molecular weight PAHs using ProUCL.

3.3 Pesticides

4,4-DDE was detected in one of three samples at a concentration near the ECV and the detection limit, as shown in Table C3-12. The data are insufficient to allow calculation of an EPC using ProUCL, and the maximum would be selected as the EPC with the existing data set. The total concentration of DDT and metabolites (DDT-R) (3.2 µg/kg) is less than two times the ECV. Collection of additional data is not expected to yield sufficient detections to

strongly influence the EPC. Therefore, no additional data collection is recommended to support EPC development.

4.0 Decision 3 – Potential Threat to Groundwater from Residual Soil Concentrations

The following preliminary analysis was performed with the existing data set to assess the potential threat to groundwater and to assess if additional data, above and beyond that necessary for Decision 1, is needed to resolve Decision 3. Additional evaluations will be performed as appropriate as data are collected to resolve Decision 1. Data collected to satisfy Decision 1 - Nature and Extent Evaluation - will provide the final representative data set that will be used to assess the threat to groundwater. The preliminary conclusions regarding the threat to groundwater are based on available data and will be revisited after the implementation of the soil investigation. The combined data set will then be evaluated for data gaps, and further conclusions regarding the threat to groundwater will be provided to the agencies and stakeholders for review prior to submittal of the RFI/RI Volume 3.

Table C3-13 presents the results of the tiered screening analysis for AOC 9. Ten metals had concentrations in excess of their respective BTV. Of those 10, hexavalent chromium, molybdenum, and thallium had one or more concentrations exceeding the calculated soil screening levels, as shown in Table C3-14. Numerical modeling was conducted to evaluate the potential of these three metals to leach into groundwater. Based on initial model screening simulations, the potential for hexavalent chromium and thallium to leach to groundwater could not be ruled out. These two constituents are discussed further below.

4.1 Thallium

At AOC 9, only one out of 29 samples had a detectable concentration of thallium (4.1 mg/kg). This single detection prompted the additional analysis. The simulated leaching concentration of thallium was likely due to the following factors:

- Nondetects in the initial concentration profile were input as one-half of the detection limit, resulting in a non-zero concentration and mass throughout the simulated vadose zone.
- Thallium has a very low Kd (dissociation constant) of 3.2 milliliters per gram.
- The background upper tolerance limit for thallium in groundwater is very low at 0.908 micrograms per liter.

Additional data are not needed for thallium; however, further refinement of the vadose zone model is proposed.

4.2 Hexavalent Chromium

The simulated leaching concentrations of hexavalent chromium were likely due to the following factors:

- The initial screening approach assigned the maximum concentration found at each depth interval across the entire interval, even though many other samples with far lower concentrations were observed at each level.

- The presence of hexavalent chromium at the deepest sampling interval at several locations required assignment of that concentration from that depth down to the water table.

Additional data are needed to better define the vertical extent of hexavalent chromium at AOC 9 and to assess if a current threat to groundwater exists. The screening model will be also refined with the new vertical data to more closely simulate vadose zone soil conditions.

5.0 Decision 4 – Data Sufficiency to Support the Corrective Measures Study/Feasibility Study

As discussed in Section 6.0 of the Part A Phase 1 Data Gaps Evaluation Report, various types of data will be needed to support the evaluation of technologies/remedial actions for the corrective measures study/feasibility study (CMS/FS). The types of data needed vary somewhat depending on the specific technology to be evaluated. The categories of data required for technologies that may be applicable to the areas outside the fence line include:

- Extent of COPCs and COPECs above action levels (required for all technologies).
- Waste characterization parameters (required if soil may be disposed of offsite), as discussed in Table 6-1 in the Part A Phase 1 Data Gaps Evaluation Report.
- Constituent leachability (required to assess the need for fixation of leachable compounds and/or the feasibility of certain soil washing technologies).
- Soil physical properties (required for all technologies; however, the properties required vary among the different technologies), as discussed in Table 6-1 in the Part A Phase 1 Data Gaps Evaluation Report.
- Surface and subsurface features (required to determine whether there are physical impediments to implementing specific technologies and/or remediating specific areas).
- If present, volumes of white powder and debris.

The following is a summary of data for AOC 9 that are currently available to support CMS/FS.

5.1 Extent of COPCs and COPECs

A summary of the nature and extent of detected COPCs/COPECs is presented in Section 2.0 Decision 1 – Nature and Extent. The lateral and vertical extents of the COPCs/COPECs is discussed in Section 2.2, data results for selected constituents are shown in Figure C3-1 and Figures C3-3 through C3-8, and data gaps associated with lateral and vertical delineation are discussed in Section 6.0.

5.2 Waste Characterization Parameters

Only partial waste characterization data are available to characterize the soil and other materials to be potentially removed for remedial action and disposed in an offsite permitted facility. While none of the soils or other materials is considered ignitable, corrosive, or reactive, data are lacking to complete the evaluation of the toxicity characteristic. Total chemical concentrations are available to characterize the soil, certain debris, and white

powder material relative to California Title 22 total threshold limit concentrations. The maximum concentrations of these metals were compared to the California Title 22 total threshold limit and none of the metals in AOC 9 exceeded the total threshold limit, as shown in Table C3-15. The maximum detected concentrations were also compared to the soluble threshold limit concentrations, and none of the metals concentrations in AOC 9 exceeded 10 times the soluble threshold limit concentrations, as shown in Table C3-15. Additional data regarding potential COPC/COPEC leachability include synthetic precipitation leaching procedure (SPLP) analysis for total and hexavalent chromium, as shown in Table C3-2. SPLP analysis was conducted only for soil samples (no white powder or debris samples were tested using SPLP).

5.3 Soil Physical Properties

Soil physical property data collected during the Part A Phase 1 investigation was limited to grain size analysis only. Specific soil physical property data (that is, porosity, grain size, density, organic carbon content) are required to support the CMS/FS, as described in Table 6-1 of the Part A Phase 1 Data Gaps Evaluation Report.

5.4 Surface and Subsurface Features

While there is extensive information regarding surface and subsurface features at AOC 9, additional information may be required once areas requiring remediation have been defined. Nearby roads and road structures, vegetation, and the location of bedrock are known for AOC 9. However, subsurface utilities, including gas transmission pipelines and any culverts or other features, may have to be more precisely defined to evaluate the feasibility and cost of certain remedial alternatives and to prepare construction specifications.

5.5 Volumes of White Powder and Debris

Only a small patch of white powder was observed and sampled at AOC 9, as discussed in Section 2.3 of this subappendix. No debris was observed at AOC 9.

Additional soil physical parameter data are needed to support the corrective measures study/feasibility study.

6.0 Summary of Data Gaps and Proposed Phase 2 Soil Sample Locations to Fill Identified Gaps

Based on the Part A DQO, data gaps were identified for three of the four decisions and are summarized below by decision:

- **Decision 1 (Nature and Extent)** – the following data gaps were identified to resolve this decision:
  - Data Gap #1 – Vertical extent of contamination in and downslope of the previous stained soil removal area
  - Data Gap #2 – Vertical extent of contamination outside of the previous stained soil removal area near the top of the AOC 9 slope

  - Data Gap #3 – Lateral and vertical extents of contamination near the western (downslope) portion of AOC 9 and along the bottom of the ravine

- **Decision 2 (Data Sufficient to Estimate Representative EPCs) –** no data gap was identified for this decision.
- **Decision 3 (Potential Threat to Groundwater from Residual Soil Concentrations) –** the following data gap was identified to resolve this decision:
  - Data Gap #4 – Vertical extent of contamination to support refinement of the vadose leaching zone model
- **Decision 4 (Data Sufficient to Support the CMS/FS) –** the following data gap was identified to resolve this decision:
  - Data Gap #5 – Soil physical property parameters to support the CMS/FS

Table C3-16 summarizes the proposed Phase 2 sample locations, depths, description/ rationale for each location (that is, which data gaps they would address), and analytes. Proposed Phase 2 sample locations are also shown on Figure C3-9.

6.1 Access Restrictions

AOC 9 is located on a steep slope just outside the compressor station fence line. Most of the proposed Phase 2 sample locations are located on the steep slope or in drainage areas along the pipeline access road located at the toe of the slope beneath the AOC. Due to the unstable nature of the slope and lack of level ground, sample collection methods are limited to hand tools and/or backhoe.

7.0 References

ARCADIS. 2009. *Technical Memorandum 4: Ecological Comparison Values for Additional Detected Chemicals in Soil*. July 1.

CH2M HILL. 2006. *RCRA Facility Investigation/Remedial Investigation Soil Investigation Work Plan, Part A, PG&E Topock Compressor Station, Needles, California*. November 16.

Pacific Gas and Electric Company (PG&E). 2000. Letter from Mel Wong/PG&E to Robert Senga/DTSC. "Additional Soil Sampling, Corrective Action Consent Agreement for Bat Cave Wash Area, PG&E Topock Compressor Station, Needles, California, USEPA ID No. CAT080011729." April 5.

Tables

TABLE C3-1
Conceptual Site Model – Area of Concern 9
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
PG&E Topock Compressor Station, Needles, California

Primary Source	Primary Source Media	Potential Release Mechanism	Secondary Source Media	Potential Secondary Release Mechanism
Runoff from compressor station	Surface Soil	Percolation and/or infiltration Potential entrainment in stormwater/surface water runoff	Surface Soil Subsurface Soil Potential Groundwater	Wind erosion and atmospheric dispersion of surface soil Potential volatilization and atmospheric dispersion/enclosed space accumulation Potential extracted groundwater
Discharge from compressor station via broken stormwater/ trench drain pipe	Shallow Soil	Percolation and/or infiltration	Surface Soil Subsurface Soil Potential Groundwater	Wind erosion and atmospheric dispersion of surface soil Potential volatilization and atmospheric dispersion/enclosed space accumulation Potential extracted groundwater[a]

[a] Quantitative evaluation of the groundwater pathway completed in the Groundwater Risk Assessment (ARCADIS, 2009); Part A Phase I data will be reviewed in the data gaps assessment to evaluate potential fate impacts or current localized impacts to groundwater from soil.

TABLE C3-2
Synthetic Precipitation Leaching Procedure (SPLP) Extraction Results
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Topock Compressor Station, Needles, California

Location	Sample Date	Depth (ft bgs)	SPLP Results in mg/L	
			Hexavalent Chromium	Chromium (total)
AOC9				
AOC9-7	09/18/08	0-0.5	0.0238 J	0.0402
AOC9-8	10/01/08	0-0.5	1.57 J	1.7

Notes:

ft bgs feet below ground surface
mg/L milligrams per liter
J concentration estimated by laboratory or data validation

TABLE C3-3
Sample Results: Metals
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
AOC9-1	10/01/08	0 - 0.5	N	ND (2) *	6.2	93	ND (1) *	ND (1)	1.03	23	5.4	9.1	19	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	26	46
	10/01/08	2 - 3	N	ND (2) *	4.1	89	ND (1) *	ND (1)	ND (0.478)	9.7	4.3	5	4.5	ND (0.1) *	ND (1)	7.4	ND (1)	ND (1)	ND (2)	17	17
AOC9-2	09/18/08	0 - 0.5	N	ND (2) *	3.2	120	ND (2) *	ND (1)	ND (0.401)	16	4.7	11	9.6	ND (0.099) *	ND (2) *	11	ND (1)	ND (2)	ND (4) *	25	33
	09/18/08	2 - 3	N	ND (2) *	3.3	150	ND (2) *	ND (1)	ND (0.406)	11	3	5.9	4.9	ND (0.1) *	ND (2) *	6.9	ND (1)	ND (2)	ND (4) *	20	20
AOC9-3	09/18/08	0 - 0.5	N	ND (2) *	3.2	110	ND (2) *	ND (1)	ND (0.402)	25	4.1	17	9	ND (0.1) *	ND (2) *	12	ND (1)	ND (2)	ND (4) *	24	49
	09/18/08	2 - 3	N	ND (2) *	3.5	130	ND (2) *	ND (1)	ND (0.454)	15	3.8	7.3	23	ND (0.1) *	ND (2) *	10	ND (1)	ND (2)	ND (4.1) *	23	92
AOC9-4	09/18/08	0 - 0.5	N	ND (2) *	3.7	120	ND (2) *	ND (1)	1.06	22	5	12	13	ND (0.1) *	ND (2) *	12	ND (1)	ND (2)	ND (4) *	29	53
	09/18/08	2 - 3	N	ND (2) *	3.9	110	ND (2) *	ND (1)	ND (0.402)	19	4.6	11	11	ND (0.1) *	ND (2) *	11	ND (1)	ND (2)	ND (4) *	25	42
AOC9-5	10/01/08	0 - 0.5	N	ND (2) *	4.9	90	ND (1) *	ND (1)	0.726	35	7.1	19	28	ND (0.1) *	ND (1)	17	ND (1)	ND (1)	ND (2)	30	100
	10/01/08	2 - 3	N	ND (2) *	6	130	ND (2) *	ND (1)	1	38	7.6	21	25	0.27	ND (2) *	20	ND (1)	ND (2)	ND (4) *	31	76
	10/01/08	2 - 3	FD	ND (2) *	7	120	ND (2) *	ND (1)	0.791	43	7.7	19	24	0.23	ND (2) *	19	ND (1)	ND (2)	ND (4) *	34	85
AOC9-6	09/18/08	0 - 0.5	N	ND (2) *	3.8	180	ND (2) *	ND (1)	0.789	25	5.4	12	23	0.14	ND (2) *	13	ND (1)	ND (2)	ND (4) *	31	68
	09/18/08	2 - 3	N	ND (2.1) *	3.8	120	ND (2.1) *	ND (1)	ND (0.458)	16	5	9.3	5	ND (0.1) *	ND (2.1) *	14	ND (1)	ND (2.1)	ND (4.2) *	25	31
AOC9-7	09/18/08	0 - 0.5	N	ND (2) *	2.2	94	ND (2) *	ND (1)	4.37	72	4.2	14	15	ND (0.1) *	ND (2) *	11	ND (1)	ND (2)	ND (4) *	22	120
	09/18/08	2 - 3	N	ND (2) *	4.3	83	ND (1) *	ND (1)	ND (0.411)	13	2.9	6.7	20	ND (0.1) *	ND (1)	6.7	ND (1)	ND (1)	ND (2)	18	29
AOC9-8	10/01/08	0 - 0.5	N	ND (2) *	3.6	100	ND (1) *	ND (1)	48.6 J	230	4.4	11	20	ND (0.1) *	1	10	ND (1)	ND (1)	ND (2)	20	1,000
	10/01/08	2.5 - 3	N	ND (2.1) *	6.3	130	ND (2.1) *	ND (1)	2.41	41	5.3	13	59	ND (0.1) *	4.5	12	ND (1)	ND (2.1)	4.1	25	130
	10/01/08	5.5 - 6	N	ND (2) *	4	87	ND (1) *	ND (1)	1.32	13	3.7	5.5	4.4	ND (0.1) *	ND (1)	8.1	ND (1)	ND (1)	ND (2)	17	21
AOC9-9	10/01/08	0 - 0.5	N	ND (2) *	5	120	ND (1) *	ND (1)	ND (0.404)	14	3.9	8	7	ND (0.1) *	ND (1)	8.1	ND (1)	ND (1)	ND (2)	19	34
	10/01/08	2.5 - 3	N	ND (2.1) *	4.8	91	ND (1) *	ND (1)	ND (0.415)	21	6.9	10	3.8	ND (0.1) *	ND (1)	15	ND (1)	ND (1)	ND (2.1)	32	41
	10/01/08	5.5 - 6	N	ND (2.1) *	4.9	97	ND (1) *	ND (1)	1.53	28	7.1	11	4.9	ND (0.1) *	ND (1)	15	ND (1)	ND (1)	ND (2.1)	31	53
	10/01/08	5.5 - 6	FD	ND (2.1) *	4.5	87	ND (1) *	ND (1)	1.28	27	7.3	10	4.4	ND (0.1) *	ND (1)	15	ND (1)	ND (1)	ND (2.1)	30	50
AOC9-10	10/01/08	0 - 0.5	N	ND (2) *	5.1	76	ND (1) *	ND (1)	0.418	28	6.8	11	18	ND (0.1) *	ND (1)	15	ND (1)	ND (1)	ND (2)	30	49
	10/01/08	2 - 3	N	ND (2) *	7.3	110	ND (2) *	ND (1)	0.494	30	8.1	15	15	0.11	ND (2) *	19	ND (1)	ND (2)	ND (4) *	35	110
AOC9-11	09/18/08	0 - 0.5	N	ND (2.1) *	3.6	130	ND (2.1) *	ND (1.1) *	ND (0.418)	18	4.5	8.5	7.7	0.13	ND (2.1) *	11	ND (1.1)	ND (2.1)	ND (4.3) *	25	35
	09/18/08	2 - 3	N	ND (2) *	3.4	120	ND (2) *	ND (1)	ND (0.406)	20	4.3	9.7	7.1	ND (0.1) *	ND (2) *	11	ND (1)	ND (2)	ND (4) *	24	30
AOC9-12	10/01/08	0 - 0.5	N	ND (2) J*	7.3	190 J	ND (2) *	ND (1)	0.727	34	9.4	19	13	ND (0.1) *	ND (2) *	24	ND (1)	ND (2)	ND (4.1) *	38	57
	10/01/08	2 - 3	N	ND (2.1) *	6.6	220	ND (2.1) *	ND (1)	ND (0.415)	40	11	17	11	ND (0.1) *	ND (2.1) *	29	ND (1)	ND (2.1)	ND (4.1) *	40	50
AOC9-13	09/19/08	0 - 0.5	N	ND (2) J*	5.2	180	ND (2) *	ND (1)	ND (0.404)	18	4.7	13	8.3	ND (0.099) *	ND (2) *	11	ND (1)	ND (2)	ND (4) *	27	36
	09/19/08	2 - 3	N	ND (2) *	3.8	130	ND (2) *	ND (1)	ND (0.409)	23 J	4.7	9.8	10	ND (0.1) *	ND (2) *	13	ND (1)	ND (2)	ND (4.1) *	27	35
	09/19/08	2 - 3	FD	ND (2) *	3.6	110	ND (2) *	ND (1)	ND (0.41)	18 J	4.5	9.6	5.6	ND (0.1) *	ND (2) *	13	ND (1)	ND (2)	ND (4.1) *	24	32
AOC9-14	10/02/08 [6]	0 - 0.5	N	ND (2.1) *	12	170	ND (5.4) *	ND (1.1) *	1.7	31	ND (5.4)	24	34	ND (0.11) *	ND (5.4) *	10	ND (1.1)	ND (5.4) *	ND (11) *	19	81
	10/02/08	2 - 3	N	ND (2) *	7.1	160	ND (2) *	ND (1)	ND (0.412)	38	8.8	17	13	ND (0.1) *	ND (2) *	22	ND (1)	ND (2)	ND (4.1) *	33	61
#4	04/06/00	0 - 3	N	---	---	---	---	---	4.2	53.2	---	12.4	---	---	---	13.5	---	---	---	---	343
#5	04/06/00	0 - 3	N	---	---	---	---	---	2.7	29	---	13.8	---	---	---	16.3	---	---	---	---	64
#6	04/06/00	0 - 3	N	---	---	---	---	---	2.6	33	---	12.4	---	---	---	13.2	---	---	---	---	92.7
#7	04/06/00	0 - 3	N	---	---	---	---	---	1.3	32.1	---	15.3	---	---	---	16.3	---	---	---	---	68
#8	04/06/00	0 - 3	N	---	---	---	---	---	2.8	28.8	---	12.9	---	---	---	16.4	---	---	---	---	61.1
#9	04/06/00	0 - 3	N	---	---	---	---	---	2.7	92.7	---	50.4	---	---	---	10.1	---	---	---	---	215

TABLE C3-3

Sample Results: Metals
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				0.285	11	410	0.672	1.1	0.83	39.8	12.7	16.8	8.39	0.0125	1.37	27.3	1.47	5.15	2.32	52.2	58
Residential Regional Screening Levels [2]:				31	0.062	15,000	160	70	0.29	280	23	3,100	150	10	390	1,500	390	390	5.1	390	23,000
Residential DTSC CHHSL [3]:				30	0.07	5,200	16	39	17	NE	660	3,000	80	18	380	1,600	380	380	5	530	23,000
Ecological Comparison Values [4]:				0.285	11.4	330	23.3	0.0151	139.6	36.3	13	20.6	0.0166	0.0125	2.25	0.607	0.177	5.15	2.32	13.9	0.164
Background [5]:				NE	11	410	0.672	1.1	0.83	39.8	12.7	16.8	8.39	NE	1.37	27.3	1.47	NE	NE	52.2	58
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
#10	04/06/00	0 - 3	N	---	---	---	---	---	(114)	(398)	---	(17.9)	---	---	---	14.8	---	---	---	---	(744)
#11	04/06/00	0 - 3	N	---	---	---	---	---	(1.4)	31.4	---	(18.7)	---	---	---	10.7	---	---	---	---	(80.3)
#12	04/06/00	0 - 3	N	---	---	---	---	---	0.8	38.3	---	(35.6)	---	---	---	21.1	---	---	---	---	(84)

[1] Interim screening level is background value. If background value is not available then the lesser of the DTSC residential CHHSL or the ecological comparison value is used. If CHHSL is not available, it is the lesser of the USEPA residential regional screening level or the ecological comparison value.

[2] USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

[3] California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

[4] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28.

[5] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

[6] White powder sample

Results greater than or equal to the interim screening level are circled; however, if the interim screening level is equal to the background value, only results greater than the interim screening level are circled.

* Reporting limits greater than or equal to the interim screening level.
USEPA United States Environmental Protection Agency
DTSC California Department of Toxic Substances Control
CHHSL California human health screening levels
NE not established
mg/kg milligrams per kilogram
ft bgs feet below ground surface
N primary sample
FD field duplicate
--- not analyzed
ND not detected at the listed reporting limit
J concentration or reporting limit estimated by laboratory or data validation

TABLE C3-4

Sample Results: Contract Laboratory Program Inorganics
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Contract Laboratory Program (CLP) Inorganics (mg/kg)							
Interim Screening Level[1] :				**16,400**	**66,500**	**55,000**	**12,100**	**402**	**4,400**	**2,070**	**0.9**
Residential Regional Screening Levels[2] :				**77,000**	**NE**	**55,000**	**NE**	**1,800**	**NE**	**NE**	**1,600**
Residential DTSC CHHSL[3] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Ecological Comparison Values[4] :				**NE**	**NE**	**NE**	**NE**	**220**	**NE**	**NE**	**0.9**
Background[5] :				**16,400**	**66,500**	**NE**	**12,100**	**402**	**4,400**	**2,070**	**NE**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Aluminum**	**Calcium**	**Iron**	**Magnesium**	**Manganese**	**Potassium**	**Sodium**	**Cyanide**
AOC9-5	10/01/08	0 - 0.5	N	10,000	26,000	17,000	7,400	250	2,300	810	ND (1.01) *
AOC9-11	09/18/08	0 - 0.5	N	6,900	26,000	12,000	5,700	210	1,500	450	ND (1.04) *
AOC9-12	10/01/08	0 - 0.5	N	13,000	38,000	22,000 J	9,600 J	310 J	2,500	620	ND (1.04) *

1 Interim screening level is background value. If background value is not available then the lesser of the DTSC residential CHHSL or the ecological comparison value is used. If CHHSL is not available, it is the lesser of the USEPA residential regional screening level or the ecological comparison value.

2 USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

3 California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil" November 2004 (January 2005 Revision). January.

4 ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil". May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison Values for Additional Detected Chemicals in Soil." July 1.

5 CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the interim screening level are circled; however, if the interim screening level is equal to the background value, only results greater than the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
mg/kg	milligrams per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C3-5
Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polycyclic Aromatic Hydrocarbons (µg/kg)																			
Interim Screening Level [1]:				22,000	310,000	1,700,000	3,400,000	17,000,000	380	38	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	10,000	1,160	38
Residential Regional Screening Levels[2]:				22,000	310,000	1,700,000	3,400,000	17,000,000	380	15	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	NE	NE	15
Residential DTSC CHHSL [3]:				NE	NE	NE	NE	NE	NE	38	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	38
Ecological Comparison Values [4]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	10,000	1,160	NE
Background [5]:				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
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**
AOC9-1	10/01/08	0 - 0.5	N	ND (5)	ND (5)	ND (5) J	ND (5)	ND (5)	13	18	21	16	20	24	ND (5)	34	ND (5)	16	ND (5)	12	32	12	190	26
	10/01/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1) J	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)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC9-2	09/18/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	6.6	9.5	6.2	ND (5)	7.4	ND (5)	10	ND (5)	5.5	ND (5)	ND (5)	9.7	ND	55	9.5
	09/18/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC9-3	09/18/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	12	16	24	14	11	20	ND (5)	32	ND (5)	14	ND (5)	9.1	29	9.1	170	23
	09/18/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC9-4	09/18/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	19	23	32	19	14	27	ND (5)	44	ND (5)	18	ND (5)	13	41	13	240	32
	09/18/08	2 - 3	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	18	22	31	18	14	28	ND (5)	44	ND (5)	18	ND (5)	15	41	15	230	31
AOC9-5	10/01/08	0 - 0.5	N	160	120	ND (5) J	5.1	ND (5)	60	(73)	77	58	90	95	17	140	ND (5)	52	16	46	130	350	790	(110)
	10/01/08	2 - 3	N	220 J	240 J	ND (5.1) J	ND (5.1)	ND (5.1)	57	(75)	75	62	94	93	18	130	ND (5.1)	53	32	39	120	530	780	(110)
	10/01/08	2 - 3	FD	120 J	81 J	ND (5.1) J	ND (5.1)	ND (5.1)	44	(60)	63	53	81	73	15	100	ND (5.1)	48	13	31	100	250	640	(89)
AOC9-6	09/18/08	0 - 0.5	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	54	(77)	120	50	36	87	12	130	ND (5.1)	43	ND (5.1)	26	130	26	740	(110)
	09/18/08	2 - 3	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	5.8	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	6.2	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	6.2	ND	18	4.9
AOC9-7	09/18/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	17	21	33	20	9.3	26	5.1	44	ND (5)	18	ND (5)	11	38	11	230	31
	09/18/08	2 - 3	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	6.3	10	15	6.7	7.4	11	ND (5)	14	ND (5)	6.4	ND (5)	ND (5)	14	ND	91	14
AOC9-8	10/01/08	0 - 0.5	N	ND (5.1)	ND (5.1)	ND (5.1) J	ND (5.1)	ND (5.1)	36	(46)	50	36	62	64	12	97	ND (5.1)	35	ND (5.1)	30	88	30	530	(69)
	10/01/08	2.5 - 3	N	ND (5.1)	ND (5.1)	ND (5.1) J	ND (5.1)	ND (5.1)	16	22	23	18	27	27	6.8	38	ND (5.1)	16	ND (4.8)	14	36	14	230	33
	10/01/08	5.5 - 6	N	ND (5.1)	ND (5.1)	ND (5.1) J	ND (5.1)	ND (5.1)	13	10	12	6.5	12	15	ND (5.1)	27	ND (5.1)	6.1	ND (3.5)	7.5	25	7.5	130	15
AOC9-9	10/01/08	0 - 0.5	N	ND (5.1)	ND (5.1)	ND (5.1) J	ND (5.1)	ND (5.1)	8.2	15	16	15	18	17	ND (5.1)	21	ND (5.1)	13	ND (5.1)	6.8	20	6.8	140	22
	10/01/08	2.5 - 3	N	ND (5.2)	ND (5.2)	ND (5.2) J	ND (5.2)	ND (5.2)	ND (5.2)	7.2	7.2	7.4	9	7.1	ND (5.2)	7.2	ND (5.2)	6.5	ND (4.4)	ND (5.2)	7.5	ND	59	11
	10/01/08	5.5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2) J	ND (5.2)	ND (5.2)	9	13	14	12	16	15	ND (5.2)	19	ND (5.2)	10	ND (4.6)	5.5	18	5.5	130	19
	10/01/08	5.5 - 6	FD	ND (5.2)	ND (5.2)	ND (5.2) J	ND (5.2)	ND (5.2)	6.3	9	11	9	11	10	ND (5.2)	12	ND (5.2)	7.7	ND (4.1)	ND (5.2)	12	ND	88	14
AOC9-10	10/01/08	0 - 0.5	N	5.9	ND (5)	ND (5) J	ND (5)	ND (5)	30	34	40	33	34	40	11	71	ND (5)	29	ND (5)	22	63	28	390	(51)
	10/01/08	2 - 3	N	51	36	ND (5.1) J	ND (5.1)	ND (5.1)	30	(45)	46	41	53	54	14	74	ND (5.1)	36	5.8	21	71	110	460	(67)
AOC9-11	09/18/08	0 - 0.5	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	11	16	21	13	10	17	ND (5.3)	25	ND (5.3)	12	ND (5.3)	5.5	23	5.5	150	22
	09/18/08	2 - 3	N	45	56	ND (5.1)	ND (5.1)	ND (5.1)	13	15	21	12	9.2	18	ND (5.1)	28	ND (5.1)	12	9	8.4	26	120	150	22
AOC9-12	10/01/08	0 - 0.5	N	ND (5.1)	ND (5.1)	ND (5.1) J	ND (5.1)	ND (5.1)	8.8	14	18	14	15	17	ND (5.1)	24	ND (5.1)	12	ND (5.1)	7.2	22	7.2	140	20
	10/01/08	2 - 3	N	ND (5.2)	ND (5.2)	ND (5.2) J	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	6.3	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	6	ND	12	4.5
AOC9-13	09/19/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	31	(45)	41	25	53	60	9.8	87	ND (5)	27	ND (5)	26	81	26	460	(64)
	09/19/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	20	8.1	5.9	ND (5.1)	39 J	ND (5.1)	10	ND (5.1)	ND (5.1)	ND (5.1)	49 J	19	49	100	23
	09/19/08	2 - 3	FD	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	9.1	14	14	8.6	14	18 J	ND (5.1)	27	ND (5.1)	8.7	ND (4.9)	9 J	24	9	140	20
AOC9-14	10/02/08 [6]	0 - 0.5	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)
	10/02/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	6.5 J	15 J	15 J	19 J	17 J	15 J	16 J	17 J	10 J	ND (5.1)	17 J	ND (5.1)	ND (5.1)	11 J	6.5	150	28

TABLE C3-5

Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

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[1] Interim screening level is DTSC residential CHHSL. If CHHSL is not available, the USEPA residential regional screening level is used. If an ecological comparison value has been calculated, then the lowest between the ecological comparison value or the CHHSL/regional screening level is used.

[2] USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

[3] California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

[4] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28.

[5] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

[6] White powder sample

Results greater than or equal to the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
µg/kg	micrograms per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C3-6
Sample Results: Total Petroleum Hydrocarbons and pH
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Total Petroleum Hydrocarbons (mg/kg)			General Chemistry
Interim Screening Level [1]:				**540**	**540**	**1,800**	**NE**
Residential Regional Screening Levels [2]:				**NE**	**NE**	**NE**	**NE**
Residential DTSC CHHSL [3]:				**NE**	**NE**	**NE**	**NE**
RWQCB Environmental Screening Levels [4]:				**540**	**540**	**1,800**	**NE**
Ecological Comparison Values [5]:				**NE**	**NE**	**NE**	**NE**
Background [6]:				**NE**	**NE**	**NE**	**NE**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**pH**
AOC9-1	10/01/08	0 - 0.5	N	---	ND (10)	ND (10)	8.52
	10/01/08	2 - 3	N	ND (0.85) J	ND (10)	14.2	8.17
AOC9-2	09/18/08	0 - 0.5	N	---	ND (10)	ND (10)	8.62
	09/18/08	2 - 3	N	ND (0.93)	ND (10)	ND (10)	8.72
AOC9-3	09/18/08	0 - 0.5	N	---	ND (10)	24.4	7.92
	09/18/08	2 - 3	N	ND (1.2) J	ND (10)	17.3	8.22
AOC9-4	09/18/08	0 - 0.5	N	---	ND (10)	11.8	7.63
	09/18/08	2 - 3	N	ND (3.7)	ND (10)	11.7	7.69
AOC9-5	10/01/08	0 - 0.5	N	---	ND (10)	61.6	9.12
	10/01/08	2 - 3	N	ND (0.88)	ND (10)	55.4	8.91
	10/01/08	2 - 3	FD	ND (0.78)	ND (10)	59.4	9.01
AOC9-6	09/18/08	0 - 0.5	N	---	ND (101)	ND (101)	8.77
	09/18/08	2 - 3	N	ND (66)	ND (10)	ND (10)	8.34
AOC9-7	09/18/08	0 - 0.5	N	---	ND (10)	31.1	8.27
	09/18/08	2 - 3	N	ND (1)	ND (10)	ND (10)	8.71
AOC9-8	10/01/08	0 - 0.5	N	---	ND (10)	42.7	8.2
	10/01/08	2.5 - 3	N	ND (0.92)	ND (10)	48.8	8.68
	10/01/08	5.5 - 6	N	ND (0.79)	ND (10)	15.5	8.42
AOC9-9	10/01/08	0 - 0.5	N	---	ND (10)	20.3	9.13
	10/01/08	2.5 - 3	N	ND (0.96)	ND (10)	ND (10)	8.36
	10/01/08	5.5 - 6	N	ND (0.75)	ND (10)	ND (10)	8.54
	10/01/08	5.5 - 6	FD	ND (0.8)	ND (10)	ND (10)	8.57
AOC9-10	10/01/08	0 - 0.5	N	---	ND (10)	12.1	9.23
	10/01/08	2 - 3	N	ND (1)	ND (10)	22	8.94
AOC9-11	09/18/08	0 - 0.5	N	---	ND (10)	51.8	8.65
	09/18/08	2 - 3	N	ND (1)	ND (10)	46.7	8.07
AOC9-12	10/01/08	0 - 0.5	N	---	ND (10)	19.9	8.48
	10/01/08	2 - 3	N	ND (1)	ND (10)	ND (10)	8.55
AOC9-13	09/19/08	0 - 0.5	N	---	ND (10)	19.2 J	8.57
	09/19/08	2 - 3	N	ND (1.1)	13	77.9 J	8.28
	09/19/08	2 - 3	FD	ND (1.1) J	12.9	62 J	8.45
AOC9-14	10/02/08 [7]	0 - 0.5	N	---	ND (10) J	48.4 J	9.41
	10/02/08	2 - 3	N	ND (0.84)	34.8	702 J	9.08

TABLE C3-6
Sample Results: Total Petroleum Hydrocarbons and pH
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Total Petroleum Hydrocarbons (mg/kg)			General Chemistry
Interim Screening Level [1]:				**540**	**540**	**1,800**	**NE**
Residential Regional Screening Levels [2]:				**NE**	**NE**	**NE**	**NE**
Residential DTSC CHHSL [3]:				**NE**	**NE**	**NE**	**NE**
RWQCB Environmental Screening Levels [4]:				**540**	**540**	**1,800**	**NE**
Ecological Comparison Values [5]:				**NE**	**NE**	**NE**	**NE**
Background [6]:				**NE**	**NE**	**NE**	**NE**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**pH**
#4	04/06/00	0 - 3	N	---	---	---	9.62
#5	04/06/00	0 - 3	N	---	---	---	9.75
#6	04/06/00	0 - 3	N	---	---	---	9.66
#7	04/06/00	0 - 3	N	---	---	---	9.6
#8	04/06/00	0 - 3	N	---	---	---	8.95
#9	04/06/00	0 - 3	N	---	---	---	9.67
#10	04/06/00	0 - 3	N	---	---	---	8.2
#11	04/06/00	0 - 3	N	---	---	---	8.9
#12	04/06/00	0 - 3	N	---	---	---	8.78

1 Interim screening level is the Regional Water Quality Control Board environmental screening level.

2 USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites". http://epaprgs.ornl.govchemicals/index.shtml. December.

3 California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil, November 2004 (January 2005 Revision)". January.

4 Water Board. 2008. "Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater" (Table K-1). May 27.

5 ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil". May 28.

6 CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California". May.

7 White Powder Sample

Results greater than the interim screening level are circled.

TPH	total petroleum hydrocarbon
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
Water Board	Regional Water Quality Control Board
NE	not established
mg/kg	milligrams per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C3-7
Sample Results: Pesticides
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Pesticides (µg/kg)																		
Interim Screening Level [1] :				2.1	2.1	2.1	33	77	430	270	77	5	370,000	370,000	370,000	21,000	21,000	21,000	500	430	130	53	340,000	460
Residential Regional Screening Levels [2] :				2,000	1,400	1,700	29	77	1,600	270	77	30	370,000	370,000	370,000	18,000	18,000	18,000	520	1,600	110	53	310,000	440
Residential DTSC CHHSL [3] :				2,300	1,600	1,600	33	NE	430	NE	NE	35	NE	NE	NE	21,000	21,000	21,000	500	430	130	NE	340,000	460
Ecological Comparison Values [4] :				2.1	2.1	2.1	NE	NE	470	NE	NE	5	NE	NE	NE	NE	NE	NE	NE	470	NE	NE	NE	NE
Background [5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
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**
AOC9-5	10/01/08	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)
AOC9-11	09/18/08	0 - 0.5	N	ND (2.1) *	3.2	ND (2.1) *	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (2.1)	ND (1.1)	ND (2.1)	ND (2.1)	ND (2.1)	ND (2.1)	ND (2.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (5.3)	ND (53)
AOC9-12	10/01/08	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 (5.1)	ND (51)

1 Interim screening level is DTSC residential CHHSL. If CHHSL is not available, the USEPA residential regional screening level is used. If an ecological comparison value has been calculated, then the lowest between the ecological comparison value or the CHHSL/regional screening level is used.

2 USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

3 California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

4 ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison values for Additional Chemicals in Soil." July 1.

5 CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the interim screening level are circled.

* Reporting limits greater than or equal to the interim screening level.
USEPA United States Environmental Protection Agency
DTSC California Department of Toxic Substances Control
CHHSL California human health screening levels
NE not established
µg/kg micrograms per kilogram
ft bgs feet below ground surface
N primary sample
FD field duplicate
--- not analyzed
ND not detected at the listed reporting limit
J concentration or reporting limit estimated by laboratory or data validation

TABLE C3-8

Sample Results: Polychlorinated Biphenyls
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polychlorinated biphenyls (µg/kg)									
Interim Screening Level [1]:				**3,900**	**140**	**140**	**220**	**220**	**220**	**220**	**220**	**220**	**204**
Residential Regional Screening Levels [2]:				**3,900**	**140**	**140**	**220**	**220**	**220**	**220**	**220**	**220**	**NE**
Residential DTSC CHHSL [3]:				**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**NE**
Ecological Comparison Values [4]:				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**204**
Background [5]:				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
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**
AOC9-5	10/01/08	0 - 0.5	N	ND (16)	ND (33)	ND (16)	ND (16)	ND (16)	160	ND (16)	ND (16)	ND (16)	160
	10/01/08	2 - 3	N	ND (17) J	ND (33) J	ND (17) J	ND (17) J	ND (17) J	160 J	ND (17) J	ND (17) J	ND (17) J	160
AOC9-11	09/18/08	0 - 0.5	N	ND (18)	ND (35)	ND (18)	ND (18)	ND (18)	ND (18)	ND (18)	ND (18)	ND (18)	ND (9)
AOC9-12	10/01/08	0 - 0.5	N	ND (17)	ND (34)	ND (17)	ND (17)	ND (17)	44	ND (17)	ND (17)	ND (17)	44
	10/01/08	2 - 3	N	ND (17) J	ND (34) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (8.5)

[1] Interim screening level is the USEPA residential regional screening level.

[2] USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

[3] California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

[4] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison Values for Additional Dectected Chemicals in Soil." July 1.

[5] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
µg/kg	micrograms per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C3-9
Sample Results: Asbestos
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Location	Date	Depth (ft bgs)	Sample Type	Asbestos		
				PLM/BULK [1]	CARB435/ [2] PLM (%)	TEM [3] (%)
AOC9-14	10/02/08 [4]	0 - 0.5	N	Present	ND (<0.1)	ND (0.07)
	10/02/08	2 - 3	N	Present	<0.1	---

[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

ft bgs feet below ground surface
FD field duplicate
--- not analyzed

TABLE C3-10
Constituent Concentrations in Soil Compared to Screening Values
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Parameter	Units	Frequency of detection	Maximum Detected Value	Background Threshold Value (BTV) [1] # of Exceedences [7]	(BTV)	Ecological Comparison Value (ECV) [2] # of Exceedences [8]	(ECV)	Residential Screening Level (Res SL) [3] # of Exceedences [8]	(Res SL)	RWQCB Environmental Screening Levels (ESL) [4] # of Exceedences [8]	(ESL)	Commercial Screening Level (Com SL) [5] # of Exceedences [8]	(Com SL)	Interim Screening Level (Int SL) [6] # of Exceedences [8]	(Int SL)
Metals															
Antimony	mg/kg	0 / 29 (0%)	ND (2.1) ‡	NA	(NE)	0	(0.285)	0	(30)	NA	(NE)	0	(380)	0	(0.285)
Arsenic	mg/kg	29 / 29 (100%)	7.3	0	(11)	0	(11.4)	0	(0.07) *	NA	(NE)	0	(0.24) *	0	(11)
Barium	mg/kg	29 / 29 (100%)	220	0	(410)	0	(330) *	0	(5,200)	NA	(NE)	0	(63,000)	0	(410)
Beryllium	mg/kg	0 / 29 (0%)	ND (2.1) ‡	0	(0.672)	0	(23.3)	0	(16)	NA	(NE)	0	(190)	0	(0.672)
Cadmium	mg/kg	0 / 29 (0%)	ND (1.1) ‡	0	(1.1)	0	(0.0151) *	0	(39)	NA	(NE)	0	(500)	0	(1.1)
Chromium	mg/kg	38 / 38 (100%)	398	8	(39.8)	8	(36.3) *	1	(280)	NA	(NE)	0	(1,400)	8	(39.8)
Chromium, Hexavalent	mg/kg	22 / 38 (58%)	114	16	(0.83)	0	(139.6)	2	(17)	NA	(NE)	2	(37)	16	(0.83)
Cobalt	mg/kg	29 / 29 (100%)	11	0	(12.7)	0	(13)	0	(23)	NA	(NE)	0	(300)	0	(12.7)
Copper	mg/kg	38 / 38 (100%)	50.4	10	(16.8)	3	(20.6)	0	(3,000)	NA	(NE)	0	(38,000)	10	(16.8)
Lead	mg/kg	29 / 29 (100%)	59	19	(8.39)	19	(0.0166) *	0	(80)	NA	(NE)	0	(320)	19	(8.39)
Mercury	mg/kg	4 / 29 (14%)	0.27	NA	(NE)	4	(0.0125)	0	(18)	NA	(NE)	0	(180)	4	(0.0125)
Molybdenum	mg/kg	2 / 29 (6.9%)	4.5	1	(1.37)	1	(2.25)	0	(380)	NA	(NE)	0	(4,800)	1	(1.37)
Nickel	mg/kg	38 / 38 (100%)	29	1	(27.3)	1	(0.607) *	0	(1,600)	NA	(NE)	0	(16,000)	1	(27.3)
Thallium	mg/kg	1 / 29 (3.4%)	4.1	NA	(NE)	1	(2.32)	0	(5)	NA	(NE)	0	(63)	1	(2.32)
Vanadium	mg/kg	29 / 29 (100%)	40	0	(52.2)	0	(13.9) *	0	(390)	NA	(NE)	0	(5,200)	0	(52.2)
Zinc	mg/kg	38 / 38 (100%)	1,000	18	(58)	18	(0.164) *	0	(23,000)	NA	(NE)	0	(100,000)	18	(58)
Contract Laboratory Program Inorganics															
Aluminum	mg/kg	3 / 3 (100%)	13,000	0	(16,400)	NA	(NE)	0	(77,000)	NA	(NE)	0	(990,000)	0	(16,400)
Calcium	mg/kg	3 / 3 (100%)	38,000	0	(66,500)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	0	(66,500)
Iron	mg/kg	3 / 3 (100%)	22,000	NA	(NE)	NA	(NE)	0	(55,000)	NA	(NE)	0	(720,000)	0	(55,000)
Magnesium	mg/kg	3 / 3 (100%)	9,600	0	(12,100)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	0	(12,100)
Manganese	mg/kg	3 / 3 (100%)	310	0	(402)	0	(220)	0	(1,800)	NA	(NE)	0	(23,000)	0	(402)
Potassium	mg/kg	3 / 3 (100%)	2,500	0	(4,400)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	0	(4,400)
Sodium	mg/kg	3 / 3 (100%)	810	0	(2,070)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	0	(2,070)
Cyanide	mg/kg	0 / 3 (0%)	ND (1.04) ‡	NA	(NE)	0	(0.9)	0	(1,600)	NA	(NE)	0	(20,000)	0	(0.9)
Polycyclic Aromatic Hydrocarbons															
1-Methyl naphthalene	µg/kg	5 / 29 (17%)	220	NA	(NE)	NA	(NE)	0	(22,000)	NA	(NE)	0	(99,000)	0	(22,000)
2-Methyl naphthalene	µg/kg	4 / 29 (14%)	240	NA	(NE)	NA	(NE)	0	(310,000)	NA	(NE)	0	(4,100,000)	0	(310,000)
Acenaphthene	µg/kg	1 / 29 (3.4%)	5.1	NA	(NE)	NA	(NE)	0	(3,400,000)	NA	(NE)	0	(33,000,000)	0	(3,400,000)
Anthracene	µg/kg	1 / 29 (3.4%)	6.5	NA	(NE)	NA	(NE)	0	(17,000,000)	NA	(NE)	0	(170,000,000)	0	(17,000,000)
Benzo (a) anthracene	µg/kg	22 / 29 (76%)	60	NA	(NE)	NA	(NE)	0	(380)	NA	(NE)	0	(1,300)	0	(380)
Benzo (a) pyrene	µg/kg	24 / 29 (83%)	77	NA	(NE)	NA	(NE)	6	(38)	NA	(NE)	0	(130)	6	(38)
Benzo (b) fluoranthene	µg/kg	25 / 29 (86%)	120	NA	(NE)	NA	(NE)	0	(380)	NA	(NE)	0	(1,300)	0	(380)
Benzo (ghi) perylene	µg/kg	24 / 29 (83%)	62	NA	(NE)	NA	(NE)	0	(1,700,000)	NA	(NE)	0	(17,000,000)	0	(1,700,000)
Benzo (k) fluoranthene	µg/kg	23 / 29 (79%)	94	NA	(NE)	NA	(NE)	0	(380)	NA	(NE)	0	(1,300)	0	(380)
Chrysene	µg/kg	24 / 29 (83%)	95	NA	(NE)	NA	(NE)	0	(3,800)	NA	(NE)	0	(13,000)	0	(3,800)
Dibenzo (a,h) anthracene	µg/kg	10 / 29 (34%)	18	NA	(NE)	NA	(NE)	0	(110)	NA	(NE)	0	(380)	0	(380)
Fluoranthene	µg/kg	26 / 29 (90%)	140	NA	(NE)	NA	(NE)	0	(2,300,000)	NA	(NE)	0	(22,000,000)	0	(2,300,000)
Indeno (1,2,3-cd) pyrene	µg/kg	24 / 29 (83%)	53	NA	(NE)	NA	(NE)	0	(380)	NA	(NE)	0	(1,300)	0	(380)
Naphthalene	µg/kg	4 / 29 (14%)	32	NA	(NE)	NA	(NE)	0	(3,600)	NA	(NE)	0	(18,000)	0	(3,600)
Phenanthrene	µg/kg	20 / 29 (69%)	49	NA	(NE)	NA	(NE)	0	(1,700,000)	NA	(NE)	0	(17,000,000)	0	(1,700,000)
Pyrene	µg/kg	26 / 29 (90%)	130	NA	(NE)	NA	(NE)	0	(1,700,000)	NA	(NE)	0	(17,000,000)	0	(1,700,000)

TABLE C3-10
Constituent Concentrations in Soil Compared to Screening Values
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Parameter	Units	Frequency of detection	Maximum Detected Value	Background Threshold Value (BTV) [1]		Ecological Comparison Value (ECV) [2]		Residential Screening Level (Res SL) [3]		RWQCB Environmental Screening Levels (ESL) [4]		Commercial Screening Level (Com SL) [5]		Interim Screening Level (Int SL) [6]	
				# of Exceedences [7]	(BTV)	# of Exceedences [8]	(ECV)	# of Exceedences [8]	(Res SL)	# of Exceedences [8]	(ESL)	# of Exceedences [8]	(Com SL)	# of Exceedences [8]	(Int SL)
Polycyclic Aromatic Hydrocarbons															
PAH Low molecular weight	µg/kg	21 / 29 (72%)	530	NA	(NE)	0	(10,000)	NA	(NE)	NA	(NE)	NA	(NE)	0	(10,000)
PAH High molecular weight	µg/kg	26 / 29 (90%)	790	NA	(NE)	0	(1,160)	NA	(NE)	NA	(NE)	NA	(NE)	0	(1,160)
B(a)P Equivalent	µg/kg	26 / 29 (90%)	110	NA	(NE)	NA	(NE)	7	(38)	NA	(NE)	0	(130)	7	(38)
Polychlorinated biphenyls															
Aroclor 1254	µg/kg	3 / 5 (60%)	160	NA	(NE)	NA	(NE)	0	(220)	NA	(NE)	0	(740)	0	(220)
Total PCBs	µg/kg	3 / 5 (60%)	160	NA	(NE)	0	(204)	NA	(NE)	NA	(NE)	NA	(NE)	0	(204)
Pesticides															
4,4-DDE	µg/kg	1 / 3 (33%)	3.2	NA	(NE)	1	(2.1)	0	(1,600)	NA	(NE)	0	(6,300)	1	(2.1)
Total Petroleum Hydrocarbons															
TPH as diesel	mg/kg	2 / 29 (6.9%)	34.8	NA	(NE)	NA	(NE)	NA	(NE)	0	(540)	NA	(NE)	0	(540)
TPH as motor oil	mg/kg	20 / 29 (69%)	702	NA	(NE)	NA	(NE)	NA	(NE)	0	(1,800)	NA	(NE)	0	(1,800)

Notes:

[1] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

[2] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison Values for Additional Detected Chemicals in Soil" July 1

[3] Residential screening level - residential DTSC CHHSL. If the residential DTSC CHHSL is not established, the USEPA regional screening level is used. (PCBs are an exception to this rule since their final screening levels are equal to the EPA regional screening levels).

[4] Water Board. 2008. "Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater" (Table K-1). May 27.

[5] Commercial screening level - commercial DTSC CHHSL. If the commercial DTSC CHHSL is not established, the USEPA regional screening level is used. (PCBs are an exception to this rule since their final screening levels are equal to the EPA regional screening levels).

[6] Interim screening level is equal to the appropriate background value, if a background value is not available then the lesser of the soil ecological comparison values and DTSC CHHSL is used, if the DTSC CHHSL is not available, the USEPA regional screening level is used.

[7] Number of exceedences are the number of detections exceeding the background threshold value (BTV).

[8] Number of exceedences are the number of detections that are equal to or exceeds the screening level (ecological comparison value, residential reporting limit, commercial reporting limit or interim screening level) or otherwise noted

* Number of exceedances are calculated using background threshold value because it is greater than the respective screening level.

‡ Maxiumum Reporting Limit greater than or equal to the interim screening level

USEPA regional screening level - USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

CHHSL - California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

mg/kg	miligrams per kilogram
µg/kg	micrograms per kilogram
ng/kg	nanograms per kilogram
NA	not applicable
ND	not detected in any of the samples
NE	not established
SL	screening level

USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
Water Board	Regional Water Quality Control Board

TABLE C3-11
Central Tendency Comparisons (Site to Background)
AOC 9 - Southeast Fence Line
Soil Investigation Part A, Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Parameter	Comparison Test Used	Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Significance Level	Mean of Site Detects	Mean of Bkgd Detects	Median of Site Detects	Median of Bkgd Detects	Number of Site Detects	Number of Site Samples	Number of Bkgd Detects	Number of Bkgd Samples	Percent Detects Site	Percent Detects Bkgd
Chromium	Gehan	0.007	Site > Bkgd	44.1	22.3	28	21.9	38	38	70	70	100	100
Copper	Gehan	0.007	Site > Bkgd	13.9	10.5	12.2	10.1	38	38	70	70	100	100
Lead	Gehan	0.000	Site > Bkgd	14.2	4.38	11	3.5	29	29	59	60	100	98
Nickel	Gehan	0.964	nsd	13.6	15.4	12.5	15	38	38	70	70	100	100
Zinc	Gehan	0.000	Site > Bkgd	113	36.8	55	35.5	38	38	70	70	100	100

Bkgd = background.
NA = not applicable.
nsd = no statistical difference.
< = less than.
> = greater than.

TABLE C3-12
Decision 2 Data Gaps Summary AOC 9 - *Southeast Fence Line*
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results [1]	Maximum Detected Value [1]	> HHCV or Background as Applicable? [2] Y or N [3]	> ECV or Background as Applicable? [1, 2] Y or N	Proposed Sample ID	Notes
Metals							
Arsenic				**11 mg/kg (bckg)**	**11.4 mg/kg**		
0-0.5 ft bgs	Y	15 of 15	12 mg/kg	Y	Y	None	Compound exceeds HHCV and ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	29 of 29	12 mg/kg	Y	Y		
0-6 ft bgs	Y	31 of 31	12 mg/kg	Y	Y		
0-10 ft bgs	Y	31 of 31	12 mg/kg	Y	NA		
Chromium-Total				**280 mg/kg**	**39.8 mg/kg (bckg)**		
0-0.5 ft bgs	Y	15 of 15	230 mg/kg	N	Y	None	Compound exceeds HHCV and ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	38 of 38	398 mg/kg	Y	Y		
0-6 ft bgs	Y	40 of 40	398 mg/kg	Y	Y		
0-10 ft bgs	Y	40 of 40	398 mg/kg	Y	NA		
Chromium - Hexavalent				**17 mg/kg**	**139.6 mg/kg**		
0-0.5 ft bgs	Y	10 of 15	48.6 mg/kg	Y	N	None	Compound exceeds HHCV. Existing data adequate for EPC.
0-3 ft bgs	Y	22 of 38	114 mg/kg	Y	N		
0-6 ft bgs	Y	24 of 40	114 mg/kg	Y	N		
0-10 ft bgs	Y	24 of 40	114 mg/kg	Y	NA		
Copper				**3000 mg/kg**	**20.6 mg/kg**		
0-0.5 ft bgs	Y	15 of 15	270 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	38 of 38	270 mg/kg	N	Y		
0-6 ft bgs	Y	40 of 40	270 mg/kg	N	Y		
0-10 ft bgs	Y	40 of 40	270 mg/kg	N	NA		
Lead				**80 mg/kg**	**8.39 mg/kg (bckg)**		
0-0.5 ft bgs	Y	15 of 15	200 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	29 of 29	200 mg/kg	N	Y		
0-6 ft bgs	Y	31 of 31	200 mg/kg	N	Y		
0-10 ft bgs	Y	31 of 31	200 mg/kg	N	NA		
Mercury				**18 mg/kg**	**0.0125 mg/kg**		
0-0.5 ft bgs	N	3 of 15	0.64 mg/kg	N	Y	None	Compound exceeds ECV and no background value has been established. Detection limits are elevated relative to the ECV. Data not adequate (for the 0-0.5 ft bgs exposure interval) to calculate EPC using ProUCL. However, additional data collection is likely to yield additional non-detected values. The EPC has been defined within the limits of the analytical instrumentation.
0-3 ft bgs	Y	5 of 29	0.64 mg/kg	N	Y		
0-6 ft bgs	Y	5 of 31	0.64 mg/kg	N	Y		
0-10 ft bgs	Y	5 of 31	0.64 mg/kg	N	NA		

TABLE C3-12
Decision 2 Data Gaps Summary AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results [1]	Maximum Detected Value [1]	> HHCV or Background as Applicable? [2] Y or N [3]	> ECV or Background as Applicable? [1, 2] Y or N	Proposed Sample ID	Notes
Molybdenum				**380 mg/kg**	**2.25 mg/kg**		
0-0.5 ft bgs	N	2 of 15	19 mg/kg	N	Y	None	Compound exceeds ECV. Although there are insufficient detections to allow calculation of a 95% UCL on the mean, additional data collection is not expected to yield sufficient detections to strongly influence the EPC because additional sampling would likely result in additional non-detect values.
0-3 ft bgs	N	3 of 29	19 mg/kg	N	Y		
0-6 ft bgs	N	3 of 31	19 mg/kg	N	Y		
0-10 ft bgs	N	3 of 31	19 mg/kg	N	NA		
Nickel				**1600 mg/kg**	**27.3 mg/kg (bckg)**		
0-0.5 ft bgs	Y	15 of 15	28 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	38 of 38	29 mg/kg	N	Y		
0-6 ft bgs	Y	40 of 40	29 mg/kg	N	Y		
0-10 ft bgs	Y	40 of 40	29 mg/kg	N	NA		
Thallium				**5 mg/kg**	**2.32 mg/kg**		
0-0.5 ft bgs	NA	0 of 15	NA mg/kg	N	N	None	Compound exceeds ECV. Although there are insufficient detections to allow calculation of a 95% UCL on the mean, additional data collection is not expected to yield sufficient detections to strongly influence the EPC because additional sampling would likely result in additional non-detect values and because the maximum detected value is within two times the lowest comparison value.
0-3 ft bgs	N	1 of 29	4.1 mg/kg	N	Y		
0-6 ft bgs	N	1 of 31	4.1 mg/kg	N	Y		
0-10 ft bgs	N	1 of 31	4.1 mg/kg	N	NA		
Zinc				**23000 mg/kg**	**58 mg/kg (bckg)**		
0-0.5 ft bgs	Y	15 of 15	1000 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	38 of 38	1000 mg/kg	N	Y		
0-6 ft bgs	Y	40 of 40	1000 mg/kg	N	Y		
0-10 ft bgs	Y	40 of 40	1000 mg/kg	N	NA		
Polynuclear Aromatic Hydrocarbons							
PAHs (BaP TEQ)				**38 µg/kg**	NA		
0-0.5 ft bgs	Y	14 of 15	1400 µg/kg	Y	NA	None	Compound exceeds HHCV. Existing data adequate for EPC.
0-3 ft bgs	Y	25 of 29	1400 µg/kg	Y	NA		
0-6 ft bgs	Y	27 of 31	1400 µg/kg	Y	NA		
0-10 ft bgs	Y	27 of 31	1400 µg/kg	Y	NA		
HMW PAHs				**NA**	**1160 µg/kg**		
0-0.5 ft bgs	Y	14 of 15	9500 µg/kg	NA	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	25 of 29	9500 µg/kg	NA	Y		
0-6 ft bgs	Y	27 of 31	9500 µg/kg	NA	Y		

TABLE C3-12
Decision 2 Data Gaps Summary AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results [1]	Maximum Detected Value [1]	> HHCV or Background as Applicable? [2] Y or N [3]	> ECV or Background as Applicable? [1, 2] Y or N	Proposed Sample ID	Notes
Pesticides							
DDT-R				**1600 µg/kg**	**2.1 µg/kg**		
0-0.5 ft bgs	N	1 of 4	3.2 µg/kg	N	Y	None	Compound exceeds ECV and existing data not adequate to calculate 95% UCL. DDE was detected in 1 of 4 samples (including AOC10a-1); DDT and DDD were not detected. The magnitude of the detection is low relative to the ECV and the detection limit (2 µg/kg). Additional sampling is not expected to significantly change the results (NDs are likely and the EPC would still be the maximum detected value).
0-3 ft bgs	N	1 of 4	3.2 µg/kg	N	Y		
0-6 ft bgs	N	1 of 4	3.2 µg/kg	N	Y		
0-10 ft bgs	N	1 of 4	3.2 µg/kg	N	NA		

Footnotes:
[1] AOC 9 was evaluated for adequacy to support EPC calculations including location AOC10a-1 due to its close proximity to AOC 9 and topography. Number of detects and total sample counts as well as maximum detected value incorporate sample AOC10a-1. Total number of samples exceeding ECVs, or background as applicable, includes location AOC10a-1. A summary of results for AOC10a-1 is provided in Appendix C, Attachment 4.

[2] The higher value of either the HHCV/ECV or background was selected as the screening criteria and are included in these columns for the respective compound in **BOLDED BLUE FONT**. Values based on background are indicated with "(bckg)" next to the value.

[3] AOC9 was evaluated for data sufficiency to support the human health risk assessment excluding AOC10a-1.

Acronyms and Abbreviations:
AOC - area of concern
BaP TEQ - benzo(a)pyrene toxic equivalents
ECV - ecological comparison values
EPC - exposure point concentration
ft bgs - feet below ground surface
HHCV - human health comparison values
HMW PAH - high molecular weight polycyclic aromatic hydrocarbons
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
N - no
NA - not applicable
Y - yes

TABLE C3-13
Results of Tiered Analysis at AOC 9
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
PG&E Topock Compressor Station, Needles, California

Metal	Step 1 Do COPCs/COPECs Exceed Background?	Step 2 Do COPCs/COPECs Exceed SSL?	Step 3 Does Screening Model Eliminate Potential for Leaching to Groundwater?
Arsenic	√		
Chromium	√		
Chromium, Hexavalent	√	√	No
Copper	√		
Lead	√		
Mercury	√		
Molybdenum	√	√	Yes
Nickel	√		
Thallium	√	√	No
Zinc	√		

SSL = soil screening level.

TABLE C3-14

Sample Results Compared to the Calculated Soil Screening Levels
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)									
Soil Screening Levels : [1]				**39**	**6,400**	**0.42**	**25,000**	**4,000**	**700**	**0.73**	**4,400**	**0.22**	**150,000**
Background : [2]				**11**	**39.8**	**0.83**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**NE**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Thallium**	**Zinc**
AOC9-1	10/01/08	0 - 0.5	N	6.2	23	1.03	9.1	19	ND (0.1)	ND (1)	11	ND (2)	46
	10/01/08	2 - 3	N	4.1	9.7	ND (0.478)	5	4.5	ND (0.1)	ND (1)	7.4	ND (2)	17
AOC9-2	09/18/08	0 - 0.5	N	3.2	16	ND (0.401)	11	9.6	ND (0.099)	ND (2)	11	ND (4)	33
	09/18/08	2 - 3	N	3.3	11	ND (0.406)	5.9	4.9	ND (0.1)	ND (2)	6.9	ND (4)	20
AOC9-3	09/18/08	0 - 0.5	N	3.2	25	ND (0.402)	17	9	ND (0.1)	ND (2)	12	ND (4)	49
	09/18/08	2 - 3	N	3.5	15	ND (0.454)	7.3	23	ND (0.1)	ND (2)	10	ND (4.1)	92
AOC9-4	09/18/08	0 - 0.5	N	3.7	22	1.06	12	13	ND (0.1)	ND (2)	12	ND (4)	53
	09/18/08	2 - 3	N	3.9	19	ND (0.402)	11	11	ND (0.1)	ND (2)	11	ND (4)	42
AOC9-5	10/01/08	0 - 0.5	N	4.9	35	0.726	19	28	ND (0.1)	ND (1)	17	ND (2)	100
	10/01/08	2 - 3	N	6	38	1	21	25	0.27	ND (2)	20	ND (4)	76
	10/01/08	2 - 3	FD	7	43	0.791	19	24	0.23	ND (2)	19	ND (4)	85
AOC9-6	09/18/08	0 - 0.5	N	3.8	25	0.789	12	23	0.14	ND (2)	13	ND (4)	68
	09/18/08	2 - 3	N	3.8	16	ND (0.458)	9.3	5	ND (0.1)	ND (2.1)	14	ND (4.2)	31
AOC9-7	09/18/08	0 - 0.5	N	2.2	72	4.37	14	15	ND (0.1)	ND (2)	11	ND (4)	120
	09/18/08	2 - 3	N	4.3	13	ND (0.411)	6.7	20	ND (0.1)	ND (1)	6.7	ND (2)	29
AOC9-8	10/01/08	0 - 0.5	N	3.6	230	48.6 J	11	20	ND (0.1)	1	10	ND (2)	1,000
	10/01/08	2.5 - 3	N	6.3	41	2.41	13	59	ND (0.1)	4.5	12	4.1	130
	10/01/08	5.5 - 6	N	4	13	1.32	5.5	4.4	ND (0.1)	ND (1)	8.1	ND (2)	21
AOC9-9	10/01/08	0 - 0.5	N	5	14	ND (0.404)	8	7	ND (0.1)	ND (1)	8.1	ND (2)	34
	10/01/08	2.5 - 3	N	4.8	21	ND (0.415)	10	3.8	ND (0.1)	ND (1)	15	ND (2.1)	41
	10/01/08	5.5 - 6	N	4.9	28	1.53	11	4.9	ND (0.1)	ND (1)	15	ND (2.1)	53
	10/01/08	5.5 - 6	FD	4.5	27	1.28	10	4.4	ND (0.1)	ND (1)	15	ND (2.1)	50
AOC9-10	10/01/08	0 - 0.5	N	5.1	28	0.418	11	18	ND (0.1)	ND (1)	15	ND (2)	49
	10/01/08	2 - 3	N	7.3	30	0.494	15	15	0.11	ND (2)	19	ND (4)	110
AOC9-11	09/18/08	0 - 0.5	N	3.6	18	ND (0.418)	8.5	7.7	0.13	ND (2.1)	11	ND (4.3)	35
	09/18/08	2 - 3	N	3.4	20	ND (0.406)	9.7	7.1	ND (0.1)	ND (2)	11	ND (4)	30
AOC9-12	10/01/08	0 - 0.5	N	7.3	34	0.727	19	13	ND (0.1)	ND (2)	24	ND (4.1)	57

TABLE C3-14

Sample Results Compared to the Calculated Soil Screening Levels
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)										
Soil Screening Levels : [1]				**39**	**6,400**	**0.42**	**25,000**	**4,000**	**700**	**0.73**	**4,400**	**0.22**	**150,000**
Background : [2]				**11**	**39.8**	**0.83**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**NE**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Thallium**	**Zinc**
AOC9-12	10/01/08	2 - 3	N	6.6	40	ND (0.415)	17	11	ND (0.1)	ND (2.1)	29	ND (4.1)	50
AOC9-13	09/19/08	0 - 0.5	N	5.2	18	ND (0.404)	13	8.3	ND (0.099)	ND (2)	11	ND (4)	36
	09/19/08	2 - 3	N	3.8	23 J	ND (0.409)	9.8	10	ND (0.1)	ND (2)	13	ND (4.1)	35
	09/19/08	2 - 3	FD	3.6	18 J	ND (0.41)	9.6	5.6	ND (0.1)	ND (2)	13	ND (4.1)	32
AOC9-14	10/02/08[6]	0 - 0.5	N	12	31	(1.7)	24	34	ND (0.11)	ND (5.4)	10	ND (11)	81
	10/02/08	2 - 3	N	7.1	38	ND (0.412)	17	13	ND (0.1)	ND (2)	22	ND (4.1)	61
#4	04/06/00	0 - 3	N	---	53.2	(4.2)	12.4	---	---	---	13.5	---	343
#5	04/06/00	0 - 3	N	---	29	(2.7)	13.8	---	---	---	16.3	---	64
#6	04/06/00	0 - 3	N	---	33	(2.6)	12.4	---	---	---	13.2	---	92.7
#7	04/06/00	0 - 3	N	---	32.1	(1.3)	15.3	---	---	---	16.3	---	68
#8	04/06/00	0 - 3	N	---	28.8	(2.8)	12.9	---	---	---	16.4	---	61.1
#9	04/06/00	0 - 3	N	---	92.7	(2.7)	50.4	---	---	---	10.1	---	215
#10	04/06/00	0 - 3	N	---	398	(114)	17.9	---	---	---	14.8	---	744
#11	04/06/00	0 - 3	N	---	31.4	(1.4)	18.7	---	---	---	10.7	---	80.3
#12	04/06/00	0 - 3	N	---	38.3	(0.8)	35.6	---	---	---	21.1	---	84

[1] Soil Screening Level (SSL) calculation was provided in the technical memorandum entitled "Calculation of Soil Screening Levels for Protection of Groundwater at the PGE Topock Compressor Station", CH2MHill 2008.
[2] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the SSL are circled.

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

TABLE C3-15

Constituent Concentrations in Soil Compared to Total Threshold Limit Concentration (TTLC), Soluble Threshold Limit Concentration (STLC), and Toxic Characteristic Leaching Procedure (TCLP)
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Topock Compressor Station, Needles, California

Parameter	Frequency of detection	Maximum Detected Value (mg/kg)	TTLC in mg/kg[1]		STLC in mg/L[1]			TCLP in mg/L[1]		
			# of Exceedences	TTLC	# of Exceedences of STLC x 10	STLC x 10	STLC	# of Exceedences of TCLP x 20	TCLP x 20	TCLP
Antimony	0 / 29 (0%)	ND (2.1)	0	500	0	150	15	0	NE	NE
Arsenic	29 / 29 (100%)	7.3	0	500	0	50	5	0	100	5
Barium	29 / 29 (100%)	220	0	10000	0	1000	100	0	2000	100
Beryllium	0 / 29 (0%)	ND (2.1)	0	75	0	7.5	0.75	0	NE	NE
Cadmium	0 / 29 (0%)	ND (1.1)	0	100	0	10	1	0	20	1
Chromium	38 / 38 (100%)	398	0	2500	5	50	5	2	100	5
Chromium, Hexavalent	22 / 38 (58%)	114	0	500	1	50	5	0	NE	NE
Cobalt	29 / 29 (100%)	11	0	8000	0	800	80	0	NE	NE
Copper	38 / 38 (100%)	50.4	0	2500	0	250	25	0	NE	NE
Lead	29 / 29 (100%)	59	0	1000	1	50	5	0	100	5
Mercury	4 / 29 (14%)	0.27	0	20	0	2	0.2	0	4	0.2
Molybdenum	2 / 29 (6.9%)	4.5	0	3500	0	3500	350	0	NE	NE
Nickel	38 / 38 (100%)	29	0	2000	0	200	20	0	NE	NE
Selenium	0 / 29 (0%)	ND (1.1)	0	100	0	10	1	0	20	1
Silver	0 / 29 (0%)	ND (2.1)	0	500	0	50	5	0	100	5
Thallium	1 / 29 (3.4%)	4.1	0	700	0	70	7	0	NE	NE
Vanadium	29 / 29 (100%)	40	0	2400	0	240	24	0	NE	NE
Zinc	38 / 38 (100%)	1,000	0	5000	0	2500	250	0	NE	NE

Notes:

[1] Code of Regulations, Title 22, Chapter 11, Article 3

mg/kg miligrams per kilogram
mg/L milligrams per liter
ND not detected in any of the samples
NE not established
‡ maximum reporting limit greater than or equal to the STLC.

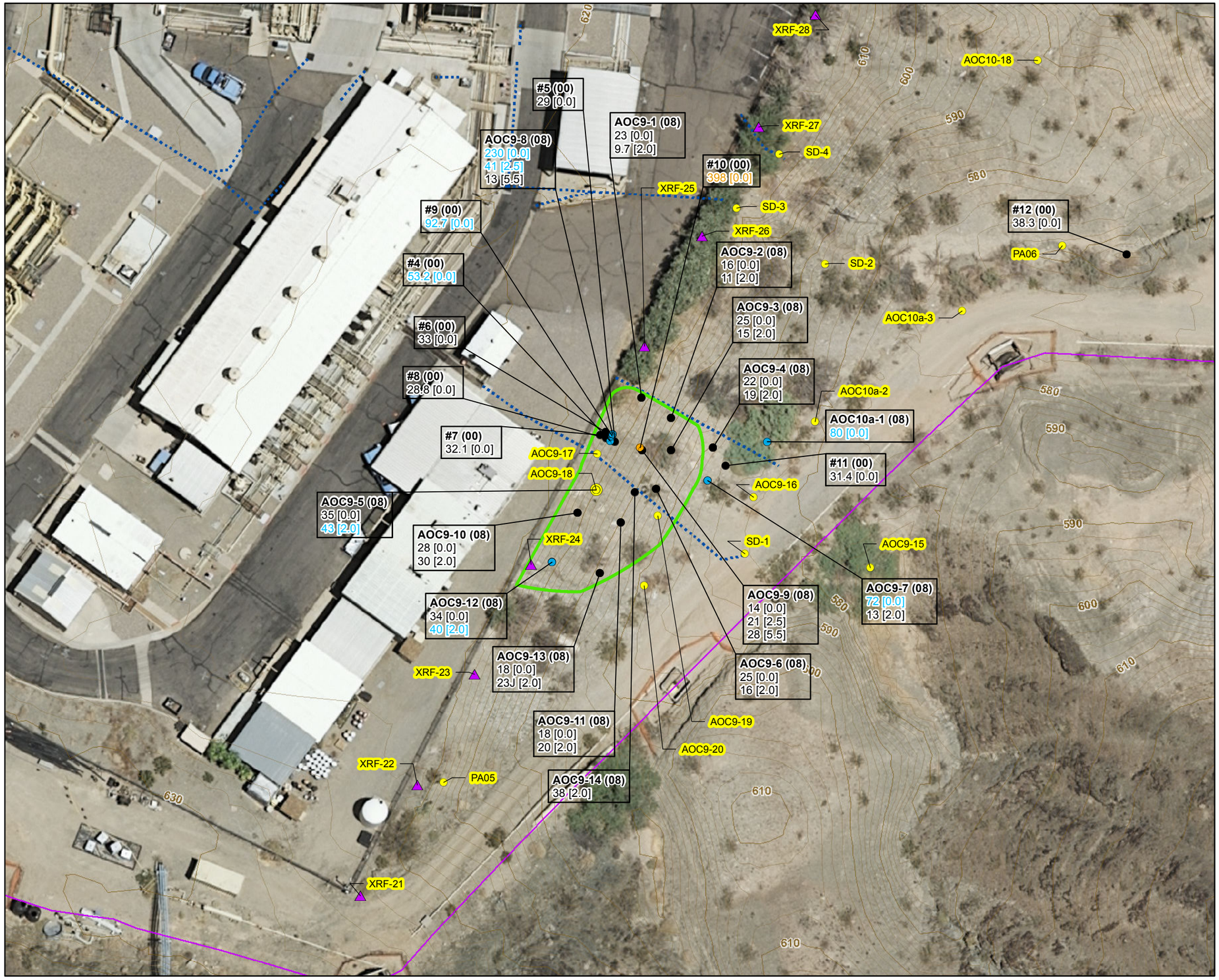
TABLE C3-16
Proposed Phase 2 Soil Sample Locations at AOC 9 – Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
PG&E Topock Compressor Station, Needles, California

Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Proposed Collection Method[a]
AOC10a-2	0, 2, 5 and 9	To resolve Data Gaps #3 and #4 - Define lateral and vertical extents of contamination downslope of AOC 9 and Subarea AOC 10a and support model refinement for Decision 3	Hexavalent chromium, Title 22 metals, PAHs, PCBs, pesticides	Backhoe
AOC10a-3	0, 2, 5 and 9	To resolve Data Gap #3 - Define lateral and vertical extents of contamination downslope of AOC 9 and Subarea AOC 10a	Hexavalent chromium, Title 22, PAHs, PCBs, pesticides	Backhoe
AOC9-15	0, 2, 5 and 9	To resolve Data Gap #3 - Define lateral extent of contamination downslope of AOC 9	Hexavalent chromium, Title 22 metals, PAHs, PCBs, pesticides	Backhoe
AOC9-16	0, 2, 5 and 9	To resolve Data Gaps #3 and #5 - Define lateral extent of contamination and support CMS/FS	Hexavalent chromium, Title 22 metals, PAHs, PCBs, pesticides; soil physical parameters (porosity, grain size, density, organic carbon content) – three samples from boring	Backhoe
AOC9-17	9 and 14	To resolve Data Gaps #1 and #4 - Define vertical extent of contamination at cluster of previous sample locations (#4 through #9 and AOC9-8) and support model refinement for Decision 3	Hexavalent chromium	Backhoe
AOC9-18	5, 9, and 14	To resolve Data Gaps # 2 and 4 - Define vertical extent of contamination at previous sample location AOC9-5, and support model refinement for Decision 3	Hexavalent chromium, Title 22 metals, PAHs	Backhoe
AOC9-19	0, 2, 5 and 9	To resolve Data Gaps #3 and #5 - Define lateral and vertical extents of contaminations and support CMS/FS	Title 22 metals, PAHs, pesticides, PCBs; soil physical parameters (porosity, grain size, density, organic carbon content) – three samples from boring	Backhoe
AOC9-20	0, 2, 5 and 9	To resolve Data Gap #3 - Define lateral extent of contamination associated with AOC9-13	Mercury, lead, PAHs, pesticides, PCBs	Backhoe

Notes:

[a] Proposed collection methods listed on this table are based on experience and knowledge of the site; actual collection method will be chosen in the field based on field conditions and site access restrictions.

Figures



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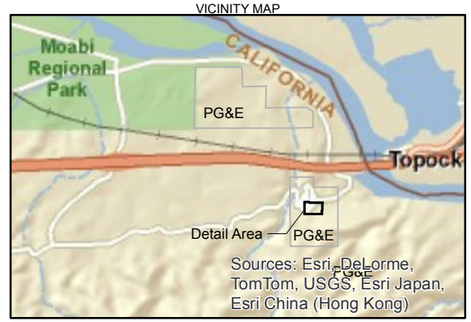


LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- AOC 9 Boundary
- Property Boundary
- Approximate Location of Stormwater Piping Below Ground
- PG&E Pipeline

SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

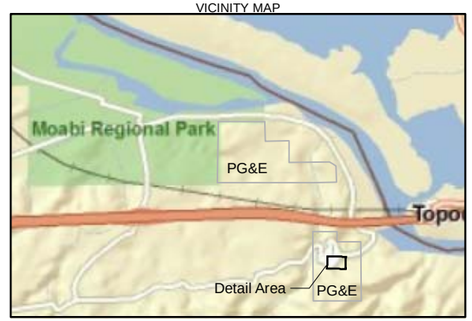
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (39.8 mg/kg) are shown in BLUE.
5. Results greater than or equal to the U.S. Environmental Protection Agency Residential Regional Screening Level (280 mg/kg) are shown in ORANGE.
6. J = Estimated Result.
7. Ecological Comparison Value (36.3 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours are shown at 2 foot intervals.

N

0 — 80 Feet

FIGURE C3-1
Total Chromium
Soil Sample Results and
Proposed Phase 2 Sample Locations
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

VICINITY MAP



LEGEND

- Soil Boring
- AOC Boundary
- Property Boundary
- PG&E Pipeline
- Stormwater Piping Below Ground (Approximate Location)
- Alternate Stormwater Piping Below Ground (Approximate Location)

Potential Release Mechanisms

- Infrequent Surface Water Runoff
- Infiltration (Site-wide)
- Windblown Dispersion of Soil (Site-wide)
- Volatilization (Site-wide)
- Degradation by Heat/Light (Site-wide)

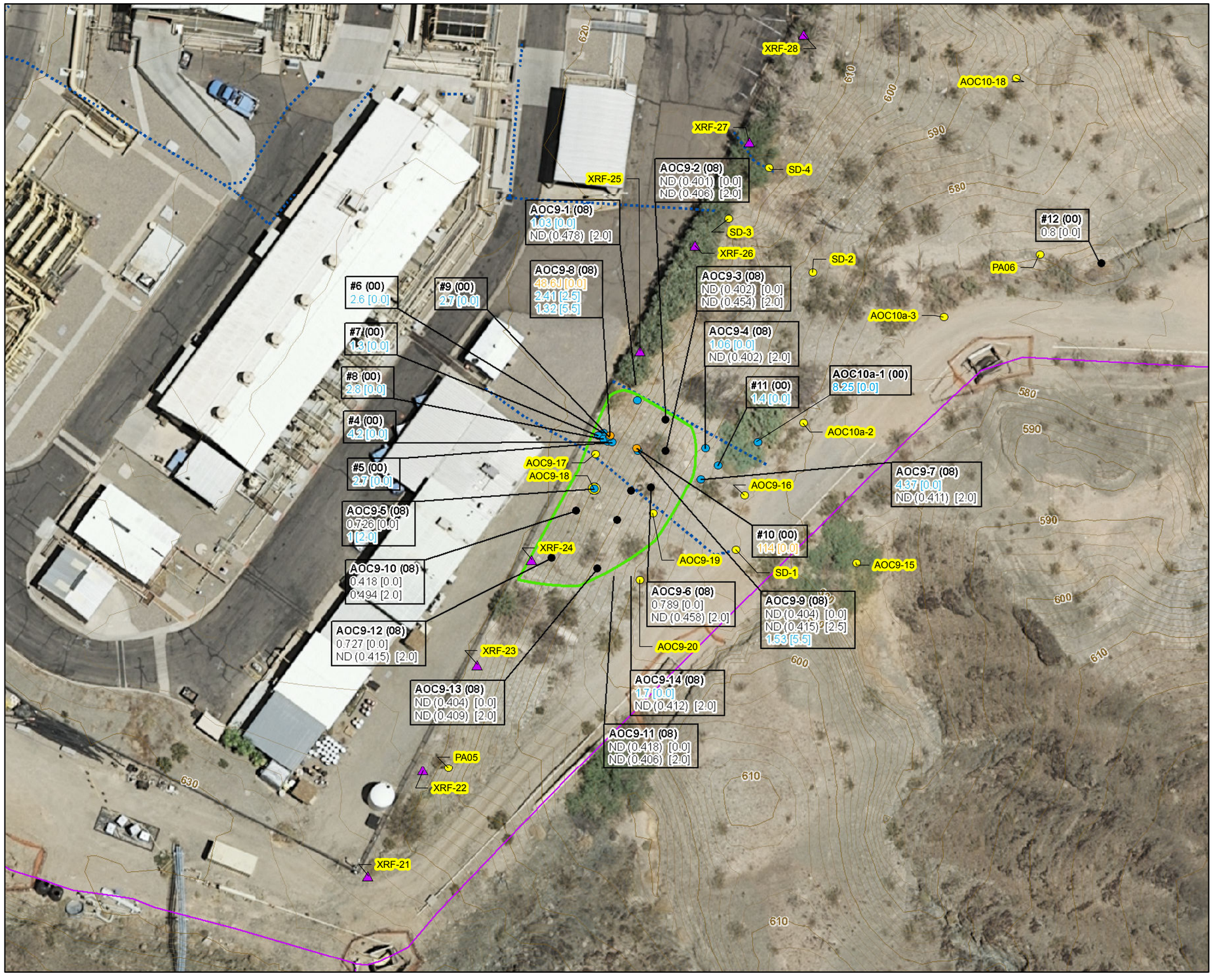
Note:
Topographic contours are shown at 2 foot intervals.

N

0 50 100
Feet

FIGURE C3-2
Conceptual Site Model for AOC-9
Soil Investigation Part A Phase 1 Data Summary Report
PG&E Topock Compressor Station
Needles, California

CH2MHILL



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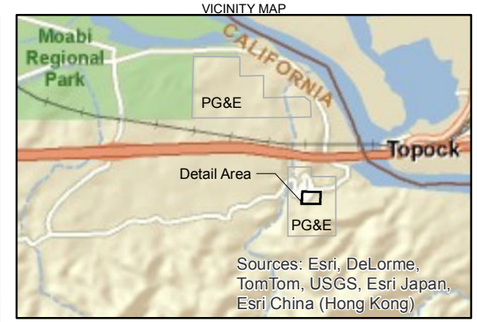


LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- AOC 9 Boundary
- Property Boundary
- Approximate Location of Stormwater Piping Below Ground
- PG&E Pipeline

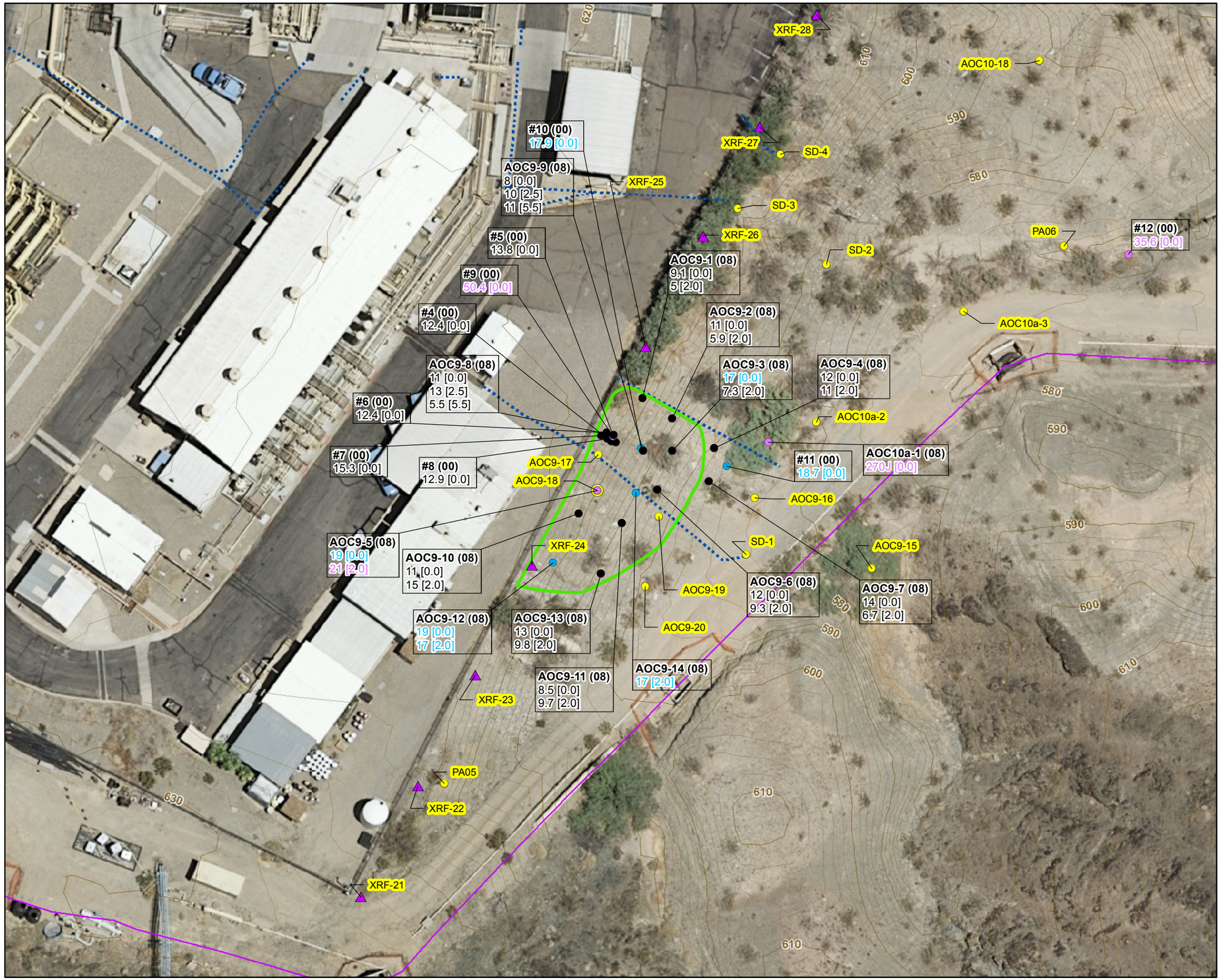
SSB-7 (08) — Sample Location, Installation Year
20 [1] — Sample Beginning Depth (ft BGS), Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft BGS = feet below ground surface
4. Results greater than Background (0.83 mg/kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparison Value (139.6 mg/kg) are in PURPLE.
6. Results greater than or equal to the California Human Health Screening Level (17 mg/kg) are in ORANGE.
7. J = Estimated Result
8. Topographic contours are shown at 2 foot intervals.

N

0 50 100
Feet

FIGURE C3-3
Hexavalent Chromium Soil Sample Results and Proposed Phase 2 Sample Locations
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



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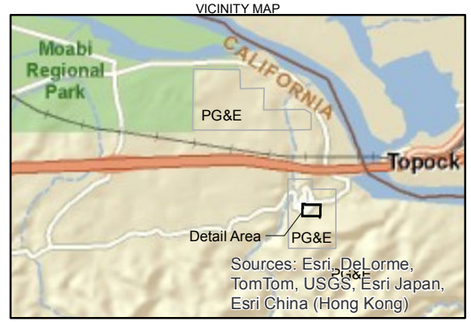


LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- AOC 9 Boundary
- Property Boundary
- Approximate Location of Stormwater Piping Below Ground
- PG&E Pipeline

SSB-7 (08) — Sample Location / Installation Date
20 [1] — Sample Beginning Depth (ft bgs) / Soil Concentration (mg/kg)

Notes:

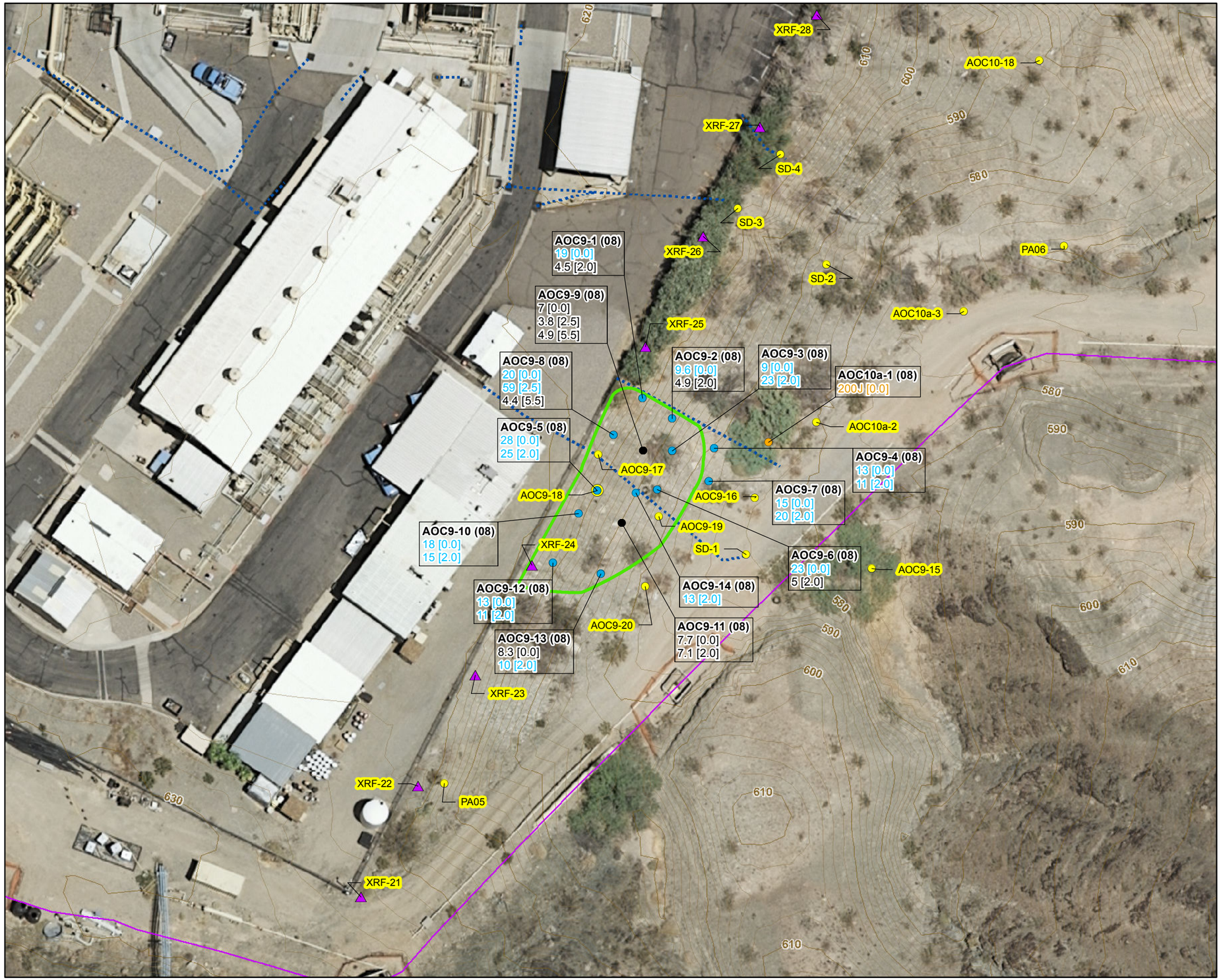
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (16.8 mg/Kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparison Value (20.6 mg/kg) are in PURPLE.
6. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (3000 mg/Kg) are shown in ORANGE.
7. J = Estimated Result
8. Topographic contours are shown at 2 foot intervals.

N

0 40 80
Feet

FIGURE C3-4
Copper
Soil Sample Results and
Proposed Phase 2 Sample Location
AOC 9 - Southeast Fence Line

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



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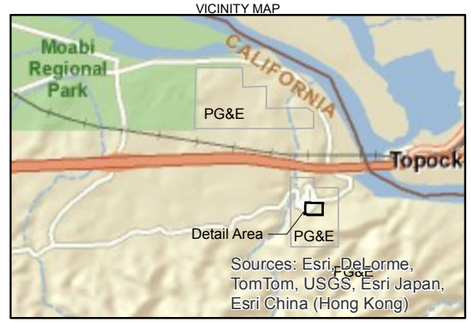


LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- AOC 9 Boundary
- Property Boundary
- Approximate Location of Stormwater Piping Below Ground
- PG&E Pipeline

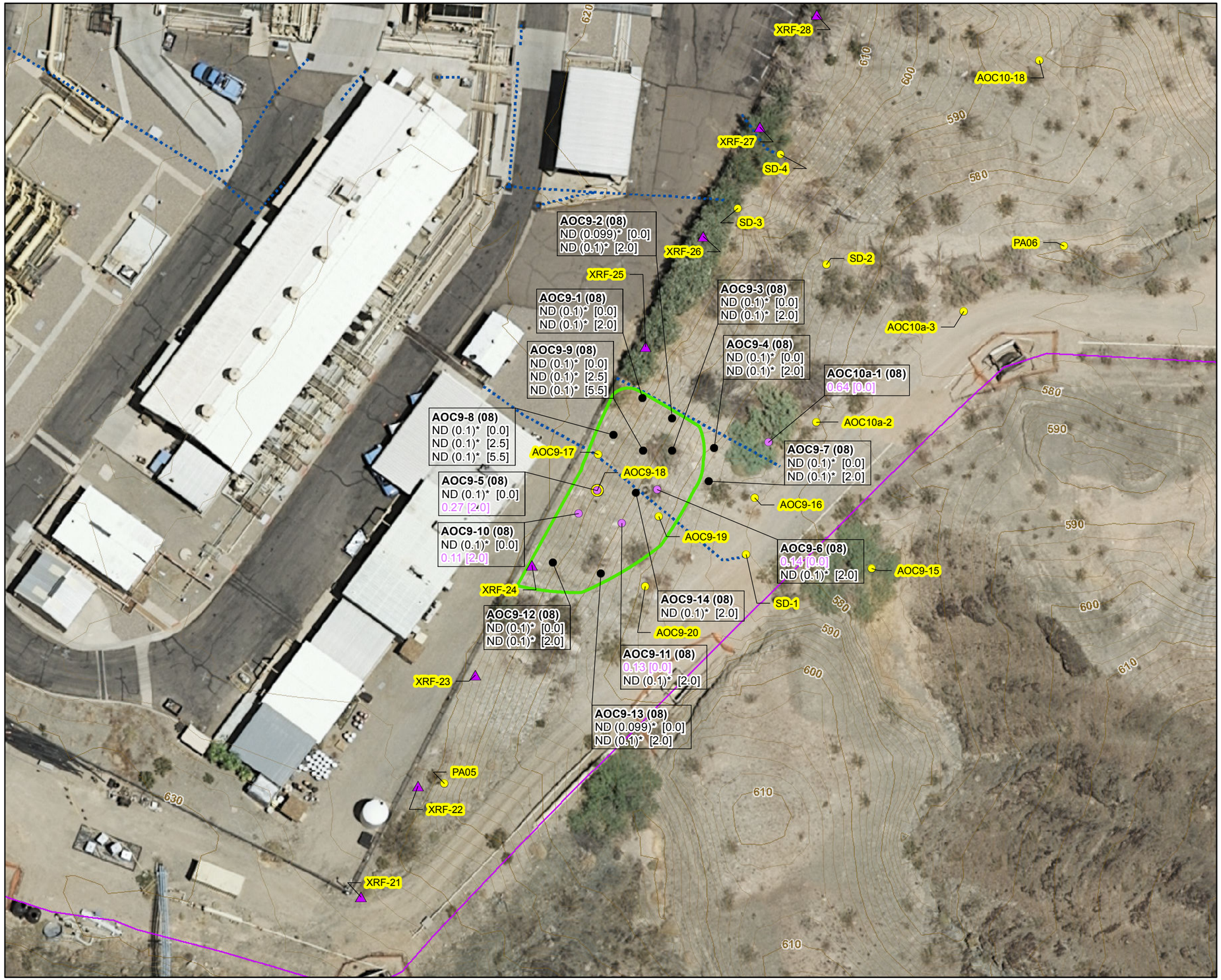
SSB-7 (08) — Sample Location
20 [1] — Installation Date
Sample Beginning Depth (ft bgs)
Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (8.39 mg/kg) are shown in BLUE.
5. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (150 mg/kg) are shown in ORANGE.
6. J = Estimated Result
7. Ecological Comparison Value (0.0166 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours are shown at 2 foot intervals.

N

0 40 80
Feet

FIGURE C3-5
Lead
Soil Sample Results and
Proposed Phase 2 Sample Locations
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



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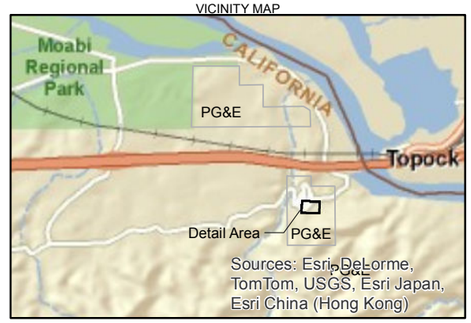


LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- AOC 9 Boundary
- Property Boundary
- Approximate Location of Stormwater Piping Below Ground
- PG&E Pipeline

SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

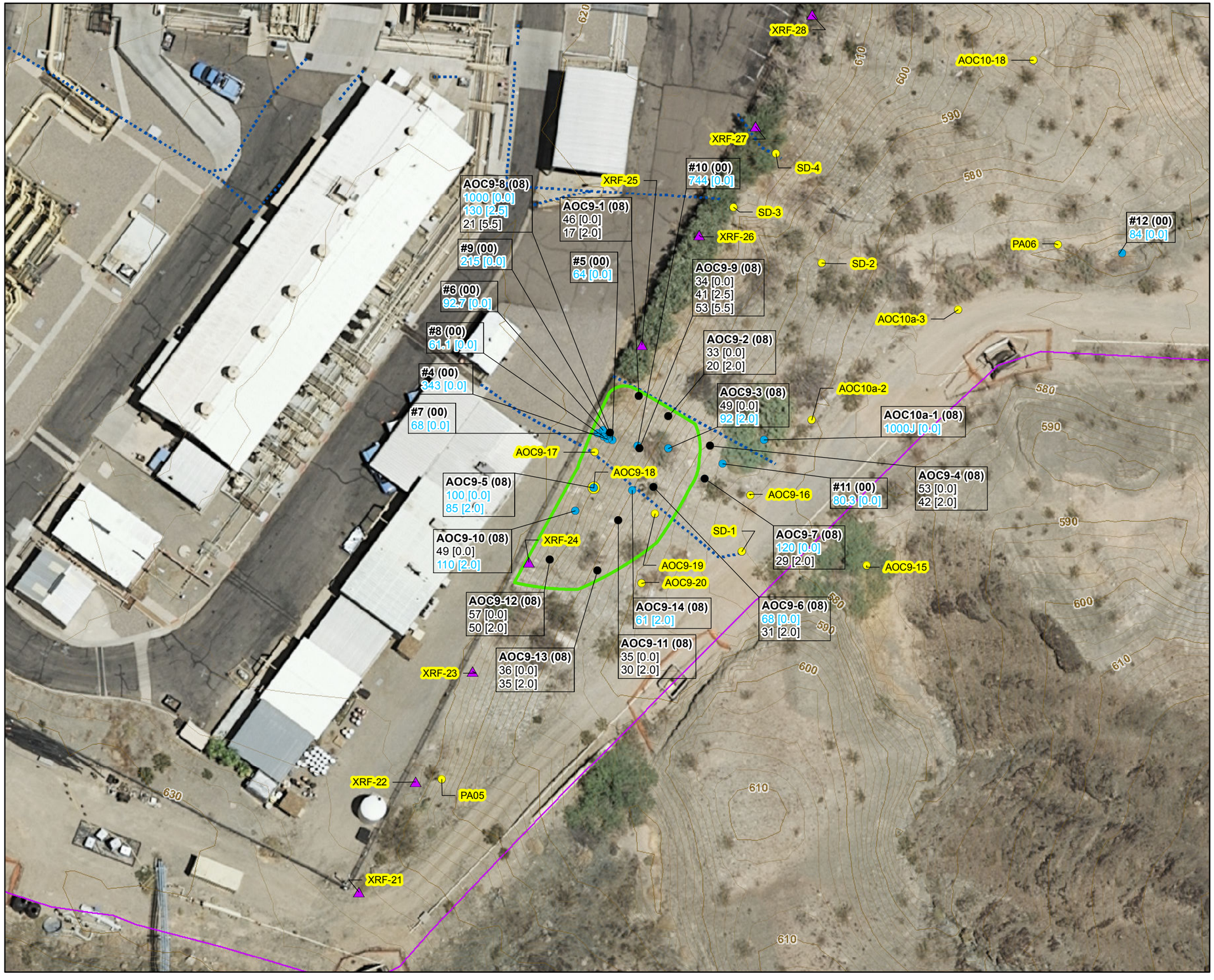
Notes:

1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than or equal to the Ecological Comparison Value (0.0125 mg/kg) are in PURPLE.
5. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (18 mg/Kg) are shown in ORANGE.
6. J = Estimated Result
7. * = Laboratory reporting limit exceeds screening levels.
8. No background value established
9. Topographic contours are shown at 2 foot intervals.

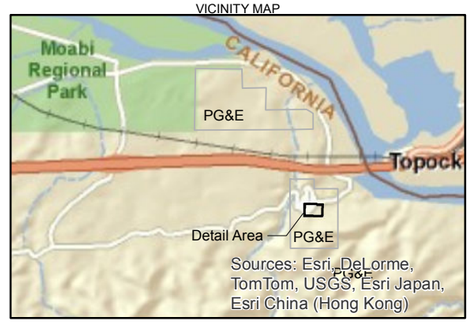
N

0 40 80
Feet

FIGURE C3-6
Mercury
Soil Sample Results and Proposed Phase 2 Sample Locations
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- AOC 9 Boundary
- Property Boundary
- Approximate Location of Stormwater Piping Below Ground
- PG&E Pipeline

SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

Notes:

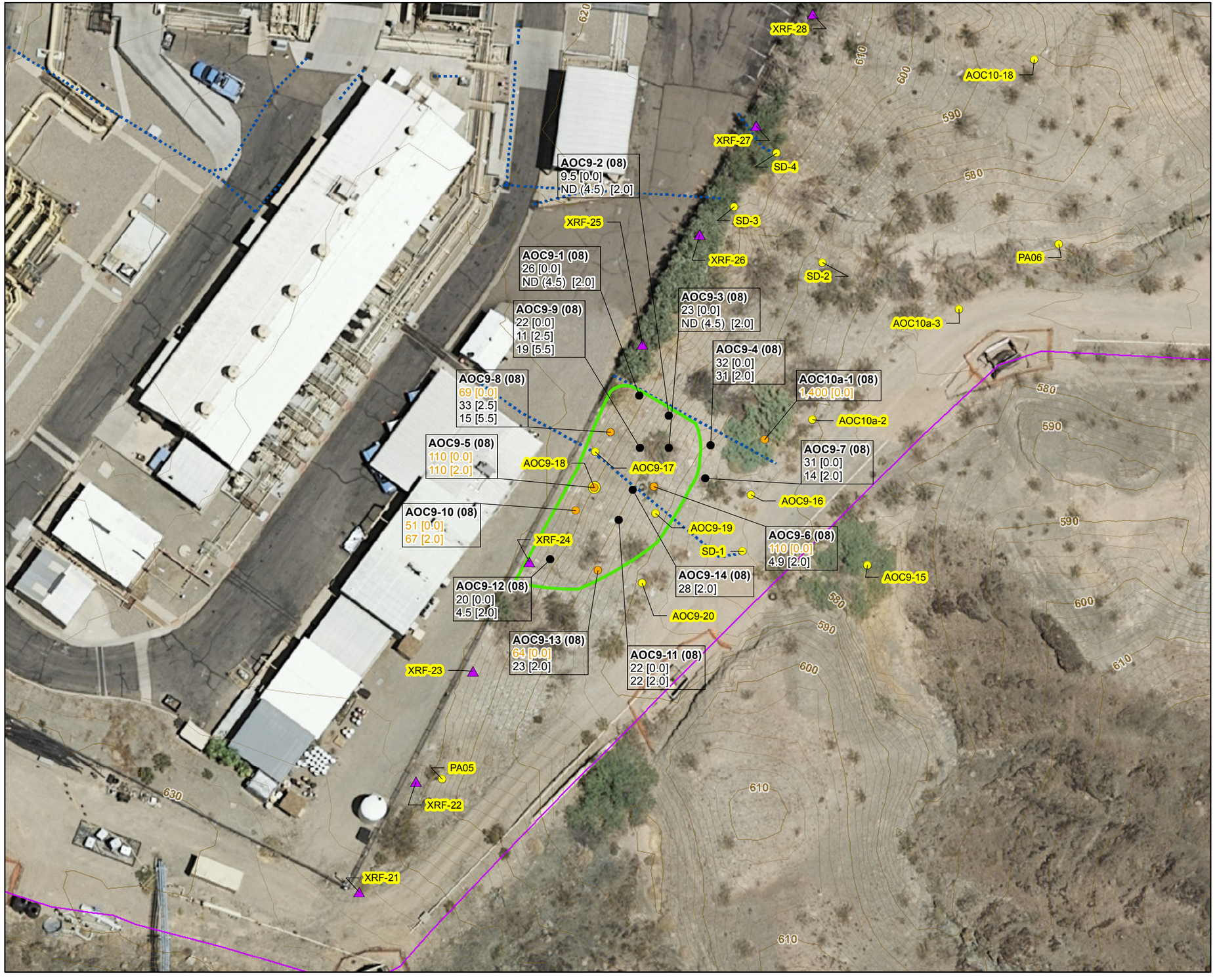
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (58 mg/kg) are shown in BLUE.
5. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (23,000 mg/kg) are shown in ORANGE.
6. J = Estimated Result
7. Ecological Comparison Value (0.164 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours are shown at 2 foot intervals.

N

0 20 40 80
Feet

FIGURE C3-7
Zinc
Soil Sample Results and Proposed Phase 2 Sample Locations
AOC 9 - Southeast Fence Line

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



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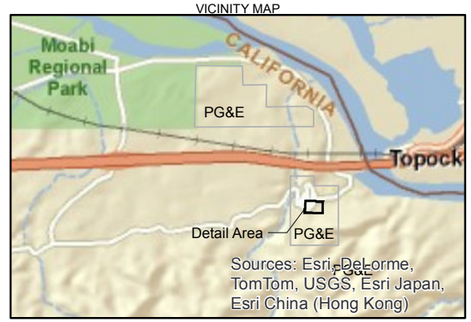


LEGEND

- Proposed Phase 2 Sample Location
- Soil Boring
- AOC 9 Boundary
- Property Boundary
- Approximate Location of Stormwater Piping Below Ground
- PG&E Pipeline

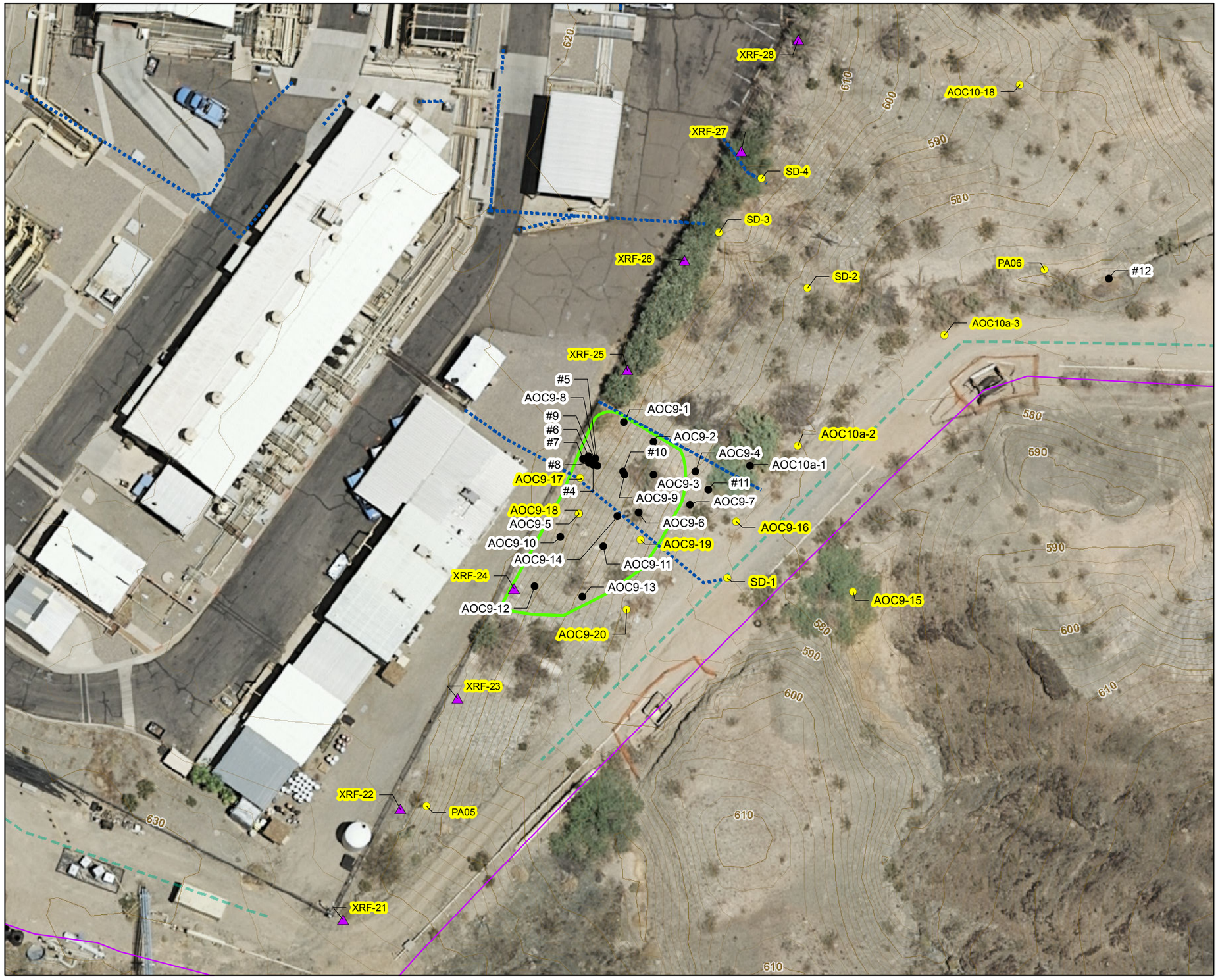
SSB-7 (08) — Sample Location / Installation Date
20 [1] — Sample Beginning Depth (ft bgs) / Soil Concentration (µg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. µg/kg = micrograms per liter
3. ft bgs = feet below ground surface
4. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (38 µg/L) are shown in ORANGE.
5. J = Estimated Result
6. No background level established
7. Topographic contours are shown at 2 foot intervals.

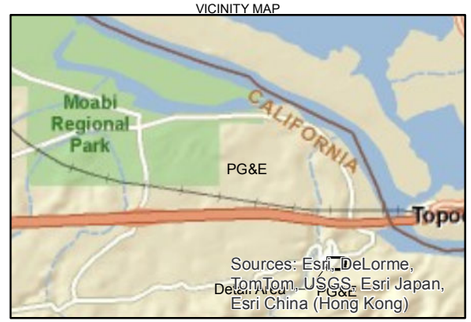
N

0 20 40 80
Feet

FIGURE C3-8
Benzo(a)Pyrene Equivalent Soil Sample Results and Potential Phase 2 Sample Locations
AOC 9 - Southeast Fence Line
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



VICINITY MAP



LEGEND

- Soil Boring
- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Access Routes
- AOC 9 Boundary
- PG&E Pipeline
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground

Note:
Topographic contours are shown at 2 foot intervals.

N

0 20 40
Feet

FIGURE C3-9
Potential Phase 2
Soil Sample Locations
AOC 9 - Southeast Fence Line
Soil Investigation Part A
Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

CH2MHILL

Path: \\Zinfandel\proj\PacificGasElectricCo\TopockProgram\GIS\MapFiles\2012\SWP_A\AOC9\AOC9_DG_Additional_Locs.mxd

Subappendix C4
Area of Concern 10 Data Gaps Evaluation Results

Contents

Tables

Figures

Attachment

Acronyms and Abbreviations

2009 ERGI	2009 East Ravine groundwater investigation
µg/kg	micrograms per kilogram
AOC	Area of Concern
bgs	below ground surface
BTV	background threshold value
CHHSL	California human health screening level
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
CMS/FS	corrective measures study/feasibility study
DQO	data quality objective
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
ECV	ecological comparison value
EPC	exposure point concentration
mg/kg	milligrams per kilogram
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PG&E	Pacific Gas and Electric Company
RFI/RI	RCRA facility investigation/remedial investigation
RSL	regional screening level
SPLP	synthetic precipitation leaching procedure
SSL	soil screening level
STLC	soluble threshold limit concentrations
TAL	Target Analyte List
TCL	Target Compound List
TPH	total petroleum hydrocarbons
TTLC	total threshold limit concentration
XRF	X-ray fluorescence

SUBAPPENDIX C4

Area of Concern 10 Data Gaps Evaluation Results

1.0 Introduction and Background

This subappendix presents the results of the data gaps evaluation and Part A Phase 2 sampling program for Area of Concern (AOC) 10 – East Ravine at the Pacific Gas and Electric Company (PG&E) Topock Compressor Station in Needles, California. The process for the data gaps evaluation is outlined in Sections 2.0 through 6.0 of the main text of Appendix A, Part A Phase 1 Data Gaps Evaluation Report, to the Soil RCRA Facility Investigation/Remedial Investigation (RFI/RI) Work Plan.

1.1 Background

AOC 10 – East Ravine is a small ravine located on the southeast side of the compressor station. The ravine runs eastward toward the Colorado River. Portions of the East Ravine are on PG&E property outside the facility fence line, and other portions of the ravine are located on property owned by Havasu National Wildlife Refuge.

The East Ravine is approximately 1,600 feet long and is bisected by three constructed berms (one constructed berm and two dirt roads, also constructed berms). The constructed berm was built circa early 1950s, the Southern California Gas Pipeline road was built in the 1950s, and the lower dirt road was built in 1916 and is associated with the old Route 66. The lower dirt road is the only berm that contains a culvert. Due to the berms, surface flow from most of the length of this ravine (west of the lower dirt road that forms the eastern boundary of AOC 10d) does not typically reach the Colorado River. The drainage for this ravine includes runoff from the compressor station access road (a curb was installed along the access road in 2006), runoff from the mountains to the south, and runoff from the compressor station itself.

During a site visit in May 2006, a storm drain was noted leading from the southeastern portion of the compressor station and discharging into the East Ravine. A small area, approximately 3 feet by 3 feet, of stained soil (possibly old hydrocarbon staining) was noted at the discharge of the storm drain. This is shown in Figure C4-1 as Subarea 10a. While discharge from the steam-cleaning area has always been directed to the oily water treatment system, this storm drain may have captured some runoff from the steam-cleaning area before the steam-cleaning area was fully bermed (CH2M HILL, 2006).

Three additional subareas (Subareas 10b, 10c, and 10d) where water and soil collect (either within lower-lying areas along the ravine course or behind berms) have been identified within the East Ravine and are shown in Figure C4-1. Subarea 10b, a natural drainage depression in the upper portion of the ravine, is located in a flat area of the ravine. These three subareas are downstream from Subarea 10a.

In 2008, during a site walk, California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) observed a layer of white powder material in the floor of

the wash in three locations between Subareas 10c and 10d and collected samples from this area (sample locations DTSC-AOC10d-1 through DTSC-AOC10d-3). The material was approximately 1 inch wide, 15 inches long, and 0.25 inch thick and was similar in appearance to the white material in Bat Cave Wash and at the Railroad Debris site. Samples collected from the powder indicate it contains elevated concentrations of calcium, chromium, copper, magnesium, sodium, and zinc.

In 2009, in response to DTSC's request in the conditional approval of the Soil Part A Work Plan (CH2M HILL, 2006), PG&E mapped white powder and debris in the East Ravine (results are described in Section 2.5 of this subappendix). Furthermore, after a January 2010 storm event, three additional white powder areas were discovered on the northern face of the East Ravine. Per DTSC's request, these three white powder areas are included in this data summary.

A graphical conceptual site model has been developed for AOC 10 based on the above site history and background and is shown in Figure C4-2. Table C4-1 presents primary sources, primary source media, potential release mechanisms, secondary source media, and potential secondary release mechanisms for AOC 10. Yellow arrows shown in Figure C4-2 represent flow within the East Ravine, and blue arrows represent surface water flow into the East Ravine. A detailed discussion of the migration pathways, exposure media, exposure routes, and human and ecological receptors is included in Appendix A of the Part A Phase 1 Data Gaps Evaluation Report.

For AOC 10, the primary potential sources of contamination are (1) runoff from the compressor station, the access road to the compressor station, and AOC 9; (2) discharge from stormwater drain pipes; (3) surface debris disposed of on the slopes of the ravine; and (4) incidental overflows of chromium-containing wastewater via the former trench drain at the top of the station access road. Potential releases would primarily have been in liquid form and would have affected surface soil. Releases from debris, whether consisting of solid particles or dissolved constituents, would also have affected surface soil.

Surface soil is the primary source medium. From surface soil, contaminants could have migrated to shallow and deeper soils; shallow soils may act as a secondary source medium to subsurface soil and subsurface soil may act as a secondary source medium to groundwater. Periodic rainfall events and runoffs to the East Ravine would have pooled in the drainage depressions identified as Subareas 10b, 10c, and 10d. In these subareas, contaminants could potentially be driven deeper and could potentially reach groundwater. If released, volatile organic compounds (VOCs) in surface soils would be expected to have been degraded by heat and light and are likely no longer present.

A secondary source may also include contaminated windblown dust. For AOC 10, windblown dust contamination, either from AOC 9 or other areas of the East Ravine, could have been deposited in the ravine or on shallow portions of the banks of the ravine. Windblown contamination, if any, is expected to be limited to surface soils.

Due to the berms within East Ravine, surface flow to the Colorado River is not considered a significant potential migration pathway. At least one berm was constructed prior to the development of the station, and another was constructed around the time the station was built. Although a culvert exists in the lower dirt road berm, chemicals of potential concern

(COPCs) concentrations east of this road are low, and there are no reports of flow through the culvert. Hexavalent chromium was not detected, and total chromium was below background in the soil sample immediately east of the lower dirt road berm.

In January 2011, additional historical aerial photographs of the compressor station were located and provided to DTSC. One photo (date unknown) indicated potential runoff of fluids from the station into East Ravine (see Figure C4-3). Figure C4-2 shows an overlay of this photo onto the site figure. Runoff can be seen originating from a point upslope of Subarea 10A and flowing into East Ravine, and water appears to be impounded in Subarea 10C. DTSC directed PG&E in a March 21, 2011 email to be sure that samples are included at appropriate locations along the line of apparent runoff. Soil sample locations have been added and presented in Section 6.0 of this subappendix.

In addition, a work plan for pore water sampling and sediment sampling along the western shore of the Colorado River in the vicinity of the East Ravine was prepared in response to comments from the DTSC and United States Department of the Interior on the *RCRA Facility Investigation/Remedial Investigation Soil Investigation Work Plan, Part A, PG&E Topock Compressor Station, Needles, California* (CH2M HILL, 2006). The work plan for the pore water sampling and sediment sampling is included as Attachment 1 of this subappendix.

1.2 AOC 10 Data

Fourteen historical soil samples (0 to 2 feet below ground surface [bgs]) were collected from nine locations (PS-21, PS-22, Bank 1, L-2-2, L-2-3, L-3-2, and L-1 through L3) in AOC 10, as shown in Figures C4-1, and C4-3 to C4-11. Historical soil samples were analyzed for five constituents: total chromium, hexavalent chromium, copper, nickel, and zinc. One historical sample collected at 1 foot bgs at location L-3 was also analyzed for calcium, iron, magnesium, and sodium.

During the 2008 Soil Part A Phase 1 soil investigation, 82 soil samples (generally collected at sample depths of 0 to 0.5, 2 to 3, 5 to 6, and 9 to 10 feet bgs) were collected from 26 sample locations (AOC10-1 through AOC10-8, AOC10a-1, AOC10b-1 through AOC10b-4, AOC10c-1 through AOC10c-5, AOC10d-1 through AOC10d-4, AOC10-XRF-01 through AOC10-XRF-03, and AOC10-XRF-10), as shown in Figures C4-1, and C4-3 to C4-11. Soil Part A Phase 1 soil samples collected in AOC 10 were analyzed for Title 22 metals, hexavalent chromium, VOCs, semivolatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), general chemistry parameters, pesticides, and polychlorinated biphenyls (PCBs). Surface soil samples were not analyzed for VOCs.

Ten percent of the Phase 1 soil samples collected in AOC 10 (nine soil samples) were analyzed for the full inorganic and organic suites per the CERCLA Target Analyte List and Target Compound List (TAL/TCL). In addition, synthetic precipitation leaching procedure (SPLP) extraction was performed on the surface soil sample (collected from 0 to 0.5 foot bgs) at sample location AOC10b-3 and soil samples collected at 2 to 3 feet bgs at sample locations AOC10c-1, AOC10c-5, and AOC10d-4. The leachate from the SPLP extractions was analyzed for total and hexavalent chromium. The leachate results from the SPLP extractions are presented in Table C4-2. The soil results were validated and the data quality evaluation is included in Appendix D to the Part A Phase 1 Data Gaps Evaluation Report.

In addition, nine soil samples were collected during the installation of two monitoring wells (MW-57BR and MW-58BR_S) associated with the 2009 East Ravine groundwater investigation (2009 ERGI). Soil samples were collected at 3 to 4, 8 to 9, and 18 to 19 feet bgs at location MW-57BR and at 1.5 to 2, 19 to 20, 29 to 30, 39 to 40, 49 to 50, and 59 to 60 feet bgs at location MW-58BR_S and were analyzed for Title 22 metals, hexavalent chromium, VOCs, semivolatile organic compounds, PAHs, TPH, and pH. The soil results for samples collected during the 2009 ERGI were validated, and the data quality evaluation is included in Appendix E of the *Summary of Findings Associated with the East Ravine Groundwater Investigation, PG&E Topock Compressor Station, Needles, California)* (CH2M HILL, 2009).

As noted above, DTSC also collected three soil samples of white powder at locations DTSC-AOC10d-1, DTSC-AOC10d-2, and DTSC-AOC10d-3. The samples were analyzed at two different analytical laboratories, as directed by DTSC and PG&E. The samples were analyzed for Title 22 metals, hexavalent chromium, general minerals, and pH and are included in the data tables for this unit.

In addition, four opportunistic soil samples were collected during maintenance activities along the 300A gas pipeline located along the southern rim of the ravine as shown on Figure C4-11. These opportunistic soil samples were collected at certain depths based on X-ray fluorescence screening and analyzed for hexavalent chromium, total chromium, molybdenum, and pH at locations AOC10-OS1, AOC10-OS2, and AOC10-OS4. The soil sample collected from AOC10-OS3 was only analyzed for pH. Laboratory analytical results for the four opportunistic samples are presented in Tables C4-3 and C4-6. These opportunistic soil data were not used as inputs to the data quality objective (DQO) decisions for AOC 10 because they are not located within the ravine. However, if these data were added as inputs to DQO decisions, they would not affect the identified data gaps presented in Section 6.0 of this subappendix.

All historical data, validated Phase 1 data, and the 2009 ERGI data that are considered Category 1 were used as inputs to the four DQO decisions for AOC 10.

2.0 Decision 1 – Nature and Extent

This section describes the nature and extent of residual soil concentrations of COPCs and chemicals of potential ecological concern (COPECs) at AOC 10. Laboratory analytical results for historical, Phase 1, and 2009 ERGI soil samples at AOC 10 are presented in Tables C4-3 through C4-8. Table C4-9 presents a statistical summary of soil analytical results for COPCs and COPECs that were either (1) detected above the laboratory reporting limits or (2) not detected but where the reporting limits for one more samples was greater than the interim screening value. Data for soil samples are presented first, followed by data for the white powder samples collected by DTSC.

2.1 Summary of AOC 10 Soil Data

Antimony, beryllium, cadmium, selenium, silver, cyanide, VOCs, TPH-gasoline, pesticides, and most species of PCBs were not detected in soil samples collected at AOC 10. Table C4-9 lists the 39 constituents detected, including four calculated quantities: benzo(a)pyrene equivalents, total low-molecular-weight PAHs, total high-molecular-weight PAHs, and total

PCBs. Nine of these constituents (aluminum, calcium, iron, magnesium, manganese, potassium, sodium, Aroclor-1254, and total PCBs) were detected in the TAL/TCL samples.

Fifteen of these constituents (vanadium, iron, potassium, sodium, Aroclor-1254, total PCBs, anthracene, benzo(g,h,i)perylene, chrysene, fluoranthene, phenanthrene, pyrene, low-molecular-weight PAHs, TPH-diesel, and TPH-motor-oil) were detected at concentrations below their respective interim screening levels. Twenty-four constituents, including two calculated quantities, were detected one or more times at concentrations exceeding the interim screening levels. These constituents included 16 metals (aluminum, arsenic, barium, calcium, total chromium, hexavalent chromium, cobalt, copper, lead, magnesium, manganese, mercury, molybdenum, nickel, thallium, and zinc), six PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz (a,h) anthracene, and indeno (1,2,3-cd)pyrene), and the two calculated quantities (benzo(a)pyrene equivalents and high molecular weight PAHs).

Eleven constituents (arsenic, total chromium, hexavalent chromium, copper, lead, molybdenum, thallium, zinc, benzo(a)pyrene, benzo(a)pyrene equivalents, and high molecular weight PAHs) were detected at concentrations exceeding their respective interim screening levels four or more times. The distributions of total chromium, hexavalent chromium, copper, lead, molybdenum, and zinc are shown in Figure C4-1 and Figures C4-4 to C4-8. The distributions of benzo(a)pyrene equivalents and high molecular weight PAHs are shown in Figures C4-9 and C4-10. Benzo(a)pyrene is not shown separately, as it is encompassed in the benzo(a)pyrene equivalents values. No figures are provided for arsenic and thallium. The four arsenic detections exceeding the arsenic interim screening level (background threshold value [BTV]) are all very close to the BTV (maximum detected concentration of 13 milligrams per kilogram [mg/kg], compared to the BTV of 11 mg/kg). All four detections of thallium exceeding the thallium interim screening level (ECV) were found in one location, in the samples from MW-58BR_S.

Four sample locations associated with AOC 9 (AOC9-4, AOC9-7, #11, and #12) are located within AOC 10 or immediately upslope of AOC 10. To provide further context for the evaluation of potential data gaps, the data for these samples are also shown in Figure C4-1 and Figures C4-4 to C4-10. The nature and extent discussion for the four AOC 9 sample locations are presented in Appendix C3. Two proposed AOC 9 Phase 2 sample locations (AOC9-15 and AOC9-16) located near AOC 10a have been included in the AOC 10 data gaps evaluation because these proposed AOC 9 Phase 2 sample locations are upslope of AOC 10a.

2.2 Nature and Extent Evaluation

The following subsection discusses the nature and extent of COPCs and COPECs detected above interim screening levels at AOC 10. As discussed in Section 3.2 of the Part A Phase 1 Data Gaps Evaluation Report, multiple factors were considered to assess whether the nature and extent of a specific constituent has been adequately delineated. Section 2.5 of this subappendix summarizes the constituents that may require further evaluation, and Section 6.0 of this subappendix provides the proposed follow-up sampling for the Part A Phase 2 soil investigation. The proposed Phase 2 sample locations are needed to fill quantitative data gaps, meet agency requirements, and further progress toward decision-making for soil remediation.

2.2.1 Arsenic

Arsenic was detected in 84 of 87 soil samples collected at AOC 10. Detected concentrations of arsenic slightly exceeded the interim screening level (11 mg/kg) (BTV) four times (maximum detected concentration of 13 mg/kg at MW-58BR), as shown in Table C4-9. Four of the detected concentrations of arsenic also exceeded the ECV (11.4 mg/kg). The detected concentrations of arsenic slightly exceeding the screening levels ranged from 12 to 13 mg/kg and were collected from two sample locations (MW-58BR at 19 to 20, 29 to 30, and 39 to 40 feet bgs and AOC10-5 at 5 to 6 feet bgs). At MW-58BR deeper samples (at 49 to 50 feet bgs and 59 to 60 feet bgs) have concentrations below the interim screening level. At AOC10-5, the deepest sample (collected at 6 feet bgs) has a concentration (12 mg/kg) that slightly exceeds the interim screening level.

2.2.2 Barium

Barium was detected in 87 of 87 soil samples collected from AOC 10. Detected concentrations of barium exceeded the interim screening level (410 mg/kg) (BTV/ECV) twice in AOC10-5 (500 mg/kg at 0 to 0.5 foot bgs and 1,300 mg/kg at 5 to 6 feet bgs), as shown in Tables C4-3 and C4-9. None of the detected concentrations exceeded residential and commercial/industrial California human health screening levels (CHHSLs) (5,200 mg/kg and 63,000 mg/kg, respectively). This sample location is located north of the small access road near Subarea 10d in the bottom of the ravine. Samples with concentrations below the screening levels are located to the north and west of this location but not the east the ravine walls. The deepest sample at AOC10-5 (5 to 6 feet bgs), had a concentration exceeding the screening levels.

2.2.3 Total Chromium

Total chromium was detected in 105 of 105 soil samples collected at AOC 10. Detected concentrations of total chromium exceeded the interim screening level (39.8 mg/kg) (BTV/ECV) 41 times (with a maximum detected concentration of 4,000 mg/kg at MW-58BR in the surface sample), as shown in Tables C4-3 and C4-9 and in Figure C4-1. Nine detected concentrations of total chromium exceeded the United States Environmental Protection Agency regional screening level (RSL) for residential use (280 mg/kg), and five detected concentration of total chromium exceeded the RSL for commercial/industrial use (1,400 mg/kg). Total chromium was detected at concentrations below the screening levels in borings MW-57BR, AOC10-5, AOC10-6, AOC10-7, and AOC10-8, which are located in the lower reaches of AOC 10. The lateral extent of samples with concentrations exceeding the screening levels is confined primarily to the ravine bottom, in Subarea 10c, the eastern portion of Subarea 10b, and the southern portion of Subarea 10d. At many locations, the deepest samples have concentrations exceeding the interim screening level; however, in most cases, only shallow samples were collected during the Part A Phase 1 and previous investigations. The deepest sample was collected at 59 to 60 feet bgs at MW-58BR, which had a detected concentration of total chromium (27 mg/kg) below the interim screening level.

2.2.4 Hexavalent Chromium

Hexavalent chromium was detected in 53 of 105 soil samples collected at AOC 10. Detected concentrations of hexavalent chromium exceeded the interim screening level (0.83 mg/kg) (background value) 36 times (with a maximum detected concentration of 150 mg/kg at

MW-58BR at 1.5 to 2 feet bgs), as shown in Tables C4-3 and C4-9 and in Figure C4-4. Five of the detected concentrations of hexavalent chromium exceeded the residential CHHSL (17 mg/kg), three exceeded the commercial/industrial CHHSL (37 mg/kg), and one exceeded the ECV (139.6 mg/kg). Hexavalent chromium was detected at concentrations below the screening levels in borings MW-57BR, AOC10-5, AOC10-6, AOC10-7, and AOC10-8, which are located in the lower reaches of AOC 10. The lateral extent of samples with concentrations exceeding the screening levels is confined primarily to the ravine bottom in the portion of East Ravine upstream of the small access road near Subarea 10d. At many locations, the deepest samples have concentrations exceeding the interim screening level; however, in most cases, only shallow samples were collected during the Part A Phase 1 and previous investigations. The deepest sample was collected at 59 to 60 feet bgs at MW-58BR, in which hexavalent chromium was not detected above laboratory reporting limits.

2.2.5 Cobalt

Cobalt was detected in 87 of 87 soil samples collected from AOC 10. In one sample from MW-58BR_S, the detected concentrations of cobalt (13 mg/kg) slightly exceeded the interim screening level (12.7 mg/kg) (background value) and the ECV (13 mg/kg), as shown in Tables C4-3 and C4-9. None of the detected concentrations exceeded residential and commercial/industrial RSLs (23 mg/kg and 300 mg/kg, respectively). This sample location is a monitoring well that was installed behind the berm in Subarea 10c. The detected concentration that slightly exceeds the screening levels was detected in the deepest sample collected at this location (59 to 60 feet bgs).

2.2.6 Copper

Copper was detected in 101 of 101 soil samples collected at AOC 10. Detected concentrations of copper exceeded the interim screening level (16.8 mg/kg) (BTV) 42 times (with a maximum detected concentration of 300 mg/kg at MW-58BR at 1.5 to 2 feet bgs), as shown in Tables C4-3 and C4-9 and in Figure C4-5. Thirty-three detected concentrations of copper exceeded the ECV (20.6 mg/kg). None of the detected concentrations exceeded the residential or commercial/industrial CHHSLs (3,000 mg/kg, and 38,000 mg/kg, respectively). Copper was detected at concentrations below the screening levels in borings MW-57BR, AOC10-5, AOC10-6, AOC10-7, and AOC10-8, which are located in the lower reaches of AOC 10. The lateral extent of samples with concentrations exceeding the screening levels is confined primarily to the ravine bottom. At many locations, the deepest samples have concentrations exceeding the interim screening level; however, in most cases, only shallow samples were collected during the Part A Phase 1 and previous investigations. The deepest sample was collected at 59 to 60 feet bgs at MW-58BR, which had a detected concentration of copper (58 mg/kg) exceeding the interim screening level.

2.2.7 Lead

Lead was detected in 86 of 87 soil samples collected at AOC 10. Detected concentrations of lead exceeded the interim screening level (8.39 mg/kg) (BTV/ECV) 32 times (with a maximum detected concentration of 200 mg/kg at AOC10a-1), as shown In Tables C4-3 and C4-9 and in Figure C4-6. Only two of the detected concentrations (at AOC10a-1 at 0 to 0.5 foot bgs and MW-58BR at 1.5 to 2 feet bgs) exceeded the residential CHHSL (80 mg/kg). None of the detected concentrations exceeded the commercial/industrial CHHSL

(320 mg/kg). Lead was detected at concentrations exceeding the interim screening level in most sample locations in AOC 10. With two exceptions (AOC10c-4 and AOC10d-4), the lead exceedances were limited to the upper three feet. The distribution of lead exceedances is not consistent with the site-specific conceptual site model for AOC 10 (that is, flow in the bottom of the ravine and accumulation of liquids and fine-grained materials behind the berms), suggesting other potential sources. Much of the lead present at AOC 10 is most likely from other anthropogenic sources (that is, proximity to former Route 66 and the use of lead in gasoline until 1970s), which would cause a more widespread distribution of lead, as discussed in Appendix C, Section C.3.

2.2.8 Mercury

Mercury was detected in two of 87 soil samples collected from AOC 10. Detected concentrations of mercury exceeded the interim screening level (0.0125 mg/kg) (ECV) twice (at AOC10a-1 [0.64 mg/kg at 0 to 0.5 foot bgs] and MW-58BR_S [0.33 mg/kg at 1.5 to 2 feet bgs]), as shown in Tables C4-3 and C4-9. None of the detected concentrations exceeded residential and commercial/industrial CHHSLs (18 mg/kg and 180 mg/kg, respectively). The ECV (0.0125 mg/kg) is below the capability of the instrumentation to detect mercury. As a result, the 85 nondetected sample results had reporting limits that exceeded the ECV. The mercury reporting limits ranged from 0.0198 to 0.1 mg/kg. The two samples with detectable concentrations of mercury are located in different subareas of AOC 10 (Subarea 10a and Subarea 10c). Samples with concentrations below the detection level surround location MW-58BR_S, and deeper samples collected at this location had concentrations below the detection level. Only one sample (AOC10a-1) was collected in Subarea 10A; however, four samples collected at AOC 9 contained detectable concentrations of mercury.

2.2.9 Molybdenum

Molybdenum was detected in 15 of 87 soil samples collected from AOC 10. Detected concentrations of molybdenum exceeded the interim screening level (1.37 mg/kg) (BTV) eight times (with a maximum detected concentration of 19 mg/kg at AOC10a-1), as shown in Tables C4-3 and C4-9 and in Figure C4-7. Four detected concentrations exceeded the ECV (2.25 mg/kg). None of the detected concentrations exceeded residential and commercial/ industrial CHHSLs (380 mg/kg and 4,800 mg/kg, respectively). The lateral extent of samples with concentrations exceeding the interim screening level is confined primarily to the ravine bottom in Subareas 10b and 10c (upstream of the upper most berm), with the exception of the exceedance at location MW-57BR located on the small access road near Subarea 10d. Samples with concentrations below the screening levels are located near and in Subarea 10d. At most locations, the deepest samples have concentrations below the interim screening level, with the exception of locations AOC10a-1 (where only a surface soil could be collected) and MW-57BR (molybdenum was detected at 3 mg/kg at 18 to 19 feet bgs, the deepest depth sampled). Samples from MW-57BR collected at 3 to 4 feet and 8 to 9 feet bgs were below the interim screening level.

2.2.10 Nickel

Nickel was detected in 101 of 101 soil samples collected from AOC 10. As shown in Tables C4-3 and C4-9, one detected concentration (28 mg/kg at AOC10a-1) slightly exceeded the interim screening level (27.3 mg/kg) (BTV/ECV). None of the detected

concentrations exceeded the residential and commercial/industrial CHHSLs (1,600 mg/kg and 16,000 mg/kg, respectively).

2.2.11 Thallium

Thallium was detected in four of 87 soil samples collected from AOC 10. Detected concentrations of thallium exceeded the interim screening level (2.32 mg/kg) (ECV) four times; all four exceedances were found in samples from MW-58BR_S in samples collected at 1.5 to 2, 19 to 20, 29 to 30, and 39 to 40 feet bgs, with a maximum detected concentration of 6.1 mg/kg at 1.5 to 2 feet bgs), as shown in Tables C4-3 and C4-9. Only one of the detected concentrations exceeded the residential CHHSL (5 mg/kg), and none exceeded the commercial/industrial CHHSL (63 mg/kg) at location MW-58BR_S, as shown in Table C4-3. Samples with concentrations below the interim screening level surround this location. The deeper samples at this location (at 49 to 50 feet bgs, and 59 to 60 feet bgs) have concentrations below the interim screening level.

2.2.12 Zinc

Zinc was detected in 101 of 101 soil samples collected at AOC 10. Detected concentrations of zinc exceeded the interim screening level (58 mg/kg) (BTV/ECV) 46 times (with a maximum detected concentration of 1,000 mg/kg at AOC10a-1), as shown in Tables C4-3 and C4-9 and in Figure C4-8. None of the detected concentrations exceeded residential and commercial/industrial CHHSLs (23,000 mg/kg and 100,000 mg/kg, respectively). The lateral extent of samples with concentrations exceeding the screening levels is confined primarily to the ravine bottom, with exceedances of the interim screening level in all four subareas. Zinc was detected at concentrations below the screening levels in borings AOC10-6 and AOC10-7. At many locations, the deepest samples have concentrations exceeding the interim screening level; however, in most cases, only shallow samples were collected during the Part A Phase 1 and previous investigations. The deepest sample collected was collected at 59 to 60 feet bgs at MW-58BR, and had a detected concentration of zinc (41 mg/kg) below the interim screening level.

2.2.13 Polycyclic Aromatic Hydrocarbons

Benzo(a)pyrene was detected in 34 of 86 soil samples collected from AOC 10. Detected concentrations of benzo(a)pyrene exceeded the interim screening level (38 micrograms per kilogram [µg/kg]) (residential CHHSL) 13 times and the commercial/industrial CHHSL (130 µg/kg) four times. Several other PAHs were detected in soil samples collected from AOC 10; only benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected at concentrations above their respective interim screening levels. To assist with evaluation of PAHs for human health, benzo(a)pyrene equivalents were calculated for each of the soil samples collected at AOC 10, as shown in Table C4-5. Benzo(a)pyrene equivalents values exceeded the interim screening level of 38 µg/kg (residential CHHSL) 15 times (maximum calculated concentration of 1,400 µg/kg at AOC10a-1), as shown in Tables C4-5 and C4-9 and in Figure C4-9, and exceeded the commercial/industrial CHHSL (130 µg/kg) five times. PAHs were detected at concentrations exceeding the screening levels in Subareas 10a, 10c, 10d and into the area downstream of a small access road near Subarea 10d. At all locations, PAH exceedances were limited to the upper three feet. With two exceptions (AOC10a-1 and

AOC10-6), the deepest samples have concentrations below the interim screening level; only shallow samples could be collected at AOC10a-1 and AOC10-6.

To assist with evaluation of PAHs for ecological risk, detected concentrations of low-molecular-weight PAHs and high-molecular-weight PAHs were summed and compared to the PAH low-molecular-weight and PAH high-molecular-weight ECVs (10,000 µg/kg and 1,160 µg/kg, respectively). Five PAH high-molecular-weight sums of detected concentrations exceeded the ECV of 1,160 µg/kg; as shown in Tables C4-5 and C4-9 and Figure C4-10. PAH high-molecular-weight sums exceeding the interim screening level are collocated with the highest benzo(a)pyrene equivalents detections. As discussed above, none of the sums of detected concentrations exceeded the PAH low-molecular-weight ECVs.

2.2.14 Target Analyte List/Target Compound List Constituents

As described above, aluminum, calcium, iron, magnesium, manganese, potassium, sodium, and Aroclor-1254 were detected in the AOC 10 soil samples analyzed for the complete TAL/TCL suite of compounds. These constituents are discussed below.

Aluminum was detected in nine of nine surface soil samples collected from AOC 10. Detected concentrations of aluminum exceeded the interim screening level (16,400 mg/kg) (BTV) once at a concentration of 18,000 mg/kg at AOC10-5, as shown in Tables C4-4 and C4-9. Remaining detected concentrations of aluminum ranged from 4,100 to 11,000 mg/kg. None of the detected concentrations exceeded residential and commercial CHHSLs (77,000 mg/kg and 990,000 mg/kg, respectively). An ECV has not been established for aluminum.

Calcium was detected in 10 of 10 surface soil samples collected from AOC 10. Detected concentrations of calcium exceeded the interim screening level (66,500 mg/kg) (background value) once at a concentration of 139,000 mg/kg at L-3, as shown in Tables C4-4 and C4-9. Remaining detected concentrations of calcium ranged from 18,000 to 44,000 mg/kg. Residential and commercial/industrial CHHSLs and an ECV have not been established for calcium.

Iron was detected in 10 of 10 surface soil samples collected from AOC 10. The maximum detected concentration of iron was 32,000 mg/kg at AOC10-a1, which is below the interim screening level of 55,000 mg/kg (residential RSL), as shown in Tables C4-4 and C4-9. Remaining detected concentrations of iron ranged from 540 to 28,000 mg/kg. Residential and commercial/industrial CHHSLs and an ECV have not been established for iron.

Magnesium was detected in 10 of 10 surface soil samples collected from AOC 10. Detected concentrations of magnesium exceeded the interim screening level (12,100 mg/kg) (background value) once at a concentration of 12,800 at L-3, as shown in Tables C4-4 and C4-9. Remaining detected concentrations of magnesium ranged from 3,900 to 12,000 mg/kg. Residential and commercial/industrial CHHSLs and an ECV have not been established for magnesium.

Manganese was detected in nine of nine surface soil samples collected from AOC 10. Detected concentrations of manganese exceeded the interim screening level (402 mg/kg) (BTV) twice (AOC10-5 [1,300 mg/kg] and AOC10-8 [470 mg/kg]), as shown in Tables C4-4 and C4-9. None of the detected concentrations exceeded residential and commercial/ industrial CHHSLs (1,800 mg/kg and 23,000 mg/kg, respectively). These manganese

exceedances are probably not related to compressor station release sources as the lateral extent of samples with concentrations for the majority of the COPCs/COPECs exceeding the screening levels is confined primarily to the ravine bottom in the portion of East Ravine upstream of the small access road near Subarea 10d, whereas these two locations are on the western ravine slope northwest of Subarea 10d and north of the berm on the north side of Subarea 10d.

Potassium was detected in nine of nine surface soil samples collected from AOC 10. The maximum detected concentration of potassium was 4,100 mg/kg at AOC10-5, which is below the interim screening level of 4,400 mg/kg (BTV), as shown in Tables C4-4 and C4-9. Remaining detected concentrations of potassium ranged from 990 to 2,300 mg/kg. Residential and commercial/industrial CHHSLs, RSLs, and an ECV have not been established for potassium.

Sodium was detected in 10 of 10 surface soil samples collected from AOC 10. The maximum detected concentration of sodium was 1,280 mg/kg at L-3, which is below the interim screening level of 2,070 mg/kg (BTV), as shown in Tables C4-4 and C4-9. Remaining detected concentrations of sodium ranged from 160 to 540 mg/kg. Residential and commercial/industrial CHHSLs, RSLs, and an ECV have not been established for sodium.

Aroclor-1254 was detected in seven of 13 soil samples collected from AOC 10; both surface (0 to 0.5 foot bgs) and subsurface soil (2 to 3 feet bgs) samples were collected. The maximum detected concentration of Aroclor-1254 was 71 µg/kg at AOC10a-1, which is well below the interim screening level of 220 µg/kg (residential RSL). Remaining detections of Aroclor-1254 ranged from 19 to 68 µg/kg. To assist with evaluation of PCBs for ecological risk, detected concentrations of the Aroclors (only Aroclor-1254 at AOC 10) were summed, and the total PCB values were compared to the ECV. The maximum calculated value for total PCBs was 71 µg/kg, which is well below the total PCB ECV of 204 µg/kg, as shown in Table C4-8. The remaining calculated total PCB concentrations ranged from 19 to 68 µg/kg.

As discussed in Section C.2 in Appendix C, PG&E recommends that aluminum, calcium, iron, magnesium, manganese, potassium, and sodium not be considered COPCs/COPECs for this AOC, and no further sampling for these constituents is proposed. These constituents have been fully discussed in Section C.2.

2.3 White Powder Sample Results (Collected by DTSC)

The three soil samples of white powder collected by DTSC at locations DTSC-AOC10d-1, DTSC-AOC10d-2, and DTSC-AOC10d-3 were analyzed for inorganic constituents only (for Title 22 metals, hexavalent chromium, general minerals and pH). As shown in Tables C4-3 and C4-4, 13 metals were detected in these samples (arsenic, barium, calcium, total chromium, hexavalent chromium, copper, iron, lead, magnesium, potassium, sodium, vanadium, and zinc). Arsenic, iron, potassium, and vanadium did not exceed their respective BTVs. Barium and sodium were detected above their respective BTVs once each, and calcium was detected above its BTV twice. Total chromium, hexavalent chromium, copper, lead, magnesium, and zinc were detected above their respective BTVs in all three samples. Hexavalent chromium also exceeded the residential CHHSL in one sample, and copper exceeded the ECV in all three samples. The remaining metals were not detected above any other comparison values.

2.4 Central Tendency Comparison to Background Threshold Values

Fourteen metals (aluminum, arsenic, barium, calcium, total chromium, hexavalent chromium, cobalt, copper, lead, magnesium, manganese, molybdenum, nickel, and zinc) were detected above their respective background values in the soil data set. A central tendency comparison was performed for 13 of these 14 metals (aluminum, arsenic, barium, calcium, total chromium, cobalt, copper, lead, magnesium, manganese, molybdenum, nickel, and zinc) to compare the AOC 10 soil data set for these metals with the corresponding Topock soil background data set to determine whether a difference exists between the two populations and whether additional sampling may be required for a given metal, as shown in Table C4-10 of this subappendix and in Figure 3-1 in the Part A Phase 1 Data Gaps Evaluation Report).

Metals in either the AOC 10 data set or background data set that were detected infrequently (less than five detects) or had a limited number of results (less than eight) were not tested. There were insufficient detections of hexavalent chromium in the background data set to allow for a central tendency comparison.

No statistical difference between the two populations was noted for aluminum, barium, calcium, cobalt, magnesium, manganese, molybdenum, and nickel, as shown in Table C4-10. However, results from the Gehan test show that site concentrations for arsenic, total chromium, copper, lead, and zinc may exceed background. The lateral and vertical extents of arsenic have been adequately defined, as discussed above; therefore, no additional sampling is proposed for arsenic. Additional sampling is proposed for total chromium, copper, lead, and zinc.

2.5 White Powder and Debris Mapping

As part of the conditional approval of the Soil Part A Work Plan (CH2M HILL, 2006), DTSC requested that the white powder and metal debris observed in AOC 10 be mapped to assist in planning for Phase 2. PG&E conducted a site walk at AOC 10 in May 2009 to map the white powder and debris areas. White powder was observed in the ravine bottom within Subarea 10d and between Subareas 10c and 10d. Several areas of miscellaneous debris were identified, as shown in Figures C4-1, C4-2, and C4-4 through C4-10. Miscellaneous debris consisted of pieces of metal, cans, tires, concrete rubble, tiles, and bricks. A small dirt pile with small pieces of green-colored wood was observed near the access road adjacent to Subarea 10d. Two areas of discolored, light soil were observed in the debris areas located on the northern ravine wall, as shown in Figure C4-1, C4-2, and C4-4 through C4-10 (these were also classified as potential white powder areas). DTSC noted during a site visit that these areas appear to be unusually weathered. Following recent heavy rainfall, an additional white powder area was discovered on the slope near the station access road slightly west of Subarea 10b; this area is also shown in the figures.

Sampling of the white powder and debris is proposed to determine the nature and extent of contamination in the white powder and debris areas. Additional characterization of debris may be needed to assess if asbestos-containing materials are present.

2.6 Nature and Extent Conclusions

Based on the site history, background, and conceptual site model, qualitative review indicates than decision error has been held to an acceptable level. Sufficient data of

acceptable quality have been attained by the collection of historical/Part A Phase 1 soil samples in areas most likely to have been impacted by the runoff from the compressor station, discharge from known stormwater drain pipes, and overflows of chromium-containing wastewater from the facility entering the East Ravine from the former trench drain. Those areas include areas downgradient of AOC 9, along the bottom and most of the length of the ravine, in drainage depression areas (Subareas 10b, 10c, and 10d), and on the northern slope of AOC 10, primarily north of Subarea 10c, although low-level contamination from station runoff may be present along other parts of the northern slope. Some of the newly-identified debris and white powder areas have not been sampled.

Review of the nature and extent discussions above indicates that the lateral extent of samples with concentrations exceeding the screening levels is confined primarily to the ravine bottom behind the berms. Within this portion of East Ravine, the lateral and vertical extents of hexavalent chromium, copper, lead, mercury, molybdenum, PAHs, total chromium, and zinc have not been defined. Soil data also indicate that the entire footprint of Subarea AOC 10c may be contaminated. Additional sampling along the side wall of this AOC will not significantly improve remedial decision; therefore, no additional sampling is recommended and uncertainty would be addressed in the CMS/FS.

Based on review of the data and the Part A DQO, data gaps were identified to resolve Decision 1 – Nature and Extent, and limited additional sampling is proposed in Phase 2 to fill the following data gaps:

1. Data Gap #1 – Lateral and vertical extent of contamination in the western portion of AOC10 (Subarea AOC 10a, downslope from AOC9, downslope from the outfall of the former trench drain), and from surface run-off from the compressor station.

2. Data Gap #2 – Nature and extent of contamination associated with runoff from station access road to the low point north of Subarea 10d.

3. Data Gap #3 – Nature and extent of contamination in and between drainage depression subareas.

4. Data Gap #4 - Nature and extent of contamination associated with the newly identified white powder areas (on the slope below the station access road) and the newly identified debris areas (on the slopes of AOC10).

In addition, the location of potential additional storm drains (beyond those identified and mapped in this report) adjacent to the employee parking lot has been identified as a data gap. To address this data gap, PG&E will perform additional research and field reconnaissance, as described in Appendix D of the Soil RFI/RI Work Plan (Storm Drain Investigation Program); relevant data from the storm drain investigation program will be incorporated into existing units as appropriate, following the implementation of the entire Soil RFI/RI Work Plan.

3.0 Decision 2 – Data Sufficient to Estimate Representative Exposure Point Concentrations

For Decision 2, data were evaluated to determine if the AOC 10 data are sufficient to conduct human health and ecological risk assessments based on the criteria described in

Section 4.0 of the Part A Phase 1 Data Gaps Evaluation Report. The principal consideration for Decision 2 was whether there were sufficient data to estimate a representative exposure point concentration (EPC). Data reviewed were all available data at AOC 10 (including historical data, soil data collected during the 2009 ERGI, and white powder samples collected by DTSC). Data from AOC10a-1 were included in the evaluation of AOC 9 (Appendix C3) to support the ecological risk assessment because this sample location is within approximately 30 feet of the AOC 9 boundary, and this is consistent with the ecological risk assessment data set definition for AOC 9/10a in the Human Health and Ecological Risk Assessment Work Plan (ARCADIS, 2008). Therefore, the AOC10a-1 data were only included in the AOC 10 evaluation to support the human health risk assessment.

Table C4-11 summarizes the results of the evaluation to determine whether data are sufficient to estimate a representative EPC. Data were reviewed for all chemicals that were detected in at least one sample and exceeded at least one comparison value. In general, existing data are adequate to support EPC development for detected chemicals that exceeded one or more comparison values (10 metals, four Contract Laboratory Program inorganics, and PAHs), as described below. Phase 2 data will be added to the existing data set to calculate the final EPC (after Decision 1 is satisfied).

3.1 Metals

Sufficient data (numbers of samples and detections) are available to calculate EPCs for arsenic, barium, total chromium, hexavalent chromium, copper, lead, and zinc using ProUCL. For the remaining metals (mercury, molybdenum, and thallium), additional data collection is not expected to significantly change the results of the risk assessment either because the compound is very infrequently detected (mercury and thallium) (that is, additional nondetects would be expected) or because the maximum detected concentration (excluding AOC10a-1) is within two times the lowest risk-based comparison value (molybdenum).

3.2 Inorganics

Sufficient data (numbers of samples and detections) are available to calculate EPCs for aluminum, calcium, magnesium, and manganese using ProUCL. No additional data collection appears warranted because it is reasonable to assume that the nature and extent of these inorganics in the shallow exposure intervals (0 to 0.5 or 0 to 3 feet bgs) is representative of the deeper depths. In addition, maximum concentrations of aluminum, magnesium, and calcium detected in the standard exposure intervals (0 to 0.5, 0 to 3, 0 to 6, and 0 to 10 feet bgs) are comparable to background, as discussed in Section 2.3 of this appendix.

3.3 Polycyclic Aromatic Hydrocarbons

Sufficient data (numbers of samples and detections) are available to calculate EPCs for benzo(a)pyrene toxicity equivalents and high molecular weight PAHs using ProUCL.

4.0 Decision 3 – Potential Threat to Groundwater from Residual Soil Concentrations

The following preliminary analysis was performed with the existing data set to assess the potential threat to groundwater and to assess if additional data, above and beyond that necessary for Decision 1, are needed to resolve Decision 3. Additional evaluation will be performed as appropriate, as data are collected to resolve Decision 1. Data collected to satisfy Decision 1 – Nature and Extent evaluation will provide the final representative data set that will be used to assess the threat to groundwater. The preliminary conclusions regarding the threat to groundwater are based on available data and will be revisited after the implementation of the soil investigation. The combined data set will then be evaluated for data gaps, and further conclusions regarding the threat to groundwater will be provided to the agencies and stakeholders for review prior to submittal of the RFI/RI Volume 3.

As discussed in Section 5.2.2 of the Part A Phase 1 Data Gaps Evaluation Report, AOC 10 historically received discharges of water from annual Topock Compressor Station fire pump tests; therefore, percolation rates may vary within AOC 10. For this analysis, AOC 10 was divided into four separate subareas for this analysis to account for the variable percolation rates, as shown in Figure C-1 in Appendix C.

4.1 Subarea AOC 10a

Table C4-12 presents the results of the tiered analysis for AOC 10a. Seven metals were detected at concentrations above their respective BTVs. Of those seven, hexavalent chromium, molybdenum, and lead exceeded the calculated soil screening levels (SSLs), as shown in Table C4-13. Numerical modeling was conducted to evaluate the potential of these three metals to leach into groundwater. Based on initial model screening simulations, the potential for hexavalent chromium, molybdenum, and lead to leach to groundwater could not be ruled out.

The simulated leaching concentrations exceeding groundwater screening criteria at AOC 10a are likely a result of the lack of samples as a function of depth at AOC 10a. Only one surface sample was collected in this AOC subarea. Initial concentrations were input into the model assuming a constant concentration equal to that from the surficial sample down to the water table across the AOC 10a area.

Additional data are needed to better define the vertical extent of hexavalent chromium, molybdenum, and lead at AOC 10a and to better assess the leaching potential. The model will be refined with the new vertical data to more realistically simulate vadose zone contaminant concentrations.

4.2 Subarea AOC 10b

Table C4-12 presents the results of the tiered analysis for AOC 10b. Six metals were detected at concentrations above their respective BTVs. Of those six, total chromium, hexavalent chromium, and molybdenum exceeded the calculated SSLs, as shown in Table C4-14. Numerical modeling was conducted to evaluate the potential of these three metals to leach into groundwater. Based on initial model screening simulations, the potential for total chromium and molybdenum to leach to groundwater was ruled out.

The simulated leaching concentrations of hexavalent chromium were likely due to the following factors:

- The initial screening approach assigned the maximum concentration found at each depth interval across the entire interval, even though other samples with lower concentrations were observed at each level.
- The presence of hexavalent chromium at the deepest sampling interval at one location required assignment of that concentration from that depth down to the water table for the entire area.

Additional data are needed to better define the vertical extent of hexavalent chromium. The model will be refined with the new vertical data and will be discretized spatially to more realistically simulate vadose zone contaminant concentrations.

4.3 Subarea AOC 10c

Table C4-12 presents the results of the tiered analysis for AOC 10c. Seven metals were detected at concentrations exceeding the BTVs. However, the cobalt BTV was exceeded at only one location, and the concentration was only very slightly above the BTV. At sample location MW58BR_S at 59 to 60 feet bgs, the detected concentration of cobalt was 13 mg/kg, compared to the BTV of 12.7 mg/kg. Cobalt was not detected above the BTV in any sample from the 0-to-10-foot-bgs interval, and all concentrations of cobalt in MW58BR_S above the 59-to-60-foot-bgs interval were below the BTV. Furthermore, the central tendency comparison indicated that the population of cobalt detections is consistent with the background population. Consequently, although cobalt was detected at 13 mg/kg in one sample, cobalt was not evaluated for Decision 3. Of the six remaining metals with detections exceeding the BTV, total chromium, hexavalent chromium, and molybdenum exceeded the calculated SSLs, as shown in Table C4-15. Numerical modeling was conducted to evaluate the potential of these three metals to leach into groundwater. Based on initial model screening simulations, the potential for total chromium and molybdenum to leach to groundwater was ruled out.

The simulated leaching concentrations of hexavalent chromium were likely due to the following factors:

- The initial screening approach assigned the maximum concentration found at each depth interval across the entire interval, even though other samples with lower concentrations were observed at each level.
- The presence of hexavalent chromium at the deepest sampling interval at one location required assignment of that concentration from that depth down to the water table for the entire area.

Additional data are needed to better define the vertical extent of hexavalent chromium. The model will be also refined with the new vertical data and will be discretized spatially to more realistically simulate vadose zone contaminant concentrations.

4.4 Subarea AOC 10d

Table C4-12 presents the results of the tiered analysis for AOC 10d. Eight metals were detected at concentrations above the BTVs. Of those eight, only hexavalent chromium,

barium, and molybdenum exceeded the calculated SSLs, as shown in Table C4-16. Subsequent numerical modeling was conducted to evaluate the potential of these three metals to leach into groundwater. Based on initial model screening simulations, the potential for barium and molybdenum to leach to groundwater was ruled out.

The simulated leaching concentrations of hexavalent chromium were likely due to the following factor:

- The initial screening approach assigned the maximum concentration found at each depth interval across the entire interval, even though other samples with lower concentrations were observed at each level.

Additional data are not needed in area AOC 10d to refine the model. The model will be refined by discretizing the area spatially to more realistically simulate vadose zone contaminant concentrations.

5.0 Decision 4 – Data Sufficiency to Support the Corrective Measures Study/Feasibility Study

As discussed in Section 6.0 of the Part A Phase 1 Data Gaps Evaluation Report, various types of data will be needed to support the evaluation of technologies/remedial actions for the CMS/FS. The types of data needed vary somewhat depending on the specific technology to be evaluated. The categories of data required for technologies that may be applicable to the areas outside the fence line include:

- Extent of COPCs and COPECs above action levels (required for all technologies).
- Waste characterization parameters (required if soil may be disposed of offsite), as discussed in Table 6-1 in Part A Phase 1 Data Gaps Evaluation Report.
- Constituent leachability (required to assess the need for fixation of leachable compounds and/or the feasibility of certain soil washing technologies).
- Soil physical properties (required for all technologies; however, the properties required vary among the different technologies), as discussed in Table 6-1 in the Part A Phase 1 Data Gaps Evaluation Report.
- Surface and subsurface features (required to determine whether there are physical impediments to implementing specific technologies and/or remediating specific areas).
- If present, volumes of white powder and debris.

The following is a summary of data for AOC 10 that are currently available to support CMS/FS.

5.1 Extent of COPCs and COPECs

A summary of the nature and extent of detected COPCs/COPECs is presented in Section 2.0 Decision 1 – Nature and Extent. The lateral and vertical extent of the COPCs and COPECs is discussed in Section 2.2 above. Data results for selected constituents are shown in Figure C4-1 and Figures C4-4 through C4-10, and data gaps associated with lateral and vertical delineation are discussed in Section 6.0.

5.2 Waste Characterization Parameters

Only partial waste characterization data are available to characterize the soil and other materials to be potentially removed for remedial action and disposed in an offsite permitted facility. While none of the soils or other materials is considered ignitable, corrosive, or reactive, data are lacking to complete the evaluation of the toxicity characteristic. Total chemical concentrations are available to characterize the soil, certain debris, and white powder material relative to California Title 22 total threshold limit concentrations (TTLC). The maximum concentrations of these metals for each of the units were compared to the TTLCs, and total chromium exceeded the TTLCs three times, as shown in Table C4-17. The maximum detected concentrations were also compared to the soluble threshold limit concentrations (STLCs), and concentrations of five metals in AOC 9 (barium, total chromium, hexavalent chromium, copper, and lead) exceeded 10 times STLC one or more times, as shown in Table C4-17. In addition, total chromium and lead also exceeded 20 times TCLP as indicated in Table C4-17. Because these metals have the potential to exceed STLC or TCLP thresholds, additional leachability testing for waste characterization purposes may be required if soil excavation and offsite disposal is chosen as a remedy. For the purposes of supporting the CMS/FS, the lack of STLC or TCLP analysis is not considered a data gap, for the existing total concentrations are sufficient for the purposes of evaluating various remedial alternatives. Additional data regarding potential COPC/COPEC leachability include SPLP analysis for total and hexavalent chromium, as shown in Table C4-2. SPLP analysis was conducted only for soil samples (no white powder or debris samples were tested using SPLP).

5.3 Soil Physical Properties

Soil physical property data collected during the Part A Phase 1 soil investigation was limited to grain size analysis only. Specific soil physical properties data (that is, porosity, grain size, density, organic carbon content) are required to support the CMS/FS, as described in Table 6-1 in the Part A Phase 1 Data Gaps Report.

5.4 Surface and Subsurface Features

While there is extensive information regarding surface and subsurface features at AOC 10, additional information may be required once areas requiring remediation have been defined. Nearby roads and road structures, vegetation, and the location of bedrock are known for AOC 10. However, subsurface utilities, including gas transmission pipelines and any culverts or other features, may have to be more precisely defined to evaluate the feasibility and cost of certain remedial alternatives and to prepare construction specifications.

5.5 Volumes of White Powder and Debris

Preliminary mapping has been conducted to identify the extent and type of debris present in AOC 10; findings of this mapping are presented in Section 3.0 and in Appendix B of this Part A Phase 1 Data Gaps Evaluation Report. Additional soil physical parameter data are needed to support the CMS/FS.

6.0 Summary of Data Gaps and Proposed Phase 2 Soil Sample Locations to Fill the Identified Gaps

Based on the Part A DQO, data gaps were identified for three of the four decisions and are summarized below by decisions. Identified data gaps were discussed during data gaps evaluation meetings in October and November 2010 and January 2012. Subsequent revisions to the data gaps have occurred; however, the data gap numbers from those meetings have been retained.

- **Decision 1 (Nature and Extent) –** the following data gaps were identified to resolve this decision:
  - Data Gap #1 – Lateral and vertical extents of contamination in the western portion of AOC10 (Subarea AOC 10a, downslope from AOC9, downslope from the outfall of the former trench drain), and from surface run-off from the compressor station.
  - Data Gap #2 – Nature and extent of contamination associated with runoff from station access road to the low point north of Subarea 10d
  - Data Gap #3 – Nature and extent of contamination in and between drainage depression subareas
  - Data Gap #4 - Nature and extent of contamination associated with the newly identified white powder areas (on the slope below the station access road) and the newly identified debris areas (on the slopes of AOC10)
- **Decision 2 (Data Sufficient to Estimate Representative EPCs) –** no data gap was identified for this decision.
- **Decision 3 (Potential Threat to Groundwater from Residual Soil Concentrations) –** the following data gap was identified to resolve this decision:
  - Data gap #6 – Vertical extent of contamination to support refinement of the vadose leaching zone model
- **Decision 4 (Data Sufficient to Estimate Soil Properties and Contaminant Distribution in Support of the CMS/FS) –** the following data gap was identified to resolve this decision**:**
  - Data gap #8 – Soil physical parameter information to support the CMS/FS.

In an effort to reduce intrusive sampling, a portable X-ray fluorescence (XRF) analyzer will be used to assist with identifying possible sample locations in debris areas on the slope of AOC 10 (Data Gap #4). Up to 20 XRF samples will be collected in the debris area. Corrected XRF results will be compared to applicable screening levels provided in Table 2-1 of the Soil RFI/RI Work Plan (main text) on a point-by-point basis. (For field screening purposes, XRF concentration readings will be adjusted using least squares regression equation calculated from the RCRA facility investigation/remedial investigation samples analyzed in the lab and by the XRF.) If the applicable screening levels are not exceeded, no further sampling will occur at that location. However, if applicable screening levels are exceeded, soil samples will be collected at 0 to 0.5, 2 to 3, 5 to 6, and 9 to 10 feet bgs at that location and will

be submitted to the laboratory for analysis for hexavalent chromium, PAHs, Title 22 metals, and asbestos.

Table C4-18 shows the proposed sample location IDs, sample depths, rationale for each location, and analytes. Proposed Phase 2 sample locations are shown in Figure C4-11. The proposed Phase 2 sample locations are needed to fill quantitative data gaps, meet agency requirements, and further progress toward decision-making for soil remediation.

6.1 Access Restrictions

AOC 10 is a ravine with steep sloped side walls. Majority of proposed Phase 2 sample locations are located on the slopes of the ravines, limiting access by sampling equipment. A few of the proposed Phase 2 sample locations are within the ravine bottom near the toe of the slope.

7.0 References

ARCADIS. 2008. *Human and Ecological Risk Assessment Work Plan, Topock Compressor Station, Needles, California.* August.

———. 2009. *Technical Memorandum 4: Ecological Comparison Values for Additional Detected Chemicals in Soil.* July 1.

CH2M HILL. 2006. *RCRA Facility Investigation/Remedial Investigation Soil Investigation Work Plan, Part A, PG&E Topock Compressor Station, Needles, California*. November 16.

———. 2009. *Summary of Findings Associated with the East Ravine Groundwater Investigation, PG&E Topock Compressor Station, Needles, California.*

Tables

TABLE C4-1
Conceptual Site Model – AOC 10 – East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
PG&E Topock Compressor Station, Needles, California

Primary Source	Primary Source Media	Potential Release Mechanism	Secondary Source Media	Potential Secondary Release Mechanism
Runoff from compressor station, compressor station access road, and AOC 9	Surface Soil	Percolation and/or infiltration Potential entrainment in stormwater/surface water runoff	Surface Soil Subsurface Soil Potential Groundwater	Wind erosion and atmospheric dispersion of surface soil Potential volatilization and atmospheric dispersion/enclosed space accumulation Potential discharge of groundwater to surface water [a] Potential extracted groundwater[b]
Discharge from compressor station via stormwater drains	Surface Soil	Percolation and/or infiltration Potential entrainment in stormwater/surface water runoff	Surface Soil Subsurface Soil Potential Groundwater	Wind erosion and atmospheric dispersion of surface soil Potential volatilization and atmospheric dispersion/enclosed space accumulation Potential discharge of groundwater to surface water [a] Potential extracted groundwater[b]
Disposal of Debris	Surface Soil	Percolation and/or infiltration Potential entrainment in stormwater/surface water runoff	Surface Soil Subsurface Soil Potential Groundwater	Wind erosion and atmospheric dispersion of surface soil Potential volatilization and atmospheric dispersion/enclosed space accumulation Potential discharge of groundwater to surface water [a] Potential extracted groundwater[b]

[a] Discharge to surface water is an insignificant transport pathway as evaluated in the groundwater risk assessment (ARCADIS, 2009).

[b] Quantitative evaluation of the groundwater pathway was completed in the groundwater risk assessment (ARCADIS, 2009); Part A Phase I data were reviewed on a preliminary basis in the data gaps assessment to evaluate potential fate impacts or current localized impacts to groundwater from soil; a comprehensive evaluation of the potential for constituents in soil to leach to groundwater will be completed after the Part A Phase 2 data are available.

TABLE C4-2
Synthetic Precipitation Leaching Procedure (SPLP) Extraction Results
AOC10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Topock Compressor Station, Needles, California

Location	Sample Date	Depth (ft bgs)	SPLP Results in mg/L	
			Hexavalent Chromium	Chromium (total)
AOC10				
AOC10b-3	09/30/08	0-0.5	0.0115 J	0.0218
AOC10c-1	10/01/08	2-3	0.0414 J	0.0486
AOC10c-5	10/01/08	2-3	0.128 J	0.139
AOC10d-4	09/18/08	2-3	0.031 J	0.0526

Notes:

ft bgs feet below ground surface
mg/L milligrams per liter
J concentration estimated by laboratory or data validation

TABLE C4-3
Sample Results: Metals
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
AOC10-1	10/02/08	0 - 0.5	N	ND (2) *	3.7	93	ND (1) *	ND (1)	ND (0.401)	6.6	2.7	4.9	9.2	ND (0.1) *	ND (1)	5.5	ND (1)	ND (1)	ND (2)	13	20
	10/02/08	2 - 3	N	ND (2) *	4.2	81	ND (1) *	ND (1)	ND (0.405)	7.4	3	5.6	5.8	ND (0.1) *	ND (1)	6.3	ND (1)	ND (1)	ND (2)	16	21
	10/02/08	5 - 6	N	ND (2) *	4.9	82	ND (1) *	ND (1)	ND (0.407)	7.5	3.2	5.8	5.4	ND (0.1) *	ND (1)	6.4	ND (1)	ND (1)	ND (2)	17	20
	10/02/08	9 - 10	N	ND (2) *	4.7	110	ND (1) *	ND (1)	ND (0.406)	6.8	3	5.7	4.8	ND (0.1) *	ND (1)	6.2	ND (1)	ND (1)	ND (2)	15	21
AOC10-2	10/02/08	0 - 0.5	N	ND (2) *	3.4	93	ND (1) *	ND (1)	ND (0.402)	4.9	2.3	4.1	5.1	ND (0.1) *	ND (1)	4.3	ND (1)	ND (1)	ND (2)	12	14
	10/02/08	2 - 3	N	ND (2.1) *	5.5	370	ND (1) *	ND (1)	ND (0.417)	17	6.4	9.4	3.4	ND (0.1) *	ND (1)	12	ND (1)	ND (1)	ND (2.1)	33	38
	10/02/08	5 - 6	N	ND (2.1) *	9.1	120	ND (2.1) *	ND (1)	ND (0.415)	19	7.4	9.5	4.2	ND (0.1) *	ND (2.1) *	14	ND (1)	ND (2.1)	ND (4.1) *	36	40
	10/02/08	7 - 8	N	ND (2.1) *	6	110	ND (1) *	ND (1)	ND (0.412)	17	6.3	9	3.2	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2.1)	30	32
AOC10-3	09/19/08	0 - 0.5	N	ND (2) J*	3.1	160	ND (2) *	ND (1)	1.91	62	4.6	14	7.8	ND (0.1) *	ND (2) *	12	ND (1)	ND (2)	ND (4) *	23	40
	09/19/08	0 - 0.5	FD	ND (2) *	2.6	150	ND (2) *	ND (1)	1.7	64	4.5	13	7.7	ND (0.1) *	ND (2) *	12	ND (1)	ND (2)	ND (4) *	22	41
	09/19/08	2 - 3	N	ND (2.1) *	3.3	160	ND (5.1) *	ND (1)	ND (0.412)	43	10	14	ND (5.1)	ND (0.1) *	ND (5.1) *	26	ND (1)	ND (5.1)	ND (10) *	43	47
	09/19/08	5 - 6	N	ND (2.1) *	5.4	220	ND (5.1) *	ND (1)	0.705	37	9.9	16	2.9	ND (0.1) *	ND (5.1) *	25	ND (1)	ND (5.1)	ND (10) *	46	61
	09/19/08	9 - 10	N	ND (2.1) *	7.4	110	ND (1) *	ND (1)	ND (0.412)	28	9	12	2.8	ND (0.1) J*	ND (1)	20	ND (1)	ND (1)	ND (2.1)	33	50
AOC10-4	09/19/08	0 - 0.5	N	ND (2) *	3.5	110	ND (2) *	ND (1)	0.55	33	6.5	14	11	ND (0.1) *	ND (2) *	15	ND (1)	ND (2)	ND (4) *	32	52
	09/19/08	2 - 3	N	ND (2) *	2.5	130	ND (2) *	ND (1)	ND (0.409)	26	7.1	16	4.4	ND (0.1) *	ND (2) *	19	ND (1)	ND (2)	ND (4.1) *	33	38
	09/19/08	5 - 6	N	ND (2.1) *	5.9	75	ND (5.2) *	ND (1)	ND (0.418)	27	10	16	3	ND (0.11) *	ND (5.2) *	20	ND (1)	ND (5.2) *	ND (10) *	40	63
	09/19/08	9 - 10	N	ND (2.1) *	7.7	48	ND (1) *	ND (1)	ND (0.413)	18	7.9	12	2.7	ND (0.1) J*	ND (1)	14	ND (1)	ND (1)	ND (2.1)	27	48
AOC10-5	09/19/08	0 - 0.5	N	ND (2) *	9.6	500	ND (5.1) *	ND (1)	1.01	39	9.6	27	27	ND (0.1) *	ND (5.1) *	23	ND (1)	ND (5.1)	ND (10) *	52	97
	09/19/08	2 - 3	N	ND (2.1) *	8.2	380	ND (5.1) *	ND (1)	0.48	30	8.3	21	34	ND (0.1) *	ND (5.1) *	20	ND (1)	ND (5.1)	ND (10) *	43	77
	09/19/08	5 - 6	N	ND (4.1) *	12	1,100	ND (5.1) *	ND (2) *	ND (0.407)	19	8.8	40	6.7	ND (0.1) *	ND (5.1) *	16	ND (2) *	ND (5.1)	ND (10) *	36	80
	09/19/08	5 - 6	FD	ND (4.1) *	12	1,300	ND (5.1) *	ND (2) *	ND (0.407)	18	8.5	41	7.3	ND (0.1) *	ND (5.1) *	14	ND (2) *	ND (5.1)	ND (10) *	37	79
AOC10-6	09/20/08	0 - 0.5	N	ND (2) J*	7	220 J	ND (2) *	ND (1)	ND (0.402)	24	7.2	11	26	ND (0.1) *	ND (2) *	16	ND (1)	ND (2)	ND (4) *	32	58
	09/20/08	2 - 3	N	ND (2) *	4.2	220	ND (1) *	ND (1)	ND (0.404)	23	7	9.5	4.1	ND (0.1) *	ND (1)	16	ND (1)	ND (1)	ND (2)	34	45
AOC10-7	09/20/08	0 - 0.5	N	ND (2) *	7.6	250	ND (1) *	ND (1)	ND (0.414)	22	6.7	12	8.6	ND (0.1) *	ND (1)	14	ND (1)	ND (1)	ND (2)	29	54
	09/20/08	2 - 3	N	ND (2) *	8	210	ND (1) *	ND (1)	ND (0.406)	27	7.9	12	8.1	ND (0.1) *	1.1	14	ND (1)	ND (1)	ND (2)	33	58
	09/20/08	5 - 6	N	ND (2) *	9.6	270	ND (2) *	ND (1)	ND (0.407)	33	8.7	13	4.4	ND (0.1) *	ND (2) *	20	ND (1)	ND (2)	ND (4.1) *	38	58
AOC10-8	08/22/08	0 - 0.5	N	ND (4) *	8.6	210	ND (2) *	ND (2) *	ND (0.402)	16	6.4	12	15 J	ND (0.1) *	ND (2) *	14	ND (2) *	ND (2)	ND (4) *	31	87
	08/22/08	0 - 0.5	FD	ND (4) *	8.2	180	ND (2) *	ND (2) *	ND (0.416)	18	7	12	12 J	ND (0.1) *	ND (2) *	14	ND (2) *	ND (2)	ND (4) *	33	75
AOC10a-1	10/17/08	0 - 0.5	N	ND (2.1) J*	8.8	140	ND (1.1) *	ND (1.1) *	8.25	80	5.7	270 J	200 J	0.64	19	28	ND (1.1)	ND (1.1)	ND (2.1)	17	1,000 J
AOC10b-1	09/30/08	0 - 0.5	N	ND (2) *	3.6	130	ND (1) *	ND (1)	0.559	24	4.8	9.8	8.6	ND (0.1) *	ND (1)	10	ND (1)	ND (1)	ND (2)	25	38
	09/30/08	2 - 3	N	ND (2) *	3.1	120	ND (1) *	ND (1)	1.39	63	4.8	28	8.4 J	ND (0.1) *	ND (1)	11	ND (1)	ND (1)	ND (2)	20	110 J
	09/30/08	2 - 3	FD	ND (2) *	2.9	100	ND (1) *	ND (1)	1.39	61	4.2	27	12 J	ND (0.1) *	1.5	10	ND (1)	ND (1)	ND (2)	18	160 J
	09/30/08	5 - 6	N	ND (2) *	3.1	110	ND (1) *	ND (1)	0.425	20	3.9	8	4.3	ND (0.1) *	ND (1)	8.4	ND (1)	ND (1)	ND (2)	16	39
	09/30/08	9 - 10	N	ND (2) *	4.7	120	ND (2) *	ND (1)	ND (0.407)	29	6.2	10	3.7	ND (0.1) *	ND (2) *	16	ND (1)	ND (2)	ND (4) *	24	29
AOC10b-2	09/30/08	0 - 0.5	N	ND (2) *	3	89	ND (1) *	ND (1)	0.434	29	3.8	11	8.2	ND (0.1) *	1.1	8.9	ND (1)	ND (1)	ND (2)	17	40
	09/30/08	2 - 3	N	ND (2) *	2.9	100	ND (1) *	ND (1)	1.05	47	4.3	15	5.2	ND (0.1) *	1.1	10	ND (1)	ND (1)	ND (2)	17	44
	09/30/08	5 - 6	N	ND (2) *	4.1	100	ND (1) *	ND (1)	0.453	29	5.3	8.8	4.2	ND (0.1) *	1	14	ND (1)	ND (1)	ND (2)	22	27
	09/30/08	9 - 10	N	ND (2) *	5.7	120	ND (2) *	ND (1)	0.759	39	8.2	15	3.8	ND (0.1) *	ND (2) *	22	ND (1)	ND (2)	ND (4) *	29	38

TABLE C4-3
Sample Results: Metals
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
AOC10b-3	09/30/08	0 - 0.5	N	ND (2) *	ND (1)	120	ND (1) *	ND (1)	27.7	820	3.6	90	24	ND (0.1) *	1.5	9.2	ND (1)	ND (1)	ND (2)	17	240
	10/01/08	2 - 3	N	ND (2) *	2.9	93	ND (1) *	ND (1)	1.82	90	5.8	23	5	ND (0.1) *	ND (1)	14	ND (1)	ND (1)	ND (2)	22	59
	10/01/08	5 - 6	N	ND (2.1) *	5	110	ND (2.1) *	ND (1)	0.429	38	9.2	14	3.8	ND (0.1) *	ND (2.1) *	24	ND (1)	ND (2.1)	ND (4.1) *	33	40
	10/01/08	5 - 6	FD	ND (2.1) *	5	110	ND (2.1) *	ND (1)	ND (0.417)	36	10	16	3.6	ND (0.1) *	ND (2.1) *	25	ND (1)	ND (2.1)	ND (4.1) *	35	39
	10/01/08	9 - 10	N	ND (2.1) *	6.2	120	ND (2.1) *	ND (1)	ND (0.415)	36	11	13	3.5	ND (0.1) *	ND (2.1) *	26	ND (1)	ND (2.1)	ND (4.1) *	38	44
AOC10b-4	09/30/08	0 - 0.5	N	ND (2) *	3.4	76	ND (1) *	ND (1)	ND (0.401)	12	4	5.8	41	ND (0.1) *	ND (1)	9.1	ND (1)	ND (1)	ND (2)	17	29
	09/30/08	2 - 3	N	ND (2) *	3.6	100	ND (1) *	ND (1)	ND (0.403)	14	4.7	6.7	10	ND (0.1) *	ND (1)	9.6	ND (1)	ND (1)	ND (2)	21	31
	09/30/08	5 - 6	N	ND (2) *	3.8	150	ND (1) *	ND (1)	ND (0.407)	20	6.7	8.9	3.4	ND (0.1) *	ND (1)	14	ND (1)	ND (1)	ND (2)	30	35
	09/30/08	9 - 10	N	ND (2.1) *	4	85	ND (1) *	ND (1)	ND (0.415)	26	7.4	11	2.8	ND (0.1) *	ND (1)	18	ND (1)	ND (1)	ND (2.1)	30	42
AOC10c-1	10/01/08	0 - 0.5	N	ND (2) J*	4.2	110	ND (1) *	ND (1)	1.98	55	5.4	15	7.8	ND (0.1) *	ND (1)	13	ND (1)	ND (1)	ND (2)	23	48
	10/01/08	2 - 3	N	ND (2) *	1.2	140	ND (1) *	ND (1)	27.3	490	5.6	41	18	ND (0.1) *	1.2	13	ND (1)	ND (1)	ND (2)	21	76
	10/01/08	5 - 6	N	ND (2) *	3.4	110	ND (2) *	ND (1)	4.78	220	8.2	17	5.4	ND (0.1) *	ND (2) *	20	ND (1)	ND (2)	ND (4.1) *	28	42
	10/01/08	9 - 10	N	ND (2) *	4	180	ND (1) *	ND (1)	1.37	63	9.2	14	3.4	ND (0.1) *	1	23	ND (1)	ND (1)	ND (2)	33	39
AOC10c-2	10/01/08	0 - 0.5	N	ND (2) *	5.9	130	ND (2) *	ND (1)	1.25	51	5.8	19	12	ND (0.1) *	ND (2) *	13	ND (1)	ND (2)	ND (4) *	24	61
	10/01/08	2 - 3	N	ND (2) *	4.1	150	ND (1) *	ND (1)	3.77	190	5.6	37	17	ND (0.1) *	2.2	13	ND (1)	ND (1)	ND (2)	24	78
	10/01/08	2 - 3	FD	ND (2) *	4.1	150	ND (1) *	ND (1)	3.8	180	5.4	34	16	ND (0.1) *	1.9	13	ND (1)	ND (1)	ND (2)	24	75
	10/01/08	5 - 6	N	ND (2) *	3.4	150	ND (1) *	ND (1)	1.92	110	8.4	24	7	ND (0.1) *	1.9	19	ND (1)	ND (1)	ND (2)	31	51
	10/01/08	9 - 10	N	ND (2) *	4.5	86	ND (1) *	ND (1)	0.605	32	11	13	2.7	ND (0.1) *	ND (1)	22	ND (1)	ND (1)	ND (2)	44	50
AOC10c-3	10/02/08	0 - 0.5	N	ND (2) *	9.4	270	ND (2) *	ND (1)	2.56	110	8	42	32	ND (0.1) *	ND (2) *	19	ND (1)	ND (2)	ND (4.1) *	36	140
	10/02/08	2 - 3	N	ND (2.1) *	3.6	230	ND (2.1) *	ND (1)	9.27	690	7	60	31	ND (0.11) *	ND (2.1) *	16	ND (1)	ND (2.1)	ND (4.1) *	29	140
	10/02/08	2 - 3	FD	ND (2.1) *	3.5	220	ND (2.1) *	ND (1)	7.97	660	6.9	60	26	ND (0.1) *	ND (2.1) *	16	ND (1)	ND (2.1)	ND (4.1) *	28	140
	10/02/08	5 - 6	N	ND (2) *	3.9	140	ND (1) *	ND (1)	0.512	29	7.8	9	4.5	ND (0.1) *	ND (1)	17	ND (1)	ND (1)	ND (2)	28	36
	10/02/08	9 - 10	N	ND (2.1) *	4.4	64	ND (1) *	ND (1)	ND (0.412)	22	7.8	11	2.7	ND (0.1) *	ND (1)	14	ND (1)	ND (1)	ND (2.1)	31	41
AOC10c-4	10/01/08	0 - 0.5	N	ND (2.1) *	11	310	ND (2.1) *	ND (1)	2.66	120	8.8	46	36	ND (0.1) *	ND (2.1) *	21	ND (1)	ND (2.1)	ND (4.1) *	42	150
	10/01/08	2 - 3	N	ND (2) *	5.9	170	ND (2) *	ND (1)	2.11	90	9.9	19	8.9	ND (0.1) *	ND (2) *	20	ND (1)	ND (2)	ND (4.1) *	31	52
	10/01/08	5 - 6	N	ND (2) *	4.6	120	ND (1) *	ND (1)	2.84	27	9.1	14	2.6	ND (0.1) *	ND (1)	17	ND (1)	ND (1)	ND (2)	35	47
	10/01/08	9 - 10	N	ND (2.1) *	7.3	200	ND (2.1) *	ND (1)	0.436	92	5.4	25	13	ND (0.1) *	ND (2.1) *	13	ND (1)	ND (2.1)	ND (4.1) *	25	74
AOC10c-5	10/01/08	0 - 0.5	N	ND (2) *	6.6	170	ND (2) *	ND (1)	2.49	81	6.3	29	15	ND (0.1) *	ND (2) *	15	ND (1)	ND (2)	ND (4) *	27	80
	10/01/08	2 - 3	N	ND (2.1) *	ND (1)	230	ND (2.1) *	ND (1)	16.4	1,500	6.7	110	47	ND (0.1) *	2.9	16	ND (1)	ND (2.1)	ND (4.1) *	27	170
	10/01/08	5 - 6	N	ND (2.1) *	3.7	100	ND (2.1) *	ND (1)	1.48	82	8.6	12	4	ND (0.1) *	ND (2.1) *	19	ND (1)	ND (2.1)	ND (4.1) *	31	44
	10/01/08	9 - 10	N	ND (2) *	4.5	130	ND (1) *	ND (1)	0.423	47	9.1	15	3	ND (0.1) *	ND (1)	21	ND (1)	ND (1)	ND (2)	34	46
AOC10d-1	09/18/08	0 - 0.5	N	ND (2) J*	3.4	120	ND (2) *	ND (1)	0.644	49	6.8	16	8.8	ND (0.1) *	ND (2) *	16	ND (1)	ND (2)	ND (4) *	31	58
	09/18/08	2 - 3	N	ND (2) *	3.9	120	ND (2) *	ND (1)	2.86	150	7.1	31	6.8	ND (0.1) *	ND (2) *	17	ND (1)	ND (2)	ND (4.1) *	35	76
	09/18/08	5 - 6	N	ND (2.1) *	6.9	200	ND (5.2) *	ND (1)	1.06	66	11	23	5.2	ND (0.11) *	ND (5.2) *	27	ND (1)	ND (5.2) *	ND (10) *	45	80
	09/18/08	5 - 6	FD	ND (2.1) *	7.1	210	ND (5.2) *	ND (1)	0.703	64	11	23	5.3	ND (0.1) *	ND (5.2) *	26	ND (1)	ND (5.2) *	ND (10) *	46	74
	09/18/08	9 - 10	N	ND (4.1) *	9.8	140	ND (2.1) *	ND (2.1) *	ND (0.414)	23	9.4	12	3.5	ND (0.1) J*	ND (2.1) *	17	ND (2.1) *	ND (2.1)	ND (4.1) *	31	58

TABLE C4-3
Sample Results: Metals
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
AOC10d-2	09/17/08	0 - 0.5	N	ND (2) *	4.2	180	ND (2) *	ND (1)	ND (0.403)	22	6.2	17	21	ND (0.1) *	ND (2) *	16	ND (1)	ND (2)	ND (4) *	32	61
	09/17/08	2 - 3	N	ND (2) *	3.3	180	ND (2) *	ND (1)	1.16	40	5.4	14	16	ND (0.1) *	ND (2) *	14	ND (1)	ND (2)	ND (4.1) *	30	54
	09/17/08	5 - 6	N	ND (2) *	6.6	210	ND (5.1) *	ND (1)	0.597	33	10	16	6.2	ND (0.1) *	ND (5.1) *	21	ND (1)	ND (5.1)	ND (10) *	45	70
	09/17/08	9 - 10	N	ND (2) *	7.2	150	ND (5.1) *	ND (1)	ND (0.406)	22	8.5	16	3.2	ND (0.1) J*	ND (5.1) *	16	ND (1)	ND (5.1)	ND (10) *	38	73
AOC10d-3	09/17/08	0 - 0.5	N	ND (2) *	3.6	120	ND (2) *	ND (1)	ND (0.406)	20	5.9	12	22	ND (0.1) *	ND (2) *	15	ND (1)	ND (2)	ND (4) *	29	52
	09/18/08	2 - 3	N	ND (2) *	3.4	270	ND (2) *	ND (1)	1.91	64	6.3	18	21	ND (0.1) *	ND (2) *	15	ND (1)	ND (2)	ND (4.1) *	33	61
	09/18/08	5 - 6	N	ND (2) *	7.3	280	ND (5.1) *	ND (1)	ND (0.407)	30	10	18	3.3	ND (0.1) *	ND (5.1) *	23	ND (1)	ND (5.1)	ND (10) *	43	60
	09/18/08	5 - 6	FD	ND (2) *	6	330	ND (5.1) *	ND (1)	ND (0.407)	31	10	18	5.1	ND (0.1) *	ND (5.1) *	23	ND (1)	ND (5.1)	ND (10) *	42	59
	09/18/08	9 - 10	N	ND (4.1) *	8.2	150	ND (2) *	ND (2) *	ND (0.408)	21	8.5	11	3.6	ND (0.1) J*	ND (2) *	15	ND (2) *	ND (2)	ND (4.1) *	28	56
AOC10d-4	09/18/08	0 - 0.5	N	ND (2.1) *	9.2	340	ND (5.2) *	ND (1)	0.92	29	8.3	25	25	ND (0.1) *	ND (5.2) *	21	ND (1)	ND (5.2) *	ND (10) *	42	85
	09/18/08	2 - 3	N	ND (2.1) *	5.4	260	ND (2.1) *	ND (1.1) *	3.93	130	6.7	27	26	ND (0.11) *	ND (2.1) *	17	ND (1.1)	ND (2.1)	ND (4.2) *	35	81
	09/18/08	5 - 6	N	ND (2) *	3.6	220	ND (2) *	ND (1)	ND (0.415)	66	6.5	21	17	ND (0.1) *	ND (2) *	15	ND (1)	ND (2)	ND (4.1) *	31	64
	09/18/08	9 - 10	N	ND (2) *	6.9	220	ND (5.1) *	ND (1)	ND (0.41)	32	11	16	5.2	ND (0.1) J*	ND (5.1) *	24	ND (1)	ND (5.1)	ND (10) *	43	68
AOC10-OS1	04/06/11	11 - 11.5	N	---	---	---	---	---	ND (0.4) J	43	---	---	---	---	5.9	---	---	---	---	---	---
AOC10-OS2	04/06/11	5.5 - 6	N	---	---	---	---	---	0.78 J	44	---	---	---	---	5.8	---	---	---	---	---	---
AOC10-OS4	04/06/11	6.5 - 7	N	---	---	---	---	---	ND (0.41) J	170	---	---	---	---	13	---	---	---	---	---	---
AOC10-XRF-01	08/25/08	0 - 0.5	N	---	---	---	---	---	ND (0.404)	9.2	---	---	---	---	---	---	---	---	---	---	---
AOC10-XRF-02	08/25/08	0 - 0.5	N	---	---	---	---	---	ND (0.404)	11	---	---	---	---	---	---	---	---	---	---	---
AOC10-XRF-03	08/25/08	0 - 0.5	N	---	---	---	---	---	ND (0.405)	10	---	---	---	---	---	---	---	---	---	---	---
AOC10-XRF-10	09/21/08	3 - 4	N	---	---	---	---	---	ND (0.416)	26	---	---	---	---	---	---	---	---	---	---	---
DTSC-AOC10d-1	01/18/08 [6]	0	N	ND (4.42) *	8.28	163	ND (4.41) *	ND (8.83) *	31.5	652	ND (4.41)	137	14.3	ND (0.0193) *	ND (2.5) *	ND (4.41)	ND (4.42) *	ND (4.42)	ND (8.83) *	39.5	134
DTSC-AOC10d-2	01/18/08 [6]	0	N	ND (4.89) *	7.36	595	ND (4.89) *	ND (9.78) *	6.03	243	ND (4.89)	66.5	13.1	ND (0.0192) *	ND (4.89) *	ND (4.89)	ND (4.89) *	ND (4.89)	ND (9.78) *	36.2	147
DTSC-AOC10d-3	01/18/08 [6]	0	N	ND (4.65) *	5.87	264	ND (4.65) *	ND (9.3) *	4.38	224	ND (4.65)	46.5	12	ND (0.0198) *	ND (4.65) *	ND (4.65)	ND (4.65) *	ND (4.65)	ND (9.3) *	34.5	197
MW-57BR	01/14/09	3 - 4	N	ND (2) *	9.2	270	ND (2) *	ND (1)	ND (0.16)	26	7.8	11	6.7	ND (0.1) *	ND (2) *	17	ND (1)	ND (2)	ND (4.1) *	34	52
	01/14/09	8 - 9	N	ND (2.1) *	8	85	ND (1) *	ND (1)	ND (0.17)	20	7.9	11	2.7	ND (0.1) *	1.3	16	ND (1)	ND (1)	ND (2.1)	28	46
	01/14/09	8 - 9	FD	ND (2.1) *	8.4	85	ND (1) *	ND (1)	ND (0.16)	22	8	11	2.9	ND (0.1) *	1.3	16	ND (1)	ND (1)	ND (2.1)	27	48
	01/14/09	18 - 19	N	ND (4.1) *	9.9	240	ND (2.1) *	ND (2.1) *	ND (0.16)	25	10	12	4.3	ND (0.1) *	3	16	ND (2.1) *	ND (2.1)	ND (4.1) *	31	68
MW-58BR_S	01/29/09	1.5 - 2	N	ND (2.1) J*	ND (2.1)	410	ND (2.1) *	ND (1.1) *	150	4,000	8.2	300	160	0.33	3.5	24	ND (1.1)	ND (2.1)	6.1	23	300
	01/29/09	19 - 20	N	ND (2.1) *	12	240	ND (2.1) *	ND (1.1) *	0.43	33	12	24	4	ND (0.11) *	ND (2.1) *	25	ND (1.1)	ND (2.1)	4.7	38	63
	01/29/09	29 - 30	N	ND (2.1) *	13	110	ND (2.1) *	ND (1.1) *	ND (0.17)	26	11	14	3.6	ND (0.11) *	ND (2.1) *	19	ND (1.1)	ND (2.1)	4.8	33	64
	01/29/09	39 - 40	N	ND (2.1) *	12	150	ND (2.1) *	ND (1.1) *	0.43	35	12	17	4.2	ND (0.11) *	ND (2.1) *	22	ND (1.1)	ND (2.1)	4.7	34	51
	01/29/09	49 - 50	N	ND (2.1) *	8.3	180	ND (1.1) *	ND (1.1) *	ND (0.17)	24	8.7	17	3.7	ND (0.11) *	ND (1.1)	16	ND (1.1)	ND (1.1)	ND (2.1)	28	46
	01/29/09	59 - 60	N	ND (2.2) *	8.4	37	ND (1.1) *	ND (1.1) *	ND (0.18)	27	13	58	3.4	ND (0.11) *	ND (1.1)	22	ND (1.1)	ND (1.1)	ND (2.2)	28	41
Bank 1	03/07/03	0	N	---	---	---	---	---	ND (4) *	21.5	---	13.7	---	---	---	14.3	---	---	---	---	55
L-1	02/20/03	0	N	---	---	---	---	---	ND (4.1) *	88.4	---	34.8	---	---	---	17	---	---	---	---	99.7
	02/20/03	2	N	---	---	---	---	---	2.5	217	---	69.6	---	---	---	10.8	---	---	---	---	123
L-2	02/20/03	0	N	---	---	---	---	---	ND (4.7) *	86.8	---	42.7	---	---	---	22.8	---	---	---	---	122
	02/20/03	2	N	---	---	---	---	---	13	3,360	---	211	---	---	---	18	---	---	---	---	278
L-2-2	03/05/03	2	N	---	---	---	---	---	41	1,610	---	139	---	---	---	19	---	---	---	---	203

TABLE C4-3
Sample Results: Metals
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)																
Interim Screening Level [1]:				**0.285**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**0.0125**	**1.37**	**27.3**	**1.47**	**5.15**	**2.32**	**52.2**	**58**
Residential Regional Screening Levels [2]:				**31**	**0.062**	**15,000**	**160**	**70**	**0.29**	**280**	**23**	**3,100**	**150**	**10**	**390**	**1,500**	**390**	**390**	**5.1**	**390**	**23,000**
Residential DTSC CHHSL [3]:				**30**	**0.07**	**5,200**	**16**	**39**	**17**	**NE**	**660**	**3,000**	**80**	**18**	**380**	**1,600**	**380**	**380**	**5**	**530**	**23,000**
Ecological Comparison Values [4]:				**0.285**	**11.4**	**330**	**23.3**	**0.0151**	**139.6**	**36.3**	**13**	**20.6**	**0.0166**	**0.0125**	**2.25**	**0.607**	**0.177**	**5.15**	**2.32**	**13.9**	**0.164**
Background [5]:				**NE**	**11**	**410**	**0.672**	**1.1**	**0.83**	**39.8**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**27.3**	**1.47**	**NE**	**NE**	**52.2**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Antimony**	**Arsenic**	**Barium**	**Beryllium**	**Cadmium**	**Chromium, Hexavalent**	**Chromium, total**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Nickel**	**Selenium**	**Silver**	**Thallium**	**Vanadium**	**Zinc**
L-2-3	03/05/03	2	N	---	---	---	---	---	(99)	(2,740)	---	(288)	---	---	---	25	---	---	---	---	(299)
L-3	02/20/03	0	N	---	---	---	---	---	ND (4.5) *	28.4	---	(22.7)	---	---	---	18.1	---	---	---	---	(74.3)
	02/20/03	1	N	---	---	---	---	---	(1.2 J)	(379)	---	(79.7)	---	---	---	10.1	---	---	---	---	(252)
	02/20/03	1.5	N	---	---	---	---	---	ND (4) *	(77.7)	---	(17.2)	---	---	---	11.9	---	---	---	---	(61.9)
L-3-2	03/05/03	0.5	N	---	---	---	---	---	(9.4)	(228)	---	(40.5)	---	---	---	15.1	---	---	---	---	(129)
PS-21	04/13/99	0	N	---	---	---	---	---	(0.9)	16.5	---	14.2	---	---	---	10.5	---	---	---	---	43.9
	04/13/99	2	N	---	---	---	---	---	ND (0.51)	(90)	---	12.6	---	---	---	10.8	---	---	---	---	(59.1)
PS-22	04/13/99	0	N	---	---	---	---	---	ND (0.5)	24.7	---	11.4	---	---	---	10.5	---	---	---	---	(85.3)

[1] Interim screening level is background value. If background value is not available then the lesser of the DTSC residential CHHSL or the ecological comparison value is used. If CHHSL is not available, it is the lesser of the USEPA residential regional screening level or the ecological comparison value.

[2] USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

[3] California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

[4] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28.

[5] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

[6] White powder sample

Results greater than or equal to the interim screening level are circled; however, if the interim screening level is equal to the background value, only results greater than the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
mg/kg	milligrams per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C4-4

Sample Results: Contract Laboratory Program Inorganics
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Contract Laboratory Program (CLP) Inorganics (mg/kg)							
Interim Screening Level[1] :				**16,400**	**66,500**	**55,000**	**12,100**	**402**	**4,400**	**2,070**	**0.9**
Residential Regional Screening Levels[2] :				**77,000**	**NE**	**55,000**	**NE**	**1,800**	**NE**	**NE**	**1,600**
Residential DTSC CHHSL[3] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Ecological Comparison Values[4] :				**NE**	**NE**	**NE**	**NE**	**220**	**NE**	**NE**	**0.9**
Background[5] :				**16,400**	**66,500**	**NE**	**12,100**	**402**	**4,400**	**2,070**	**NE**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Aluminum**	**Calcium**	**Iron**	**Magnesium**	**Manganese**	**Potassium**	**Sodium**	**Cyanide**
AOC10-3	09/19/08	0 - 0.5	N	7,100	31,000	13,000 J	7,700 J	260	1,800	480	ND (1) *
	09/19/08	0 - 0.5	FD	7,200	29,000	13,000	7,500	250	1,700	450	ND (0.998) *
AOC10-5	09/19/08	0 - 0.5	N	18,000	44,000	28,000	12,000	1,300	4,100	360	ND (1) *
AOC10-8	08/22/08	0 - 0.5	N	7,900	23,000	17,000	6,100	470	1,600	170	ND (4.86) *
	08/22/08	0 - 0.5	FD	8,100	20,000	18,000	6,300	390	1,500	160	ND (5.06) *
AOC10a-1	10/17/08	0 - 0.5	N	4,100 J	18,000	32,000 J	3,900	270	1,100	540	ND (1.07) *
AOC10b-1	09/30/08	0 - 0.5	N	4,900	20,000	13,000	4,700	180	990	200	ND (1) *
AOC10c-1	10/01/08	0 - 0.5	N	7,500	24,000	15,000	6,500	210	1,500	250	ND (1) *
AOC10c-2	10/01/08	0 - 0.5	N	8,200	25,000	15,000	6,600	230	1,900	330	ND (1.01) *
AOC10d-2	09/17/08	0 - 0.5	N	11,000	28,000	18,000	8,200	370	2,300	210	ND (1) *
AOC10d-3	09/17/08	0 - 0.5	N	8,900	20,000	17,000	6,700	270	1,700	190	ND (1) *
DTSC-AOC10d-1	01/18/08[6]	0	N	---	265,000	8,680	14,300	---	1,730	2,790	---
DTSC-AOC10d-2	01/18/08[6]	0	N	---	234,000	14,000	13,200	---	2,120	1,780	---
DTSC-AOC10d-3	01/18/08[6]	0	N	---	22,500	14,200	12,800	---	2,640	1,820	---
L-3	02/20/03	1	N	---	139,000	540 J	12,800	---	---	1,280 J	---

TABLE C4-4

Sample Results: Contract Laboratory Program Inorganics
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

[1] Interim screening level is background value. If background value is not available then the lesser of the DTSC residential CHHSL or the ecological comparison value is used. If CHHSL is not available, it is the lesser of the USEPA residential regional screening level or the ecological comparison value.

[2] USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

[3] California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil" November 2004 (January 2005 Revision). January.

[4] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil". May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison Values for Additional Detected Chemicals in Soil." July 1.

[5] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

[6] White powder sample

Results greater than or equal to the interim screening level are circled; however, if the interim screening level is equal to the background value, only results greater than the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
mg/kg	milligrams per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C4-5
Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polycyclic Aromatic Hydrocarbons (µg/kg)																			
Interim Screening Level[1] :				22,000	310,000	3,400,000	1,700,000	17,000,000	380	38	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	10,000	1,160	38
Residential Regional Screening Levels[2] :				22,000	310,000	3,400,000	1,700,000	17,000,000	380	15	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	NE	NE	15
Residential DTSC CHHSL[3] :				NE	NE	NE	NE	NE	NE	38	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	38
Ecological Comparison Values[4] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	10,000	1,160	NE
Background[5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**1-Methyl naphthalene**	**2-Methyl naphthalene**	**Acenaphthene**	**Acenaphthylene**	**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**
AOC10-1	10/02/08	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)	7	ND (5)	ND (5)	ND (5)	ND (5)	6.6	ND	14	4.4
	10/02/08	2 - 3	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 (4.7)	ND (5)	ND (5)	ND	ND	ND (4.4)
	10/02/08	5 - 6	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)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/02/08	9 - 10	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 (4.5)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC10-2	10/02/08	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)
	10/02/08	2 - 3	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.5)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/02/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/02/08	7 - 8	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)
AOC10-3	09/19/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	5.2	5.4	ND (5)	5.9	7	ND (5)	11	ND (5)	ND (5)	ND (5)	ND (5)	9.7	ND	44	7.7
	09/19/08	0 - 0.5	FD	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	5.4	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND	5.4	4.4
	09/19/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/19/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	09/19/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC10-4	09/19/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	8	9.2	7.3	8.9	11	ND (5)	17	ND (5)	6.4	ND (5)	5.4	16	5.4	84	12
	09/19/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/19/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	09/19/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC10-5	09/19/08	0 - 0.5	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	44	76	88 J	62	84	100	20	150	ND (5.1)	57	ND (5.1)	42	130	42	810	110
	09/19/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	9.8	190	290	370	240	300	350	61	530	ND (5.1)	230	ND (5.1)	190	500	200	3,100	420
	09/19/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/19/08	5 - 6	FD	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	5.8	5.9	5.4	6.3	7.6	ND (5.1)	10	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	9.7	ND	51	8.5
AOC10-6	09/20/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	22	36	33	32	46	46	9.2	70	ND (5)	28	ND (5)	22	64	22	390	52
	09/20/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	8.4	39	16	ND (5.1)	ND (5.1)	92	ND (5.1)	24	ND (5.1)	ND (5.1)	ND (5.1)	90	44	90	220	44
AOC10-7	09/20/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	5.4 J	10 J	9.7 J	8.6 J	11 J	13 J	ND (5)	18 J	ND (5)	7.9 J	ND (5)	5.7 J	17 J	5.7	100	14
	09/20/08	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)	5.4	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	5.2	ND	11	4.5
	09/20/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC10-8	08/22/08	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)
	08/22/08	0 - 0.5	FD	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)
AOC10a-1	10/17/08	0 - 0.5	N	ND (80)	ND (80)	ND (80)	ND (80)	86	560	920	1,600	1,400	580	930	340	1,000	ND (80)	1,100	ND (80)	200	1,100	570	19,000	2,900
AOC10b-1	09/30/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	7.4	10	9.5	10	8.9	ND (5)	7.4	ND (5)	7.4	ND (5)	ND (5)	7.3	ND	68	11
	09/30/08	2 - 3	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)
	09/30/08	2 - 3	FD	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)
	09/30/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/30/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)

TABLE C4-5
Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polycyclic Aromatic Hydrocarbons (µg/kg)																			
Interim Screening Level[1] :				22,000	310,000	3,400,000	1,700,000	17,000,000	380	38	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	10,000	1,160	38
Residential Regional Screening Levels[2] :				22,000	310,000	3,400,000	1,700,000	17,000,000	380	15	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	NE	NE	15
Residential DTSC CHHSL[3] :				NE	NE	NE	NE	NE	NE	38	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	38
Ecological Comparison Values[4] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	10,000	1,160	NE
Background[5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**1-Methyl naphthalene**	**2-Methyl naphthalene**	**Acenaphthene**	**Acenaphthylene**	**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**
AOC10b-2	09/30/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	7.4	14	22	15	17	18	ND (5)	19	ND (5)	13	ND (5)	ND (5)	19	ND	140	21
	09/30/08	2 - 3	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)
	09/30/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/30/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC10b-3	09/30/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	10	10	34	18	18	19	6	8.7	ND (5)	16	ND (5)	ND (5)	8.9	ND	150	20
	10/01/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/01/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/01/08	5 - 6	FD	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/01/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC10b-4	09/30/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	8.1	11	13	8.6	16	16	ND (5)	20	ND (5)	7.7	ND (5)	5.6	19	5.6	120	16
	09/30/08	2 - 3	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)
	09/30/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/30/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC10c-1	10/01/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	7	11	11	11	13	13	ND (5)	18	ND (5)	8.7	ND (5)	ND (5)	18	ND	110	16
	10/01/08	2 - 3	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	15	21	23	18	27	27	6.3	33	ND (5)	17	ND (5)	9.3	32	9.3	220	32
	10/01/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/01/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC10c-2	10/01/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	16	24	25	20	32	30	7.1	37	ND (5)	19	ND (5)	9.6	36	9.6	250	36
	10/01/08	2 - 3	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	51	72	73	46	89	92	18	130	ND (5)	46	ND (5)	36	120	36	740	100
	10/01/08	2 - 3	FD	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	54	70	66	43	87	90	17	120	ND (5)	43	ND (5)	36	120	36	710	100
	10/01/08	5 - 6	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	18	25	24	17	30	30	7.5	38	ND (5)	16	ND (5)	10	37	10	240	37
	10/01/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC10c-3	10/02/08	0 - 0.5	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	37	63	76	60	80	89	17	110	ND (5.1)	55	ND (5.1)	30	99	30	690	94
	10/02/08	2 - 3	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	8.4	230 J	180 J	200 J	84 J	170 J	260 J	33 J	400 J	ND (5.2)	92 J	ND (5.2)	72 J	350 J	80	2,000	260
	10/02/08	2 - 3	FD	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	14 J	24 J	36 J	22 J	25 J	30 J	6.2 J	39 J	ND (5.2)	20 J	ND (5.2)	11 J	38 J	11	250	36
	10/02/08	5 - 6	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 (3.5)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/02/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC10c-4	10/01/08	0 - 0.5	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	24	49	79	43	60	71	14	87	ND (5.2)	38	ND (5.2)	23	82	23	550	75
	10/01/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	8.9	14	7.7	11	12	ND (5.1)	15	ND (5.1)	7	ND (5.1)	ND (5.1)	15	ND	91	13
	10/01/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	10/01/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	11	17	23	17	24	24	ND (5.2)	30	ND (5.2)	15	ND (5.2)	8.6	29	8.6	190	25
AOC10c-5	10/01/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	53	59	71	58	67	84	21	120	ND (5)	50	ND (5)	58	100	58	680	91
	10/01/08	2 - 3	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	52	69	96	62	68	94	22	100	ND (5.2)	59	ND (5.2)	29	100	29	720	100
	10/01/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	10/01/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)

TABLE C4-5
Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polycyclic Aromatic Hydrocarbons (µg/kg)																			
Interim Screening Level[1] :				22,000	310,000	3,400,000	1,700,000	17,000,000	380	38	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	10,000	1,160	38
Residential Regional Screening Levels[2] :				22,000	310,000	3,400,000	1,700,000	17,000,000	380	15	380	1,700,000	380	3,800	110	2,300,000	2,300,000	380	3,600	1,700,000	1,700,000	NE	NE	15
Residential DTSC CHHSL[3] :				NE	NE	NE	NE	NE	NE	38	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	38
Ecological Comparison Values[4] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	10,000	1,160	NE
Background[5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**1-Methyl naphthalene**	**2-Methyl naphthalene**	**Acenaphthene**	**Acenaphthylene**	**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**
AOC10d-1	09/18/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	9.9	16	25	18	6.2	12	ND (5)	14	ND (5)	14	ND (5)	ND (5)	14	ND	130	22
	09/18/08	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/18/08	5 - 6	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	09/18/08	5 - 6	FD	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	09/18/08	9 - 10	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
AOC10d-2	09/17/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	80	120	160	72	68	140	22	230	ND (5)	76	ND (5)	77	210	77	1,200	170
	09/17/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	11	17	26	14	11	23	ND (5.1)	35	ND (5.1)	14	ND (5.1)	11	32	11	180	24
	09/17/08	5 - 6	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	9.1	14	20	12	9.8	16	ND (5.1)	26	ND (5.1)	12	ND (5.1)	7.8	24	7.8	140	20
	09/17/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC10d-3	09/17/08	0 - 0.5	N	ND (5)	ND (5)	ND (5)	ND (5)	7.9	140	190	250	110	120	220	33	360	ND (5)	120	ND (5)	130	340	140	1,900	270
	09/18/08	2 - 3	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	38	52	73	43	22	58	11	99	ND (5.1)	41	ND (5.1)	34	90	34	530	74
	09/18/08	5 - 6	N	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	5.2	7	ND (5.1)	ND (5.1)	5.4	ND (5.1)	7.9	ND (5.1)	ND (5.1)	ND (5.1)	ND (5.1)	8.2	ND	34	7.6
	09/18/08	5 - 6	FD	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/18/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
AOC10d-4	09/18/08	0 - 0.5	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	13	23	41	21	11	32	ND (5.2)	47	ND (5.2)	20	ND (5.2)	15	42	15	250	33
	09/18/08	2 - 3	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	13	29	43	25	15	31	5.8	44	ND (5.3)	23	ND (5.3)	12	42	12	270	41
	09/18/08	5 - 6	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	09/18/08	9 - 10	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 (5.1)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
MW-57BR	01/14/09	3 - 4	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 (4.3)	ND (5.1)	ND (5.1)	ND	ND	ND (4.5)
	01/14/09	8 - 9	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.6)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	01/14/09	8 - 9	FD	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.5)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
	01/14/09	18 - 19	N	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (4.2)	ND (5.2)	ND (5.2)	ND	ND	ND (4.5)
MW-58BR_S	01/29/09	19 - 20	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (4.6)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
	01/29/09	29 - 30	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
	01/29/09	39 - 40	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (4.2)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
	01/29/09	49 - 50	N	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (5.3)	ND (4.3)	ND (5.3)	ND (5.3)	ND	ND	ND (4.6)
	01/29/09	59 - 60	N	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (5.5)	ND (4.8)	ND (5.5)	ND (5.5)	ND	ND	ND (4.8)

TABLE C4-5

Sample Results: Polycyclic Aromatic Hydrocarbons
AOC 10 - East Ravine
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Pacific Gas and Electric Company Topock Compressor Station, Needles, California

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[1] Interim screening level is DTSC residential CHHSL. If CHHSL is not available, the USEPA residential regional screening level is used. If an ecological comparison value has been calculated, then the lowest between the ecological comparison value or the CHHSL/regional screening level is used.

[2] USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

[3] California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

[4] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28.

[5] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
µg/kg	micrograms per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C4-6

Sample Results: Volatile Organic Compounds, Total Petroleum Hydrocarbons and General Chemistry Parameters
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry (mg/kg, unless otherwise noted)				
Interim Screening Level [1]:				540	540	1,800	NE	NE	NE	NE	NE	NE
Residential Regional Screening Levels [2]:				NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC CHHSL [3]:				NE	NE	NE	NE	NE	NE	NE	NE	NE
RWQCB Environmental Screening Levels [4]:				540	540	1,800	NE	NE	NE	NE	NE	NE
Ecological Comparison Values [5]:				NE	NE	NE	NE	NE	NE	NE	NE	NE
Background [6]:				NE	NE	NE	NE	NE	NE	0	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Alkalinity, bicarb as CaCO3**	**Alkalinity, carb as CaCO3**	**Alkalinity, total as CaCO3**	**pH**	**Chloride**	**Sulfate**
AOC10-1	10/02/08	0 - 0.5	N	---	ND (10) J	ND (10) J	---	---	---	8.44	---	---
	10/02/08	2 - 3	N	ND (0.94)	ND (10)	ND (10)	---	---	---	8.19	---	---
	10/02/08	5 - 6	N	ND (1)	ND (10) J	ND (10) J	---	---	---	8.06	---	---
	10/02/08	9 - 10	N	ND (0.96)	ND (10)	ND (10)	---	---	---	---	---	---
AOC10-2	10/02/08	0 - 0.5	N	---	ND (10) J	ND (10) J	---	---	---	7.98	---	---
	10/02/08	2 - 3	N	ND (0.99)	ND (10)	ND (10)	---	---	---	8.47	---	---
	10/02/08	5 - 6	N	ND (0.87)	ND (10)	ND (10)	---	---	---	8.15	---	---
	10/02/08	7 - 8	N	ND (0.89)	ND (10)	ND (10)	---	---	---	---	---	---
AOC10-3	09/19/08	0 - 0.5	N	---	ND (10)	11.3	---	---	---	8.86	---	---
	09/19/08	0 - 0.5	FD	---	ND (10)	13	---	---	---	8.8	---	---
	09/19/08	2 - 3	N	ND (1.6)	ND (10)	ND (10)	---	---	---	9.26	---	---
	09/19/08	5 - 6	N	ND (1.4)	ND (10)	ND (10)	---	---	---	9.24	---	---
AOC10-4	09/19/08	0 - 0.5	N	---	ND (10)	ND (10)	---	---	---	8.2	---	---
	09/19/08	2 - 3	N	ND (1.4)	ND (10)	ND (10)	---	---	---	9.55	---	---
	09/19/08	5 - 6	N	ND (1.4)	ND (10)	ND (10)	---	---	---	9.28	---	---

TABLE C4-6

Sample Results: Volatile Organic Compounds, Total Petroleum Hydrocarbons and General Chemistry Parameters
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry (mg/kg, unless otherwise noted)				
Interim Screening Level [1] :				**540**	**540**	**1,800**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Residential Regional Screening Levels [2] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Residential DTSC CHHSL [3] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
RWQCB Environmental Screening Levels [4] :				**540**	**540**	**1,800**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Ecological Comparison Values [5] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Background [6] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**0**	**NE**	**NE**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Alkalinity, bicarb as CaCO3**	**Alkalinity, carb as CaCO3**	**Alkalinity, total as CaCO3**	**pH**	**Chloride**	**Sulfate**
AOC10-5	09/19/08	0 - 0.5	N	---	ND (10)	47.1	---	---	---	7.64	---	---
	09/19/08	2 - 3	N	ND (1.2)	ND (10)	33.1	---	---	---	8.22	---	---
	09/19/08	5 - 6	N	ND (1.4)	ND (10)	19.7	---	---	---	8.57	---	---
	09/19/08	5 - 6	FD	ND (1.5)	ND (10)	ND (10)	---	---	---	8.41	---	---
AOC10-6	09/20/08	0 - 0.5	N	---	ND (10)	15.7	---	---	---	8.55	---	---
	09/20/08	2 - 3	N	ND (1.5) J	51.8	207	---	---	---	7.97	---	---
AOC10-7	09/20/08	0 - 0.5	N	---	ND (10)	26.5	---	---	---	8.05	---	---
	09/20/08	2 - 3	N	ND (1.6) J	ND (10)	14.5	---	---	---	8.11	---	---
	09/20/08	5 - 6	N	---	ND (10)	11.5	---	---	---	7.91	---	---
AOC10-8	08/22/08	0 - 0.5	N	---	ND (10)	ND (10)	---	---	---	8.14	---	---
	08/22/08	0 - 0.5	FD	---	ND (10)	ND (10)	---	---	---	8.44	---	---
AOC10a-1	10/17/08	0 - 0.5	N	---	ND (213) J	297 J	---	---	---	8.35	---	---

TABLE C4-6

Sample Results: Volatile Organic Compounds, Total Petroleum Hydrocarbons and General Chemistry Parameters
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry (mg/kg, unless otherwise noted)				
Interim Screening Level [1] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Residential Regional Screening Levels [2] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC CHHSL [3] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
RWQCB Environmental Screening Levels [4] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Ecological Comparison Values [5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Background [6] :				NE	NE	NE	NE	NE	NE	0	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Alkalinity, bicarb as CaCO3**	**Alkalinity, carb as CaCO3**	**Alkalinity, total as CaCO3**	**pH**	**Chloride**	**Sulfate**
AOC10b-1	09/30/08	0 - 0.5	N	---	ND (10)	10.9	---	---	---	9.01	---	---
	09/30/08	2 - 3	N	ND (1.1)	ND (10)	13.3	---	---	---	9.75	---	---
	09/30/08	2 - 3	FD	ND (1.3)	ND (10)	14.5	---	---	---	9.75	---	---
	09/30/08	5 - 6	N	ND (1.1) J	34.2	ND (10)	---	---	---	9.86	---	---
	09/30/08	9 - 10	N	ND (1.5)	ND (10)	ND (10)	---	---	---	---	---	---
AOC10b-2	09/30/08	0 - 0.5	N	---	ND (10)	11.2	---	---	---	8.93	---	---
	09/30/08	2 - 3	N	ND (1.9)	ND (10)	17	---	---	---	9.7	---	---
	09/30/08	5 - 6	N	ND (1.3)	ND (10)	ND (10)	---	---	---	9.68	---	---
	09/30/08	9 - 10	N	ND (1.6)	ND (10)	11	---	---	---	---	---	---
AOC10b-3	09/30/08	0 - 0.5	N	---	ND (10)	56	---	---	---	8.13	---	---
	10/01/08	2 - 3	N	ND (1.3)	ND (10)	14.4	---	---	---	9.41	---	---
	10/01/08	5 - 6	N	ND (1.6)	ND (10)	ND (10)	---	---	---	9.79	---	---
	10/01/08	5 - 6	FD	ND (1.5)	ND (10)	ND (10)	---	---	---	9.77	---	---
	10/01/08	9 - 10	N	ND (1.4)	ND (10) J	ND (10) J	---	---	---	---	---	---

TABLE C4-6

Sample Results: Volatile Organic Compounds, Total Petroleum Hydrocarbons and General Chemistry Parameters
AOC 10 - East Ravine
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Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry (mg/kg, unless otherwise noted)				
Interim Screening Level [1] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Residential Regional Screening Levels [2] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC CHHSL [3] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
RWQCB Environmental Screening Levels [4] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Ecological Comparison Values [5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Background [6] :				NE	NE	NE	NE	NE	NE	0	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Alkalinity, bicarb as CaCO3**	**Alkalinity, carb as CaCO3**	**Alkalinity, total as CaCO3**	**pH**	**Chloride**	**Sulfate**
AOC10b-4	09/30/08	0 - 0.5	N	---	ND (10)	ND (10)	---	---	---	9	---	---
	09/30/08	2 - 3	N	ND (1.4)	ND (10)	ND (10)	---	---	---	9.61	---	---
	09/30/08	5 - 6	N	ND (1.1)	ND (10)	ND (10)	---	---	---	9.25	---	---
	09/30/08	9 - 10	N	ND (1.6)	ND (10)	ND (10)	---	---	---	---	---	---
AOC10c-1	10/01/08	0 - 0.5	N	---	ND (10)	20.6	---	---	---	8.93	---	---
	10/01/08	2 - 3	N	ND (1.9) J	ND (10)	34.1	---	---	---	8.99	---	---
	10/01/08	5 - 6	N	ND (1.6)	ND (10)	13.9	---	---	---	9.42	---	---
	10/01/08	9 - 10	N	ND (1.3)	ND (10) J	ND (10) J	---	---	---	---	---	---
AOC10c-2	10/01/08	0 - 0.5	N	---	ND (10)	23.5	---	---	---	8.9	---	---
	10/01/08	2 - 3	N	ND (1.2)	ND (10)	32.4	---	---	---	8.74	---	---
	10/01/08	2 - 3	FD	ND (1.4)	ND (10)	34.4	---	---	---	8.78	---	---
	10/01/08	5 - 6	N	ND (1.3)	ND (10)	14.5	---	---	---	9.46	---	---
	10/01/08	9 - 10	N	ND (1.7)	ND (10) J	ND (10) J	---	---	---	---	---	---

TABLE C4-6

Sample Results: Volatile Organic Compounds, Total Petroleum Hydrocarbons and General Chemistry Parameters
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry (mg/kg, unless otherwise noted)				
Interim Screening Level [1] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Residential Regional Screening Levels [2] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC CHHSL [3] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
RWQCB Environmental Screening Levels [4] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Ecological Comparison Values [5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Background [6] :				NE	NE	NE	NE	NE	NE	0	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Alkalinity, bicarb as CaCO3**	**Alkalinity, carb as CaCO3**	**Alkalinity, total as CaCO3**	**pH**	**Chloride**	**Sulfate**
AOC10c-3	10/02/08	0 - 0.5	N	---	ND (10)	26.1	---	---	---	7.84	---	---
	10/02/08	2 - 3	N	ND (1.3)	ND (10)	67.4	---	---	---	9.16	---	---
	10/02/08	2 - 3	FD	ND (3.2)	ND (10)	82.5	---	---	---	9.29	---	---
	10/02/08	5 - 6	N	ND (1.1)	ND (10)	ND (10)	---	---	---	9.2	---	---
	10/02/08	9 - 10	N	ND (1.3)	ND (10)	ND (10)	---	---	---	---	---	---
AOC10c-4	10/01/08	0 - 0.5	N	---	ND (10)	20.5	---	---	---	7.8	---	---
	10/01/08	2 - 3	N	ND (1.6)	ND (10)	21.6	---	---	---	9.35	---	---
	10/01/08	5 - 6	N	ND (1.5)	ND (10)	ND (10)	---	---	---	9.57	---	---
	10/01/08	9 - 10	N	ND (1.4)	ND (10) J	ND (10) J	---	---	---	---	---	---
AOC10c-5	10/01/08	0 - 0.5	N	---	ND (10)	18.1	---	---	---	8.14	---	---
	10/01/08	2 - 3	N	ND (1.5)	ND (10)	70.9	---	---	---	8.79	---	---
	10/01/08	5 - 6	N	ND (1.7)	ND (10)	ND (10)	---	---	---	9.76	---	---
	10/01/08	9 - 10	N	ND (1.3)	ND (10) J	ND (10) J	---	---	---	---	---	---

TABLE C4-6

Sample Results: Volatile Organic Compounds, Total Petroleum Hydrocarbons and General Chemistry Parameters
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry (mg/kg, unless otherwise noted)				
Interim Screening Level [1] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Residential Regional Screening Levels [2] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC CHHSL [3] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
RWQCB Environmental Screening Levels [4] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Ecological Comparison Values [5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Background [6] :				NE	NE	NE	NE	NE	NE	0	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Alkalinity, bicarb as CaCO3**	**Alkalinity, carb as CaCO3**	**Alkalinity, total as CaCO3**	**pH**	**Chloride**	**Sulfate**
AOC10d-1	09/18/08	0 - 0.5	N	---	ND (10)	ND (10)	---	---	---	8.25	---	---
	09/18/08	2 - 3	N	ND (1.4)	ND (10)	15.3	---	---	---	8.89	---	---
	09/18/08	5 - 6	N	ND (1.6)	11.1	27.9	---	---	---	9.02	---	---
	09/18/08	5 - 6	FD	ND (2.7)	ND (10)	ND (10)	---	---	---	9	---	---
AOC10d-2	09/17/08	0 - 0.5	N	---	ND (10)	ND (10)	---	---	---	7.78	---	---
	09/17/08	2 - 3	N	ND (1.4)	ND (10)	27.3 J	---	---	---	8.63	---	---
	09/17/08	5 - 6	N	ND (1.3)	ND (10)	38.3 J	---	---	---	9.07	---	---
AOC10d-3	09/17/08	0 - 0.5	N	---	ND (10)	16.1 J	---	---	---	8.13	---	---
	09/18/08	2 - 3	N	ND (1.4)	ND (10)	ND (10)	---	---	---	8.85	---	---
	09/18/08	5 - 6	N	ND (1.5)	ND (10)	ND (10)	---	---	---	9.36	---	---
	09/18/08	5 - 6	FD	ND (1.7)	ND (10)	ND (10)	---	---	---	9.42	---	---
AOC10d-4	09/18/08	0 - 0.5	N	---	ND (10)	11.6	---	---	---	7.84	---	---
	09/18/08	2 - 3	N	ND (1.4)	ND (10)	16.8	---	---	---	8.54	---	---
	09/18/08	5 - 6	N	ND (1.5) J	ND (10)	11.6	---	---	---	9.07	---	---

TABLE C4-6

Sample Results: Volatile Organic Compounds, Total Petroleum Hydrocarbons and General Chemistry Parameters
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry (mg/kg, unless otherwise noted)				
Interim Screening Level [1] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Residential Regional Screening Levels [2] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC CHHSL [3] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
RWQCB Environmental Screening Levels [4] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Ecological Comparison Values [5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Background [6] :				NE	NE	NE	NE	NE	NE	0	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Alkalinity, bicarb as CaCO3**	**Alkalinity, carb as CaCO3**	**Alkalinity, total as CaCO3**	**pH**	**Chloride**	**Sulfate**
AOC10-OS1	04/06/11	0 - 0.5	N	---	---	---	---	---	---	8.4	---	---
	04/06/11	2.5 - 3	N	---	---	---	---	---	---	8.1	---	---
	04/06/11	5.5 - 6	N	---	---	---	---	---	---	7.8	---	---
	04/06/11	9.5 - 10	N	---	---	---	---	---	---	8.1	---	---
	04/06/11	11 - 11.5	N	---	---	---	---	---	---	8.6	---	---
AOC10-OS2	04/06/11	0 - 0.5	N	---	---	---	---	---	---	8.4	---	---
	04/06/11	2.5 - 3	N	---	---	---	---	---	---	8.9	---	---
	04/06/11	5.5 - 6	N	---	---	---	---	---	---	8.5	---	---
	04/06/11	5.5 - 6	FD	---	---	---	---	---	---	9.3	---	---
AOC10-OS3	04/06/11	5 - 5.5	N	---	---	---	---	---	---	9.1	---	---
AOC10-OS4	04/06/11	6.5 - 7	N	---	---	---	---	---	---	8.7	---	---
DTSC-AOC10d-1	01/18/08[7]	0	N	---	---	---	40.4	ND (5)	35.1	7.7	7.02	15.7
DTSC-AOC10d-2	01/18/08[7]	0	N	---	---	---	38.3	ND (5)	35.5	8.46	5.9	27.4
DTSC-AOC10d-3	01/18/08[7]	0	N	---	---	---	38.2	ND (5)	35.4	8.48	ND (4.04)	13.3

TABLE C4-6

Sample Results: Volatile Organic Compounds, Total Petroleum Hydrocarbons and General Chemistry Parameters
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry (mg/kg, unless otherwise noted)				
Interim Screening Level [1] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Residential Regional Screening Levels [2] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Residential DTSC CHHSL [3] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
RWQCB Environmental Screening Levels [4] :				540	540	1,800	NE	NE	NE	NE	NE	NE
Ecological Comparison Values [5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE
Background [6] :				NE	NE	NE	NE	NE	NE	0	NE	NE
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Alkalinity, bicarb as CaCO3**	**Alkalinity, carb as CaCO3**	**Alkalinity, total as CaCO3**	**pH**	**Chloride**	**Sulfate**
MW-57BR	01/14/09	3 - 4	N	ND (0.96)	ND (10)	ND (10)	---	---	---	---	---	---
	01/14/09	8 - 9	N	ND (0.89)	ND (10)	ND (10)	---	---	---	---	---	---
	01/14/09	8 - 9	FD	ND (0.92)	ND (10)	ND (10)	---	---	---	---	---	---
	01/14/09	18 - 19	N	ND (0.83)	ND (10)	ND (10)	---	---	---	---	---	---
MW-58BR_S	01/29/09	19 - 20	N	ND (1.4)	ND (11)	ND (11)	---	---	---	---	---	---
	01/29/09	29 - 30	N	ND (0.84)	ND (11)	ND (11)	---	---	---	---	---	---
	01/29/09	39 - 40	N	ND (0.73)	ND (11)	ND (11)	---	---	---	---	---	---
	01/29/09	49 - 50	N	ND (0.96) J	ND (11)	ND (11)	---	---	---	---	---	---
	01/29/09	59 - 60	N	ND (1.1)	ND (11)	ND (11)	---	---	---	---	---	---
Bank 1	03/07/03	0	N	---	---	---	---	---	---	8.8	---	---
L-1	02/20/03	0	N	---	---	---	---	---	---	7.5	---	---
	02/20/03	2	N	---	---	---	---	---	---	8.7	---	---
L-2	02/20/03	0	N	---	---	---	---	---	---	8.8	---	---
	02/20/03	2	N	---	---	---	---	---	---	8.7	---	---
L-2-2	03/05/03	2	N	---	---	---	---	---	---	8.8	---	---
L-2-3	03/05/03	2	N	---	---	---	---	---	---	8.6	---	---

TABLE C4-6

Sample Results: Volatile Organic Compounds, Total Petroleum Hydrocarbons and General Chemistry Parameters
AOC 10 - East Ravine
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Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				VOCs (µg/kg)	Total Petroleum Hydrocarbons (mg/kg)			General Chemistry (mg/kg, unless otherwise noted)				
Interim Screening Level [1] :				**540**	**540**	**1,800**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Residential Regional Screening Levels [2] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Residential DTSC CHHSL [3] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
RWQCB Environmental Screening Levels [4] :				**540**	**540**	**1,800**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Ecological Comparison Values [5] :				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Background [6] :				**NE**	**NE**	**NE**	**NE**	**NE**	**0**	**NE**	**NE**	**NE**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**TPH as gasoline**	**TPH as diesel**	**TPH as motor oil**	**Alkalinity, bicarb as CaCO3**	**Alkalinity, carb as CaCO3**	**Alkalinity, total as CaCO3**	**pH**	**Chloride**	**Sulfate**
L-3	02/20/03	0	N	---	---	---	---	---	---	8.9	---	---
	02/20/03	1	N	---	---	---	452 J	ND (700)	452 J	8.8	3.71	7.25
	02/20/03	1.5	N	---	---	---	---	---	---	9.4	---	---
L-3-2	03/05/03	0.5	N	---	---	---	---	---	---	8.8	---	---

1 Interim screening level is the Regional Water Quality Control Board environmental screening level.

2 US EPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites". http://epaprgs.ornl.govchemicals/index.shtml. December.

3 California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil, November 2004 (January 2005 Revision)". January.

4 Water Board. 2008. "Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater" (Table K-1). May 27.

5 ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil". May 28.

6 CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California". May.

7 White powder sample

Results greater than the interim screening level are circled.

TABLE C4-6

Sample Results: Volatile Organic Compounds, Total Petroleum Hydrocarbons and General Chemistry Parameters
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

TPH	total petroleum hydrocarbon
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
Water Baard	Regional Water Quality Control Board
NE	not established
mg/kg	milligrams per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C4-7
Sample Results: Pesticides
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Pesticides (µg/kg)																		
Interim Screening Level [1] :				2.1	2.1	2.1	33	77	430	270	77	5	370,000	370,000	370,000	21,000	21,000	21,000	500	430	130	53	340,000	460
Residential Regional Screening Levels [2] :				2,000	1,400	1,700	29	77	1,600	270	77	30	370,000	370,000	370,000	18,000	18,000	18,000	520	1,600	110	53	310,000	440
Residential DTSC CHHSL [3] :				2,300	1,600	1,600	33	NE	430	NE	NE	35	NE	NE	NE	21,000	21,000	21,000	500	430	130	NE	340,000	460
Ecological Comparison Values [4] :				2.1	2.1	2.1	NE	NE	470	NE	NE	5	NE	NE	NE	NE	NE	NE	NE	470	NE	NE	NE	NE
Background [5] :				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
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**
AOC10-3	09/19/08	0 - 0.5	N	ND (2)	ND (2) J	ND (2)	ND (1)	ND (1) J	ND (1) J	ND (1)	ND (1) J	ND (2) J	ND (1)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2) J	ND (1) J	ND (1)	ND (1) J	ND (1) J	ND (5)	ND (50)
	09/19/08	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)
AOC10-5	09/19/08	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 (5.1)	ND (51)
AOC10-8	08/22/08	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)
	08/22/08	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)
AOC10a-1	10/17/08	0 - 0.5	N	ND (2.1) J*	ND (2.1) J*	ND (2.1) J*	ND (1.1) J	ND (1.1) J	ND (1.1) J	ND (1.1) J	ND (1.1) J	ND (2.1) J	ND (1.1) J	ND (2.1) J	ND (2.1) J	ND (2.1) J	ND (2.1) J	ND (2.1) J	ND (1.1) J	ND (1.1) J	ND (1.1) J	ND (1.1) J	ND (5.3) J	ND (53) J
AOC10b-1	09/30/08	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)
AOC10c-1	10/01/08	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)
AOC10c-2	10/01/08	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)
AOC10d-2	09/17/08	0 - 0.5	N	ND (2)	ND (2)	ND (2)	ND (1)	ND (1) J	ND (1)	ND (1) J	ND (1) J	ND (2) J	ND (1)	ND (2)	ND (2) J	ND (2)	ND (2)	ND (2) J	ND (1) J	ND (1)	ND (1)	ND (1)	ND (5)	ND (50)
AOC10d-3	09/17/08	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)

[1] Interim screening level is DTSC residential CHHSL. If CHHSL is not available, the USEPA residential regional screening level is used. If an ecological comparison value has been calculated, then the lowest between the ecological comparison value or the CHHSL/regional screening level is used.

[2] USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

[3] California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

[4] ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison values for Additional Chemicals in Soil." July 1.

[5] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
µg/kg	micrograms per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C4-8

Sample Results: Polychlorinated Biphenyls
AOC 10 - East Ravine
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Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Polychlorinated biphenyls (µg/kg)									
Interim Screening Level[1]:				**3,900**	**140**	**140**	**220**	**220**	**220**	**220**	**220**	**220**	**204**
Residential Regional Screening Levels[2]:				**3,900**	**140**	**140**	**220**	**220**	**220**	**220**	**220**	**220**	**NE**
Residential DTSC CHHSL[3]:				**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**89**	**NE**
Ecological Comparison Values[4]:				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**204**
Background[5]:				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
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**
AOC10-3	09/19/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
	09/19/08	0 - 0.5	FD	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17) J	ND (17)	ND (17)	ND (8.5)
AOC10-5	09/19/08	0 - 0.5	N	ND (17)	ND (34)	ND (17)	ND (17)	ND (17)	49	ND (17)	ND (17)	ND (17)	49
	09/19/08	2 - 3	N	ND (17) J	ND (34) J	ND (17) J	ND (17) J	ND (17) J	33 J	ND (17) J	ND (17) J	ND (17) J	33
AOC10-8	08/22/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
	08/22/08	0 - 0.5	FD	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
AOC10a-1	10/17/08	0 - 0.5	N	ND (18)	ND (35)	ND (18)	ND (18)	ND (18)	71	ND (18)	ND (18)	ND (18)	71
AOC10b-1	09/30/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (17)	ND (8.5)
AOC10c-1	10/01/08	0 - 0.5	N	ND (16)	ND (33)	ND (16)	ND (16)	ND (16)	ND (16)	ND (16)	ND (16)	ND (16)	ND (8)
AOC10c-2	10/01/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	58	ND (17)	ND (17)	ND (17)	58
	10/01/08	2 - 3	N	ND (17) J	ND (33) J	ND (17) J	ND (17) J	ND (17) J	68 J	ND (17) J	ND (17) J	ND (17) J	68
	10/01/08	2 - 3	FD	ND (17) J	ND (33) J	ND (17) J	ND (17) J	ND (17) J	46 J	ND (17) J	ND (17) J	ND (17) J	46
AOC10d-2	09/17/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	20	ND (17)	ND (17)	ND (17)	20
	09/17/08	2 - 3	N	ND (17) J	ND (34) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (8.5)
AOC10d-3	09/17/08	0 - 0.5	N	ND (17)	ND (33)	ND (17)	ND (17)	ND (17)	19	ND (17)	ND (17)	ND (17)	19
	09/18/08	2 - 3	N	ND (17) J	ND (34) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (17) J	ND (8.5)

1 Interim screening level is the USEPA residential regional screening level.

2 USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

3 California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

4 ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison Values for Additional Dectected Chemicals in Soil." July 1.

5 CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

TABLE C4-8

Sample Results: Polychlorinated Biphenyls
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Results greater than or equal to the interim screening level are circled.

*	Reporting limits greater than or equal to the interim screening level.
USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
NE	not established
µg/kg	micrograms per kilogram
ft bgs	feet below ground surface
N	primary sample
FD	field duplicate
---	not analyzed
ND	not detected at the listed reporting limit
J	concentration or reporting limit estimated by laboratory or data validation

TABLE C4-9

Constituent Concentrations in Soil Compared to Screening Values
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Parameter	Units	Frequency of detection	Maximum Detected Value	Background Threshold Value (BTV) [1] # of Exceedences [7]	(BTV)	Ecological Comparison Value (ECV) [2] # of Exceedences [8]	(ECV)	Residential Screening Level (Res SL) [3] # of Exceedences [8]	(Res SL)	RWQCB Environmental Screening Levels (ESL) [4] # of Exceedences [8]	(ESL)	Commercial Screening Level (Com SL) [5] # of Exceedences [8]	(Com SL)	Interim Screening Level (Int SL) [6] # of Exceedences [8]	(Int SL)
Metals															
Antimony	mg/kg	0 / 87 (0%)	ND (4.1) ‡	NA	(NE)	0	(0.285)	0	(30)	NA	(NE)	0	(380)	0	(0.285)
Arsenic	mg/kg	84 / 87 (97%)	13	4	(11)	4	(11.4)	4	(0.07) *	NA	(NE)	4	(0.24) *	4	(11)
Barium	mg/kg	87 / 87 (100%)	1,300	2	(410)	2	(330) *	0	(5,200)	NA	(NE)	0	(63,000)	2	(410)
Beryllium	mg/kg	0 / 87 (0%)	ND (5.2) ‡	0	(0.672)	0	(23.3)	0	(16)	NA	(NE)	0	(190)	0	(0.672)
Cadmium	mg/kg	0 / 87 (0%)	ND (2.1) ‡	0	(1.1)	0	(0.0151) *	0	(39)	NA	(NE)	0	(500)	0	(1.1)
Chromium	mg/kg	105 / 105 (100%)	4,000	41	(39.8)	41	(36.3) *	9	(280)	NA	(NE)	5	(1,400)	41	(39.8)
Chromium, Hexavalent	mg/kg	53 / 105 (50%)	150	36	(0.83)	1	(139.6)	5	(17)	NA	(NE)	3	(37)	36	(0.83)
Cobalt	mg/kg	87 / 87 (100%)	13	1	(12.7)	0	(13)	0	(23)	NA	(NE)	0	(300)	1	(12.7)
Copper	mg/kg	101 / 101 (100%)	300	42	(16.8)	33	(20.6)	0	(3,000)	NA	(NE)	0	(38,000)	42	(16.8)
Lead	mg/kg	86 / 87 (99%)	200	32	(8.39)	32	(0.0166) *	2	(80)	NA	(NE)	0	(320)	32	(8.39)
Mercury	mg/kg	2 / 87 (2.3%)	0.64	NA	(NE)	2	(0.0125)	0	(18)	NA	(NE)	0	(180)	2	(0.0125)
Molybdenum	mg/kg	15 / 87 (17%)	19	8	(1.37)	4	(2.25)	0	(380)	NA	(NE)	0	(4,800)	8	(1.37)
Nickel	mg/kg	101 / 101 (100%)	28	1	(27.3)	1	(0.607) *	0	(1,600)	NA	(NE)	0	(16,000)	1	(27.3)
Selenium	mg/kg	0 / 87 (0%)	ND (2.1) ‡	0	(1.47)	0	(0.177) *	0	(380)	NA	(NE)	0	(4,800)	0	(1.47)
Silver	mg/kg	0 / 87 (0%)	ND (5.2) ‡	NA	(NE)	0	(5.15)	0	(380)	NA	(NE)	0	(4,800)	0	(5.15)
Thallium	mg/kg	4 / 87 (4.6%)	6.1	NA	(NE)	4	(2.32)	1	(5)	NA	(NE)	0	(63)	4	(2.32)
Vanadium	mg/kg	87 / 87 (100%)	52	0	(52.2)	0	(13.9) *	0	(390)	NA	(NE)	0	(5,200)	0	(52.2)
Zinc	mg/kg	101 / 101 (100%)	1,000	46	(58)	46	(0.164) *	0	(23,000)	NA	(NE)	0	(100,000)	46	(58)
Contract Laboratory Program Inorganics															
Aluminum	mg/kg	9 / 9 (100%)	18,000	1	(16,400)	NA	(NE)	0	(77,000)	NA	(NE)	0	(990,000)	1	(16,400)
Calcium	mg/kg	10 / 10 (100%)	139,000	1	(66,500)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	1	(66,500)
Iron	mg/kg	10 / 10 (100%)	32,000	NA	(NE)	NA	(NE)	0	(55,000)	NA	(NE)	0	(720,000)	0	(55,000)
Magnesium	mg/kg	10 / 10 (100%)	12,800	1	(12,100)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	1	(12,100)
Manganese	mg/kg	9 / 9 (100%)	1,300	2	(402)	2	(220)	0	(1,800)	NA	(NE)	0	(23,000)	2	(402)
Potassium	mg/kg	9 / 9 (100%)	4,100	0	(4,400)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	0	(4,400)
Sodium	mg/kg	10 / 10 (100%)	1,280	0	(2,070)	NA	(NE)	NA	(NE)	NA	(NE)	NA	(NE)	0	(2,070)
Cyanide	mg/kg	0 / 9 (0%)	ND (4.86) ‡	NA	(NE)	0	(0.9)	0	(1,600)	NA	(NE)	0	(20,000)	0	(0.9)
Polycyclic Aromatic Hydrocarbons															
Anthracene	µg/kg	4 / 86 (4.7%)	86	NA	(NE)	NA	(NE)	0	(17,000,000)	NA	(NE)	0	(170,000,000)	0	(17,000,000)
Benzo (a) anthracene	µg/kg	28 / 86 (33%)	560	NA	(NE)	NA	(NE)	1	(380)	NA	(NE)	0	(1,300)	1	(380)
Benzo (a) pyrene	µg/kg	34 / 86 (40%)	920	NA	(NE)	NA	(NE)	13	(38)	NA	(NE)	4	(130)	13	(38)
Benzo (b) fluoranthene	µg/kg	34 / 86 (40%)	1,600	NA	(NE)	NA	(NE)	1	(380)	NA	(NE)	1	(1,300)	1	(380)
Benzo (ghi) perylene	µg/kg	31 / 86 (36%)	1,400	NA	(NE)	NA	(NE)	0	(1,700,000)	NA	(NE)	0	(17,000,000)	0	(1,700,000)
Benzo (k) fluoranthene	µg/kg	32 / 86 (37%)	580	NA	(NE)	NA	(NE)	1	(380)	NA	(NE)	0	(1,300)	1	(380)
Chrysene	µg/kg	34 / 86 (40%)	930	NA	(NE)	NA	(NE)	0	(3,800)	NA	(NE)	0	(13,000)	0	(3,800)
Dibenzo (a,h) anthracene	µg/kg	18 / 86 (21%)	340	NA	(NE)	NA	(NE)	1	(110)	NA	(NE)	0	(380)	0	(380)
Fluoranthene	µg/kg	36 / 86 (42%)	1,000	NA	(NE)	NA	(NE)	0	(2,300,000)	NA	(NE)	0	(22,000,000)	0	(2,300,000)
Indeno (1,2,3-cd) pyrene	µg/kg	30 / 86 (35%)	1,100	NA	(NE)	NA	(NE)	1	(380)	NA	(NE)	0	(1,300)	1	(380)
Phenanthrene	µg/kg	25 / 86 (29%)	200	NA	(NE)	NA	(NE)	0	(1,700,000)	NA	(NE)	0	(17,000,000)	0	(1,700,000)
Pyrene	µg/kg	36 / 86 (42%)	1,100	NA	(NE)	NA	(NE)	0	(1,700,000)	NA	(NE)	0	(17,000,000)	0	(1,700,000)
PAH Low molecular weight	µg/kg	25 / 86 (29%)	290	NA	(NE)	0	(10,000)	NA	(NE)	NA	(NE)	NA	(NE)	0	(10,000)
PAH High molecular weight	µg/kg	36 / 86 (42%)	9,500	NA	(NE)	5	(1,160)	NA	(NE)	NA	(NE)	NA	(NE)	5	(1,160)

TABLE C4-9

Constituent Concentrations in Soil Compared to Screening Values
AOC 10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

Parameter	Units	Frequency of detection	Maximum Detected Value	Background Threshold Value (BTV) [1]		Ecological Comparison Value (ECV) [2]		Residential Screening Level (Res SL) [3]		RWQCB Environmental Screening Levels (ESL) [4]		Commercial Screening Level (Com SL) [5]		Interim Screening Level (Int SL) [6]	
				# of Exceedences [7]	(BTV)	# of Exceedences [8]	(ECV)	# of Exceedences [8]	(Res SL)	# of Exceedences [8]	(ESL)	# of Exceedences [8]	(Com SL)	# of Exceedences [8]	(Int SL)
Polycyclic Aromatic Hydrocarbons															
B(a)P Equivalent	µg/kg	36 / 86 (42%)	1,400	NA	(NE)	NA	(NE)	15	(38)	NA	(NE)	5	(130)	15	(38)
Polychlorinated biphenyls															
Aroclor 1254	µg/kg	7 / 13 (54%)	71	NA	(NE)	NA	(NE)	0	(220)	NA	(NE)	0	(740)	0	(220)
Total PCBs	µg/kg	7 / 13 (54%)	71	NA	(NE)	0	(204)	NA	(NE)	NA	(NE)	NA	(NE)	0	(204)
Total Petroleum Hydrocarbons															
TPH as diesel	mg/kg	3 / 80 (3.8%)	51.8	NA	(NE)	NA	(NE)	NA	(NE)	0	(540)	NA	(NE)	0	(540)
TPH as motor oil	mg/kg	37 / 80 (46%)	297	NA	(NE)	NA	(NE)	NA	(NE)	0	(1,800)	NA	(NE)	0	(1,800)

Notes:

1 CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

2 ARCADIS. 2008. "Technical Memorandum 3: Ecological Comparison Values for Metals and Polycyclic Aromatic Hydrocarbons in Soil." May 28. ARCADIS. 2009. "Topock Compression Station - Final Technical Memorandum 4: Ecological Comparison Values for Additional Detected Chemicals in Soil" July 1

3 Residential screening level - residential DTSC CHHSL. If the residential DTSC CHHSL is not established, the USEPA regional screening level is used. (PCBs are an exception to this rule since their final screening levels are equal to the EPA regional screening levels).

4 Water Board. 2008. "Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater" (Table K-1). May 27.

5 Commercial screening level - commercial DTSC CHHSL. If the commercial DTSC CHHSL is not established, the USEPA regional screening level is used. (PCBs are an exception to this rule since their final screening levels are equal to the EPA regional screening levels).

6 Interim screening level is equal to the appropriate background value, if a background value is not available then the lesser of the soil ecological comparison values and DTSC CHHSL is used, if the DTSC CHHSL is not available, the USEPA regional screening level is used.

7 Number of exceedences are the number of detections exceeding the background threshold value (BTV).

8 Number of exceedences are the number of detections that are equal to or exceeds the screening level (ecological comparison value, residential reporting limit, commercial reporting limit or interim screening level) or otherwise noted

* Number of exceedances are calculated using background threshold value because it is greater than the respective screening level.

‡ Maxiumum Reporting Limit greater than or equal to the interim screening level

USEPA regional screening level - USEPA. 2009. "Regional Screening Levels for Chemical Contaminants at Superfund Sites." http://epaprgs.ornl.govchemicals/index.shtml. December.

CHHSL - California EPA, Office of Environmental Health Hazard Assessment. 2005. "Human Exposure Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil." November 2004 (January 2005 Revision). January.

mg/kg	miligrams per kilogram
µg/kg	micrograms per kilogram
ng/kg	nanograms per kilogram
NA	not applicable
ND	not detected in any of the samples
NE	not established
SL	screening level

USEPA	United States Environmental Protection Agency
DTSC	California Department of Toxic Substances Control
CHHSL	California human health screening levels
Water Board	Regional Water Quality Control Board

Table C4-10
Central Tendency Comparisons (Site to Background)
AOC 10 -- East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
PG&E Topock Compressor Station, Needles, California

Parameter	Comparison Test Used	Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Signficance Level	Mean of Site Detects	Mean of Bkgd Detects	Median of Site Detects	Median of Bkgd Detects	Number of Site Detects	Number of Site Samples	Number of Bkgd Detects	Number of Bkgd Samples	Percent Detects Site	Percent Detects Bkgd
Aluminum	Gehan	0.985	nsd	8660	10400	8100	10000	9	9	55	55	100	100
Arsenic	Gehan	0.000	Site > Bkgd	5.87	4.01	4.95	3.5	84	87	58	59	97	98
Barium	Gehan	0.179	nsd	180	165	140	135	87	87	60	60	100	100
Calcium	Gehan	0.066	nsd	37200	24300	24500	20000	10	10	55	55	100	100
Chromium	Gehan	0.000	Site > Bkgd	192	22.3	32	21.9	105	105	70	70	100	100
Cobalt	Gehan	0.783	nsd	7.39	7.85	7.4	7.61	87	87	58	59	100	98
Copper	Gehan	0.000	Site > Bkgd	31.7	10.5	15	10.1	101	101	70	70	100	100
Lead	Gehan	0.000	Site > Bkgd	14.1	4.38	5.4	3.5	86	87	59	60	99	98
Magnesium	Gehan	0.839	nsd	7540	7950	6650	8100	10	10	55	55	100	100
Manganese	Gehan	0.543	nsd	396	298	270	281	9	9	59	59	100	100
Molybdenum	Gehan	0.215	nsd	2.89	1.03	1.5	1	15	87	11	60	17	18
Nickel	Gehan	0.104	nsd	16.3	15.4	16	15	101	101	70	70	100	100
Zinc	Gehan	0.000	Site > Bkgd	82.1	36.8	58	35.5	101	101	70	70	100	100

Bkgd = background.
NA = not applicable.
nsd = no statistical difference.
< = less than.
> = greater than.

TABLE C4-11

Decision 2 Data Gaps Summary AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
Pacific Gas and Electric CompanyTopock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Metals							
Arsenic				**11 mg/kg (bckg)**	**11.4 mg/kg**		
0-0.5 ft bgs	Y	21 of 22	11 mg/kg	N	N	None	Compound exceeds HHCV and ECV. Existing data adequate for EPC. Note that the highest detected value of 12 mg/kg is equal to the highest detected value in the background data set.
0-3 ft bgs	Y	40 of 43	11 mg/kg	N	N		
0-6 ft bgs	Y	60 of 63	12 mg/kg	Y	Y		
0-10 ft bgs	Y	78 of 81	12 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	19 of 20	8.2 mg/kg	N	N		
Scouring Scenario 1: 2-6 ft bgs	Y	39 of 40	12 mg/kg	Y	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	57 of 58	12 mg/kg	Y	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	57 of 58	12 mg/kg	Y	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	19 of 19	12 mg/kg	Y	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	37 of 37	12 mg/kg	Y	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	37 of 37	12 mg/kg	Y	Y		
Barium				**5200 mg/kg**	**410 mg/kg (bckg)**		
0-0.5 ft bgs	Y	22 of 22	500 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	43 of 43	500 mg/kg	N	Y		
0-6 ft bgs	Y	63 of 63	1300 mg/kg	N	Y		
0-10 ft bgs	Y	81 of 81	1300 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	20 of 20	380 mg/kg	N	N		
Scouring Scenario 1: 2-6 ft bgs	Y	40 of 40	1300 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	58 of 58	1300 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	58 of 58	1300 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	19 of 19	1300 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	37 of 37	1300 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	37 of 37	1300 mg/kg	N	Y		
Chromium-Total				**280 mg/kg**	**39.8 mg/kg (bckg)**		
0-0.5 ft bgs	Y	32 of 32	820 mg/kg	Y	Y	None	Compound exceeds HHCV and ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	60 of 60	4000 mg/kg	Y	Y		
0-6 ft bgs	Y	81 of 81	4000 mg/kg	Y	Y		
0-10 ft bgs	Y	99 of 99	4000 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	20 of 20	1500 mg/kg	Y	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	41 of 41	1500 mg/kg	Y	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	59 of 59	1500 mg/kg	Y	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	59 of 59	1500 mg/kg	Y	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	19 of 19	220 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	37 of 37	220 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	37 of 37	220 mg/kg	N	Y		

TABLE C4-11

Decision 2 Data Gaps Summary AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
Pacific Gas and Electric CompanyTopock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Chromium - Hexavalent				**17 mg/kg**	**139.6 mg/kg**		
0-0.5 ft bgs	Y	16 of 32	27.7 mg/kg	Y	N	None	Compound exceeds HHCV and ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	35 of 60	150 mg/kg	Y	Y		
0-6 ft bgs	Y	46 of 81	150 mg/kg	Y	Y		
0-10 ft bgs	Y	51 of 99	150 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	13 of 20	27.3 mg/kg	Y	N		
Scouring Scenario 1: 2-6 ft bgs	Y	24 of 41	27.3 mg/kg	Y	N		
Scouring Scenario 1: 2-10 ft bgs	Y	29 of 59	27.3 mg/kg	Y	N		
Scouring Scenario 1: 2-12 ft bgs	Y	29 of 59	27.3 mg/kg	Y	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	11 of 19	4.78 mg/kg	N	N		
Scouring Scenario 2: 5-10 ft bgs	Y	16 of 37	4.78 mg/kg	N	N		
Scouring Scenario 2: 5-15 ft bgs	Y	16 of 37	4.78 mg/kg	N	N		
Copper				**3000 mg/kg**	**20.6 mg/kg**		
0-0.5 ft bgs	Y	29 of 29	270 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	57 of 57	300 mg/kg	N	Y		
0-6 ft bgs	Y	77 of 77	300 mg/kg	N	Y		
0-10 ft bgs	Y	95 of 95	300 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	20 of 20	110 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	40 of 40	110 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	58 of 58	110 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	58 of 58	110 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	19 of 19	41 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	37 of 37	41 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	37 of 37	41 mg/kg	N	Y		
Lead				**80 mg/kg**	**8.39 mg/kg (bckg)**		
0-0.5 ft bgs	Y	22 of 22	200 mg/kg	Y	Y	None	Compound exceeds HHCV and ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	42 of 43	200 mg/kg	Y	Y		
0-6 ft bgs	Y	62 of 63	200 mg/kg	Y	Y		
0-10 ft bgs	Y	80 of 81	200 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	19 of 20	47 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	39 of 40	47 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	57 of 58	47 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	57 of 58	47 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	19 of 19	17 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	37 of 37	17 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	37 of 37	17 mg/kg	N	Y		

TABLE C4-11

Decision 2 Data Gaps Summary AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
Pacific Gas and Electric CompanyTopock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Mercury				**18 mg/kg**	**0.0125 mg/kg**		
0-0.5 ft bgs	N	1 of 22	0.64 mg/kg	N	N	None	Compound exceeds ECV and no background value has been established. Detection limits are elevated relative to the ECV. Additional data collection is likely to yield additional non-detected values. The EPC has been defined within the limits of the analytical instrumentation.
0-3 ft bgs	N	2 of 43	0.64 mg/kg	N	Y		
0-6 ft bgs	N	2 of 63	0.64 mg/kg	N	Y		
0-10 ft bgs	N	2 of 81	0.64 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	NA	0 of 20	NA mg/kg	N	N		
Scouring Scenario 1: 2-6 ft bgs	NA	0 of 40	NA mg/kg	N	N		
Scouring Scenario 1: 2-10 ft bgs	NA	0 of 58	NA mg/kg	N	N		
Scouring Scenario 1: 2-12 ft bgs	NA	0 of 58	NA mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	NA	0 of 19	NA mg/kg	N	N		
Scouring Scenario 2: 5-10 ft bgs	NA	0 of 37	NA mg/kg	N	N		
Scouring Scenario 2: 5-15 ft bgs	NA	0 of 37	NA mg/kg	N	N		
Molybdenum				**380 mg/kg**	**2.25 mg/kg**		
0-0.5 ft bgs	N	3 of 22	19 mg/kg	N	N	None	Compound exceeds ECV but maximum shown (19 mg/kg) is from AOC10a-1 located adjacent to AOC9 and included in AOC9 for the ecological risk assessment (ERA). The maximum from the ERA dataset for the 0 to 0.5 feet bgs exposure interval is 1.5 mg/kg which is less than the ECV. Therefore, no additional molybdenum data are required for the 0 to 0.5 ft exposure interval. The remaining exposure intervals (0 to 3, 0 to 6, and 0 to 10 feet bgs) and intervals under Scouring Scenario 1 have sufficient data to support EPC calculation using ProUCL. The maximum detected concentrations from deep intervals under scouring scenario 2 do not exceed the comparison values and therefore no additional data are needed.
0-3 ft bgs	Y	10 of 43	19 mg/kg	N	Y		
0-6 ft bgs	Y	12 of 63	19 mg/kg	N	Y		
0-10 ft bgs	Y	14 of 81	19 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	6 of 20	2.9 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	8 of 40	2.9 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	10 of 58	2.9 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	10 of 58	2.9 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	N	2 of 19	1.9 mg/kg	N	N		
Scouring Scenario 2: 5-10 ft bgs	N	4 of 37	1.9 mg/kg	N	N		
Scouring Scenario 2: 5-15 ft bgs	N	4 of 37	1.9 mg/kg	N	N		

TABLE C4-11

Decision 2 Data Gaps Summary AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
Pacific Gas and Electric CompanyTopock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Thallium				**5 mg/kg**	**2.32 mg/kg**		
0-0.5 ft bgs	NA	0 of 22	NA mg/kg	N	N	None	Compound exceeds HHCV and ECV. Although there are insufficient detections to allow calculation of a 95% UCL on the mean, additional data collection is not expected to yield sufficient detections to strongly influence the EPC because additional sampling would likely result in additional non-detect values.
0-3 ft bgs	N	1 of 43	6.1 mg/kg	Y	Y		
0-6 ft bgs	N	1 of 63	6.1 mg/kg	Y	Y		
0-10 ft bgs	N	1 of 81	6.1 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	NA	0 of 20	NA mg/kg	N	N		
Scouring Scenario 1: 2-6 ft bgs	NA	0 of 40	NA mg/kg	N	N		
Scouring Scenario 1: 2-10 ft bgs	NA	0 of 58	NA mg/kg	N	N		
Scouring Scenario 1: 2-12 ft bgs	NA	0 of 58	NA mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	NA	0 of 19	NA mg/kg	N	N		
Scouring Scenario 2: 5-10 ft bgs	NA	0 of 37	NA mg/kg	N	N		
Scouring Scenario 2: 5-15 ft bgs	NA	0 of 37	NA mg/kg	N	N		
Zinc				**23000 mg/kg**	**58 mg/kg (bckg)**		
0-0.5 ft bgs	Y	29 of 29	1000 mg/kg	N	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	57 of 57	1000 mg/kg	N	Y		
0-6 ft bgs	Y	77 of 77	1000 mg/kg	N	Y		
0-10 ft bgs	Y	95 of 95	1000 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	20 of 20	170 mg/kg	N	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	40 of 40	170 mg/kg	N	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	58 of 58	170 mg/kg	N	Y		
Scouring Scenario 1: 2-12 ft bgs	Y	58 of 58	170 mg/kg	N	NA		
Scouring Scenario 2: 5-6 ft bgs	Y	19 of 19	80 mg/kg	N	Y		
Scouring Scenario 2: 5-10 ft bgs	Y	37 of 37	80 mg/kg	N	Y		
Scouring Scenario 2: 5-15 ft bgs	Y	37 of 37	80 mg/kg	N	Y		
Contract Laboratory Program Inorganics							
Aluminum				**77000 mg/kg**	**16400 mg/kg (bckg)**		
0-0.5 ft bgs	Y	9 of 9	18000 mg/kg	N	Y	None	Compound may exceed ECV (background). Existing data adequate for EPC. Under the scouring scenarios, no data are available. However, additional data collection does not appear warranted given that the maximum detected concentration at AOC10 is only slightly greater than background and the remaining detections are well below background. In addition, it is reasonable to assume that the nature and extent of the aluminum detected in the 0-0.5 interval is representative of concentrations at deeper depths.
0-3 ft bgs	Y	9 of 9	18000 mg/kg	N	Y		
0-6 ft bgs	Y	9 of 9	18000 mg/kg	N	Y		
0-10 ft bgs	Y	9 of 9	18000 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-12 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-15 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		

TABLE C4-11

Decision 2 Data Gaps Summary AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
Pacific Gas and Electric CompanyTopock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Calcium				**66500 mg/kg (bckg)**	**66500 mg/kg (bckg)**		
0-0.5 ft bgs	Y	9 of 9	44000 mg/kg	N	N	None	Compound may exceed HHCV and ECV (both background). Existing data adequate for EPC. Under the scouring scenarios, no data are available. However, additional data collection to support the scouring scenarios does not appear warranted given that the concentrations are comparable to background (Section 3.3). In addition, it is reasonable to assume that the nature and extent of the calcium detected in the 0 to 3.0 ft interval is representative of concentrations at deeper depths.
0-3 ft bgs	Y	10 of 10	139000 mg/kg	Y	Y		
0-6 ft bgs	Y	10 of 10	139000 mg/kg	Y	Y		
0-10 ft bgs	Y	10 of 10	139000 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-12 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-15 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Magnesium				**12100 mg/kg (bckg)**	**12100 mg/kg (bckg)**		
0-0.5 ft bgs	Y	9 of 9	12000 mg/kg	N	N	None	Compound may exceed HHCV and ECV (both background). Existing data adequate for EPC. Under the scouring scenarios, no data are available. However, additional data collection to support the scouring scenarios does not appear warranted given that the maximum concentration is approximately equal to background. In addition, it is reasonable to assume that the nature and extent of the magnesium detected in the 0 to 3.0 ft interval is representative of concentrations at deeper depths.
0-3 ft bgs	Y	10 of 10	12800 mg/kg	Y	Y		
0-6 ft bgs	Y	10 of 10	12800 mg/kg	Y	Y		
0-10 ft bgs	Y	10 of 10	12800 mg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-12 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-15 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		

TABLE C4-11

Decision 2 Data Gaps Summary AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
Pacific Gas and Electric CompanyTopock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
Manganese				**1800 mg/kg**	**402 mg/kg (bckg)**		
0-0.5 ft bgs	Y	9 of 9	1300 mg/kg	N	Y	None	Compound may exceed ECV (background). Existing data adequate for EPC. Only one of nine samples (AOC10-5) significantly exceeds background. Under the scouring scenarios, no data are available. However, additional data collection to support developing EPCs for the scouring scenarios does not appear warranted as it is reasonable to assume that the nature and extent of the manganese detected in the 0-0.5 interval is representative of concentrations at deeper depths.
0-3 ft bgs	Y	9 of 9	1300 mg/kg	N	Y		
0-6 ft bgs	Y	9 of 9	1300 mg/kg	N	Y		
0-10 ft bgs	Y	9 of 9	1300 mg/kg	N	NA		
Scouring Scenario 1: 2-3 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 1: 2-12 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-6 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-10 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Scouring Scenario 2: 5-15 ft bgs	NA	0 of 0	NA mg/kg	NA	NA		
Polynuclear Aromatic Hydrocarbons							
PAHs (BaP TEQ)				**38 µg/kg**	**NA**		
0-0.5 ft bgs	Y	20 of 22	1400 µg/kg	Y	NA	None	Compound exceeds HHCV. Existing data adequate for EPC.
0-3 ft bgs	Y	31 of 42	1400 µg/kg	Y	NA		
0-6 ft bgs	Y	35 of 62	1400 µg/kg	Y	NA		
0-10 ft bgs	Y	36 of 80	1400 µg/kg	Y	NA		
Scouring Scenario 1: 2-3 ft bgs	Y	11 of 20	420 µg/kg	Y	NA		
Scouring Scenario 1: 2-6 ft bgs	Y	15 of 40	420 µg/kg	Y	NA		
Scouring Scenario 1: 2-10 ft bgs	Y	16 of 58	420 µg/kg	Y	NA		
Scouring Scenario 1: 2-12 ft bgs	Y	16 of 58	420 µg/kg	Y	NA		
Scouring Scenario 2: 5-6 ft bgs	N	4 of 19	37 µg/kg	N	NA		
Scouring Scenario 2: 5-10 ft bgs	Y	5 of 37	37 µg/kg	N	NA		
Scouring Scenario 2: 5-15 ft bgs	Y	5 of 37	37 µg/kg	N	NA		

TABLE C4-11

Decision 2 Data Gaps Summary AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report,
Pacific Gas and Electric CompanyTopock Compressor Station, Needles, California

Compound/Depth	Adequate EPC? Y or N	Adequate EPC? Det/# results	Maximum Detected Value	> HHCV or Background as Applicable? [1] Y or N	> ECV or Background as Applicable? [1] Y or N [2]	Proposed Sample ID	Notes
HMW PAHs				**NA**	**1160 µg/kg**		
0-0.5 ft bgs	Y	20 of 22	9500 µg/kg	NA	Y	None	Compound exceeds ECV. Existing data adequate for EPC.
0-3 ft bgs	Y	31 of 42	9500 µg/kg	NA	Y		
0-6 ft bgs	Y	35 of 62	9500 µg/kg	NA	Y		
Scouring Scenario 1: 2-3 ft bgs	Y	11 of 20	3100 µg/kg	NA	Y		
Scouring Scenario 1: 2-6 ft bgs	Y	15 of 40	3100 µg/kg	NA	Y		
Scouring Scenario 1: 2-10 ft bgs	Y	16 of 58	3100 µg/kg	NA	Y		
Scouring Scenario 2: 5-6 ft bgs	N	4 of 19	240 µg/kg	NA	N		
Scouring Scenario 2: 5-10 ft bgs	Y	5 of 37	240 µg/kg	NA	N		
Scouring Scenario 2: 5-15 ft bgs	Y	5 of 37	240 µg/kg	NA	N		

Footnotes:

[1] The higher value of either the HHCV/ECV or background was selected as the screening criteria and are included in these columns for the respective compound in **BOLDED BLUE FONT**. Values based on background are indicated with "(bckg)" next to the value.

[2] AOC10 was evaluated for data sufficiency to support the ecological risk assessment excluding AOC10a-1. This sample was included in AOC 9 evaluation for adequacy to support EPC calculations for the ecological risk assessment due to its close proximity to AOC 9 and topography.

Acronyms and Abbreviations:

AOC - area of concern
BaP TEQ - benzo(a)pyrene toxic equivalents
ECV - ecological comparison values
EPC - exposure point concentration
ft bgs - feet below ground surface
HHCV - human health comparison values
HMW PAH - high molecular weight polycyclic aromatic hydrocarbons
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
N - no
NA - not applicable
Y - yes

TABLE C4-12
Results of Tiered Analysis at AOC 10a through AOC 10d – East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
PG&E Topock Compressor Station, Needles, California

Metal	Step 1 Do COPCs/COPECs Exceed Background?	Step 2 Do COPCs/COPECs Exceed SSL?	Step 3 Does Screening Model Eliminate Potential for Leaching to Groundwater?
AOC 10a			
Chromium	√		
Chromium, Hexavalent	√	√	No
Copper	√		
Lead	√	√	No
Molybdenum	√	√	No
Nickel	√		
Zinc	√		
AOC 10b			
Chromium	√	√	Yes
Chromium, Hexavalent	√	√	No
Copper	√		
Lead	√		
Molybdenum	√	√	Yes
Zinc	√		
AOC 10c			
Chromium	√	√	Yes
Chromium, Hexavalent	√	√	No
Copper	√		
Lead	√		
Molybdenum	√	√	Yes
Zinc	√		
AOC 10d			
Arsenic	√		
Barium	√	√	Yes
Chromium	√		
Chromium, Hexavalent	√	√	No
Copper	√		
Lead	√		
Molybdenum	√	√	Yes
Zinc	√		

✓ = Constituents concentration exceeds background and/or soil screening level (SSL).

TABLE C4-13

Sample Results Compared to the Calculated Soil Screening Levels
AOC 10a - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)						
Soil Screening Levels : [1]				**380**	**0.02**	**690**	**120**	**0.73**	**130**	**4,200**
Background : [2]				**39.8**	**0.83**	**16.8**	**8.39**	**1.37**	**27.3**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Molybdenum**	**Nickel**	**Zinc**
AOC10a-1	10/17/08	0 - 0.5	N	80	(8.25)	270 J	(200 J)	(19)	28	1,000 J

[1] Soil Screening Level (SSL) calculation was provided in the technical memorandum entitled "Calculation of Soil Screening Levels for Protection of Groundwater at the PGE Topock Compressor Station", CH2MHill 2008.
[2] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the SSL are circled.

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

TABLE C4-14

Sample Results Compared to the Calculated Soil Screening Levels
AOC 10b - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)					
Soil Screening Levels : [1]				**480**	**0.03**	**1,100**	**180**	**0.73**	**6,600**
Background : [2]				**39.8**	**0.83**	**16.8**	**8.39**	**1.37**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Molybdenum**	**Zinc**
AOC10-1	10/02/08	0 - 0.5	N	6.6	ND (0.401)	4.9	9.2	ND (1)	20
	10/02/08	2 - 3	N	7.4	ND (0.405)	5.6	5.8	ND (1)	21
	10/02/08	5 - 6	N	7.5	ND (0.407)	5.8	5.4	ND (1)	20
	10/02/08	9 - 10	N	6.8	ND (0.406)	5.7	4.8	ND (1)	21
AOC10b-1	09/30/08	0 - 0.5	N	24	0.559	9.8	8.6	ND (1)	38
	09/30/08	2 - 3	N	63	1.39	28	8.4 J	ND (1)	110 J
	09/30/08	2 - 3	FD	61	1.39	27	12 J	1.5	160 J
	09/30/08	5 - 6	N	20	0.425	8	4.3	ND (1)	39
	09/30/08	9 - 10	N	29	ND (0.407)	10	3.7	ND (2)	29
AOC10b-2	09/30/08	0 - 0.5	N	29	0.434	11	8.2	1.1	40
	09/30/08	2 - 3	N	47	1.05	15	5.2	1.1	44
	09/30/08	5 - 6	N	29	0.453	8.8	4.2	1	27
	09/30/08	9 - 10	N	39	0.759	15	3.8	ND (2)	38
AOC10b-3	09/30/08	0 - 0.5	N	820	27.7	90	24	1.5	240
	10/01/08	2 - 3	N	90	1.82	23	5	ND (1)	59
	10/01/08	5 - 6	N	38	0.429	14	3.8	ND (2.1)	40
	10/01/08	5 - 6	FD	36	ND (0.417)	16	3.6	ND (2.1)	39
	10/01/08	9 - 10	N	36	ND (0.415)	13	3.5	ND (2.1)	44
AOC10b-4	09/30/08	0 - 0.5	N	12	ND (0.401)	5.8	41	ND (1)	29
	09/30/08	2 - 3	N	14	ND (0.403)	6.7	10	ND (1)	31
	09/30/08	5 - 6	N	20	ND (0.407)	8.9	3.4	ND (1)	35
	09/30/08	9 - 10	N	26	ND (0.415)	11	2.8	ND (1)	42
Bank 1	03/07/03	0	N	21.5	ND (4)	13.7	---	---	55
L-1	02/20/03	0	N	88.4	ND (4.1)	34.8	---	---	99.7
	02/20/03	2	N	217	2.5	69.6	---	---	123
PS-21	04/13/99	0	N	16.5	0.9	14.2	---	---	43.9
	04/13/99	2	N	90	ND (0.51)	12.6	---	---	59.1

TABLE C4-14

Sample Results Compared to the Calculated Soil Screening Levels
AOC 10b - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)					
Soil Screening Levels : [1]				**480**	**0.03**	**1,100**	**180**	**0.73**	**6,600**
Background : [2]				**39.8**	**0.83**	**16.8**	**8.39**	**1.37**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Molybdenum**	**Zinc**
PS-22	04/13/99	0	N	24.7	ND (0.5)	11.4	---	---	85.3

[1] Soil Screening Level (SSL) calculation was provided in the technical memorandum entitled "Calculation of Soil Screening Levels for Protection of Groundwater at the PGE Topock Compressor Station", CH2MHill 2008.
[2] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the SSL are circled.

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

TABLE C4-15

Sample Results Compared to the Calculated Soil Screening Levels
AOC 10c - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)										
	Soil Screening Levels : [1]			**39**	**500**	**0.03**	**3.8**	**1,200**	**200**	**34**	**0.73**	**0.01**	**7,200**
	Background : [2]			**11**	**39.8**	**0.83**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**NE**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Chromium**	**Chromium Hexavalent**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Thallium**	**Zinc**
AOC10c-1	10/01/08	0 - 0.5	N	4.2	55	1.98	5.4	15	7.8	ND (0.1)	ND (1)	ND (2)	48
	10/01/08	2 - 3	N	1.2	490	27.3	5.6	41	18	ND (0.1)	1.2	ND (2)	76
	10/01/08	5 - 6	N	3.4	220	4.78	8.2	17	5.4	ND (0.1)	ND (2)	ND (4.1)	42
	10/01/08	9 - 10	N	4	63	1.37	9.2	14	3.4	ND (0.1)	1	ND (2)	39
AOC10c-2	10/01/08	0 - 0.5	N	5.9	51	1.25	5.8	19	12	ND (0.1)	ND (2)	ND (4)	61
	10/01/08	2 - 3	N	4.1	190	3.77	5.6	37	17	ND (0.1)	2.2	ND (2)	78
	10/01/08	2 - 3	FD	4.1	180	3.8	5.4	34	16	ND (0.1)	1.9	ND (2)	75
	10/01/08	5 - 6	N	3.4	110	1.92	8.4	24	7	ND (0.1)	1.9	ND (2)	51
	10/01/08	9 - 10	N	4.5	32	0.605	11	13	2.7	ND (0.1)	ND (1)	ND (2)	50
AOC10c-3	10/02/08	0 - 0.5	N	9.4	110	2.56	8	42	32	ND (0.1)	ND (2)	ND (4.1)	140
	10/02/08	2 - 3	N	3.6	690	9.27	7	60	31	ND (0.11)	ND (2.1)	ND (4.1)	140
	10/02/08	2 - 3	FD	3.5	660	7.97	6.9	60	26	ND (0.1)	ND (2.1)	ND (4.1)	140
	10/02/08	5 - 6	N	3.9	29	0.512	7.8	9	4.5	ND (0.1)	ND (1)	ND (2)	36
	10/02/08	9 - 10	N	4.4	22	ND (0.412)	7.8	11	2.7	ND (0.1)	ND (1)	ND (2.1)	41
AOC10c-4	10/01/08	0 - 0.5	N	11	120	2.66	8.8	46	36	ND (0.1)	ND (2.1)	ND (4.1)	150
	10/01/08	2 - 3	N	5.9	90	2.11	9.9	19	8.9	ND (0.1)	ND (2)	ND (4.1)	52
	10/01/08	5 - 6	N	4.6	27	2.84	9.1	14	2.6	ND (0.1)	ND (1)	ND (2)	47
	10/01/08	9 - 10	N	7.3	92	0.436	5.4	25	13	ND (0.1)	ND (2.1)	ND (4.1)	74
AOC10c-5	10/01/08	0 - 0.5	N	6.6	81	2.49	6.3	29	15	ND (0.1)	ND (2)	ND (4)	80
	10/01/08	2 - 3	N	ND (1)	1,500	16.4	6.7	110	47	ND (0.1)	2.9	ND (4.1)	170
	10/01/08	5 - 6	N	3.7	82	1.48	8.6	12	4	ND (0.1)	ND (2.1)	ND (4.1)	44
	10/01/08	9 - 10	N	4.5	47	0.423	9.1	15	3	ND (0.1)	ND (1)	ND (2)	46
MW-58BR_S	01/29/09	1.5 - 2	N	ND (2.1)	4,000	150	8.2	300	160	0.33	3.5	6.1	300
	01/29/09	19 - 20	N	12	33	0.43	12	24	4	ND (0.11)	ND (2.1)	4.7	63
	01/29/09	29 - 30	N	13	26	ND (0.17)	11	14	3.6	ND (0.11)	ND (2.1)	4.8	64
	01/29/09	39 - 40	N	12	35	0.43	12	17	4.2	ND (0.11)	ND (2.1)	4.7	51
	01/29/09	49 - 50	N	8.3	24	ND (0.17)	8.7	17	3.7	ND (0.11)	ND (1.1)	ND (2.1)	46
	01/29/09	59 - 60	N	8.4	27	ND (0.18)	13	58	3.4	ND (0.11)	ND (1.1)	ND (2.2)	41

TABLE C4-15

Sample Results Compared to the Calculated Soil Screening Levels
AOC 10c - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)										
Soil Screening Levels : [1]				**39**	**500**	**0.03**	**3.8**	**1,200**	**200**	**34**	**0.73**	**0.01**	**7,200**
Background : [2]				**11**	**39.8**	**0.83**	**12.7**	**16.8**	**8.39**	**NE**	**1.37**	**NE**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Chromium**	**Chromium Hexavalent**	**Cobalt**	**Copper**	**Lead**	**Mercury**	**Molybdenum**	**Thallium**	**Zinc**
AOC10-XRF-01	08/25/08	0 - 0.5	N	---	9.2	ND (0.404)	---	---	---	---	---	---	---
AOC10-XRF-02	08/25/08	0 - 0.5	N	---	11	ND (0.404)	---	---	---	---	---	---	---
AOC10-XRF-03	08/25/08	0 - 0.5	N	---	10	ND (0.405)	---	---	---	---	---	---	---
AOC10-XRF-10	09/21/08	3 - 4	N	---	26	ND (0.416)	---	---	---	---	---	---	---
L-2	02/20/03	0	N	---	86.8	ND (4.7)	---	42.7	---	---	---	---	122
	02/20/03	2	N	---	(3,360)	(13)	---	211	---	---	---	---	278
L-2-2	03/05/03	2	N	---	(1,610)	(41)	---	139	---	---	---	---	203
L-2-3	03/05/03	2	N	---	(2,740)	(99)	---	288	---	---	---	---	299

[1] Soil Screening Level (SSL) calculation was provided in the technical memorandum entitled "Calculation of Soil Screening Levels for Protection of Groundwater at the PGE Topock Compressor Station", CH2MHill 2008.

[2] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the SSL are circled.

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

TABLE C4-16

Sample Results Compared to the Calculated Soil Screening Levels
AOC 10d - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)							
	Soil Screening Levels : [1]			**39**	**1,200**	**1,700**	**0.11**	**5,900**	**1,000**	**0.73**	**36,000**
	Background : [2]			**11**	**410**	**39.8**	**0.83**	**16.8**	**8.39**	**1.37**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Barium**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Molybdenum**	**Zinc**
AOC10-3	09/19/08	0 - 0.5	N	3.1	160	62	1.91	14	7.8	ND (2)	40
	09/19/08	0 - 0.5	FD	2.6	150	64	1.7	13	7.7	ND (2)	41
	09/19/08	2 - 3	N	3.3	160	43	ND (0.412)	14	ND (5.1)	ND (5.1)	47
	09/19/08	5 - 6	N	5.4	220	37	0.705	16	2.9	ND (5.1)	61
	09/19/08	9 - 10	N	7.4	110	28	ND (0.412)	12	2.8	ND (1)	50
AOC10-4	09/19/08	0 - 0.5	N	3.5	110	33	0.55	14	11	ND (2)	52
	09/19/08	2 - 3	N	2.5	130	26	ND (0.409)	16	4.4	ND (2)	38
	09/19/08	5 - 6	N	5.9	75	27	ND (0.418)	16	3	ND (5.2)	63
	09/19/08	9 - 10	N	7.7	48	18	ND (0.413)	12	2.7	ND (1)	48
AOC10-5	09/19/08	0 - 0.5	N	9.6	500	39	1.01	27	27	ND (5.1)	97
	09/19/08	2 - 3	N	8.2	380	30	0.48	21	34	ND (5.1)	77
	09/19/08	5 - 6	N	12	1,100	19	ND (0.407)	40	6.7	ND (5.1)	80
	09/19/08	5 - 6	FD	12	1,300	18	ND (0.407)	41	7.3	ND (5.1)	79
AOC10-6	09/20/08	0 - 0.5	N	7	220 J	24	ND (0.402)	11	26	ND (2)	58
	09/20/08	2 - 3	N	4.2	220	23	ND (0.404)	9.5	4.1	ND (1)	45
AOC10-7	09/20/08	0 - 0.5	N	7.6	250	22	ND (0.414)	12	8.6	ND (1)	54
	09/20/08	2 - 3	N	8	210	27	ND (0.406)	12	8.1	1.1	58
	09/20/08	5 - 6	N	9.6	270	33	ND (0.407)	13	4.4	ND (2)	58
AOC10-8	08/22/08	0 - 0.5	N	8.6	210	16	ND (0.402)	12	15 J	ND (2)	87
	08/22/08	0 - 0.5	FD	8.2	180	18	ND (0.416)	12	12 J	ND (2)	75
AOC10d-1	09/18/08	0 - 0.5	N	3.4	120	49	0.644	16	8.8	ND (2)	58
	09/18/08	2 - 3	N	3.9	120	150	2.86	31	6.8	ND (2)	76
	09/18/08	5 - 6	N	6.9	200	66	1.06	23	5.2	ND (5.2)	80
	09/18/08	5 - 6	FD	7.1	210	64	0.703	23	5.3	ND (5.2)	74
	09/18/08	9 - 10	N	9.8	140	23	ND (0.414)	12	3.5	ND (2.1)	58
AOC10d-2	09/17/08	0 - 0.5	N	4.2	180	22	ND (0.403)	17	21	ND (2)	61
	09/17/08	2 - 3	N	3.3	180	40	1.16	14	16	ND (2)	54

TABLE C4-16

Sample Results Compared to the Calculated Soil Screening Levels
AOC 10d - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

				Metals (mg/kg)							
Soil Screening Levels : [1]				**39**	**1,200**	**1,700**	**0.11**	**5,900**	**1,000**	**0.73**	**36,000**
Background : [2]				**11**	**410**	**39.8**	**0.83**	**16.8**	**8.39**	**1.37**	**58**
Location	**Date**	**Depth (ft bgs)**	**Sample Type**	**Arsenic**	**Barium**	**Chromium**	**Chromium Hexavalent**	**Copper**	**Lead**	**Molybdenum**	**Zinc**
AOC10d-2	09/17/08	5 - 6	N	6.6	210	33	0.597	16	6.2	ND (5.1)	70
	09/17/08	9 - 10	N	7.2	150	22	ND (0.406)	16	3.2	ND (5.1)	73
AOC10d-3	09/17/08	0 - 0.5	N	3.6	120	20	ND (0.406)	12	22	ND (2)	52
	09/18/08	2 - 3	N	3.4	270	64	1.91	18	21	ND (2)	61
	09/18/08	5 - 6	N	7.3	280	30	ND (0.407)	18	3.3	ND (5.1)	60
	09/18/08	5 - 6	FD	6	330	31	ND (0.407)	18	5.1	ND (5.1)	59
	09/18/08	9 - 10	N	8.2	150	21	ND (0.408)	11	3.6	ND (2)	56
AOC10d-4	09/18/08	0 - 0.5	N	9.2	340	29	0.92	25	25	ND (5.2)	85
	09/18/08	2 - 3	N	5.4	260	130	3.93	27	26	ND (2.1)	81
	09/18/08	5 - 6	N	3.6	220	66	ND (0.415)	21	17	ND (2)	64
	09/18/08	9 - 10	N	6.9	220	32	ND (0.41)	16	5.2	ND (5.1)	68
MW-57BR	01/14/09	3 - 4	N	9.2	270	26	ND (0.16)	11	6.7	ND (2)	52
	01/14/09	8 - 9	N	8	85	20	ND (0.17)	11	2.7	1.3	46
	01/14/09	8 - 9	FD	8.4	85	22	ND (0.16)	11	2.9	1.3	48
	01/14/09	18 - 19	N	9.9	240	25	ND (0.16)	12	4.3	3	68
L-3	02/20/03	0	N	---	---	28.4	ND (4.5)	22.7	---	---	74.3
	02/20/03	1	N	---	---	379	1.2 J	79.7	---	---	252
	02/20/03	1.5	N	---	---	77.7	ND (4)	17.2	---	---	61.9
L-3-2	03/05/03	0.5	N	---	---	228	9.4	40.5	---	---	129

TABLE C4-16

Sample Results Compared to the Calculated Soil Screening Levels
AOC 10d - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

[1] Soil Screening Level (SSL) calculation was provided in the technical memorandum entitled "Calculation of Soil Screening Levels for Protection of Groundwater at the PGE Topock Compressor Station", CH2MHill 2008.
[2] CH2M HILL. 2009. "Final Soil Background Technical Memorandum at Pacific Gas and Electric Company Topock Compressor Station, Needles, California." May.

Results greater than or equal to the SSL are circled.

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

TABLE C4-17

Constituent Concentrations in Soil Compared to Total Threshold Limit Concentration (TTLC), Soluble Threshold Limit Concentration (STLC), and Toxic Characteristic Leaching Procedure (TCLP)
AOC10 - East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Topock Compressor Station, Needles, California

Parameter	Frequency of detection	Maximum Detected Value (mg/kg)	TTLC in mg/kg[1]		STLC in mg/L[1]			TCLP in mg/L[1]		
			# of Exceedences	TTLC	# of Exceedences of STLC x 10	STLC x 10	STLC	# of Exceedences of TCLP x 20	TCLP x 20	TCLP
Antimony	0 / 87 (0%)	ND (4.1)	0	500	0	150	15	0	NE	NE
Arsenic	84 / 87 (97%)	13	0	500	0	50	5	0	100	5
Barium	87 / 87 (100%)	1,300	0	10000	1	1000	100	0	2000	100
Beryllium	0 / 87 (0%)	ND (5.2)	0	75	0	7.5	0.75	0	NE	NE
Cadmium	0 / 87 (0%)	ND (2.1)	0	100	0	10	1	0	20	1
Chromium	105 / 105 (100%)	4,000	3	2500	36	50	5	18	100	5
Chromium, Hexavalent	53 / 105 (50%)	150	0	500	2	50	5	0	NE	NE
Cobalt	87 / 87 (100%)	13	0	8000	0	800	80	0	NE	NE
Copper	101 / 101 (100%)	300	0	2500	3	250	25	0	NE	NE
Lead	86 / 87 (99%)	200	0	1000	2	50	5	2	100	5
Mercury	2 / 87 (2.3%)	0.64	0	20	0	2	0.2	0	4	0.2
Molybdenum	15 / 87 (17%)	19	0	3500	0	3500	350	0	NE	NE
Nickel	101 / 101 (100%)	28	0	2000	0	200	20	0	NE	NE
Selenium	0 / 87 (0%)	ND (2.1)	0	100	0	10	1	0	20	1
Silver	0 / 87 (0%)	ND (5.2)	0	500	0	50	5	0	100	5
Thallium	4 / 87 (4.6%)	6.1	0	700	0	70	7	0	NE	NE
Vanadium	87 / 87 (100%)	52	0	2400	0	240	24	0	NE	NE
Zinc	101 / 101 (100%)	1,000	0	5000	0	2500	250	0	NE	NE

Notes

[1] Code of Regulations, Title 22, Chapter 11, Article 3
mg/kg miligrams per kilogram
mg/L milligrams per liter
ND not detected in any of the samples
NE not established
‡ maximum reporting limit greater than or equal to the STLC.

TABLE C4-18
Proposed Phase 2 Soil Sampling Locations at AOC10 – East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
PG&E Topock Compressor Station, Needles, California

Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Methods[a]
AOC9-15	0, 2, 5 and 9	To resolve Data Gap #3 - Define lateral extent of contamination downslope of AOC 9	Hexavalent chromium, Title 22 metals, PAHs, PCBs, pesticides	Backhoe
AOC9-16	0, 2, 5 and 9	To resolve Data Gaps #3 and #5- Define lateral extent of contamination and support CMS/FS	Hexavalent chromium, Title 22 metals, PAHs, PCBs, pesticides; soil physical parameters (porosity, grain size, density, organic carbon content) – three samples from boring	Backhoe
AOC10-9	0, 2, 5, and 9	To resolve Data Gap #2 – Assess nature and extent of contamination associated with runoff from station access road to the low point north of Subarea 10d	Hexavalent chromium, Title 22 metals, PAHs	Backhoe
AOC10-10	0, 2, 5, and 9	To resolve Data Gap #1- Assess lateral extent of contamination associated with PS-21 and nature and extent of potential impact from soil down slope from the outfall	Hexavalent chromium, Title 22 metals	Rotosonic
AOC10-11	0, 2, 5, and 9	To resolve Data Gaps # 4, and 8 - Assess potential impacts from debris on south slope, and the lateral extent between Subareas 10b and 10c, and support CMS/FS,	Hexavalent chromium, Title 22 metals, PAHs; pH, TPH, SVOCs, dioxins and furans (if burn material present), PCBs, soil physical parameters (Atterberg limits, relative compaction, alkalinity, cation exchange, capacity, and particle size distribution) – three samples from boring	Rotosonic
AOC10-12	0, 2, 5, and 9	To resolve Data Gap #4 - Assess potential impacts from debris on south slope (may not be technically feasible to get to proposed depth)	Hexavalent chromium, Title 22 metals, PAHs	Rotosonic
AOC10-13	White powder only	To resolve Data Gap #4 - Assess white powder material on north slope	Hexavalent chromium, PAHs, pH, Title 22 metals	Hand tools
AOC10-14	White powder only and discolored soil	To resolve Data Gap #4 - Assess white powder material and discolored soil on north slope	Hexavalent chromium, PAHs, pH, Title 22 metals	Rotosonic
AOC10-15	0, 2, 5, and 9	To resolve Data Gap #4 – Assess potential impact from debris (dirt pile with green-colored wood*)*	Hexavalent chromium, Title 22 metals, PAHs, pH, TPH, SVOCs, dioxins and furans (if burn material present), PCBs	Backhoe

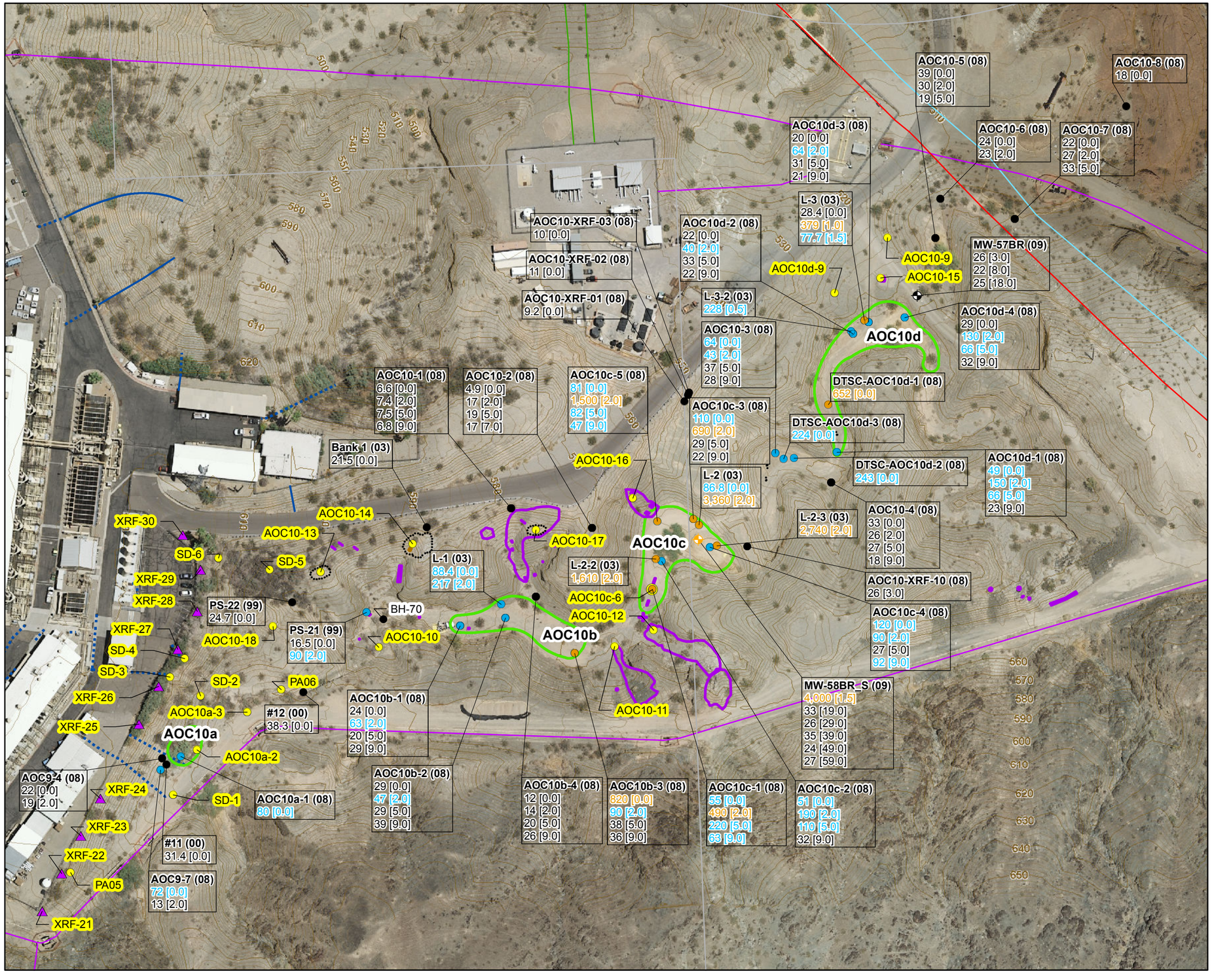
TABLE C4-18
Proposed Phase 2 Soil Sampling Locations at AOC10 – East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
PG&E Topock Compressor Station, Needles, California

Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Methods[a]
AOC10-16	0, 2, 5, and 9	To resolve Data Gap #4 - Assess potential impacts from debris on north slope	Hexavalent chromium, Title 22 metals, PAHs, pH, TPH, SVOCs, dioxins and furans (if burn material present), PCBs	Hand tools
AOC10-17	White powder and discolored soil only	To resolve Data Gap #4 - Assess white powder material and discolored soil on north slope	Hexavalent chromium, PAHs, pH, Title 22 metals	Hand tools
AOC10-18	0 and 2	To resolve Data Gap #1 – Assess nature and extent of soil downslope from potential outfall of the former trench drain and from surface run-off from the compressor station.	Hexavalent chromium, Title 22 metals, PAHs, dioxins/furans	Backhoe
AOC10a-2	0, 2, 5, and 9	To resolve Data Gaps # 1 and #6 - Assess vertical and lateral extents of contamination and collect data to assess current threat to groundwater	Hexavalent chromium, Title 22 metals, PAHs, PCBs, pesticides	Backhoe
AOC10a-3	0, 2, 5, and 9	To resolve Data Gap #1 - Assess lateral extent of contamination (downslope of AOC9 and Subarea 10a)	Hexavalent chromium, Title 22 metals, PAHs, PCBs, pesticides	Backhoe
AOC 10c-6	14 to Groundwater	To resolve Data Gaps #3 and #6 - Assess vertical extent of contamination at previous sample location AOC10c-1 and assess current threat to groundwater	Hexavalent chromium, total chromium	Rotosonic
AOC10d-9	0, 2, 5, and 9	To resolve Data Gap #2 - Assess lateral extent of contamination associated with AOC 10d-3 and L-3	Hexavalent chromium, Title 22 metals, PAHs	Backhoe
Assorted debris locations		To resolve Data Gap #4 – Sampling of new debris areas	Asbestos-containing material, XRF screen	Hand tools

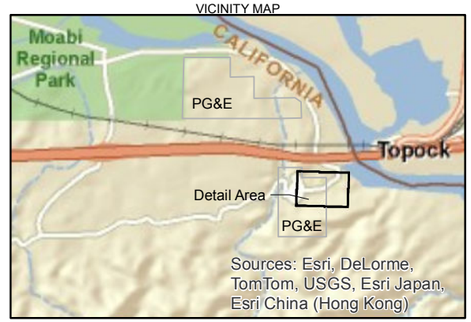
Notes:

[a] Anticipated collection methods listed on this table are best guess based on experience and knowledge of the site; actual collection method will be chosen in the field based on field conditions and site access restrictions.

Figures



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Soil Boring
- Monitoring Well
- Property Boundary
- 2 Foot Contour
- AOC 10 Boundary
- Debris Feature
- Stained Soil
- White Powder
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

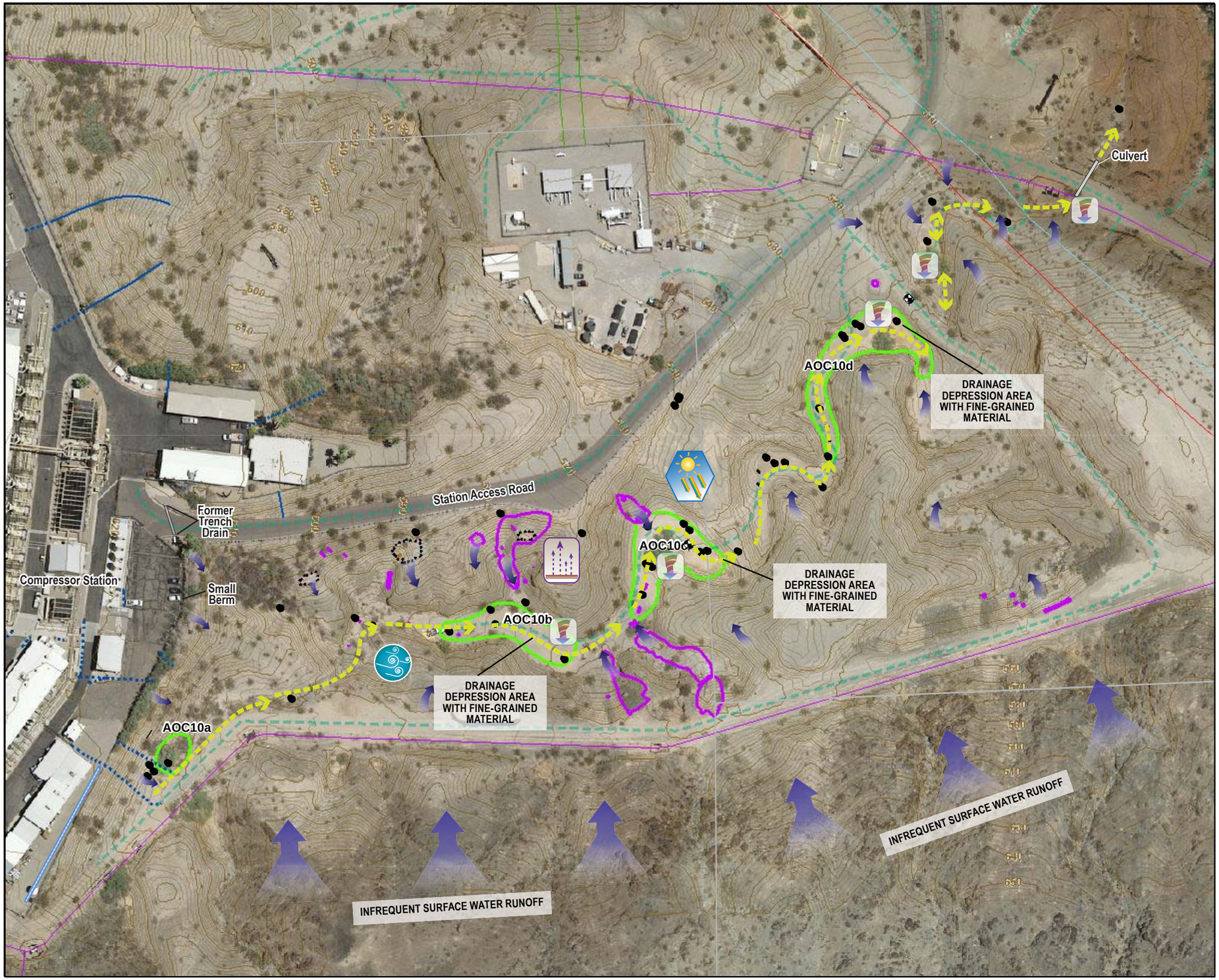
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (39.8 mg/kg) are shown in BLUE.
5. Results greater than or equal to the U.S. Environmental Protection Agency Residential Regional Screening Level (280 mg/kg) are shown in ORANGE.
6. J = Estimated Result.
7. Ecological Comparison Value (36.3 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours shown are in 2 foot intervals.

0 100 200
Feet

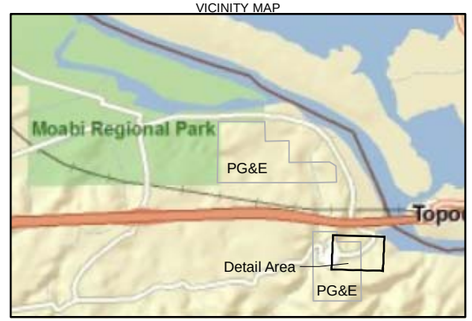
N

FIGURE C4-1
Total Chromium Soil Sample Results and Proposed Phase 2 Sample Locations AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



VICINITY MAP



LEGEND

- Soil Boring
- Monitoring Well
- AOC Boundary
- Debris Feature
- Stained Soil
- White Powder
- Property Boundary
- 2 Foot Contour
- Transwestern Pipeline
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Stormwater Piping Below Ground (Approximate Location)
- Alternate Stormwater Piping Below Ground (Approximate Location)
- Berm

Potential Release Mechanisms

- Infrequent Surface Water Runoff
- Infiltration (Site-wide)
- Windblown Dispersion of Soil (Site-wide)
- Volatilization (Site-wide)
- Degradation by Heat/Light (Site-wide)
- Downstream Movement During Flow Events

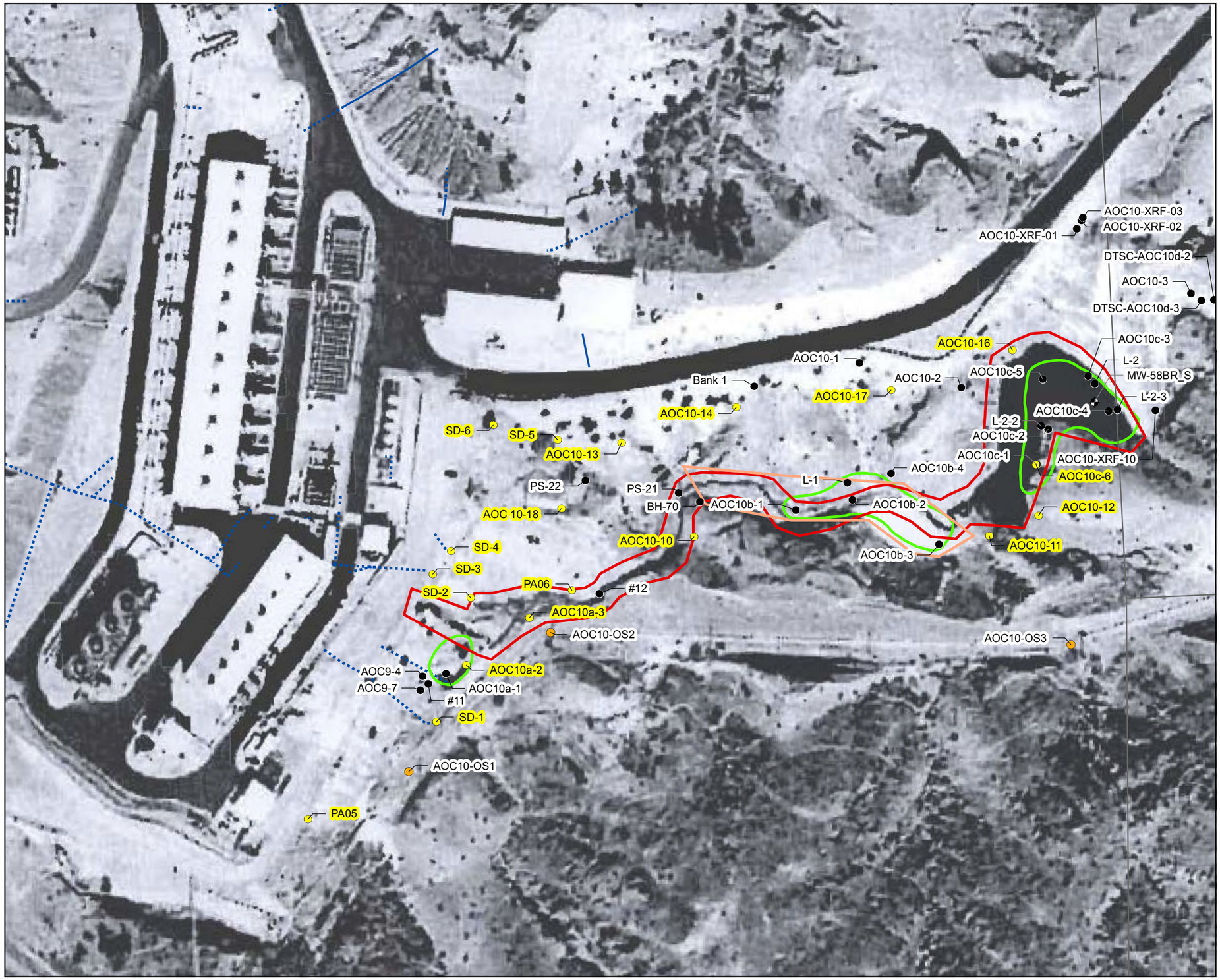
Note:
Topographic contours shown are in 2 foot intervals.

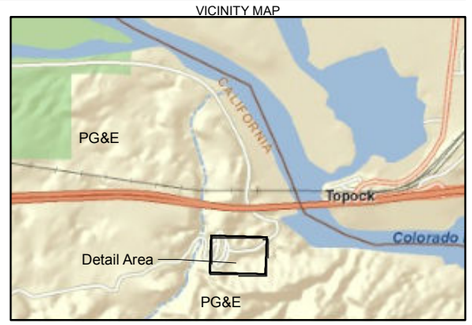
N

0 200

Feet

FIGURE C4-2
Conceptual Site Model for AOC-10
Soil Investigation Part A Phase 1 Data Summary Report
PG&E Topock Compressor Station
Needles, California





LEGEND

- Soil Boring
- Monitoring Well
- Proposed Phase 2 Sample Location
- Existing Opportunistic Soil Sample Location
- Line of Fluid Dischange Enamting from the compressor station leading to the impoundment
- AOC 10 Boundary
- East Ravine Investigation Area H
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground

Note:
1. Topographic contours shown are at 2 foot intervals

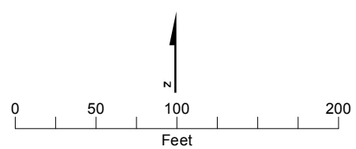
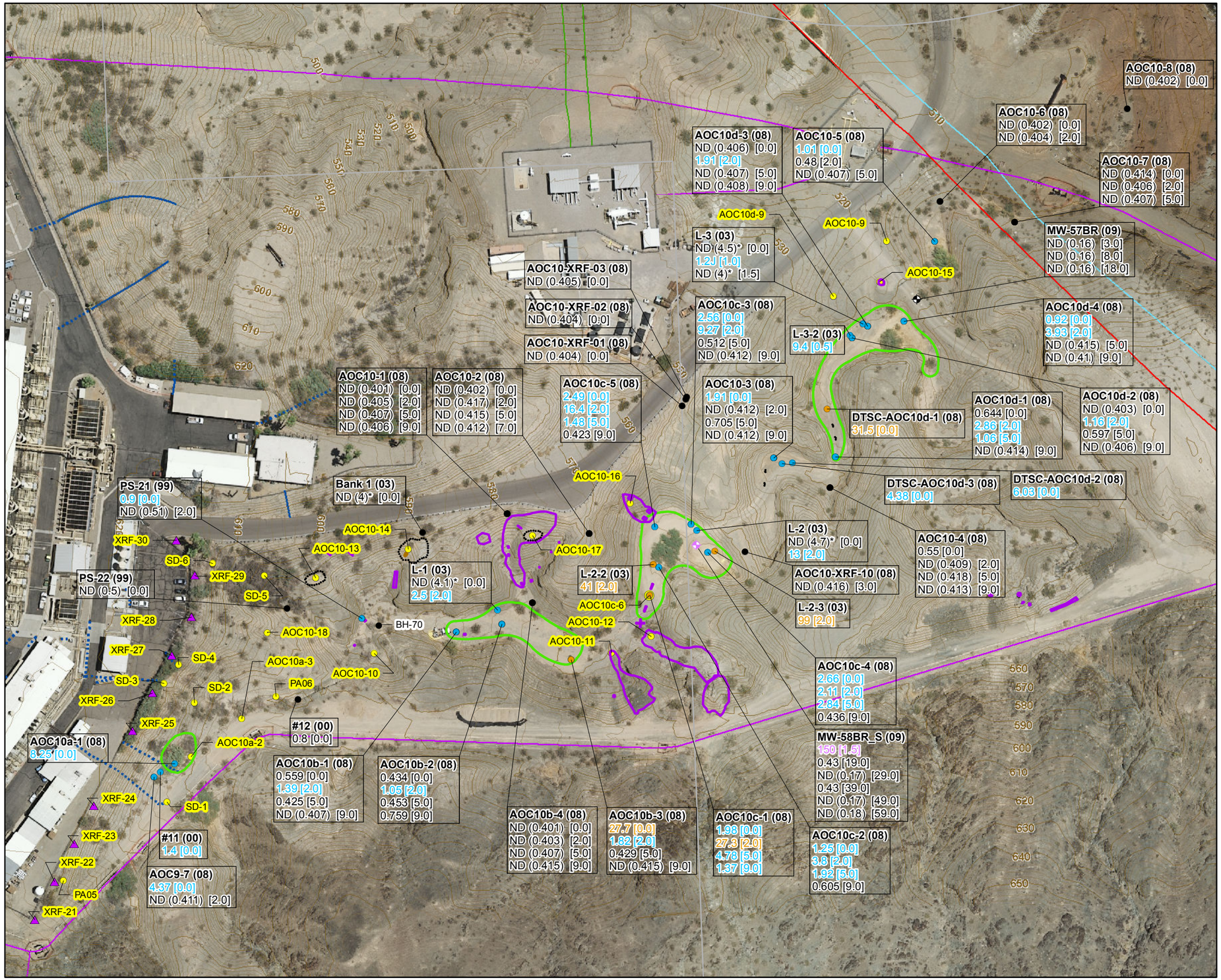
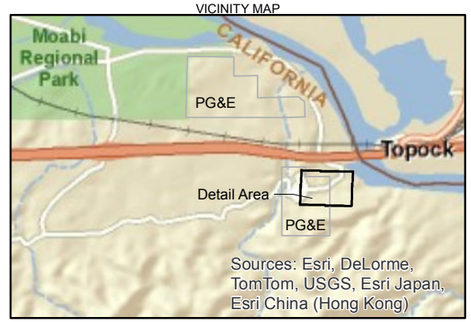


FIGURE C4-3
Potential Phase 2
Soil Sample Locations
And Historic Fluid Discharge
AOC 10 - East Ravine

Soil Investigation Part A
Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Soil Boring
- Monitoring Well
- Property Boundary
- 2 Foot Contour
- AOC 10 Boundary
- Debris Feature
- Stained Soil
- White Powder
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

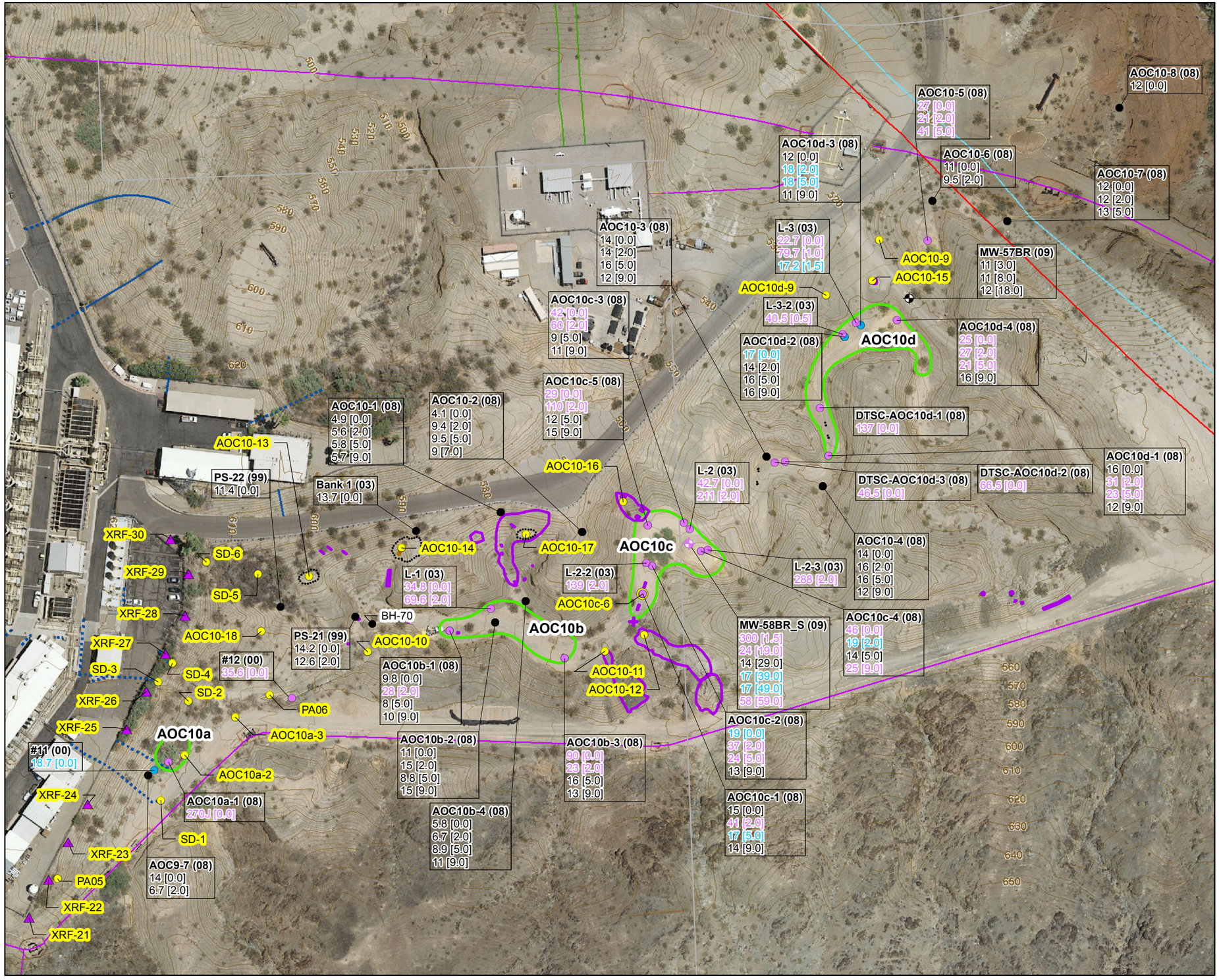
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (0.83 mg/kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparison Value (139.6 mg/kg) are shown in PURPLE.
6. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (17 mg/kg) are shown in ORANGE.
7. J = Estimated Result.
8. * = Laboratory reporting limit exceeds screening levels.
9. Topographic contours shown are in 2 foot intervals.

0 200
Feet

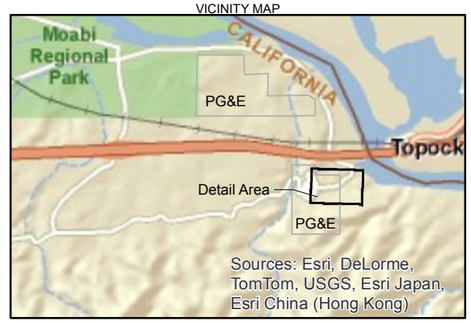
N

FIGURE C4-4
Hexavalent Chromium Soil Sample Results and Proposed Phase 2 Sampling Locations AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- Monitoring Well
- 2 Foot Contour
- Property Boundary
- AOC 10 Boundary
- Debris Feature
- Stained Soil
- White Powder
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (16.8 mg/kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparison Value (20.6 mg/kg) are shown in PURPLE.
6. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (3,000 mg/kg) are shown in ORANGE.
7. J = Estimated Result.
8. Topographic contours shown are in 2 foot intervals

0 200
Feet

N

FIGURE C4-5
Copper
Soil Sample Results and Proposed Phase 2 Sample Locations
AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California

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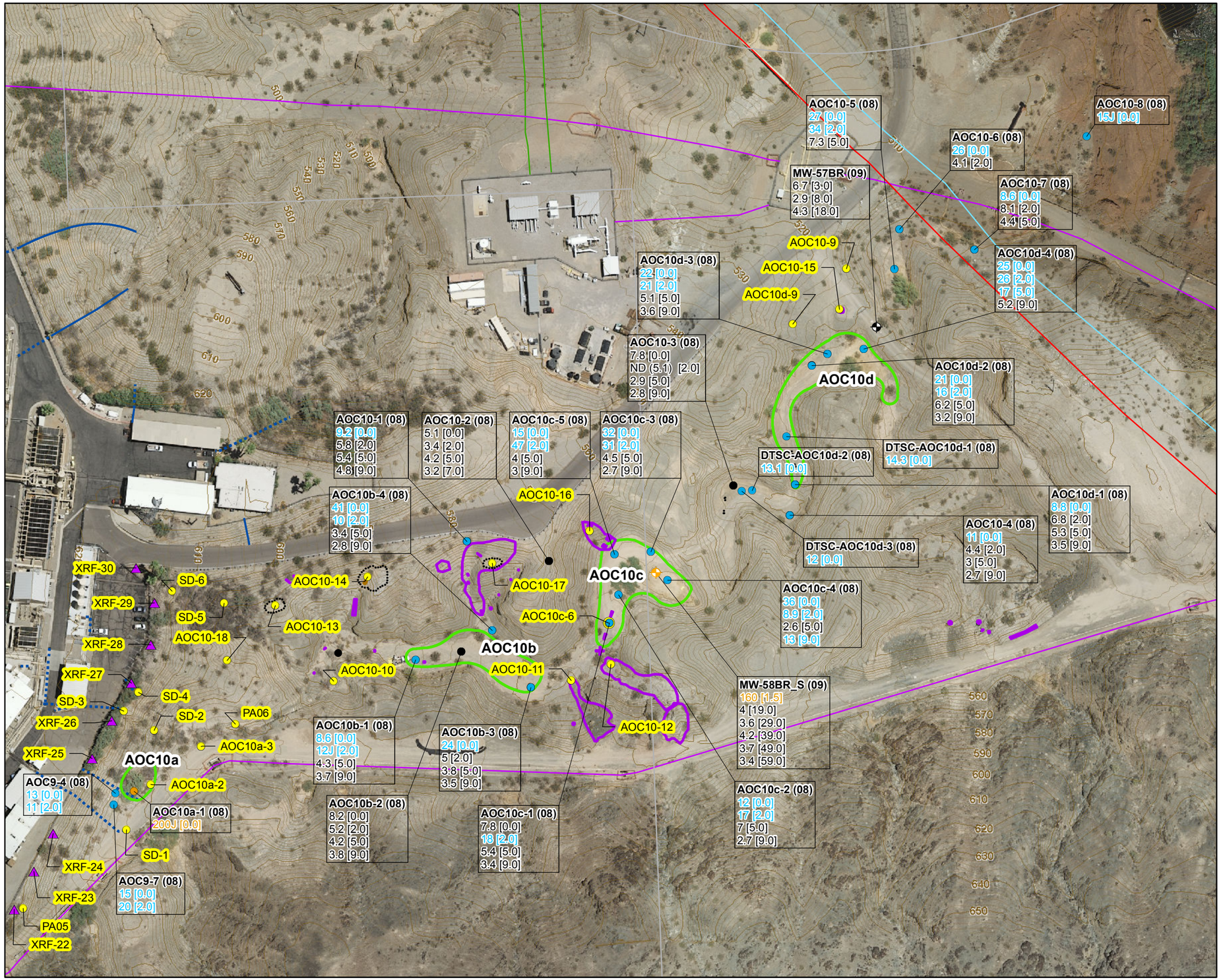
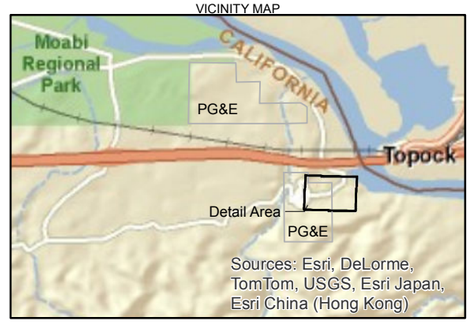


VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- Monitoring Well
- Property Boundary
- 2 Foot Contour
- AOC 10 Boundary
- Debris Feature
- Stained Soil
- White Powder
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location / Installation Date
20 [1] — Sample Beginning Depth (ft bgs) / Soil Concentration (mg/kg)

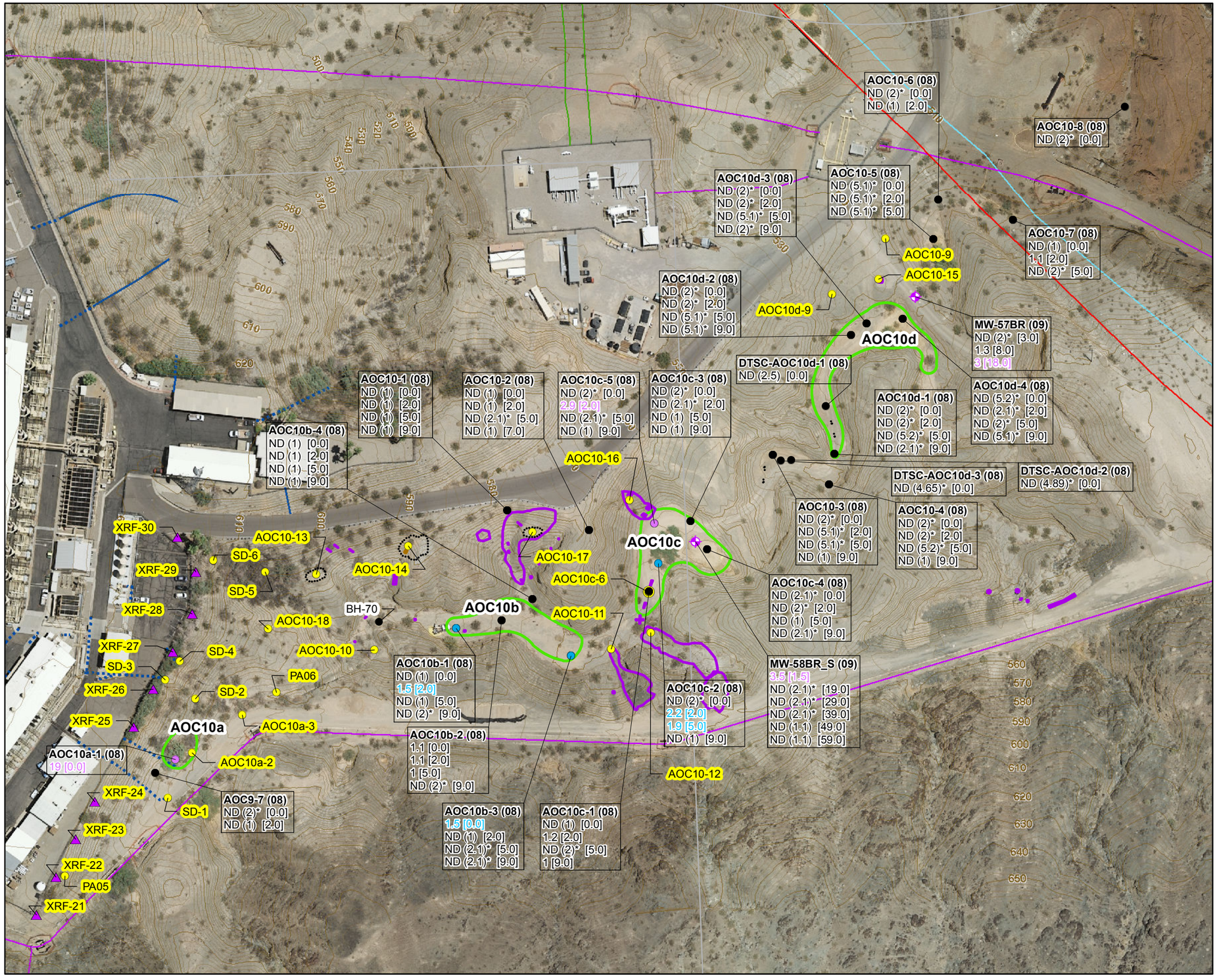
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (8.39 mg/kg) are shown in BLUE.
5. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (150 mg/kg) are shown in ORANGE.
6. J = Estimated Result.
7. Ecological Comparison Value (0.0166 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours shown are in 2 foot intervals.

0 100 200
Feet

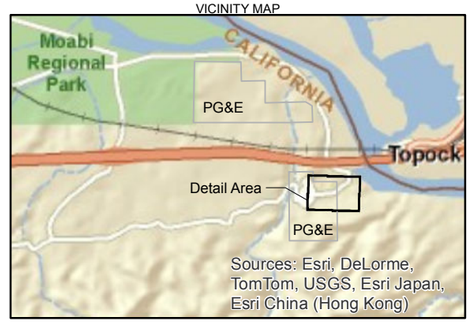
N

FIGURE C4-6
Lead
Soil Sample Results and Proposed Phase 2 Sample Locations
AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Monitoring Well
- Soil Boring
- Property Boundary
- 2 Foot Contour
- AOC 10 Boundary
- Debris Feature
- Stained Soil
- White Powder
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location / Installation Date
20 [1] — Sample Beginning Depth (ft bgs) / Soil Concentration (mg/kg)

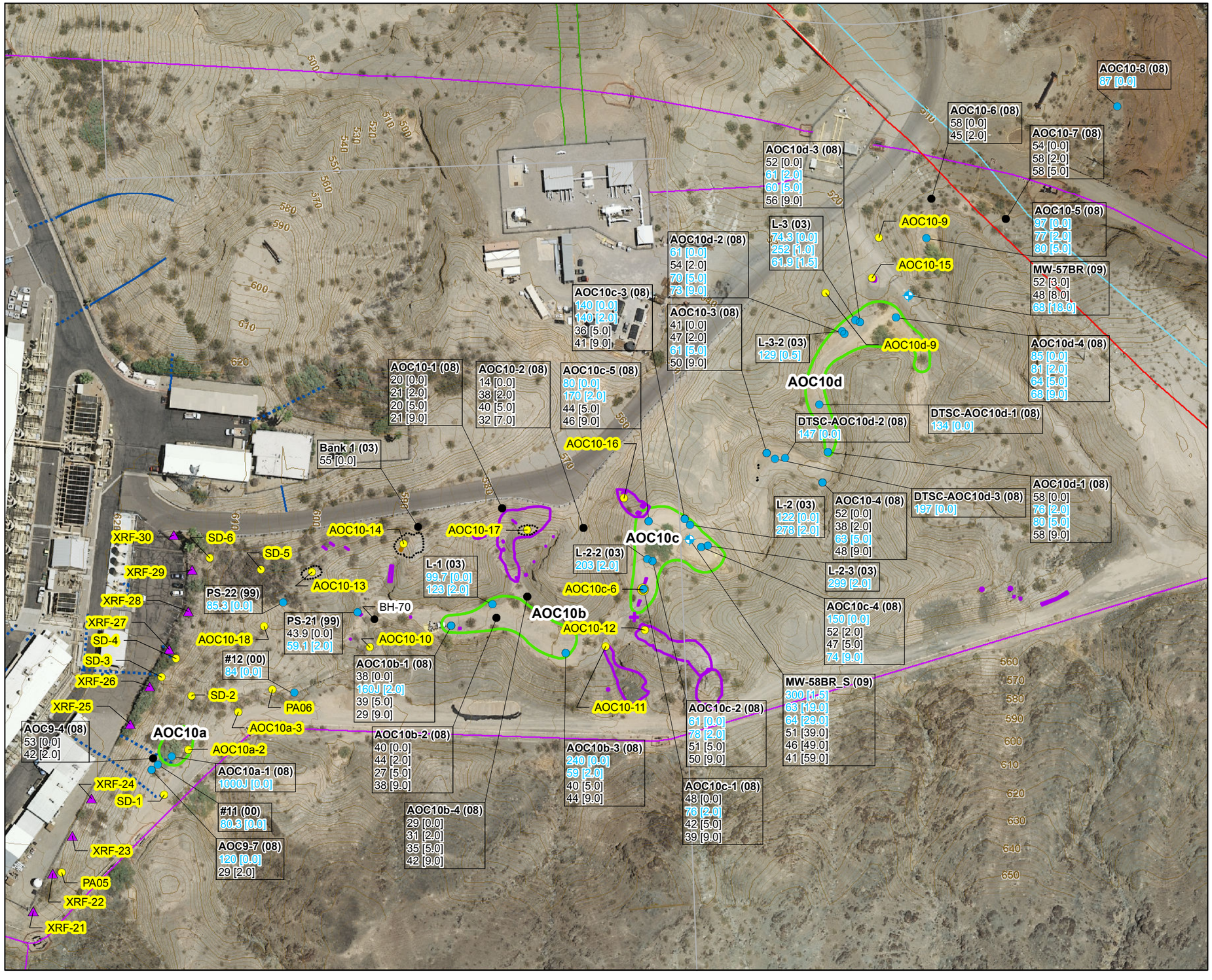
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (1.37 mg/kg) are shown in BLUE.
5. Results greater than or equal to the Ecological Comparison Value (2.25 mg/kg) are shown in PURPLE.
6. Results greater than or equal to the California Department of Toxic Substances Control Residential Califonia Regional Screening Level (380 mg/kg) are shown in ORANGE.
7. J = Estimated Result.
8. * = Laboratory reporting limit exceeds screening levels.
9. Topographic contours shown are in 2 foot intervals.

0 — 200 Feet

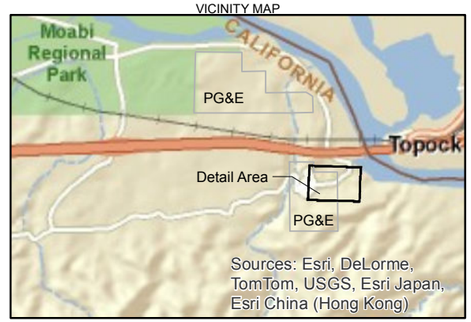
N

FIGURE C4-7
Molybdenum
Soil Sample Results and Proposed Phase 2 Sample Locations
AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station
Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- Monitoring Well
- Property Boundary
- 2 Foot Contour
- AOC 10 Boundary
- Debris Feature
- Stained Soil
- White Powder
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

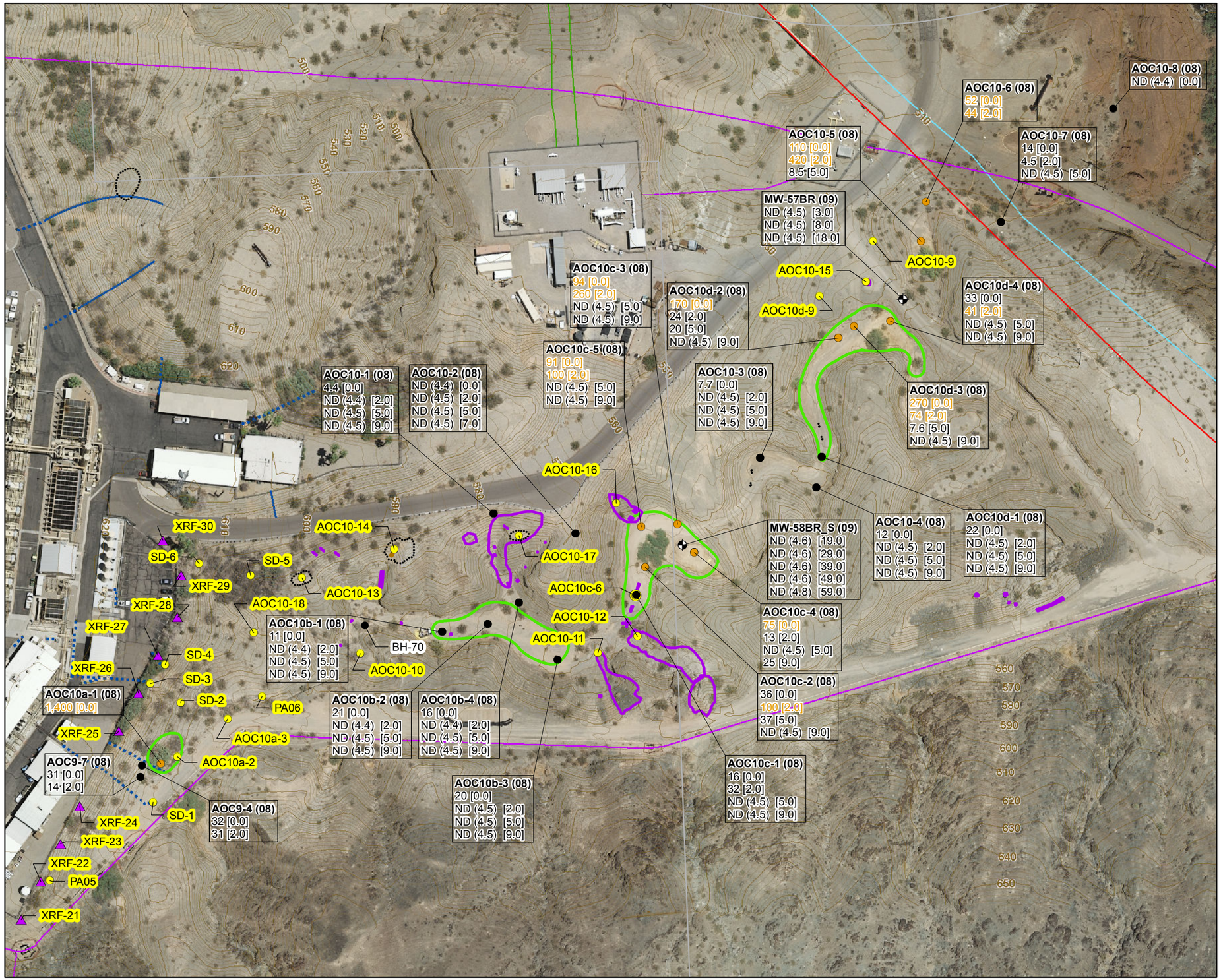
SSB-7 (08) — Sample Location, Installation Date
20 [1] — Sample Beginning Depth (ft bgs), Soil Concentration (mg/kg)

Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. mg/kg = milligrams per kilogram
3. ft bgs = feet below ground surface
4. Results greater than Background (58 mg/kg) are shown in BLUE.
5. Results greater than or equal to the California Department of Toxic Substances Control Residential California Human Health Screening Level (23,000 mg/kg) are shown in ORANGE.
6. J = Estimated Result.
7. Ecological Comparison Value (0.164 mg/kg) is below background value; therefore, the screening level is set at the background value.
8. Topographic contours shown are in 2 foot intervals.

0 200
Feet

N

FIGURE C4-8
Zinc
Soil Sample Results and Proposed Phase 2 Sample Locations
AOC 10 East Ravine
Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



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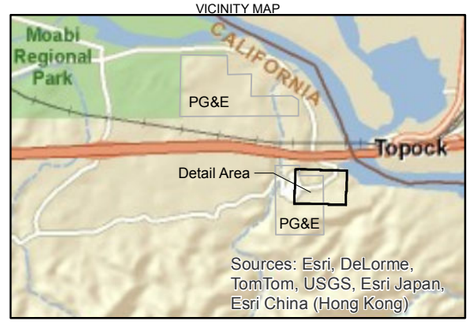


LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- Monitoring Well
- Property Boundary
- 2 Foot Contour
- AOC 10 Boundary
- Debris Feature
- Stained Soil
- White Powder
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location
20 [1] — Installation Date
Sample Beginning Depth (ft)
Soil Concentration (µg/kg)

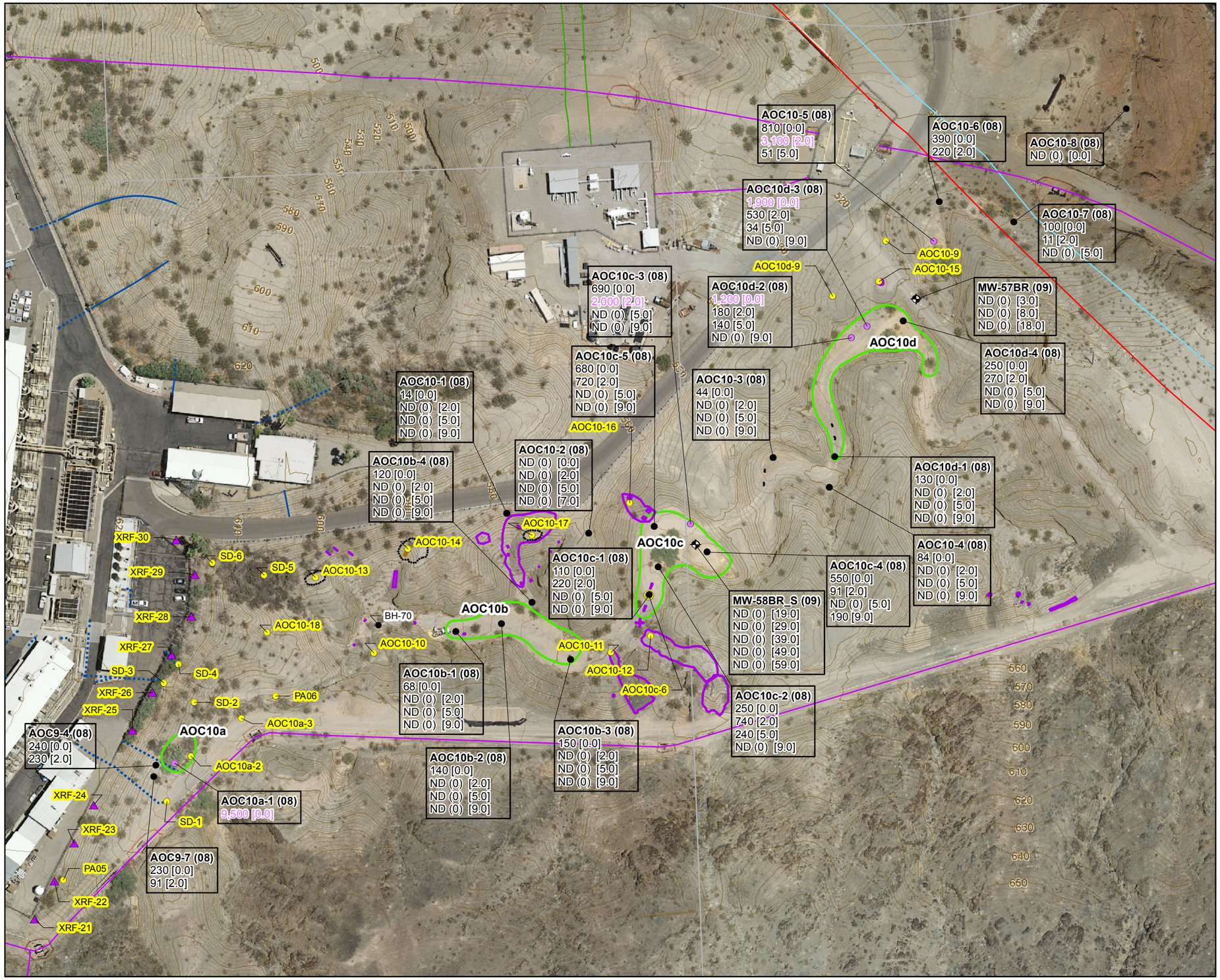
Notes:
1. ND = Not Detected (Reporting Limit in parentheses)
2. µg/kg = micrograms per kilogram
3. ft bgs = feet below ground surface
4. Results greater than or equal to California Department of Toxic Substances Control Residential California Human Health Screening Level (38 mg/kg) are shown in ORANGE.
5. J = Estimated Result.
6. No background level established.
7. Topographic contours shown are in 2 foot intervals.

0 100 200
Feet

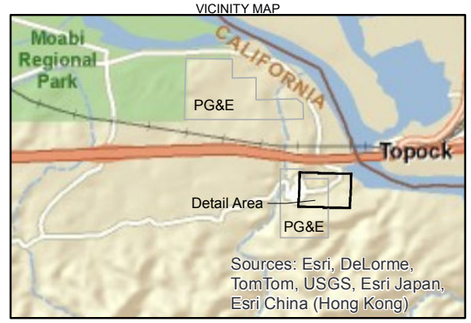
N

FIGURE C4-9
Benzo(a)Pyrene Equivalent Soil Sample Results and Proposed Phase 2 Sample Locations AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California



VICINITY MAP



LEGEND

- Proposed Phase 2 Sample Location
- Proposed XRF Screening Location
- Soil Boring
- Monitoring Well
- Property Boundary
- 2 Foot Contour
- AOC 10 Boundary
- Debris Feature
- Stained Soil
- White Powder
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline

SSB-7 (08) — Sample Location / Installation Date
20 [1] CR6 — Analyte Abbreviation / Sample Beginning Depth (ft bgs) / Soil Concentration (µg/kg)

Notes:
1. PAHHigh = PAH High Molecular Weight
2. ND = Not Detected (Reporting Limit in parentheses)
3. µg/kg = micrograms per kilogram
4. ft bgs = feet below ground surface
5. Results greater than or equal to the Ecological Comparison Value(1,160 µg/kg) are shown in PURPLE.
6. J = Estimated Result.
7. Topographic contours shown are in 2 foot intervals.

0 200
Feet

N

FIGURE C4-10
Benzo(A)Pyrene High Molecular Weight Soil Sample Results and Proposed Phase 2 Sample Locations AOC 10 - East Ravine

Soil Investigation Part A Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California

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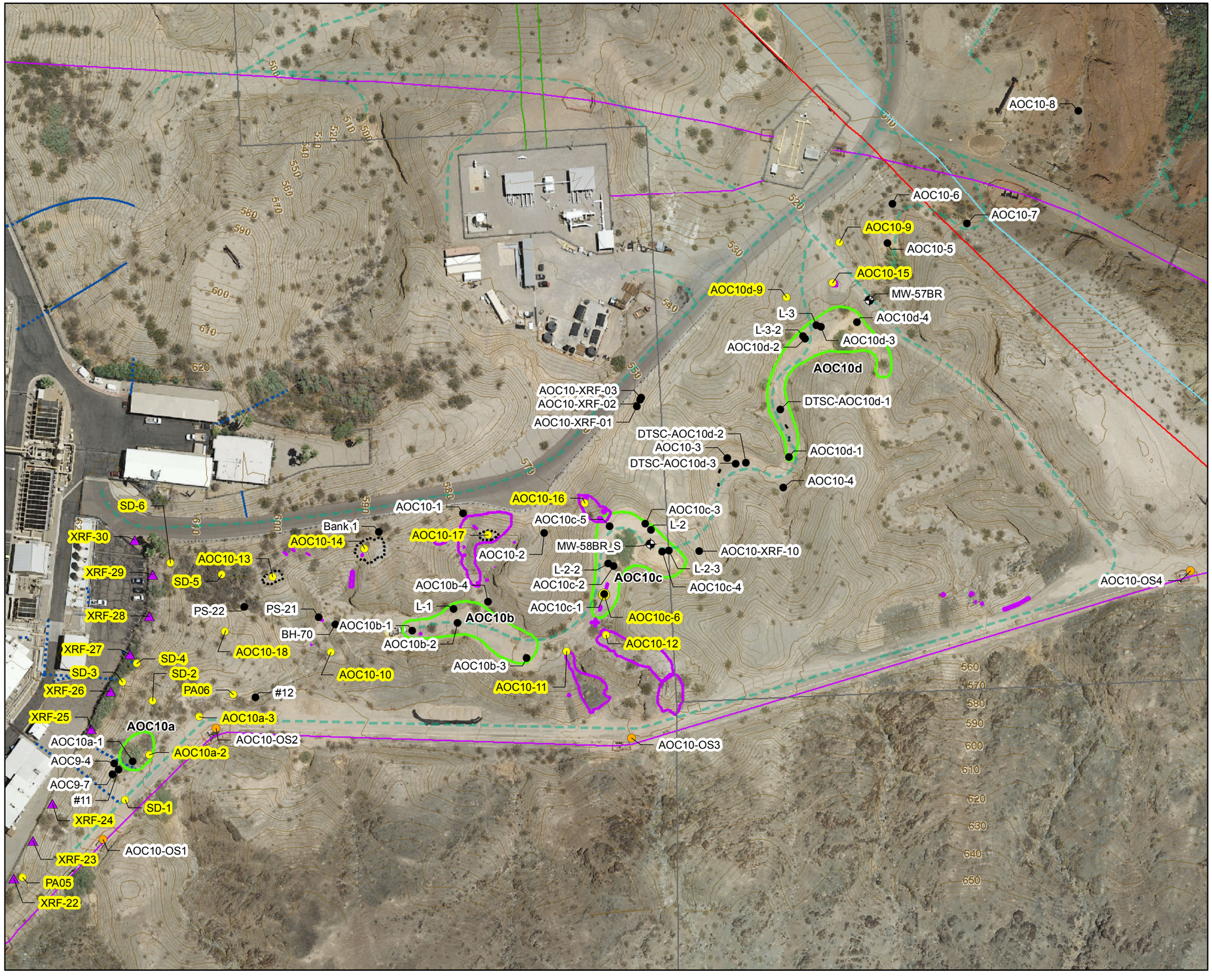
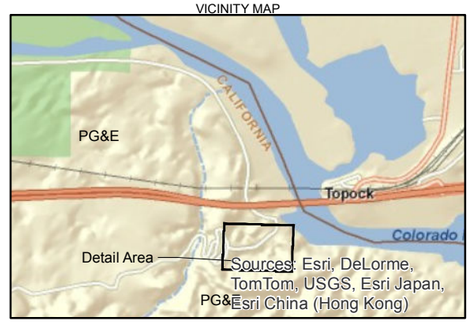


VICINITY MAP



LEGEND

- Soil Boring
- Monitoring Well
- Proposed Phase 2 Sampling Location
- Proposed XRF Screening Location
- Existing Opportunistic Soil Sample Location
- Access Routes
- Property Boundary
- AOC 10 Boundary
- Debris Features
- White Powder
- Mojave Pipeline
- PG&E Pipeline
- SoCal Gas Pipeline
- Transwestern Pipeline
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground

Note:
1. Topographic contours shown are at 2 foot intervals

N

0 50 100 200
Feet

FIGURE C4-11
Proposed Phase 2 Soil Sample Locations AOC 10 - East Ravine
Soil Investigation Part A
Phase 1 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station Needles, California