

Topock Soil RFI/RI – Plan to Address Data Gaps Identified During Work Plan Implementation (DGWP-3)

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PG&E is implementing the *Soil Resources Conservation and Recovery Act (RCRA) Facilities Investigation (RFI)/Remedial Investigation (RI) Work Plan* (January 2013) associated with the Topock Compressor Station (TCS) in Needles, California (Work Plan). Field data are collected to resolve the project Data Quality Objectives (DQOs), in support of future decisions about potential cleanup or management of contaminated soil. As defined in the Work Plan, PG&E is coordinating with DTSC and DOI (agencies) to review data collected during the field implementation of the Work Plan to evaluate potential data gaps. As data gap(s) are identified, the agencies will direct PG&E to conduct additional tasks in the field to satisfy the data gaps.

Based on evaluation of data collected to date, the agencies directed PG&E to prepare a plan to describe additional data collection activities to fill identified data gaps. In accordance with the *PG&E Topock Compressor Station Soil Investigation Project Final Environmental Impact Report* (Soil Investigation EIR) (DTSC, 2015), this plan is being provided to Tribes and stakeholders for review and comment.

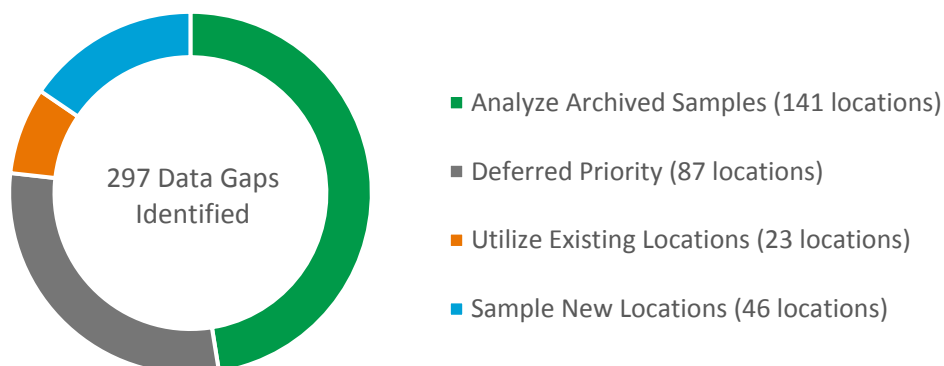
Overview

Soil investigation field work was conducted over the course of 5 months (November 2015 through March 2016) in accordance with the requirements of the Work Plan and subsequent Data Gap Work Plans (DGWP) 1 and 2 (CH2M, 2016a and 2016b). As a part of this work, investigation activities were conducted at 33 separate units. These activities initially included non-invasive surveys using surface geophysics and an x-ray fluorescence (XRF) analyzer to focus the collection of soil samples and installation of borings, potholes/trenches to evaluate subsurface conditions.

In accordance with the work plans, soil samples have been collected for laboratory analysis at approximately 319 locations inside and outside the compressor station. Twenty-seven of these sampled locations were contingency locations not included in the Work Plan, but identified in DGWP-1 and -2 as a result of initial data gap evaluation. This initial evaluation included review of field survey results and some validated laboratory analytical results obtained while field work was in progress. The Soil Investigation EIR considered a contingency of 25 percent, or up to 73 additional sample locations that might be required as a result of data gap evaluation. With the 27 additional locations included in DGWP-1 and -2, up to 46 additional contingency locations could be utilized to address other data gaps.

Once sample collection associated with the Work Plan and DGWP-1 and -2 was completed, the entirety of the validated laboratory analytical results were evaluated in accordance with the data quality objectives (DQO) defined in the Work Plan for each investigation area to determine if data gaps remained. As a result, approximately 297 remaining data gaps were identified requiring the collection of

additional data at both existing and new locations both inside and outside the TCS. In response to historic Tribal input regarding the sensitivity of the project area PG&E and the lead regulatory agencies conducted a detailed prioritization of the remaining data gaps with the goal of addressing as many as possible within the contingency threshold evaluated in the EIR. As a result of this prioritization, 87 of the 297 data gaps were classified as a lower priority when factors like existing data density and level of exceedance were considered and are not included in this work plan. In addition, through review of sample archives dating back to those collected as part of the soil investigation in 2008, previously collected samples from 141 locations will be analyzed to address data gaps without the collection of additional samples. Attachment 1 presents the list of archived samples that will be analyzed for specific organic compounds and includes the rationale for analysis as well as the analyte list. Of the remaining 69 data gaps, 23 will be addressed by collecting deeper samples at existing sample locations (the previously installed borehole will be utilized for this sample collection) and 46 will be addressed by collecting samples at new contingency locations. The following graphic summarizes this information:



This plan provides information for analysis of archived samples and the additional samples that will be collected from existing and new locations. In addition, two debris samples to be collected from the ground surface and analyzed at the laboratory are included in this plan. The collection of new samples will be conducted at the following investigation areas:

- AOC 1 – Area Around Former Percolation Bed (7 new locations)
- AOC 4 – Debris Ravine (4 existing locations, 12 new locations, and 1 debris sample)
- AOC 5 – Cooling Tower A (3 existing locations)
- AOC 6 – Cooling Tower B (2 existing locations)
- AOC 9 – Southeast Fence Line (2 new locations)
- AOC 10 – East Ravine (4 new locations)
- AOC 13 – Unpaved Areas within Compressor Station (2 new locations)
- AOC 14 – Railroad Debris Site (2 new locations)
- AOC 15 – Auxiliary Jacket Cooling Water Pump (1 existing location)
- AOC 16 – Sandblast Shelter (1 new location and 1 debris sample)
- AOC 19 – Former Cooling Liquid Mixing Area and Former Hotwell (2 existing locations and 4 new locations)
- AOC 21 – Round Depression near Sludge Drying Beds (1 existing location)
- AOC 22 – Unidentified Three-sided Structure (1 existing location and 1 new location)

- AOC 23 – Former Water Conditioning Building (1 new location)
- AOC 27 – MW-24 Bench (1 new location)
- Perimeter Area (7 existing locations)
- SWMU 1 – Former Percolation Bed (4 new locations)
- SWMU 5 – Sludge Drying Beds (1 existing location)
- SWMU 6 – Chromate Reduction Tank (1 existing location)
- Storm Drains (5 new locations)

Planned sample collection at each of these investigation areas is detailed in the attached tables, which list sample depths, rationale, analyses to be run and the anticipated collection method for each location. These new locations are in known investigation areas.

The general methods and procedures that are included in the Work Plan will continue to apply to these new activities. Work Plan figures have been annotated and attached to this plan to show the location of the new activities. Anticipated collection methods listed on these tables are estimated based on experience and knowledge at the site; actual collection method will be chosen in the field based on field conditions and site access restrictions at the time of work. New activities identified in this plan will be implemented following agency approval, as part of the current field work effort.

In addition to the investigation areas where additional work is planned, a subsection below addresses the status of investigation and data evaluation for Undesignated Area (UA) 1. No additional data collection is planned for UA 1 at this time.

AOC 1 – Area Around Former Percolation Bed

Based on laboratory results for data that has been collected and reviewed at AOC 1 (as defined in the Work Plan and DGWP-2), seven new sample locations are included in this plan to address data gaps (Figures 1 and 2). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 1 – List of New Soil Sampling Locations

New Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC1-5	0, 2, 5, 9, and 14 (as feasible)	Assess nature and extent of dioxins and furans north of railroad underpass	Title 22 metals, Hexavalent chromium, Dioxins and furans	Drill
AOC1-6	0, 2, 5, 9, and 14 (as feasible)	Assess nature and extent of dioxins and furans between north of railroad underpass and the mouth of Bat Cave Wash	Title 22 metals, Hexavalent chromium, Dioxins and furans	Drill
AOC1-7	0, 2, 5, 9, and 14 (as feasible)	Assess nature and extent of dioxins and furans near SSB-9	Title 22 metals, Hexavalent chromium, PCBs, Dioxins and furans	Drill
AOC1-8	0 and 2 (as feasible)	Assess dioxins and furans downstream of sample location AOC1-T5D in depositional area between the 1-40 and railroad under passes	Title 22 metals, Hexavalent chromium, Dioxins and furans	Hand tools

AOC1-T1g	0, 2, 5, and 9 (as feasible)	Trench north of SWMU 1 to define lateral extent of dioxins and furans	Title 22 metals, Hexavalent chromium, Dioxins and furans	Backhoe
AOC1-T7	0, 2, 5, and 9 (as feasible)	Trench between previous sample transects T3 and T4 to define lateral extent of dioxins and furans	Title 22 metals, Hexavalent chromium, Dioxins and furans	Backhoe
AOC1-T8	0, 2, 5, and 9 (as feasible)	Trench between previous sample transects T4 and T5 to define lateral extent of dioxins and furans	Title 22 metals, Hexavalent chromium, Dioxins and furans	Backhoe

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

TPH – Total petroleum hydrocarbon

AOC 4 – Debris Ravine

Based on laboratory results for data that has been collected and reviewed at AOC 4 (as defined in the Work Plan), 12 new sample locations, collecting deeper samples at four existing locations, and one debris sample are included in this plan to address data gaps (Figure 3). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 4 – List of Existing and New Soil Sampling Locations

Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC4-23	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of organic compounds	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hydrovac
AOC4-24	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of organic compounds	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hydrovac
AOC4-26	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of organic compounds	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hydrovac
AOC4-27	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of organic compounds	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hydrovac
AOC4-33	0 and 2 (as feasible)	Assess organic compounds on west side of ravine	PAHs, PCBs, Dioxins and furans	Hand tools
AOC4-34	0 and 2 (as feasible)	Assess organic compounds on west side of ravine	PAHs, PCBs, Dioxins and furans	Hand tools

AOC4-35	0 and 2 (also 5) (as feasible)	Assess organic compounds on west side of ravine	PAHs, PCBs, Dioxins and furans	Hand tools
AOC4-36	0, 2, 5, and 9 (as feasible)	Define nature and extent of metals and organic compounds, north of the plant road that accesses the water tanks and southeast of the water tanks	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hand tools
AOC4-37	0, 2, 5, and 9 (as feasible)	Define nature and extent of metals and organic compounds, north of the plant road that accesses the water tanks and southeast of the water tanks	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hand tools
AOC4-38	0, 2, 5, and 9 (as feasible)	Define nature and extent of metals and organic compounds, north of the plant road that accesses the water tanks and southeast of the water tanks	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hand tools
AOC4-39	0, 2, 5, and 9 (as feasible)	Define nature and extent of metals and organic compounds, north of the plant road that accesses the water tanks and southeast of the water tanks	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hand tools
AOC4-40	0, 2, 5, and 9 (as feasible)	Define nature and extent of metals and organic compounds, north of the plant road that accesses the water tanks and southeast of the water tanks	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hand tools
AOC4-41	0, 2, 5, and 9 (as feasible)	Define nature and extent of metals and organic compounds, north of the plant road that accesses the water tanks and southeast of the water tanks	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hand tools
AOC4-42	0, 2, 5, and 9 (as feasible)	Define vertical extent of detects in time critical removal action confirmation samples	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hand tools
AOC4-K05	2 and 5 (as feasible)	Define vertical extent of detects in time critical removal action confirmation samples	Title 22 metals, Hexavalent chromium, PCBs, Dioxins and furans	Hand tools/Hydrovac
AOC4-M06	2 and 5 (as feasible)	Define vertical extent of detects in time critical removal action confirmation samples	Dioxins and furans	Hand tools/Hydrovac
AOC4-tar	Debris sample	Assess the area of black, tarry debris that was identified to the northeast of the water tanks during the July 26, 2016 site walk.	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans, and SVOCs	Hand tools

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

SVOCs – Semivolatile organic compounds

TPH – Total petroleum hydrocarbon

AOC 5 – Cooling Tower A

Based on laboratory results for data that has been collected and reviewed at AOC 5 (as defined in the Work Plan), collecting deeper samples at three existing sample locations are included in this plan to address data gaps (Figure 4). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 5 – List of Existing Soil Sampling Locations

Existing Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC5-2 (OS2)	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of hexavalent chromium	Hexavalent chromium	Hydrovac
AOC5-4 (OS4)	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of hexavalent chromium	Hexavalent chromium	Hydrovac
SWMU11-3	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of hexavalent chromium	Hexavalent chromium	Hydrovac

Notes:

bgs – below ground surface

ft – feet

AOC 6 – Cooling Tower B

Based on laboratory results for data that has been collected and reviewed at AOC 6 (as defined in the Work Plan), collecting deeper samples at two existing sample locations are included in this plan to address data gaps (Figure 5). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 6 – List of Existing Soil Sampling Locations

Existing Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC6-5	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of hexavalent chromium and molybdenum	Title 22 metals, Hexavalent chromium	Hydrovac
AOC6-7	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of hexavalent chromium and molybdenum and nature and extent of PCBs	Title 22 metals, Hexavalent chromium, PCBs	Hydrovac

Notes:

bgs – below ground surface

ft – feet

PCBs – Polychlorinated biphenyls

AOC 9 – Southeast Fence Line

Based on laboratory results for data that has been collected and reviewed at AOC 9 (as defined in the Work Plan), two new sample locations are included in this plan to address data gaps (Figure 6). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 9 – List of New Soil Sampling Locations

New Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC9-21	0, 2 and, 5 (as feasible)	Define lateral and vertical extents of PAHs and PCBs at AOC9-15 to the southwest, up the access road	Title 22 metals, PAHs, PCBs, Dioxins and furans	Drill
AOC9-22	0, 2, and 5 (as feasible)	Define lateral and vertical extents of PAHs and PCBs at AOC9-15 to the southwest in a depositional basin	Title 22 metals, PAHs, PCBs, Dioxins and furans	Hand tools

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

AOC 10 – East Ravine

Based on laboratory results for data that has been collected and reviewed at AOC 10 (as defined in the Work Plan, DGWP-1 and DGWP-2), four new sample locations are included in this plan to address data gaps (Figure 7). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 10 – List of New Soil Sampling Locations

New Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC10a-4	0, 2, 5 and 9 (as feasible)	Define lateral extent of metals along surface water flow pathway from AOC10a-3	Title 22 metals	Drill
AOC10-25	0, 2, 5 and 9 (as feasible)	Assess depositional area north of existing sample location AOC10-15	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Drill
AOC10-26	0, 2, and 5 (as feasible)	Assess depositional areas within AOC 10 for dioxins and furans	Dioxins and furans	Drill
AOC10-27	0, 2, and 5 (as feasible)	Assess depositional areas within AOC 10 for dioxins and furans	Dioxins and furans	Drill

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

TPH – Total petroleum hydrocarbon

AOC 13 – Unpaved Areas within Compressor Station

Based on laboratory results for data that has been collected and reviewed at AOC 13 (as defined in the Work Plan), two new sample locations are included in this plan to address data gaps (Figure 8). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 13 – List of New Soil Sampling Locations

New Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC13-33	0 and 2 (as feasible)	Nature and extent of PCBs and dioxins and furans downslope of AOC13-30. The precise location on the slope is dependent on location information for the old storm drain line originating at the north cooling tower and observed debris.	Title 22 metals, hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hand tools
AOC13-34	0, 2, and 5 (as feasible)	Assess nature and extent of mercury at AOC19-5	Title 22 metals	Hydrovac

Notes:

bgs – below ground surface

ft – feet

PCBs – Polychlorinated biphenyls

AOC 14 – Railroad Debris Site

Based on laboratory results for data that has been collected and reviewed at AOC 14 (as defined in the Work Plan and DGWP-1), two new sample locations are included in this plan to address data gaps (Figure 9). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 14 – List of New Soil Sampling Locations

New Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC14-20	0, 2, 5 and 9 (as feasible)	Assess above and below the waste debris layer in the I-40 road cut	Title 22 metals, Hexavalent chromium, Dioxins and furans	Backhoe
AOC14-21	0, 2, 5 and 9 (as feasible)	Assess above and below the waste debris layer in the I-40 road cut	Title 22 metals, Hexavalent chromium, Dioxins and furans	Backhoe

Notes:

bgs – below ground surface

ft – feet

AOC 15 – Auxiliary Jacket Cooling Water Pumps

Based on laboratory results for data that has been collected and reviewed at AOC 15 (as defined in the Work Plan), deeper sample collection at one existing location is included in this plan to address data gaps (Figure 10). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 15 – List of Existing Soil Sampling Locations

Existing Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC15-1 (OS1)	5, 9, and 14 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of hexavalent chromium and molybdenum	Title 22 metals, Hexavalent chromium	Hydrovac

Notes:

bgs – below ground surface

ft – feet

AOC 16 – Sandblast Shelter

Based on laboratory results for data that has been collected and reviewed at AOC 16 (as defined in the Work Plan), one new sample location and a debris sample of the grit are included in this plan to address data gaps (Figure 11). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 16 – List of New Soil Sampling Locations

New Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC16-5	0 and 2 (as feasible)	Assess nature and extent west of AOC 16-2, located in debris on slope west of AOC	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Backhoe
AOC16-grit	NA – debris sample	Assess grit located near the AOC	Title 22 metals, PAHs, PCBs,	Hand tools

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

AOC 19 – Former Cooling Liquid Mixing Area and Former Hotwell

Based on laboratory results for data that has been collected and reviewed at AOC 19 (as defined in the Work Plan and DGWP-1), four new sample locations and collecting deeper samples at two existing locations are included in this plan to address data gaps (Figure 12). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 19 – List of Existing and New Soil Sampling Locations

Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC19-10 (OS10)	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of metals	Title 22 metals, Hexavalent chromium	Hydrovac
AOC19-11	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of metals	Title 22 metals, Hexavalent chromium	Hydrovac
AOC19-12	0, 2, and 5 (as feasible)	Assess lateral extent of metals and organic compounds adjacent to north and south coolers in gravel area	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hydrovac
AOC19-13	0, 2, and 5 (as feasible)	Assess lateral extent of metals and organic compounds adjacent to north and south coolers in gravel area	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hydrovac
AOC19-14	0, 2, and 5 (as feasible)	Assess lateral extent of metals and organic compounds adjacent to north and south coolers in gravel area	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hydrovac
AOC19-15	0, 2, and 5 (as feasible)	Assess lateral extent of metals and organic compounds adjacent to north and south coolers in gravel area	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hydrovac

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

AOC 21 – Round Depression near Sludge Drying Beds

Based on laboratory results for data that has been collected and reviewed at AOC 21 (as defined in the Work Plan), collecting deeper samples at one existing location is included in this plan to address data gaps (Figure 11). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 21 – List of Existing Soil Sampling Locations

Existing Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC21-1	9 and 14 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of hexavalent chromium	Hexavalent chromium	Hydrovac

Notes:

bgs – below ground surface

ft – feet

AOC 22 – Unidentified Three-sided Structure

Based on laboratory results for data that has been collected and reviewed at AOC 22 (as defined in the Work Plan), one new sample location and collecting deeper samples at one existing location are included in this plan to address data gaps (Figure 13). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 22 – List of Existing and New Soil Sampling Locations

Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC22-2	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of hexavalent chromium and lead	Title 22 metals, Hexavalent chromium, PAHs, PCBs	Hydrovac
AOC22-3	0, 2, 5, and 9 (as feasible)	Assess lateral extent of metals and organic compounds north of AOC22-2	Title 22 metals, Hexavalent chromium, PAHs, PCBs, Dioxins and furans	Hydrovac

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

AOC 23 – Former Water Conditioning Building

Based on laboratory results for data that has been collected and reviewed at AOC 23 (as defined in the Work Plan), one new sample location is included in this plan to address data gaps (Figure 14). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 23 – List of New Soil Sampling Locations

New Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC23-4	0 and 2 (as feasible)	Assess lateral extent of metals and organic compounds southeast of AOC23-3	Title 22 metals, Hexavalent chromium, PAHs, PCBs	Hydrovac

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

AOC 27 – MW-24 Bench

Based on laboratory results for data that has been collected and reviewed at AOC 27 (as defined in the Work Plan and DGWP-1), one new sample location is included in this plan to address data gaps (Figure 15). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

AOC 27 – List of New Soil Sampling Location

New Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
AOC27-51	0, 2, 5 and 9 (as feasible)	Assess the extent of burned debris, trench going into Bat Cave Wash, west of AOC27-6, -7 and -8	Title 22 metals, Hexavalent chromium, Dioxins and furans, PAHs, TPH, PCBs	Backhoe

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbon

PCBs – Polychlorinated biphenyls

TPH – Total petroleum hydrocarbons

Perimeter Area

Based on laboratory results for data that has been collected and reviewed at Perimeter Area (as defined in the Work Plan), collecting deeper samples at seven existing locations are included in this plan to address data gaps (Figures 16 and 17). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

Perimeter Area – List of Existing Soil Sampling Locations

Existing Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
PA-10	2 (and 5 to hold) (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of PAHs and PCBs	PAHs, PCBs	Hydrovac
PA-11	2 (and 5 to hold) (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of metals, PAHs and PCBs	Title 22 metals, PAHs, PCBs	Hydrovac
PA-12	2 (and 5 to hold) (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of metals, PAHs and PCBs	Title 22 metals, PAHs, PCBs	Hydrovac
PA-18	2 (and 5 to hold) (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of PAHs and PCBs	PAHs, PCBs	Hydrovac
PA-19	2 (and 5 to hold) (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of PAHs and PCBs	PAHs, PCBs	Hydrovac
PA-20	2 (and 5 to hold) (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of PAHs and PCBs	PAHs, PCBs	Hydrovac
PA-21	2 (and 5 to hold) (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of PAHs and PCBs	PAHs, PCBs	Hydrovac

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

SWMU 1 – Former Percolation Bed

Based on laboratory results for data that has been collected and reviewed at SWMU 1 (as defined in the Work Plan), four new sample locations are included in this plan to address data gaps (Figure 1). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

SWMU 1 – List of New Soil Sampling Locations

New Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
SWMU1-26	0, 2, 5, 9, 14, and 19 (as feasible)	Assess nature and extent of dioxins and furans in Bat Cave Wash west of SWMU1-25	Dioxins and furans	Drill
SWMU1-27	0, 2, 5, 9, 14, and 19 (as feasible)	Assess nature and extent of dioxins and furans in Bat Cave Wash south of SWMU1-25	Dioxins and furans	Drill
SWMU1-28	0 and 2 (as feasible)	Assess nature and extent of contamination observed at SWMU1-25, upslope, directly above a break in the old pipeline	Title 22 metals, Hexavalent chromium, Dioxins and furans	Hand tools
SWMU1-29	0, 2, 5, and 9 (as feasible)	Trench west of SWMU1-19 to assess nature and extent of dioxins and furans in Bat Cave Wash	Title 22 metals, Hexavalent chromium, Dioxins and furans	Backhoe

Notes:

bgs – below ground surface

ft – feet

SWMU 5 – Sludge Drying Beds

Based on laboratory results for data that has been collected and reviewed at SWMU 5 (as defined in the Work Plan), collecting deeper samples at one existing location is included in this plan to address data gaps (Figure 11). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

SWMU 5 –List of Existing Soil Sampling Locations

Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
SWMU5-2	5 and 9 (as feasible)	Return to existing sample location to collect deeper samples to define vertical extent of PAHs and PCBs	PAHs, PCBs	Hydrovac

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

SWMU 6 – Chromate Reduction Tank

Based on laboratory results for data that has been collected and reviewed at SWMU 6 (as defined in the Work Plan), collecting deeper samples at one existing location is included in this plan to address data gaps (Figure 11). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table.

SWMU 6 – List of Existing Soil Sampling Locations

Existing Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
SWMU6-1	9 (as feasible)	Collect deeper samples to assess native material beneath former chromate reduction tank as defined in the Work Plan	PAHs, PCBs	Drill

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

Storm Drains

Based on the review of video from within the storm drains and laboratory results for soil samples collected at storm drains outfalls and from within catch basins (as defined in the Work Plan and DGWP-1), five new sample locations are included in this plan to address data gaps (Figures 16 and 17). The sample locations, depths, description/rationale, analytes, and anticipated collection methods are presented in the following table. In most cases, the specific sampling location and depths will be established in the field based on location of specific features observed in video from within the storm drain lines. This will be accomplished by installing the video to the given feature and using a locator from the ground surface to identify the position and depth of the camera.

Storm Drains– List of New Soil Sampling Locations

New Location ID	Depths (ft bgs)	Description/Rationale	Analytes	Anticipated Collection Method
SD-27	Immediately beneath the line (and 1-2 beneath the first interval to hold) (as feasible)	Assess Storm Drain Line 8 (old), upslope of potential former out fall south of current line	Title 22 Metals, hexavalent chromium, PAHs, PCBs, TPH	Hydrovac/hand tools
SD-28	Immediately beneath the line (and 1-2 beneath the first interval to hold) (as feasible)	Assess Storm Drain Line 11, where the line transitions from old red clay to white PVC	Title 22 Metals, hexavalent chromium, PAHs, PCBs, TPH	Hydrovac
SD-29	Immediately beneath the line (and 2 beneath the line to hold) (as feasible)	Assess area near the old red clay pipe that extends south from CB-30. The boring would also be located by the industrial floor drain line	Title 22 Metals, hexavalent chromium, PAHs, PCBs, TPH	Hydrovac

SD-30	To be determined after field survey	Pothole near TD-3 to try and complete the video survey of a long stretch of storm drain line, which was not located in the initial survey	Title 22 Metals, hexavalent chromium, PAHs, PCBs, TPH	Hydrovac
SD-31	Immediately beneath the line (and 1-2 beneath the first interval to hold) (as feasible)	Assess potential historic storm drain lines on west side of north cooling tower	Title 22 Metals, hexavalent chromium, PAHs, PCBs, TPH	Hydrovac

Notes:

bgs – below ground surface

ft – feet

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

TPH – Total petroleum hydrocarbon

UA 1 – Potential Pipe Disposal Area

Historical accounts indicate that pipe material was buried in the vicinity of UA 1. Surface geophysical surveys were conducted at UA 1 as part of the Part A, Phase 1 soil investigation in 2008 and most recently in November 2015 in accordance with the Work Plan to identify potential locations where pipes may have been buried. The 2015 survey was performed in areas not included in the 2008 survey area. The results of these surveys indicated that geophysical anomalies are present in the investigation area that could be associated with buried ferromagnetic pipes or debris. However, the magnitude of the anomalies are lower than would be expected from a grouping of buried pipes and might suggest that the pipe material is located at depths beyond the range of the geophysical survey. Based on these interpretations and given the sensitivity of the project area in general, and the acute sensitivity of the UA 1 investigation area, DOI, BLM and USFWS do not believe trenching to characterize UA-1 is appropriate at this time. Documentation of the results of the geophysical surveys will be included in the RFI/RI Report for the Topock Soil Investigation.

References

- California Department of Toxic Substances Control (DTSC). 2015. *Final EIR, Pacific Gas and Electric Company's Topock Compressor Station, Needles, California*. EPA ID No. CAT080011729. August.
- CH2M. 2016a. *Topock Soil RFI/RI – Plan to Address Data Gaps Identified During Work Plan Implementation (DG-WP-01)*. January 13.
- _____. 2016b. *Topock Soil RFI/RI – Plan to Address Data Gaps Identified During Work Plan Implementation (DG-WP-02)*. February 12.

Attachment 1

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
AOC 1	AOC1-2	0 and 2	Assess nature and extent of dioxins and furans in Bat Cave Wash	Dioxins and furans
AOC 1	AOC1-3	0 and 2	Assess nature and extent of dioxins and furans in Bat Cave Wash	Dioxins and furans
AOC 1	AOC1-BCW6	0 and 2	Assess nature and extent of dioxins and furans in fine-grained material at the mouth of Bat Cave Wash	Dioxins and furans
AOC 1	AOC1-BCW8	0 and 2	Assess nature and extent of organic compounds in Bat Cave Wash	Dioxins and furans
AOC 1	AOC1-BCW9	0 and 2	Assess nature and extent of organic compounds in Bat Cave Wash	PCBs, Dioxins and furans
AOC 1	AOC1-BCW12	0 and 2	Assess nature and extent of organic compounds in Bat Cave Wash	PCBs, Dioxins and furans
AOC 1	AOC1-BCW14	0 and 2	Assess nature and extent of organic compounds in Bat Cave Wash	Dioxins and furans
AOC 1	AOC1-BCW17	0 and 2	Assess nature and extent of organic compounds in Bat Cave Wash	Dioxins and furans
AOC 1	AOC1-BCW22 or -23	0 and 2	Assess nature and extent of organic compounds in Bat Cave Wash	Dioxins and furans
AOC 1	AOC1-BCW24	0 and 2	Assess nature and extent of organic compounds in Bat Cave Wash	PAHs, Dioxins and furans
AOC 1	AOC1-BCW-26	0 and 2	Assess nature and extent of organic compounds in Bat Cave Wash	PAHs, Dioxins and furans
AOC 1	AOC1-BCW30	0 and 2	Assess nature and extent of organic compounds in Bat Cave Wash	Dioxins and furans
AOC 1	AOC1-T1e	0, 2, 5, and 9	Assess nature and extent of organic compounds in Bat Cave Wash	Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
AOC 1	AOC1-T1f	0, 2, 5, and 9	Assess nature and extent of organic compounds in Bat Cave Wash	Dioxins and furans
AOC 4	AOC4-30	0	Assess nature and extent of PCBs	PCBs
AOC 4	AOC4-32	0	Assess nature and extent of PCBs	PCBs
AOC 5	AOC5-3 (OS3)	0 and 2	Assess nature and extent of organic compounds	PAHs, PCBs, Dioxins and furans
AOC 5	AOC5-4	0 and 2	Assess nature and extent of organic compounds	PAHs, PCBs, Dioxins and furans
AOC 5	AOC5-5	0 and 2	Assess nature and extent of organic compounds	PAHs, PCBs, Dioxins and furans
AOC 5	SWMU11-3	0 and 2	Assess nature and extent of organic compounds	PAHs, PCBs, Dioxins and furans
AOC 6	AOC6-2	0 and 2	Assess nature and extent of organic compounds	PAHs, Dioxins and furans
AOC 6	AOC6-4	0	Assess nature and extent of organic compounds	PAHs, Dioxins and furans
AOC 6	AOC6-5	0 and 2	Assess nature and extent of organic compounds	PCBs
AOC 6	AOC6-7	0 and 2	Assess nature and extent of organic compounds	PAHs, Dioxins and furans
AOC 6	AOC6-8	0	Assess nature and extent of organic compounds	PAHs, Dioxins and furans
AOC 9	AOC9-15	0 and 2	Assess nature and extent of dioxins and furans	Dioxins and furans
AOC 9	AOC9-16	0, 2, and 5	Assess nature and extent of dioxins and furans	Dioxins and furans
AOC 9	AOC9-17	0, 2, and 5	Assess nature and extent of dioxins and furans	Dioxins and furans
AOC 9	AOC9-18	5	Assess nature and extent of PCBs and dioxins and furans	PCBs, Dioxins and furans
AOC 9	AOC9-19	0, 2, and 5	Assess nature and extent of dioxins and furans	Dioxins and furans
AOC 9	AOC9-20	0, 2, and 5	Assess nature and extent of dioxins and furans	Dioxins and furans
AOC 10	AOC10-10	0, 2, and 5	Assess nature and extent of PAHs, PCBs, and dioxins and furans	PAHs, PCBs, Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
AOC 10	AOC10-12	0, 2, and 5	Assess nature and extent of PAHs, PCBs, and dioxins and furans	PAHs, PCBs, Dioxins and furans
AOC 10	AOC10-18	0 and 2	Assess nature and extent of PAHs, PCBs, and dioxins and furans	PAHs, PCBs, Dioxins and furans
AOC 10	AOC10-20	0 and 2	Assess nature and extent of dioxins and furans exceedances in nearby samples	Dioxins and furans
AOC 10	AOC10-21	2	Assess nature and extent of dioxins and furans exceedances in nearby samples	Dioxins and furans
AOC 10	AOC10-22	0, 2, and 5	Assess nature and extent of PAHs, PCBs, and dioxins and furans	PAHs, PCBs, Dioxins and furans
AOC 10	AOC10-23	0 and 2	Assess nature and extent of PAHs, PCBs, and dioxins and furans	PAHs, PCBs, Dioxins and furans
AOC 10	AOC10a-3	0, 2, 5, and 9	Assess nature and extent of PAHs, PCBs, and dioxins and furans	PAHs, PCBs, Dioxins and furans
AOC 10	AOC10b-1	0, 2, and 5	Assess collection basins within AOC 10	Dioxins and furans
AOC 10	AOC10c-4	0, 2, and 5	Assess collection basins within AOC 10	Dioxins and furans
AOC 10	AOC10c-6	14	Assess nature and extent of PAHs, PCBs, and dioxins and furans	PAHs, PCBs, Dioxins and furans
AOC 10	AOC10d-9	0, 2, 5, and 9	Assess nature and extent of PAHs, PCBs, and dioxins and furans	PAHs, PCBs, Dioxins and furans
AOC 10	SD-02	0 and 2	Assess dioxins and furans in these samples, based elevated concentrations of other constituents	Dioxins and furans
AOC 10	ERPW-1	0 and 2	Assess dioxins and furans in these samples, based on dioxins and furans in East Ravine	Dioxins and furans
AOC 10	ERPW-3	0 and 2	Assess dioxins and furans in these samples, based on dioxins and furans in East Ravine	Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
AOC 10	ERPW-9	0 and 2	Assess dioxins and furans in these samples, based on dioxins and furans in East Ravine	Dioxins and furans
AOC 11	AOC11-1	0, 2, 5, and 9	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	AOC11-6	0, 2, 5, and 9	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	AOC11-7	0, 2, and 5	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	AOC11-8	0 and 2	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	AOC11-9	0 and 2	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	AOC11a-3	0, 2, and 5	Assess depositional areas within AOC 11	Dioxins and furans
AOC 11	AOC11c-4	0, 2, 5, 9, 14, and 19	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	AOC11d-1	0, 2, and 5	Assess depositional areas within AOC 11	Dioxins and furans
AOC 11	AOC11e-3	0, 2, 5, 9, and 14	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	AOC11e-4	0, 2, 5, 9, and 14	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	AOC11e-6	0	Assess dioxins and furans in these samples, based on PCB and PAH detects	PAHs, Dioxins and Furans
AOC 11	SD-08	0 and 2	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	SD-09	0, 2, and 5	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	SD-10	0 and 2	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
AOC 11	SD-11A	0, 2, and 5	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	SD-12	0	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	SD-13	0	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	SD-20	0	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	SD-23	0	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 11	SD-24	0	Assess dioxins and furans in these samples, based on PCB and PAH detects	Dioxins and furans
AOC 13	AOC13-4	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 13	AOC13-7	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 13	AOC13-9	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 13	AOC13-10	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 13	AOC13-11	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 13	AOC13-13	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 13	AOC13-15	0, 2, and 5	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
AOC 13	AOC13-17	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 13	AOC13-23	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 13	AOC13-30	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 15	AOC15-1 (OS1)	0 and 2	Assess spraying of oil in this unit for weed and/or dust control	PAHs, PCBs
AOC 18	AOC18-1	0	Dioxins and furans added since organic compounds are COCs for this unit	Dioxins and furans
AOC 18	AOC18-5	0	Dioxins and furans added since organic compounds are COCs for this unit	Dioxins and furans
AOC 18	AOC18-9	0	Dioxins and furans added since organic compounds are COCs for this unit	Dioxins and furans
AOC 18	AOC18-12	0	Dioxins and furans added since organic compounds are COCs for this unit	Dioxins and furans
AOC 19	AOC19-5	2	Assess organics where there have been higher detects of metals in this unit	PAHs, PCBs, Dioxins and furans
AOC 19	AOC19-6	0	Assess organics where there have been higher detects of metals in this unit	PAHs, PCBs, Dioxins and furans
AOC 19	AOC19-7	0 and 2	Assess organics where there have been higher detects of metals in this unit	PAHs, PCBs, Dioxins and furans
AOC 19	AOC19-8	0	Assess organics where there have been higher detects of metals in this unit	PAHs, PCBs, Dioxins and furans
AOC 19	AOC19-10	0 and 2	Assess organics where there have been higher detects of metals in this unit	PAHs, PCBs, Dioxins and furans
AOC 19	AOC19-11	0	Assess organics where there have been higher detects of metals in this unit	PAHs, PCBs, Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
AOC 22	AOC22-2	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 23	AOC23-2	0	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 23	AOC23-3	0	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
AOC 27	AOC27-4	5	Dioxins and furans were detected above applicable screening levels in deepest samples, run samples beneath debris layer for dioxins and furans	Dioxins and furans
AOC 27	AOC27-6	5	Dioxins and furans were detected above applicable screening levels in deepest samples, run samples beneath debris layer for dioxins and furans	Dioxins and furans
AOC 27	AOC27-7	5	Dioxins and furans were detected above applicable screening levels in deepest samples, run samples beneath debris layer for dioxins and furans	Dioxins and furans
AOC 27	AOC27-8	5	Dioxins and furans were detected above applicable screening levels in deepest samples, run samples beneath debris layer for dioxins and furans	Dioxins and furans
AOC 27	AOC27-9	0, 2, and 5	Dioxins and furans were detected above applicable screening levels in deepest samples, run samples beneath debris layer for dioxins and furans	Dioxins and furans
AOC 27	AOC27-18	0	Dioxins and furans were detected above applicable screening levels in deepest samples, run samples beneath debris layer for dioxins and furans	Dioxins and furans
AOC 27	AOC27-20	0, 2, and 5	Dioxins and furans were detected above applicable	Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
			screening levels in deepest samples, run samples beneath debris layer for dioxins and furans	
AOC 27	AOC27-50	5	Dioxins and furans were detected above applicable screening levels in deepest samples, run samples beneath debris layer for dioxins and furans	Dioxins and furans
PA	PA-01	0	To assess dioxins and furans exceedances at storm drain outfall sample SD-14	Dioxins and furans
PA	PA-02	0	To assess dioxins and furans exceedances at storm drain outfall sample SD-14	Dioxins and furans
PA	PA-05	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
PA	PA-06	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
PA	PA-10	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
PA	PA-11	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
PA	PA-12	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
PA	PA-15	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
PA	PA-16	0	Assess nature and extent of dioxins and furans within the compressor station	Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
			fence line and assess offsite migration	
PA	PA-17	0	To assess dioxins and furans exceedances at AOC4-32 and historical operations (that is, burning of waste) in this area	Dioxins and furans
PA	PA-18	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
PA	PA-19	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
PA	PA-20	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
PA	PA-21	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
PA	PA-23	0	Assess nature and extent of dioxins and furans within the compressor station fence line and assess offsite migration	Dioxins and furans
SD	SD-25	0	To assess dioxins and furans exceedances at AOC4-32 and historical operations (that is, burning of waste) in this area	Dioxins and furans
SD	SD-26	0	To assess dioxins and furans exceedances at AOC4-32 and historical operations (that is, burning of waste) in this area	Dioxins and furans
SD	CB-01	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
SD	CB-03	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	CB-06	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	CB-08	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	CB-09	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	CB-11	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	CB-13	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	CB-15	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	CB-21	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	CB-26	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall	Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
			samples, analyze catch basin samples for dioxins and furans	
SD	CB-27	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	CB-28	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	CB-30	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	TD-3	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SD	TD-4	NA	Dioxins and furans detected above applicable screening levels at storm drain outfall samples, analyze catch basin samples for dioxins and furans	Dioxins and furans
SWMU 1	SWMU1-19	14 and 19	Dioxins and furans TEQ exceeds applicable screening levels in deepest samples analyzed at this location, analyze next two sample depths to define vertical extent	Dioxins and furans
SWMU 1	SWMU1-20	14 and 19	Dioxins and furans TEQ exceeds applicable screening levels in deepest samples analyzed at this location, analyze next two sample depths to define vertical extent	Dioxins and furans
SWMU 1	SWMU1-21	14 and 19	Dioxins and furans TEQ exceeds applicable screening levels in deepest samples analyzed at this	Dioxins and furans

Attachment 1 – List of Archive Soil Samples to be analyzed

Unit	Location ID	Top Depth (ft bgs)	Description/Rationale	Analytes
			location, analyze next two sample depths to define vertical extent	
SWMU 1	SWMU1-22	0	Assess nature and extent of dioxins and furans within Bat Cave Wash	Dioxins and furans
SWMU 1	SWMU1-24	0	Assess nature and extent of dioxins and furans within Bat Cave Wash	Dioxins and furans
SWMU 5	SWMU5-2	0 and 2	This unit handled organics, which may have included PCBs as suggested by results from nearby sample locations. Assess nature and extent of dioxins and furans within the compressor station fence line	PCBs, Dioxins and furans
SWMU 8	SWMU8-1	0 and 2	Assess nature and extent of dioxins and furans within the compressor station fence line	Dioxins and furans
Unit 4's	AOC20-4	0, 2, and 5	Based on detections for TPH in this area, going back to recent samples near the old valve samples. This sample location was selected because of PAH data and it is closest sample to old valve sample OWS valve PL-1.	Dioxins and furans

Notes:

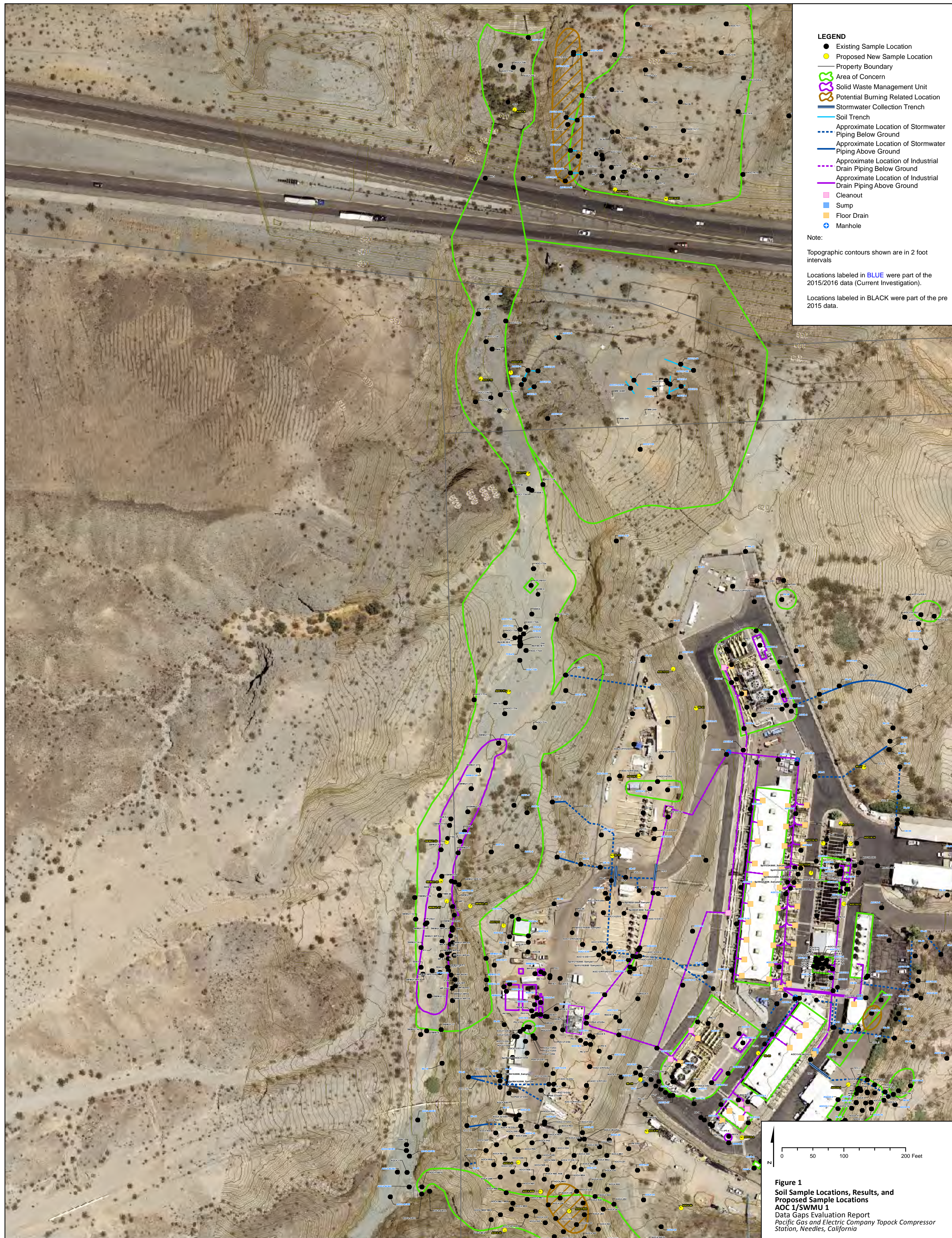
bgs – below ground surface

ft – feet

NA – not applicable

PCBs – Polychlorinated biphenyls

TPH – Total petroleum hydrocarbon



- LEGEND**
- Existing Sample Location
 - Proposed New Sample Location
 - Property Boundary
 - Area of Concern
 - Solid Waste Management Unit
 - Potential Burning Related Location
 - Stormwater Collection Trench
 - Soil Trench
 - Approximate Location of Stormwater Piping Below Ground
 - Approximate Location of Stormwater Piping Above Ground
 - Approximate Location of Industrial Drain Piping Below Ground
 - Approximate Location of Industrial Drain Piping Above Ground
 - Cleanout
 - Sump
 - Floor Drain
 - ⊕ Manhole

Note:

Topographic contours shown are in 2 foot intervals

Locations labeled in **BLUE** were part of the 2015/2016 data (Current Investigation).

Locations labeled in **BLACK** were part of the pre 2015 data.

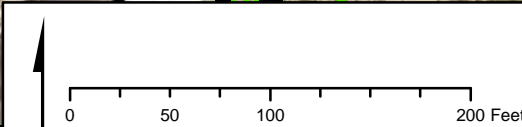
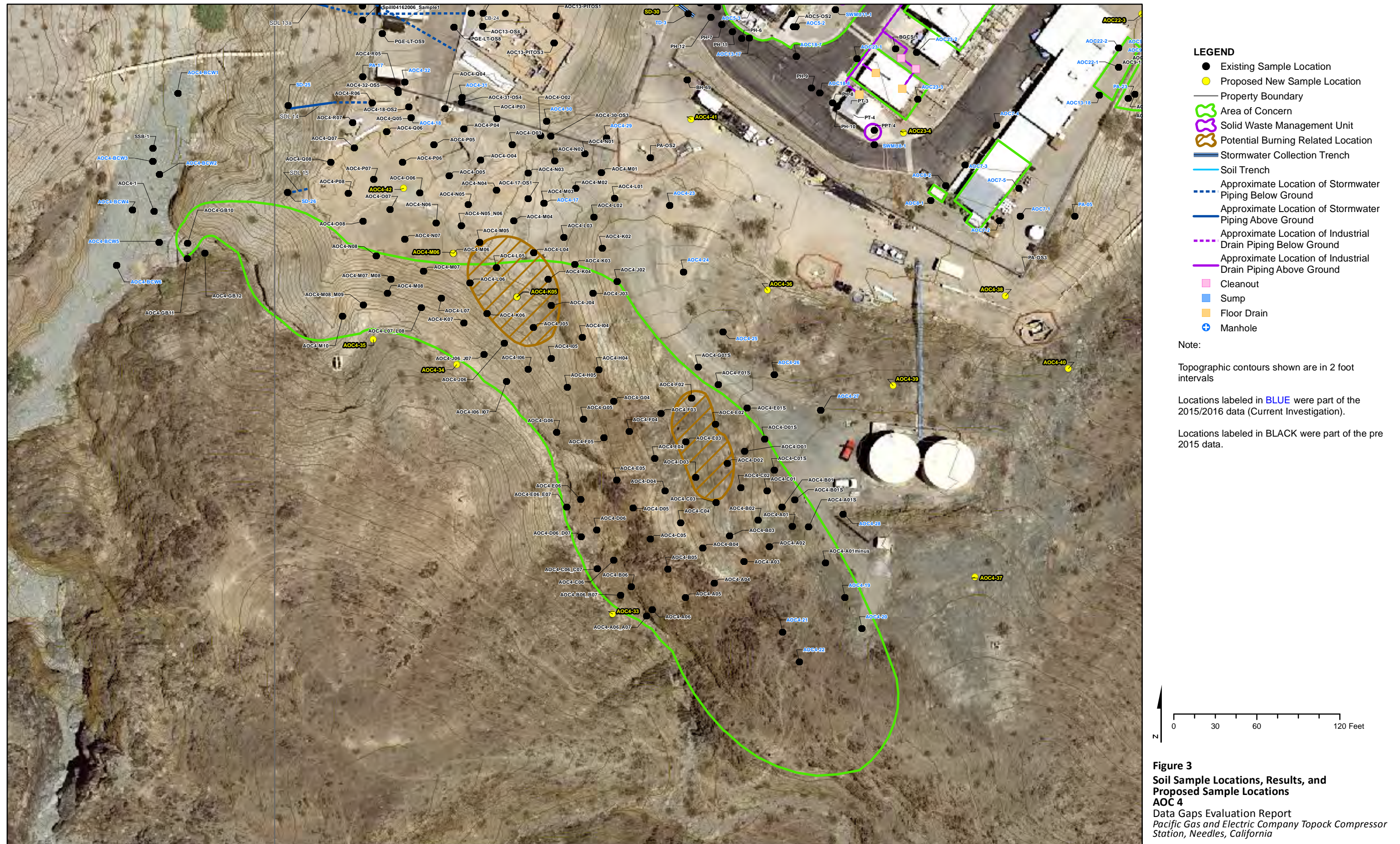
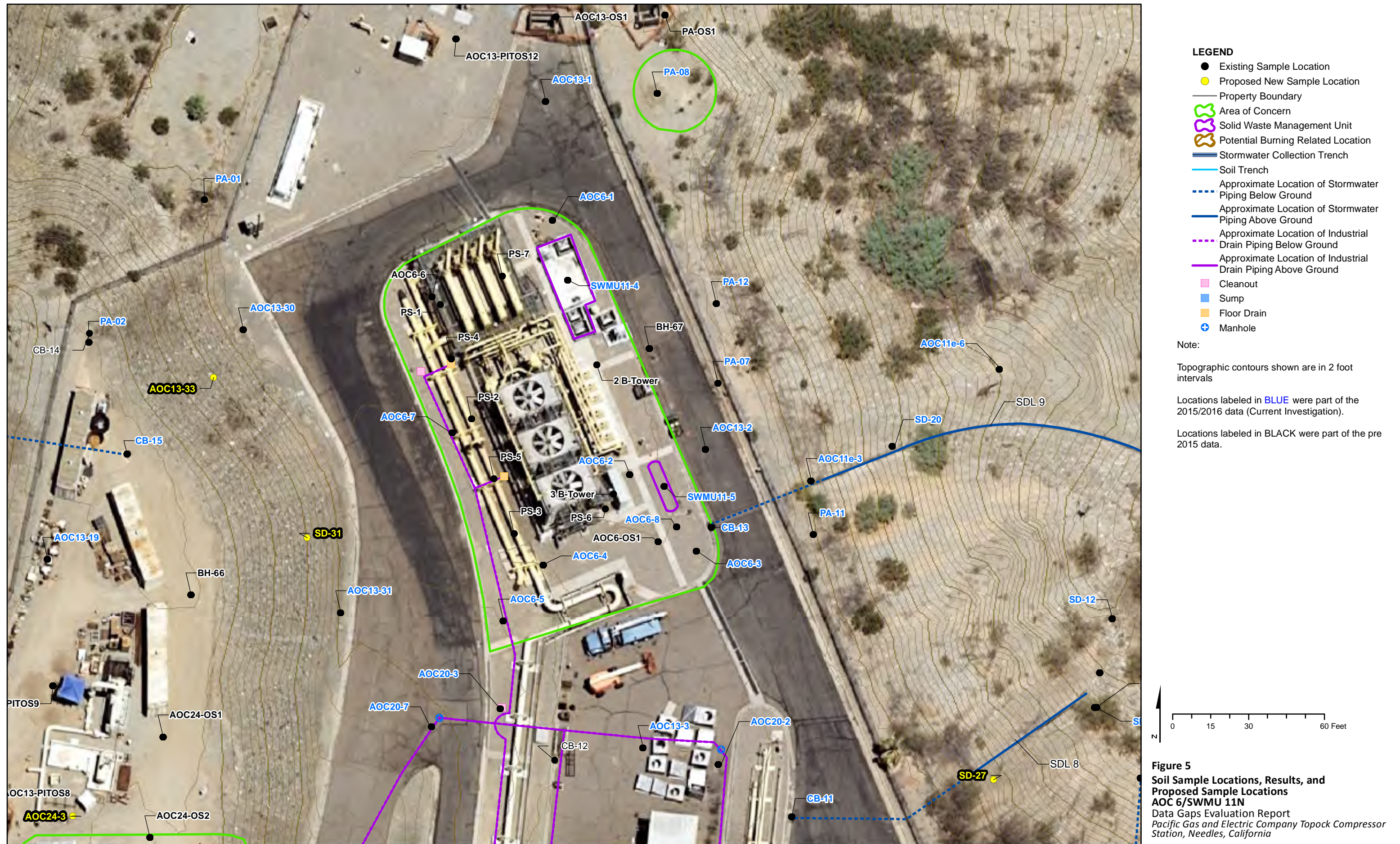


Figure 1
Soil Sample Locations, Results, and Proposed Sample Locations
AOC 1/SWMU 1
Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California









LEGEND

- Existing Sample Location
- Proposed New Sample Location
- Property Boundary
- Area of Concern
- Solid Waste Management Unit
- Potential Burning Related Location
- Stormwater Collection Trench
- Soil Trench
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Approximate Location of Industrial Drain Piping Below Ground
- Approximate Location of Industrial Drain Piping Above Ground
- Cleanout
- Sump
- Floor Drain
- Manhole

Note:

Topographic contours shown are in 2 foot intervals

Locations labeled in BLUE were part of the 2015/2016 data (Current Investigation).

Locations labeled in BLACK were part of the pre 2015 data.

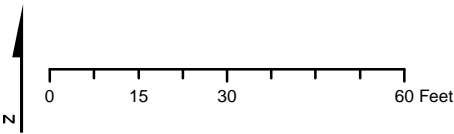
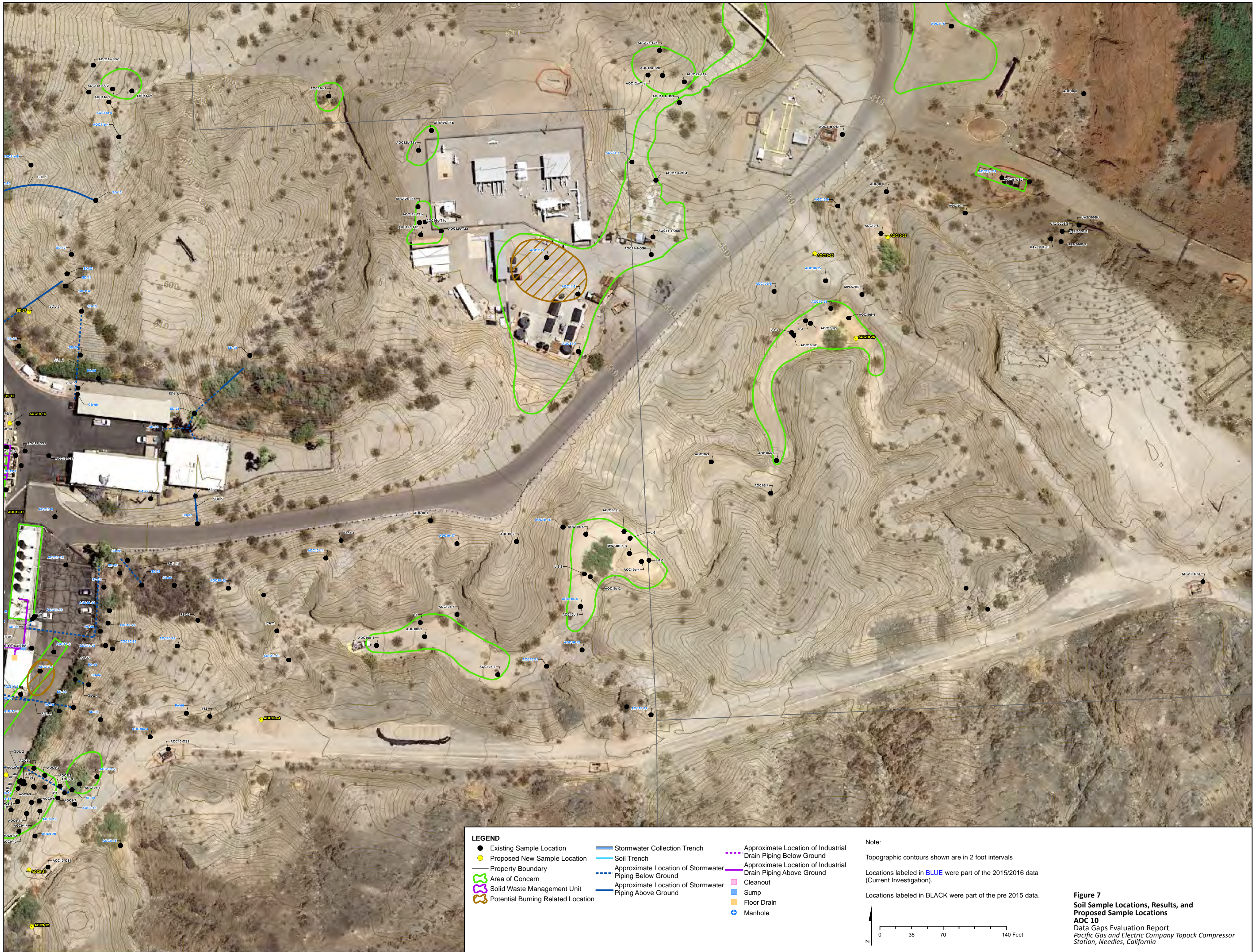
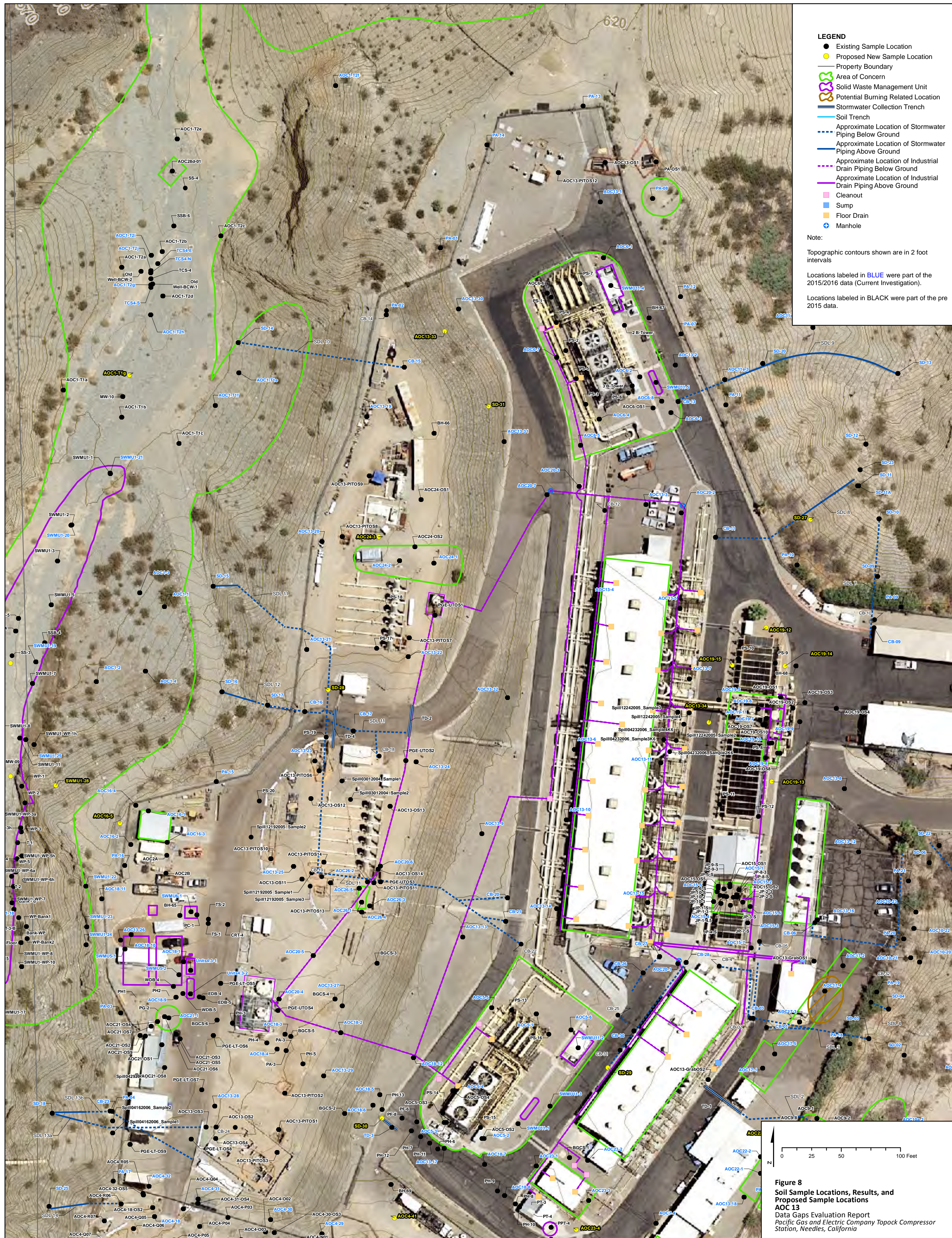


Figure 6
Soil Sample Locations, Results, and Proposed Sample Locations
AOC 9
 Data Gaps Evaluation Report
 Pacific Gas and Electric Company Topock Compressor Station, Needles, California







- LEGEND**
- Existing Sample Location
 - Proposed New Sample Location
 - Property Boundary
 - Area of Concern
 - Solid Waste Management Unit
 - Potential Burning Related Location
 - Stormwater Collection Trench
 - Soil Trench
 - Approximate Location of Stormwater Piping Below Ground
 - Approximate Location of Stormwater Piping Above Ground
 - Approximate Location of Industrial Drain Piping Below Ground
 - Approximate Location of Industrial Drain Piping Above Ground
 - Cleanout
 - Sump
 - Floor Drain
 - Manhole

Note:

Topographic contours shown are in 2 foot intervals

Locations labeled in **BLUE** were part of the 2015/2016 data (Current Investigation).

Locations labeled in **BLACK** were part of the pre 2015 data.

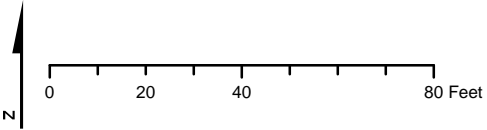


Figure 9
Soil Sample Locations, Results, and Proposed Sample Locations
AOC 14
Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California



LEGEND

- Existing Sample Location
- Proposed New Sample Location
- Property Boundary
- Area of Concern
- Solid Waste Management Unit
- Potential Burning Related Location
- Stormwater Collection Trench
- Soil Trench
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Approximate Location of Industrial Drain Piping Below Ground
- Approximate Location of Industrial Drain Piping Above Ground
- Cleanout
- Sump
- Floor Drain
- Manhole

Note:

Topographic contours shown are in 2 foot intervals

Locations labeled in BLUE were part of the 2015/2016 data (Current Investigation).

Locations labeled in BLACK were part of the pre 2015 data.

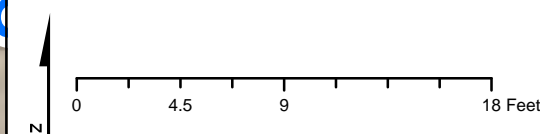
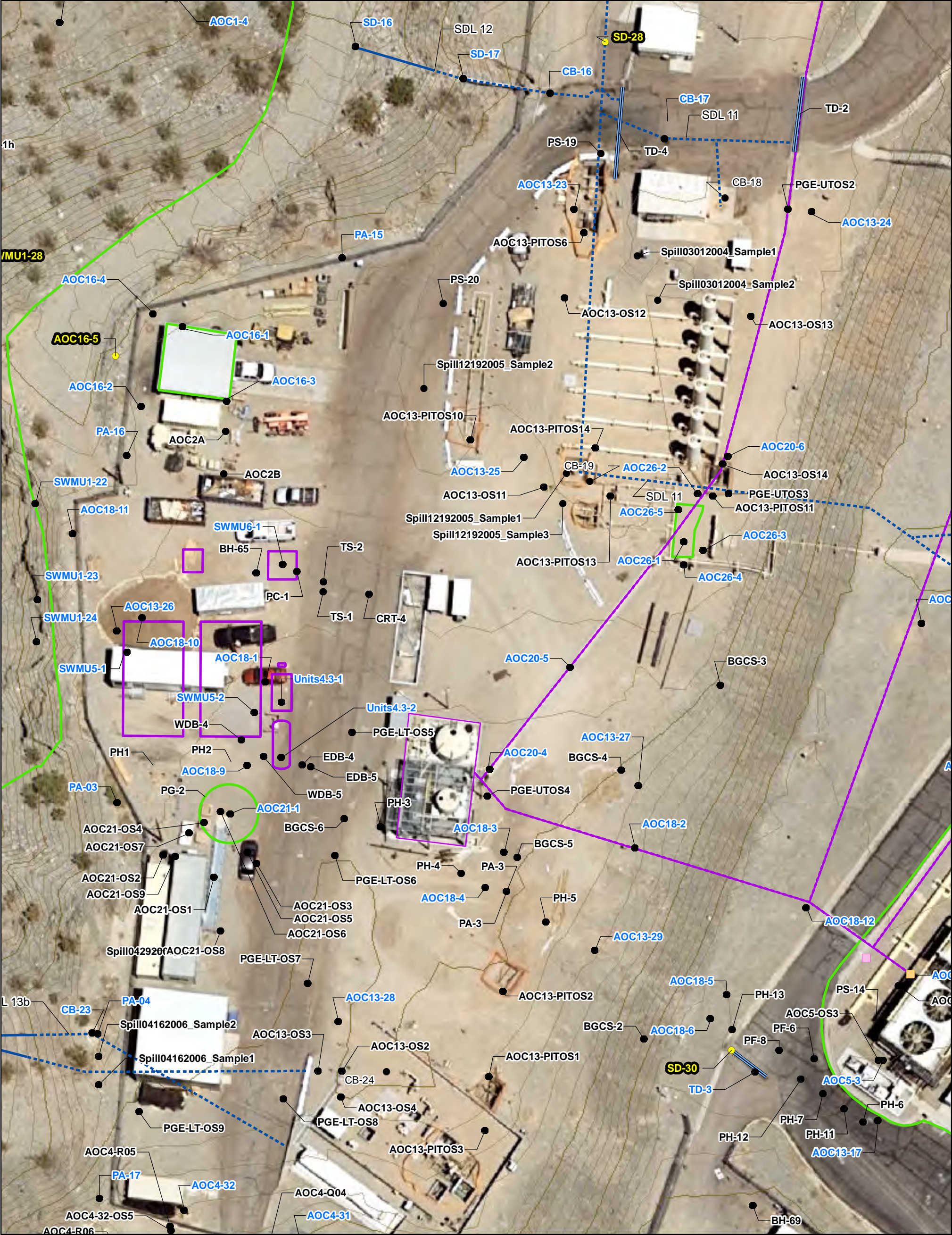


Figure 10
Soil Sample Locations, Results, and Proposed Sample Locations
AOC 15
 Data Gaps Evaluation Report
 Pacific Gas and Electric Company Topock Compressor Station, Needles, California



LEGEND

- Existing Sample Location
- Proposed New Sample Location
- Property Boundary
- Area of Concern
- Solid Waste Management Unit
- Potential Burning Related Location
- Cleanout
- Sump
- Floor Drain
- Manhole
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Approximate Location of Industrial Drain Piping Below Ground
- Approximate Location of Industrial Drain Piping Above Ground
- Stormwater Collection Trench
- Soil Trench

Note:

Topographic contours shown are in 2 foot intervals

Locations labeled in BLUE were part of the 2015/2016 data (Current Investigation).

Locations labeled in BLACK were part of the pre 2015 data.

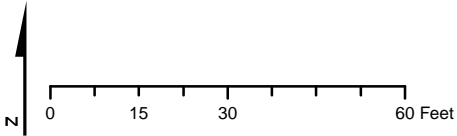
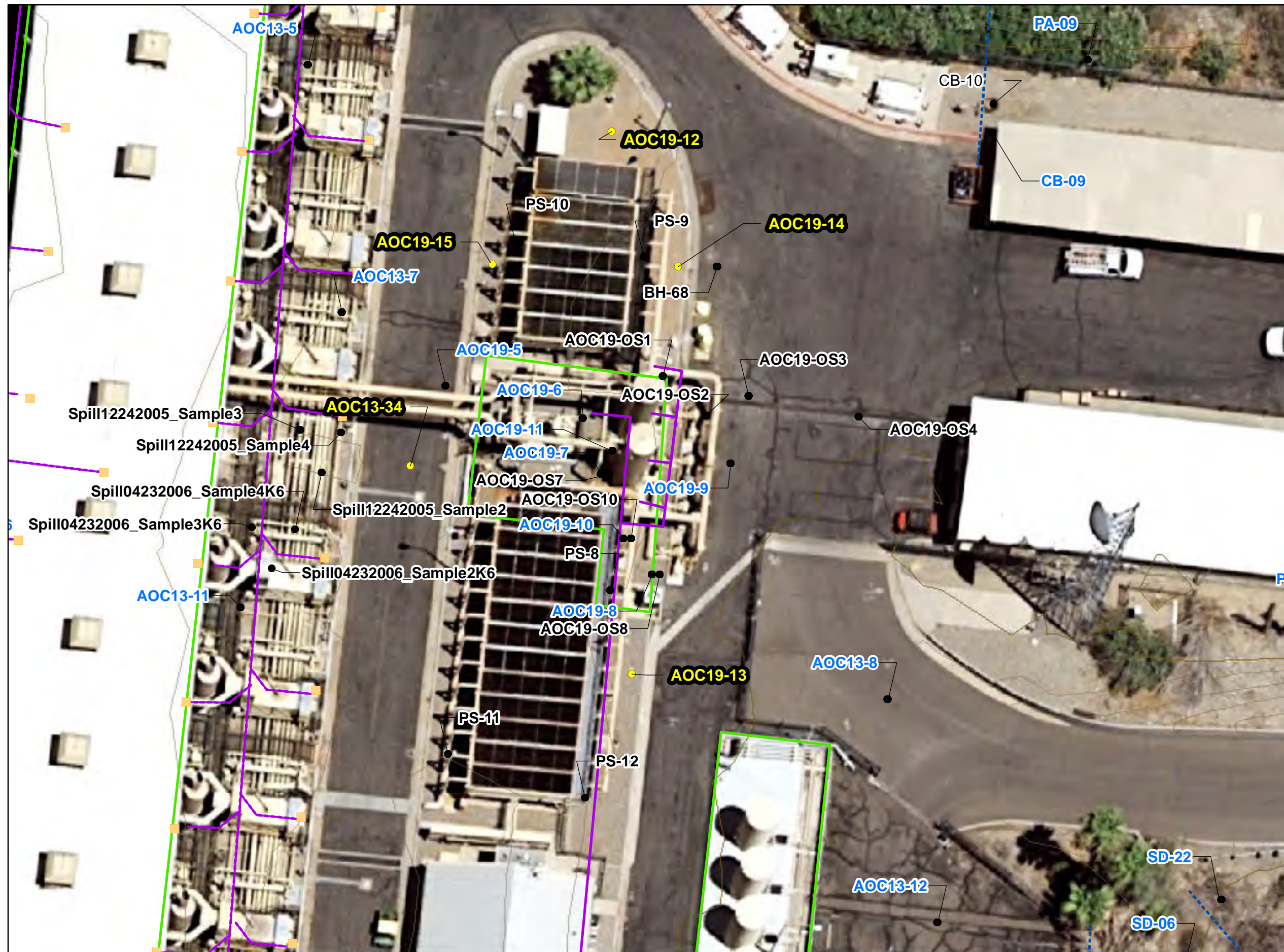


Figure 11
Soil Sample Locations, Results, and Proposed Sample Locations
AOC 16, 18, 21, 26/SWMU 5, 6/Units 4.3, 4.4, 4.5
Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California



LEGEND

- Existing Sample Location
- Proposed New Sample Location
- Property Boundary
- Area of Concern
- Solid Waste Management Unit
- Potential Burning Related Location
- Stormwater Collection Trench
- Soil Trench
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Approximate Location of Industrial Drain Piping Below Ground
- Approximate Location of Industrial Drain Piping Above Ground
- Cleanout
- Sump
- Floor Drain
- Manhole

Note:

Topographic contours shown are in 2 foot intervals

Locations labeled in BLUE were part of the 2015/2016 data (Current Investigation).

Locations labeled in BLACK were part of the pre 2015 data.

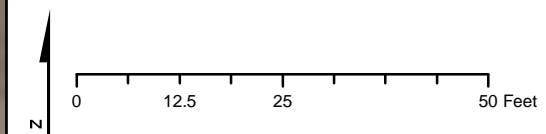
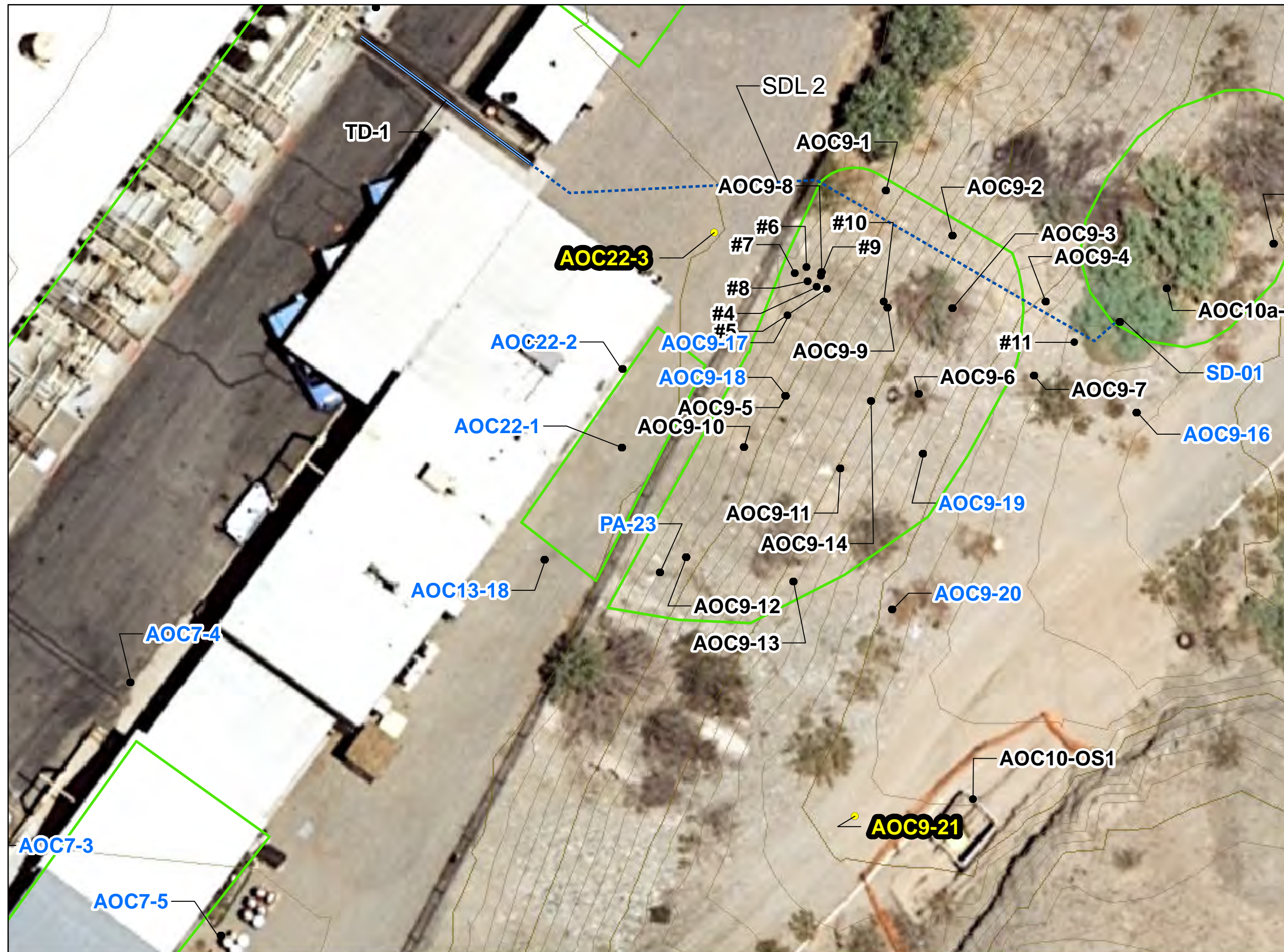


Figure 12
Soil Sample Locations, Results, and Proposed Sample Locations
AOC 19
 Data Gaps Evaluation Report
 Pacific Gas and Electric Company Topock Compressor Station, Needles, California







LEGEND

- Existing Sample Location
- Proposed New Sample Location
- Property Boundary
- Area of Concern
- Solid Waste Management Unit
- Potential Burning Related Location
- Stormwater Collection Trench
- Soil Trench
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Approximate Location of Industrial Drain Piping Below Ground
- Approximate Location of Industrial Drain Piping Above Ground
- Cleanout
- Sump
- Floor Drain
- Manhole

Note:

Topographic contours shown are in 2 foot intervals

Locations labeled in BLUE were part of the 2015/2016 data (Current Investigation).

Locations labeled in BLACK were part of the pre 2015 data.

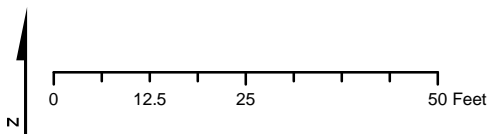
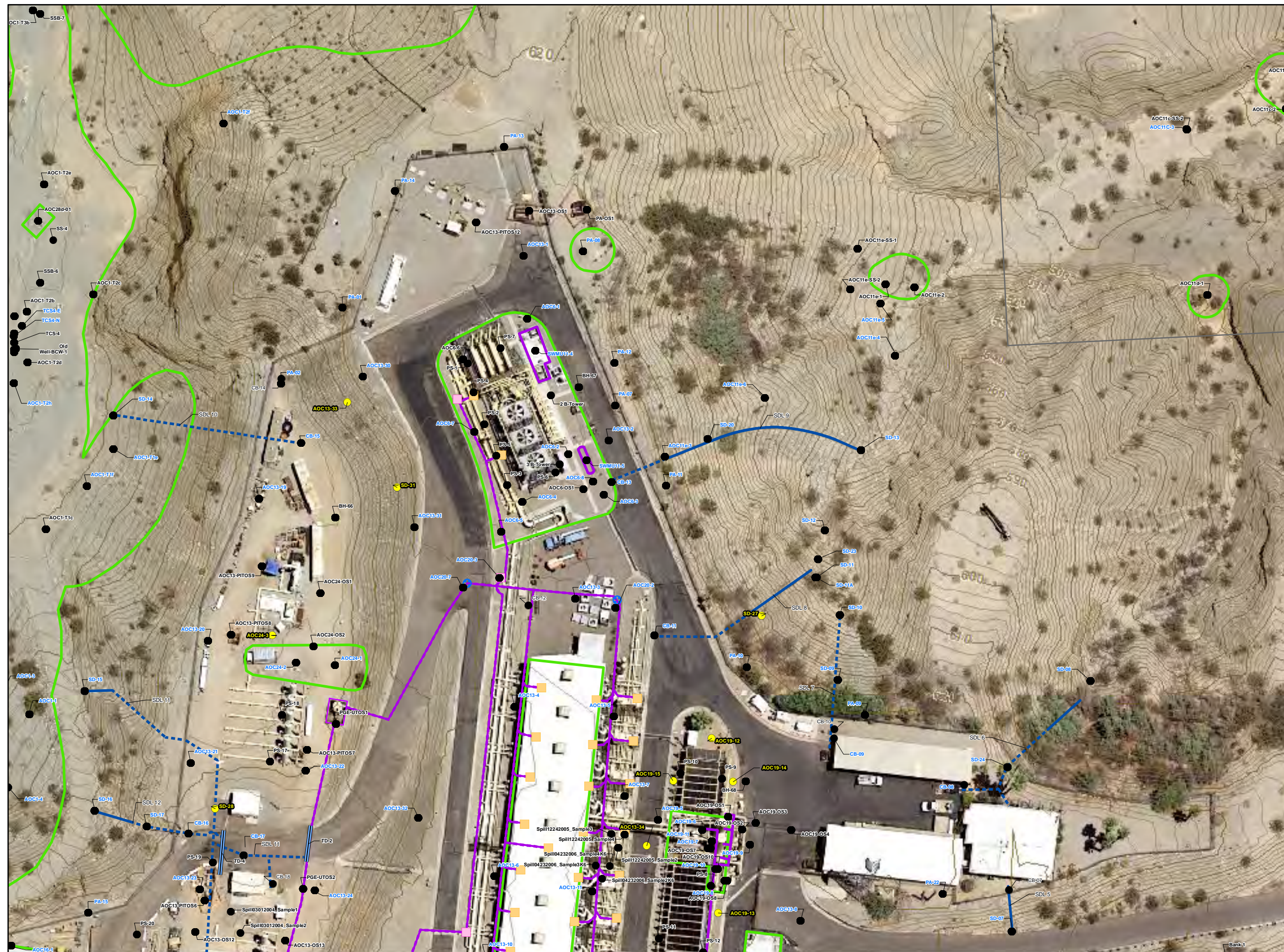


Figure 15
Soil Sample Locations, Results, and Proposed Sample Locations
AOC 27
 Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California



LEGEND

- Existing Sample Location
- Proposed New Sample Location
- Property Boundary
- Area of Concern
- Solid Waste Management Unit
- Potential Burning Related Location
- Stormwater Collection Trench
- Soil Trench
- Approximate Location of Stormwater Piping Below Ground
- Approximate Location of Stormwater Piping Above Ground
- Approximate Location of Industrial Drain Piping Below Ground
- Approximate Location of Industrial Drain Piping Above Ground
- Cleanout
- Sump
- Floor Drain
- Manhole

Note:

Topographic contours shown are in 2 foot intervals

Locations labeled in **BLUE** were part of the 2015/2016 data (Current Investigation).

Locations labeled in **BLACK** were part of the pre 2015 data.

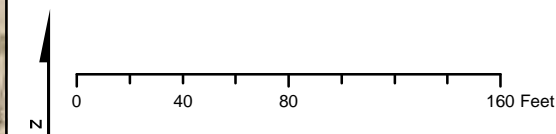


Figure 16
Soil Sample Locations, Results, and Proposed Sample Locations
Perimeter Area North and Storm Drains
Data Gaps Evaluation Report
Pacific Gas and Electric Company Topock Compressor Station, Needles, California

