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APPENDIX A O C 11
POST- SOIL NON-TIME CRITICAL REMOVAL ACTION HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT FOR A O C 11 EXPOSURE AREA

Topock Compressor Station
Needles, California

May 2026

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ACRONYMS AND ABBREVIATIONS

µg/dL	microgram per deciliter
2019 HHERA	2019 Soil Human Health and Ecological Risk Assessment Report
2,3,7,8-TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
4,4-DDE	4,4-dichlorodiphenyldichloroethylene
AOC	Area of Concern
AOC 11a	Area of Concern 11 Subarea a
AOC 11b	Area of Concern 11 Subarea b
AOC 11c	Area of Concern 11 Subarea c
AOC 11d	Area of Concern 11 Subarea d
AOC 11e	Area of Concern 11 Subarea e
Arcadis	Arcadis U.S., Inc.
BAF	bioaccumulation factor
B(a)PEQ	benzo(a)pyrene equivalent
bgs	below ground surface
BTAG	Biological Technical Assistance Group
BTV	background threshold value
CDI	chronic daily intake
COPC	constituent of potential concern
COPEC	constituent of potential ecological concern
D/F	dioxin/furan
DOI	U.S. Department of the Interior
DTSC	Department of Toxic Substances Control (California)
EC	exposure concentration
EPC	exposure point concentration
ERA	ecological risk assessment
HHERA	human health and ecological risk assessment
HHRA	human health risk assessment
HI	hazard index
HMW	high molecular weight

HQ	hazard quotient
I-40	Interstate 40
ILCR	incremental lifetime cancer risk
LMW	low molecular weight
LOAEL	lowest-observed adverse effects level
LOE	line of evidence
main report	Post-Soil Non-Time Critical Removal Action Human Health and Ecological Risk Assessment Report
NA	not applicable
NOAEL	no-observed adverse effects level
NTCRA	non-time-critical removal action
OEHHA	Office of Environmental Health Hazard Assessment
OHV	off-highway vehicle
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PG&E	Pacific Gas and Electric Company
RAG	removal action goal
RAWP	Human Health and Ecological Risk Assessment Work Plan
RBRG	risk-based remedial goal
site	Pacific Gas and Electric Company Topock Compressor Station site
SUF	site use factor
SWMU	Solid Waste Management Unit
TAA	target action area
TCS	Topock Compressor Station
Technical Memo	Soil Risk Assessment Addendum: Proposed Approach to Update the Human Health and Ecological Risk Assessment after Completion of the 2023 Non-Time-Critical Removal Action
TEQ	toxicity equivalent
TPH	total petroleum hydrocarbon
TRV	toxicity reference value
UA	undesignated area
UCL	upper confidence limit

USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WOE	weight of evidence

1 INTRODUCTION

This appendix presents the human health and ecological risk assessment (HHERA) for the Area of Concern (AOC) 11 potential soil exposure area located outside the Topock Compressor Station (TCS) in Needles, California. The risk characterization presented herein evaluates the current conditions in AOC 11 following completion of the non-time-critical removal action (NTCRA) in 2022. Consistent with the approach for the Post-NTCRA HHERA detailed in the January 30, 2024 Soil Risk Assessment Addendum: Proposed Approach to Update the Human Health and Ecological Risk Assessment after Completion of the 2023 Non-Time-Critical Removal Action (Technical Memo; Arcadis U.S., Inc. [Arcadis 2024]) to the U.S. Department of the Interior (DOI) and Department of Toxic Substances Control (California) (DTSC), the updated risk characterization is presented only for risk-driving receptors.

The AOC 11 potential exposure area, shown on Figure AOC11-1.1, is approximately 5.8 acres in total. Table AOC11-1.1 presents historical sample locations evaluated in the 2019 Soil Human Health and Ecological Risk Assessment Report (2019 HHERA; Arcadis 2019) as well as recent samples collected in 2022 as part of the NTCRA as described in the text that follows.

The 2019 HHERA (Arcadis 2019) did not identify potential risk to human or ecological receptors within the AOC 11 potential exposure area. However, the NTCRA targeted soil removal in areas where dioxin toxicity equivalent (TEQ) and hexavalent chromium exceeded removal action goals (RAGs) (Jacobs 2025). The NTCRA soil removal areas in AOC 11 and current in-place sample locations (i.e., historical and NTCRA confirmation samples remaining in place) are shown on Figure AOC 11-1.2.

Details of the NTCRA are presented in Section 2.2.3 of the Post-NTCRA HHERA Report (the “main report”), to which this appendix is attached, and are summarized in Section 1.2 as relevant to AOC 11. A summary of the updated human health risk assessment (HHRA) and the ecological risk assessment (ERA) results are presented in Sections 5 and 6, respectively of the main report. This Post-NTCRA HHERA refers to “HHRA” when discussing specific information for assessing risks to human health, “ERA” when discussing specific information for assessing risks to potential ecological receptors, and “HHERA” when discussing topics that are common to both the HHRA and the ERA.

Descriptions of the physical location and characteristics of the AOC 11 potential exposure area and the HHERA methodologies are provided in the main report and the final Human Health and Ecological Risk Assessment Work Plan (RAWP) documents (Arcadis 2008, 2009, 2015) and are not repeated in this appendix. Detailed discussions of the historical uses and sampling and analysis are presented in the 2019 HHERA (Arcadis 2019).

This Post-NTCRA HHERA summarizes use of the Pacific Gas and Electric Company (PG&E) TCS site (site), data evaluation, potential receptors, exposure pathways, and updated results of the HHERA risk characterization for soil in the AOC 11 potential exposure area for risk-driving receptors following completion of the NTCRA. Tables and figures specific to the AOC 11 potential exposure area HHERA are also presented in this appendix.

1.1 Summary of Site Use

AOC 11 is also referred to as the Topographic Low Areas. Low areas AOC 11 Subarea 11a (AOC 11a), Subarea 11b (AOC 11b), Subarea 11c (AOC 11c), and Subarea 11d (AOC 11d) are located on Havasu National Wildlife Refuge property and one low topographic area (Subarea 11e [AOC 11e]) is on PG&E property. The primary source of contamination to AOC 11 is runoff from surrounding areas.

Multiple storm drains discharge to this area, and several former TCS storm drains are believed to have discharged to this area in the past. In addition, portions of AOC 11 receive discharge from the station access road. An employee reported that a burn area formerly existed in the southern portion of this AOC near the station access road. AOC 11 also includes the low topographic area (AOC 11e), located north of the plant access road near the Route 66 sign. This area receives runoff from the access road. A stormwater pipe that captures runoff from Interstate 40 (I-40) and National Trails Highway also discharges into AOC 11 north of AOC 11a and immediately south of the I-40 overcrossing. Stormwater runoff from I-40 could have resulted in the release of total petroleum hydrocarbons (TPHs) and metals to this area (CH2M Hill, Inc. 2013).

The primary source of contamination to AOC 11 is runoff from the TCS, the access road to the TCS, potential railroad debris below the station access road (asphalt, a metal sign, refractory bricks, ceramic plates, glass resistors, and concrete were observed during 2008 field activities), the Transwestern Meter Station area, and I-40. Additionally, stormwater runoff from the TCS could have entered the stormwater drains that discharge to AOC 11.

If released, volatile organic compounds (VOCs) in surface soils would be expected to have been degraded by heat and light and are likely not present in significant quantities. Potential sources of dioxin/furan (D/F) in the vicinity of the TCS may include historical industrial activities as well as other sources unrelated to TCS activities (i.e., unauthorized dumping and burning; regional wildfires; combustion of diesel and leaded gas; and exhaust from cars, trucks, and trains) (CH2M 2017).

As a result of employee interviews conducted in late 2009/early 2010 and subsequent additional site reconnaissance, two new topographic low areas, a potential burn area, and a small new white powder area were identified.

- Two new topographic low areas that may receive runoff from the TCS were identified. Subarea 11f consists of the drainage area beginning near the current decontamination pad and Transwestern Meter Station and extending downslope to the low area across from AOC 11b. It captures a portion of runoff originating from the TCS that flows down the TCS access road. The other topographic low area (Subarea 11g) is located between the TCS access road and the Colorado River west of the Route 66 sign. This area may have also received runoff from the access road.
- According to interviews with former PG&E employees, fire training exercises were conducted near the location of the current decontamination pad and Transwestern Meter Station and involved burning primarily scrap wood. Fire drills were also held and reportedly expanded to include extinguishing diesel fires in a 55-gallon drum. This potential burn area is located in the potential drainage area for Subarea 11f.
- A small new white powder area was identified upslope of AOC 11e following the January 2010 rain event. Located on the steep slope below the northeastern portion of the TCS, this area is not accessible by

equipment. This white powder may represent a native mineral evaporite deposit. The white powder is no longer present.

The primary source medium for AOC 11 is surface soil. 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.

After storm events, water pools in AOC 11a (the largest topographic low area) and does not readily infiltrate. Historically, water may have also pooled behind the two check berms in AOC 11c and AOC 11e; while these structures have been breached and no longer retain water, accumulated fine-grained soils are present behind the berm at AOC 11c. Laterally, contaminants in soil would generally be expected to be limited to the area along the topographic drainages. With the exception of subarea 11g, all of the low points within this unit are terminal low points, and flow cannot exit AOC 11. At these low points, contaminants could potentially be driven deeper and potentially could reach groundwater.

Runoff down the station access road periodically reaches Subarea 11g. It is possible some flow during extreme storm events may result in runoff over the 11g bank and down the slope toward the Colorado River. However, there would be minimal contribution from the station to runoff flow under these extreme storm conditions.

Another potential source of contamination to AOC 11 may also include contaminated windblown dust. Contaminated surface soil (either within AOC 11 or from the adjacent TCS) may have been eroded by wind and deposited at the ground surface within AOC 11.

1.2 Summary of NTCRA in AOC 11

As summarized in the NTCRA Completion Report (Jacobs 2025), the DOI selected a removal action of excavation of contaminated soil and debris at target action areas (TAAs) within the site, located in Needles, California (DOI 2021). PG&E commenced the NTCRA soil removal action on July 25, 2022 according to the DOI-approved Soil NTCRA Work Plan (Jacobs 2022), which incorporated comments from stakeholders, including DOI, U.S. Bureau of Land Management, and tribal stakeholders.

The removal action consisted of the following activities:

- Soil excavation;
- Mechanical separation and size separation of rocks, debris, and soil; and
- Disposal of the contaminated soil and debris in approved and permitted landfills.

Work associated with the NTCRA was completed on May 20, 2024.

In AOC 11, removal activities associated with the NTCRA were completed at one targeted action area (TAA) associated with AOC 11. The TAA, extent of the NTCRA removal areas (including step-out locations), and confirmation samples remaining in place are presented on Figure AOC11-1.2. Details of the removal actions, remaining contamination (if any), and confirmation sampling is presented in Section 3 of the NTCRA Completion Report (Jacobs 2025) and summarized briefly for the AOC 11 TAA in the text that follows.

AOC11 TAA1 is a topographic low area on the northeastern side of TCS. The TAA is located at the base of a ravine with steep slopes to the south, east, and west. Soil within the TAA is a mixture of depositional sands

and gravel and possibly fill material from construction of TCS. Historical runoff from the facility collected behind the constructed impoundment and infiltrated or evaporated. Historical soil sample results indicate soil contaminated with hexavalent chromium and D/F is present primarily within approximately 5 to 6 feet of the surface. Soil removal activities began at AOC11 TAA1 in July 2022 and were completed in September 2022, resulting in the removal of approximately 754 yd^3 of contaminated soil (Section 3.12 of the NTCRA Completion Report [Jacobs 2025]). Contamination was primarily encountered in a thin layer of white powder, which was observed throughout the TAA at approximately 3 to 5 feet below ground surface (bgs). The white powder contained chromium, copper, and dioxin TEQ at concentrations exceeding the numerical RAGs. Soil beyond the white powder also contained contaminants exceeding the numerical RAG, but to a lesser extent. Twenty-three confirmation soil samples were collected from the TAA and approved step-out locations in the excavation sidewalls and floor. Following excavation, the resulting topography of the area matched that of the ravine contours and did not result in ponding water or cause an entrapment hazard to wildlife. Based on the results of a site walk conducted on September 9, 2022, with PG&E Representatives and the onsite Biologist, it was agreed that backfill of the TAA was not warranted or recommended and no backfill was placed in the excavated areas.

Soil exceeding the numerical RAGs or debris remain in a few places associated with Soil N T C R A removals as well as a few isolated locations outside of the Soil N T C R A removal areas, because removing it may have presented a hazard to workers, undermined critical infrastructure or utilities, or encroached upon culturally sensitive areas. At the AOC 11 potential exposure area, depth-weighted location concentrations exceeding RAGs for hexavalent chromium, total chromium, and dioxin TEQ remain in place. Section 3 of the N T C R A Completion Report (Jacobs 2025) describes the remaining contamination in each target action area and provides a list of individual confirmation samples (i.e., non-depth-weighted) exceeding the RAGs (Table 3-16 of the N T C R A Completion Report). Figure 2-4 and Table 2-1 of the main Report provide the locations and concentrations, respectively, of the depth-weighted historical and confirmation sample concentrations exceeding the RAGs which include the following:

- Hexavalent chromium: AOC11e-1 and AOC11e-6;
- Total chromium: AOC11e-6; and
- Dioxin TEQ: AOC11TAA1-CF4, AOC11TAA1-CW6a, PA-10, PA-11, PA-12, and SD-11A.

2 DATA EVALUATION AND COPC/COPEC SELECTION

This section summarizes the data considered for the AOC 11 potential exposure area Post-NTCRA HHERA and presents the constituents of potential concern (COPCs) for human health and constituents of potential ecological concern (COPECs) identified as risk drivers in the 2019 HHERA (Arcadis 2019) as well as non-risk-driving COPCs/COPECs evaluated for the AOC 11 potential exposure area.

For AOC 11, the 2019 HHERA (Arcadis 2019) did not identify potential risk to human or ecological receptors exposed to any COPCs/COPECs. However, consistent with the approach for the Post-NTCRA HHERA detailed in the January 30, 2024 Technical Memo (Arcadis 2024), the HHRA evaluated post-NTCRA exposures (i.e., considering NTCRA-related excavation and placement of backfill) to hexavalent chromium, total chromium, copper, and dioxin TEQ, as well as pre-NTCRA exposures for the remaining non-risk-driving COPCs (i.e., using exposure point concentrations [EPCs] from the 2019 HHERA). For AOC 11 potential exposure area, no risk-driving COPECs were identified in the 2019 HHERA. Soil and/or white powder in AOC 11 with chromium, copper, hexavalent chromium and/or dioxin TEQ exceeded numerical RAGs and were targeted for removal. However, COPCs/COPECs that were identified as potential risk drivers at other site AOCs were evaluated for this Post-NTCRA HHERA, including hexavalent chromium, total chromium, copper, and dioxin TEQ.

The data evaluation steps for these non-risk-driving COPCs/COPECs are described below. Also, some additional data for non-risk-driving COPCs/COPECs were collected on a limited basis as part of the NTCRA and were evaluated as described below.

2.1 Data Evaluation for Risk-Driving COPCs and COPECs

As mentioned above, no risk-driving COPCs or COPECs were identified for AOC 11 potential exposure area in the 2019 HHERA (Arcadis 2019). However, COPCs/COPECs that were identified as potential risk-drivers at other site AOCs were evaluated including hexavalent chromium, total chromium, copper, and dioxin TEQ. All soil sampling locations currently in place (i.e., not excavated as part of the NTCRA) for these COPCs/COPECs at the AOC 11 potential exposure area were evaluated in this Post-NTCRA HHERA. The Post-NTCRA HHERA dataset for AOC 11 includes results for in-place samples evaluated in the 2019 HHERA and in-place NTCRA confirmation samples. [Note: additional NTCRA data for "other" non-risk-driving constituents are discussed in Section 2.3].

All soil sampling locations currently in place at the AOC 11 potential exposure area are presented on Figure AOC11-1.2 and in Table AOC11-1.1. Details of the soil sampling and analysis conducted as part of the NTCRA are presented in the NTCRA Completion Report (Jacobs 2025); details of the soil sampling and analysis for the remaining samples are described in the RAWP documents (Arcadis 2008, 2009, 2015) and 2019 HHERA (Arcadis 2019). For the baseline scenario, only soil data from 0 to 3 feet bgs were evaluated in this Post-NTCRA HHERA to account for potential soil exposures for risk-driving receptors (i.e., camper, hiker, OHV rider, and desert shrew) which may occur at surface soils (e.g., 0 to 0.5 foot bgs) or shallow soils (e.g., 0 to 3 feet bgs). Because potential soil contact does not extend below 3 feet bgs for the baseline scenario, deeper soil data (i.e., greater than 3 feet bgs) were excluded from this risk evaluation, as noted in Table AOC11-1.1.

Following the steps outlined in Section 3 of the main report, soil data considered usable for the risk assessment were identified and used in the quantitative Post-NTCRA HHERA. Samples representing soil that was excavated as part of the NTCRA were excluded from the dataset and current sample top and bottom depths (reflecting excavation and/or placement of fill material) were used (Table AOC11-1.1). The post-NTCRA soil data for the AOC 11 potential exposure area are presented in Attachment AOC11-A1 and include the following:

- Pre-NTCRA Data: For pre-NTCRA data, the dataset includes results for site risk drivers (i.e., hexavalent chromium, total chromium, copper, and dioxin TEQ) from the 2019 HHERA dataset (Arcadis 2019) where those samples remain in place.
- NTCRA Confirmation Sampling Data: The dataset includes results for site risk drivers (i.e., hexavalent chromium, total chromium, copper, and dioxin TEQ) from confirmation samples that currently remain in place.

2.2 Data Evaluation for Non-Risk-Driving COPCs

As noted above, EPCs for non-risk-driving constituents used in the 2019 HHERA (Arcadis 2019) were also used in this HHRA, as calculated from the pre-NTCRA soil dataset. As discussed in Section 5.5.2 of the main report, use of pre-NTCRA soil data for non-risk-driving COPCs is a conservative approach that is likely to overestimate post-NTCRA concentrations of these COPCs. Thus, the data evaluation steps are as described in detail in Section 3 of the 2019 HHERA. The soil sampling locations for the 2019 HHERA dataset at AOC 11 are presented on Figure AOC11-1.1 and in Table AOC11-1.1 of the 2019 HHERA. The data were evaluated based on the methodology described in the RAWP documents (Arcadis 2008, 2009, 2015). Note that for this Post-NTCRA HHERA, only surface soil (0 to 0.5 foot bgs) and shallow soil (0 to 3 feet bgs) were evaluated.

The process for identifying COPCs and COPECs included in the HHERA is detailed in Section 3.4 of the 2019 HHERA (Arcadis 2019). COPCs and COPECs were selected in the 2019 HHERA for the AOC 11 potential exposure area using soil data encompassing all relevant exposure depths for the HHERA (i.e., 0 to 10 feet bgs for the AOC 11 potential exposure area) presented in Attachment AOC11-A1 to the 2019 HHERA. Inorganic compounds, LMW PAHs, HMW PAHs, B(a)PEQ, and dioxin TEQ were above background levels in AOC 11 potential exposure area soil (0 to 10 feet bgs), and therefore, were included as COPCs and/or COPECs in the baseline exposure depths evaluated in the 2019 HHERA. When B(a)PEQ was detected above the background level, carcinogenic PAHs (i.e., benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, and indeno(1,2,3-cd)pyrene) associated with B(a)PEQ were also selected as COPCs in the HHRA for the evaluation of the noncancer endpoint for each individual PAH. All other detected organic constituents in AOC 11 potential exposure area soil in the baseline exposure depths were included as COPCs and/or COPECs in the 2019 HHERA. COPCs and/or COPECs selected for exposure depths and scenarios evaluated in the 2019 HHERA for the AOC 11 potential exposure area and relevant to the applicable depths evaluated in this Post-NTCRA HHERA are summarized in Section 3. Detailed COPC and/or COPEC selection tables are presented in Tables AOC11-2.1a through AOC11-2.1d of the 2019 HHERA.

2.3 Evaluation of Additional Data

In some cases, NTCRA confirmation samples were also analyzed for other constituents, including a few metals (lead, mercury, molybdenum, and zinc). These data for metals were not included in the Post-NTCRA HHERA exposure estimates. Instead, measured concentrations of in-place confirmation samples were compared to the range of concentrations observed in the 2019 HHERA dataset (Arcadis 2019). This evaluation is presented in Table AOC11-2.1 for the baseline scenario. The maximum and mean concentrations for the in-place NTCRA confirmation samples for lead, mercury, molybdenum, and zinc were less than the maximum and mean concentrations for these metals in the 2019 HHERA dataset. This indicates that EPCs evaluated for lead, mercury, molybdenum, and zinc in this HHRA based on values calculated for the 2019 HHERA dataset (Arcadis 2019) are likely a conservative estimate of current post-NTCRA exposures in AOC 11. Exclusion of the in-place NTCRA confirmation samples for these constituents is not expected to materially change the risk estimates or conclusions of this Post-NTCRA HHERA.

3 EXPOSURE POINT CONCENTRATIONS

Depth-weighted and area-weighted EPCs for COPCs/COPECs in soil at the AOC 11 potential exposure area were calculated as described in Section 4.2 of the main report. As noted in Section 2, EPCs for hexavalent chromium, total chromium, copper, and dioxin TEQ were calculated from the post-NTCRA dataset. In addition, EPCs from the 2019 HHERA (Arcadis 2019) for remaining non-risk-driving COPCs were used in the HHRA to estimate cumulative risks to human receptors. Consistent with the scenarios evaluated in the 2019 HHERA, one scenario was evaluated for the AOC 11 potential exposure area: Baseline (no scouring).

The following exposure depths were evaluated:

- Surface soil (0 to 0.5 foot bgs); and
- Shallow soil (0 to 3 feet bgs).

Deeper soil intervals were not evaluated as the risk-driving receptors are potentially exposed only to surface and shallow soil.

The depth-weighted data used in the calculation of depth-weighted EPCs for hexavalent chromium, total chromium, copper, and dioxin TEQ are presented in Attachment AOC11-A2. The summary statistics for these AOC 11 potential exposure area soil depth-weighted datasets and depth-weighted EPCs were calculated consistent with the RAWP documents (Arcadis 2008, 2009, 2015). Per the RAWP (Arcadis 2008), area-weighted EPCs for the HHRA are evaluated only if depth-weighted EPCs suggest that cumulative cancer risks and/or noncancer hazards may be significant for any given HHRA exposure scenario (cumulative cancer risks exceed a 0.000001 cancer risk level, and/or the noncancer hazard index [HI] exceeds 1). Similarly, for the ERA, area-weighted EPCs are evaluated for consistency with the 2019 HHERA but only discussed if depth-weighted EPCs suggest potential risk to potential ecological receptors (i.e., hazard quotient [HQ] greater than 1 for any COPEC). For the AOC 11 potential exposure area, area-weighted EPCs were deemed necessary for either the HHRA or the ERA, and therefore, were calculated. The area-weighted data used in the calculation of area-weighted EPCs and the Thiessen polygons figures representing the area-weighted EPCs are presented in Attachment AOC11-A3.

In some cases, the area-weighted EPCs are greater than the depth-weighted EPCs, such as for hexavalent chromium and total chromium in surface soil (0 to 0.5 foot bgs) and shallow soil (0 to 3 feet bgs) for the baseline scenario. In these cases, the depth-weighted EPCs are based on a different upper confidence limit (UCL) method (95% Student's-t UCL, 95% H-UCL, or 95% Kaplan-Meier (t) UCL) than the area-weighted EPC (calculated using the bias-corrected accelerated bootstrap UCL method). Each of the UCL methods are noted by ProUCL to produce stable and unbiased UCL estimates that are unlikely to overestimate or underestimate the true expected UCL value (United States Environmental Protection Agency [USEPA] 2022). The difference in the UCL values (ranging from approximately 20 to 40%) can be attributed to the effect of area-weighting as well as the different UCL methods employed.

In accordance with the 2019 HHERA (Arcadis 2019), if the soil dataset had fewer than four detected values (i.e., concentrations reported above the detection limit) or fewer than eight total observations, the EPC defaulted to the maximum depth-weighted concentration in that dataset.

Soil summary statistics for constituents measured at the AOC 11 potential exposure area and depth- and area-weighted EPCs for COPCs/COPECs calculated using depth-weighted data from the four exposure

depths listed previously are presented in Table AOC11-3.1. It should be noted that the list of constituents shown in Table AOC11-3.1 is based on analytes that were detected at least once at the site (including all potential exposure areas inside or outside the TCS) in the 2019 HHERA (Arcadis 2019) and measured at AOC 11. Table AOC11-3.1 also presents the basis of the calculated depth- and area-weighted EPCs, including if the EPC is based on the maximum detected concentration.

4 HUMAN HEALTH RISK ASSESSMENT

This section briefly summarizes the HHRA approach used for this Post-NTCRA HHERA; presents the COPC, EPC, risk, and hazard summary tables; and discusses the results of the risk characterization and uncertainties in the risk assessment for the AOC 11 potential exposure area. Details of the overall HHRA approach are presented in Section 5 of the 2019 HHERA (Arcadis 2019). Dose, exposure concentration (EC), risk, and hazard calculation tables for potential human health receptors at the AOC 11 potential exposure area are presented in Attachment AOC11-B.

As stated in the 2019 HHERA (Arcadis 2019), risks/hazards estimated for an individual AOC, Solid Waste Management Unit (SWMU), or undesignated area (UA) potential exposure area like AOC 11 are not considered representative of the realistic or likely potential exposures for the human populations that could be present in the areas outside the TCS (such as recreational users). Risks/hazards calculated separately for individual AOCs are conservative and likely overestimate site risks/hazards. As described in the RAWP documents (Arcadis 2008, 2009, 2015), these human populations would more likely be exposed randomly, over the course of a lifetime, to soil present in all individual AOC/SWMU/UA potential exposure areas located outside the TCS, rather than have a lifetime of contact limited to the area of a single potential exposure area. Therefore, estimated risk/hazards presented for individual AOC/SWMU/UA potential exposure areas are not believed to be representative of the potential health risks to humans potentially contacting the soil outside the TCS. As stated previously, the Post-NTCRA HHERA provides updated risk estimates for human health and the environment based on potential exposures to current soil conditions in the NTCRA areas. Therefore, updated risk estimates were not performed for the OCS potential exposure area in the Post-NTCRA HHERA It is noted that due to NTCRA soil removal, the potential post-NTCRA soil risks for the OCS are likely lower than estimated in the 2019 HHERA. The HHRA results and conclusions of the 2019 HHERA and of this Post-NTCRA HHERA will be considered for making risk-management decisions for the site in the Corrective Measure Study/Feasibility Study to be prepared for the site.

4.1 Human Health Conceptual Site Model

Following the steps outlined in Section 5.5 of the 2019 HHERA (Arcadis 2019), risks were estimated for potentially complete and significant exposure pathways identified in the human health conceptual site model for risk-driving receptors potentially exposed to COPCs in soil present at the AOC 11 potential exposure area, as identified in the 2019 HHERA. These included incidental ingestion of soil, dermal contact with soil, and inhalation of particulates and VOC vapors in ambient outdoor air from soil for the recreational user (child and/or adult campers, hikers, and off-highway vehicle [OHV] riders).

As previously noted in Section 1, the 2019 HHERA (Arcadis 2019) did not identify potential risk to human receptors within the AOC 11 potential exposure area. However, the 2022 NTCRA targeted soil removal in areas where dioxin TEQ and hexavalent chromium exceeded RAGs (Jacobs 2025).

Potential exposure pathways considered incomplete or insignificant were not quantitatively evaluated and are discussed in Section 5.3.1 of the 2019 HHERA (Arcadis 2019).

4.2 Constituents of Potential Concern

COPCs for the AOC 11 potential exposure area were selected in accordance with the RAWP documents (Arcadis 2008, 2009, 2015) and as described in Section 3.4 of the 2019 HHERA (Arcadis 2019). COPCs for the AOC 11 potential exposure area evaluated in this Post-NTCRA HHERA are the same as the COPCs for the AOC 11 potential exposure area evaluated in the 2019 HHERA. The COPC selection process using soil data encompassing all relevant exposure depths for this Post-NTCRA HHERA (i.e., 0 to 6 feet bgs for the AOC 11 potential exposure area) are presented in Attachment AOC11-A. COPCs for the two exposure depths (surface and shallow) and one scenario (baseline) evaluated for the HHRA for the AOC 11 potential exposure area are summarized in Table AOC11-4.1. COPCs selected for Subsurface II soil in the 2019 HHERA are also shown in Table AOC11-4.1, however, only the EPCs for volatile compounds for these depth intervals are used in the estimates of outdoor vapor concentrations in the quantitative HHRA for the evaluation of the outdoor vapor inhalation pathway. The EPCs for COPCs for Subsurface II soil were not updated in this this Post-NTCRA HHERA and are the same as presented in the 2019 HHERA.

COPCs included metals (arsenic, hexavalent chromium, total chromium, copper, lead, mercury, and zinc), one VOC (methyl acetate), PAHs, pesticides (4,4-dichlorodiphenyldichloroethylene [4,4-DDE], alpha-chlordane, dieldrin, and gamma-chlordane), PCBs, TPH as diesel, TPH as motor oil, and dioxin TEQ in surface and shallow soil.

4.3 Exposure Point Concentration Summary

For the potentially complete and significant exposure pathways identified in the conceptual site model, EPCs were calculated as described in Section 4.2 of the main report and presented in Section 3 of this appendix. Depth-weighted data used in the calculation of depth-weighted EPCs are presented in Attachment AOC11-A. Depth- and area-weighted EPCs for COPCs in soil and estimated outdoor air concentrations associated with dust and vapors and used to estimate risk in the HHRA are summarized in Tables AOC11-4.2a and AOC11-4.2b and Tables AOC11-4.3a and AOC11-4.3b, respectively, for the two exposure depths evaluated.

As described in detail in Section 5.3.3 of the 2019 HHERA (Arcadis 2019), surface and shallow soil exposure depths and corresponding EPC datasets for recreational users (child and/or adult campers, hikers, hunters, and OHV riders) were used to evaluate potential exposure to COPCs in soil for potential human receptors.

4.4 Estimation of Exposure Dose

The EC and chronic daily intake (CDI) for potential carcinogenic and noncarcinogenic effects were calculated, as described in Section 5.5.1 of the 2019 HHERA (Arcadis 2019), for COPCs in soil for potentially complete exposure pathways. The calculated EC and CDI values using depth-weighted EPCs are presented in Attachment AOC 11-B1 in Tables AOC 11-B1.1a through AOC 11-B1.1c (carcinogenic effects) and Tables AOC 11-B1.2a through AOC 11-B1.2c (noncarcinogenic effects) for the potential receptors evaluated. The calculated EC and CDI values using area-weighted EPCs are presented in Attachment AOC 11-B2 in Tables AOC11-B2.1a through AOC 11-B2.1c (carcinogenic effects) and Tables AOC11-B2.2a through AOC 11-B2.2c (noncarcinogenic effects) for the potential receptors evaluated. Exposure parameters used in the dose calculations were presented in Table 5-1 of the 2019 HHERA and are presented in Table 5-1 of the main report.

4.5 Toxicity Assessment

The toxicity assessment characterizes the relationship between the magnitude of exposure to a constituent and the potential for adverse health effects. More specifically, the toxicity assessment identifies agency-promulgated or derived toxicity values that can be used to estimate the likelihood of adverse health effects occurring in humans at different exposure levels. The approach for the toxicity assessment was provided in Section 4.5 of the RAWP (Arcadis 2008) and in Section 4.2 of the Final Human Health and Ecological Risk Assessment Work Plan Addendum 2 (Arcadis 2015). Consistent with regulatory risk assessment policy, adverse health effects resulting from potential chemical exposures are evaluated in two categories: carcinogenic effects and noncarcinogenic effects. The hierarchy of sources for the toxicity criteria to be used for the Post-NTCRA HHERA have been updated from the 2019 HHERA and are compliant with the September 4, 2018, "Toxicity Criteria for Human Health Risk Assessments, Screening Levels, and Remediation Goals" rule (Title 22, California Code of Regulations, sections 68400.5, 69020-69022). Toxicity values for carcinogenic and noncarcinogenic effects for COPCs selected and used for the HHRA are described in Section 5.3 of the main report and were used to estimate potential cancer risks and noncancer hazards described in this Post-NTCRA HHERA.

4.6 Human Health Risk Characterization

For potential human receptors, assuming lifetime soil exposure is limited to the AOC 11 potential exposure area, the estimated incremental lifetime cancer risks (ILCRs) and/or noncancer HQs were calculated for each COPC and potentially complete exposure pathway. Estimated cumulative ILCRs (i.e., sum of chemical-specific ILCRs for each exposure depth for a scenario) were calculated and compared to the DTSC's point of departure for risk management decision of 1×10^{-6}. Risk management decisions may raise this criterion depending on site-specific conditions. As indicated in the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations 300), cancer risks between one in a million and one hundred in a million probability of occurrence (1×10^{-6} and 1×10^{-4}) fall within a risk management range. This is generally referred to as the acceptable risk range. Within this estimated cancer risk range, there is flexibility for risk managers in deciding what action, if any, is necessary and appropriate for the protection of human health. Fish and Wildlife's cancer risk threshold level is ten in a million (1×10^{-5}) for soil deeper than 2 feet below ground surface (February 12, 2021 Topock Soil EE/CA Response to Comment Consultation Meeting Agenda). Estimated cumulative noncancer hazards (i.e., HIs) are calculated and compared to an HI of 1 (DTSC 2015). Chemical exposures that yield HIs of less than or equal to 1 are not expected to result in adverse noncancer health effects (USEPA 1989).

4.6.1 Risk Characterization for Exposure to Soil (Baseline Scenario and Depth-Weighted EPCs)

Table AOC11-4.4 summarizes cumulative ILCRs and HIs estimated for exposure to soil for each potential human receptor at the AOC 11 potential exposure area, which were calculated using depth-weighted EPCs. The dose, EC, ILCR, and HI equations are presented in detail in Section 5.5.1 of the 2019 HHERA (Arcadis 2019). The detailed cancer risk estimates (Tables AOC11-B1.3a through AOC11-B1.3c) and noncancer hazard calculations (Tables AOC11-B1.4a through AOC11-B1.4c) are presented in Attachment AOC11-B.

Risk and hazard estimates for the AOC 11 potential exposure area are summarized in the tables and discussed in this section. Assuming lifetime soil contact is limited to the AOC 11 potential exposure area, the depth-weighted estimated cumulative HIs for the recreational users (camper, hiker, and OHV rider) potentially exposed to COPCs in post-NTCRA AA soil at all exposure depths are at or below 1. The depth-weighted estimated cumulative ILCRs for the recreational users (camper, hiker, and OHV rider) exposed to COPCs in surface and shallow soils are above the point of departure for risk management decisions of 1×10^{-6}, but within the risk management range of 1×10^{-6} and 1×10^{-4}. The depth-weighted estimated cumulative ILCRs are also below the Fish and Wildlife's cancer risk threshold level of 1×10^{-5} for soil deeper than 2 feet below ground surface (February 12, 2021 Topock Soil EE/CA Response to Comment Consultation Meeting Agenda).

Exhibit AOC 11-4.1 Baseline Depth-Weighted Estimated Cumulative Incremental Lifetime Cancer Risk and Hazard Index for the AOC 11 Potential Exposure Area for Recreational Users

Potential Receptor	Exposure Depth	Cumulative ILCR	ILCR Drivers	HI	HI Drivers
Camper	Surface	2E-06	Arsenic (2E-06) TEQ human (4E-07)	0.5	NA
Camper	Shallow	3E-06	Arsenic (2E-06) TEQ human (1E-06)	0.6	NA
Hiker	Surface	5E-06	Arsenic (4E-06) TEQ human (8E-07) Hexavalent chromium (2E-07)	1	NA
Hiker	Shallow	6E-06	Arsenic (4E-06) TEQ human (2E-06)	1	NA
OHV rider	Surface	3E-06	Arsenic (2E-06) TEQ human (4E-07) Hexavalent chromium (4E-07)	0.2	NA
OHV rider	Shallow	4E-06	Arsenic (2E-06) TEQ human (1E-06) Hexavalent chromium (4E-07)	0.3	NA

Notes:
1. ILCR and HI drivers are presented only for estimated cumulative ILCRs above 1×10^{-6} and estimated HIs above 1.
NA = not applicable

The depth-weighted estimated cumulative ILCRs for the camper, hiker, and OHV rider potentially exposed to COPCs in post-NTCRA surface and shallow soil in the AOC 11 potential exposure area are above the point of departure for risk management decisions of 1×10^{-6}, but within the risk management range of 1×10^{-6} and 1×10^{-4}. The depth-weighted estimated cumulative ILCRs are also below the Fish and Wildlife's cancer risk threshold level of 1×10^{-5} for soil deeper than 2 feet below ground surface (February 12, 2021 Topock Soil EE/CA Response to Comment Consultation Meeting Agenda). For the camper and hiker, estimated risks above de minimis levels were primarily attributed to arsenic, hexavalent chromium and/or dioxin TEQ in soil

via the soil ingestion pathway (Tables AOC11-B1.3a and AOC11-B1.3b in Attachment AOC11-B). For the OHV rider, estimated risks above de minimis levels were primarily attributed to arsenic and dioxin TEQ, via dermal contact with soil, and to hexavalent chromium via inhalation of soil particulates (Table AOC11-B1.3c).

Assuming lifetime soil contact is limited to the AOC 11 potential exposure area, the depth-weighted estimated HIs for the camper, hiker, and hunter, OHV rider (Tables AOC11-B1.4a through AOC11-B1.4c, respectively, in Attachment AOC11-B) potentially exposed to COPCs in surface and shallow soil under the baseline scenario are at or below an HI of 1.

A substantial proportion of the estimated risks above de minimis levels are attributable to background concentrations of arsenic in soil. Specifically, the majority of the ILCRs for arsenic for the camper (1.6×10^{-6} of 2×10^{-6} or approximately 80%), hiker (3.1×10^{-6} of 4×10^{-6} or approximately 78%), and OHV rider (1.7×10^{-6} of 2×10^{-6} or approximately 85%) is attributed to background concentrations of arsenic in soil. Considering the substantial contribution of background levels of arsenic in soil to the estimated cumulative ILCRs for the camper, hiker, and OHV rider potentially exposed to surface and shallow soil, it is likely that incremental risks for site-related COPCs in soil are at or slightly above the lower end of the risk management range of 1×10^{-6} and 1×10^{-4}.

The depth-weighted EPCs for lead in surface and shallow soil at the AOC 11 potential exposure area are not expected to result in an increase in blood lead levels above Office of Environmental Health Hazard Assessment (OEHHA) benchmark value of 1 microgram per deciliter (µg/dL) for child recreational users (Tables AOC11-B1.5a through AOC11-B1.5f in Attachment AOC11-B).

4.6.2 Risk Characterization for Exposure to Soil (Baseline Scenario and Area-Weighted EPCs)

Table AOC11-4.5 summarizes cumulative ILCRs and HIs estimated for exposure to soil for each potential human receptor at the AOC 11 potential exposure area in the baseline scenario, calculated using area-weighted EPCs, for receptors where the depth-weighted estimated cumulative ILCRs and/or HIs were above 1×10^{-6} and 1, respectively. Therefore, area-weighted ILCRs and HIs were provided for the recreational users (campers, hikers, and OHV riders). The dose, EC, ILCR, and HI equations are presented in detail in Section 5.5.1 of the 2019 HHERA (Arcadis 2019). The detailed cancer risk estimates (Tables AOC11-B2.3a through AOC11-B2.3c) and noncancer hazard calculations (Tables AOC11-B2.4a through AOC11-B2.4c) are presented in Attachment AOC11-B.

The baseline scenario area-weighted estimated cumulative ILCRs and HIs for each potential receptor selected for evaluation are summarized in the tables and discussed in this section. In general, the area-weighted approach resulted in a small difference in the risk or hazard estimates compared to the depth-weighted estimates.

Exhibit AOC 11-4.2 Baseline Area-Weighted Estimated Cumulative Incremental Lifetime Cancer Risk and Hazard Index for the AOC 11 Potential Exposure Area for Recreational Users

Potential Receptor	Exposure Depth	Cumulative ILCR	ILCR Drivers	HI	HI Drivers
Camper	Surface	**2E-06**	Arsenic (2E-06) TEQ human (3E-07) Hexavalent chromium (1E-07)	0.6	NA
Camper	Shallow	**2E-06**	Arsenic (2E-06) TEQ human (3E-07) Hexavalent chromium (1E-07)	0.6	NA
Hiker	Surface	**5E-06**	Arsenic (4E-06) TEQ human (6E-07) Hexavalent chromium (2E-07)	1	NA
Hiker	Shallow	**5E-06**	Arsenic (4E-06) TEQ human (6E-07) Hexavalent chromium (2E-07)	1	NA
OHV rider	Surface	**3E-06**	Arsenic (2E-06) Hexavalent chromium (5E-07) TEQ human (3E-07)	0.2	NA
OHV rider	Shallow	**3E-06**	Arsenic (2E-06) Hexavalent chromium (5E-07) TEQ human (3E-07)	0.2	NA

Note:
1. ILCR and HI drivers are presented only for ILCRs above 1×10^{-6} and HIs above 1.

Assuming lifetime soil contact is limited to the AOC 11 potential exposure area, the area-weighted estimated cumulative ILCRs for the camper, hiker, and OHV rider potentially exposed to COPCs in post-NTCRA surface and shallow soil (Tables AOC11-B2.3a through AOC11-B2.3c in Attachment AOC11-B) are above the point of departure for risk management decisions of 1×10^{-6}, but within the risk management range of 1×10^{-6} and 1×10^{-4}. The area-weighted estimated cumulative ILCRs are also below the Fish and Wildlife's cancer risk threshold level of 1×10^{-5} for soil deeper than 2 feet below ground surface (February 12, 2021 Topock Soil EE/CA Response to Comment Consultation Meeting Agenda). For the camper and hiker, estimated risks above de minimis levels were primarily attributed to arsenic, hexavalent chromium and/or dioxin TEQ in soil via the soil ingestion pathway. For the OHV rider, estimated risks above de minimis levels were primarily attributed to arsenic and dioxin TEQ, via dermal contact with soil, and to hexavalent chromium via inhalation of soil particulates. As previously noted, approximately 80%, 78%, and 85% of the ILCRs for arsenic for the camper, hiker, and OHV rider, respectively are attributed to background concentrations of arsenic in soil.

As demonstrated by comparing the values, the area-weighted estimated cumulative ILCRs for the camper, hiker, and OHV rider are not materially different than the depth-weighted estimated cumulative ILCRs for all exposure depths. Considering the substantial contribution of background levels of arsenic in soil to the estimated cumulative ILCRs for the camper, hiker, and OHV rider potentially exposed to surface and shallow soil, it is likely that incremental risks for site-related COPCs in soil are at or only slightly above the lower end of the risk management range of 1×10^{-6} and 1×10^{-4}.

The area-weighted estimated cumulative HIs for the camper, hiker, and OHV rider (Tables AOC11-B2.4a through AOC11-B2.4c in Attachment AOC11-B) potentially exposed to COPCs in surface and shallow soil at the AOC 11 potential exposure area are at or below an HI of 1. The area-weighted EPCs for lead in surface and shallow soil at the AOC 11 potential exposure area are not expected to result in an increase in blood lead levels above OEHHA benchmark value of 1 µg/dL for recreational users (Tables AOC11-B2.5a through AOC 11-B2.5f in Attachment AOC11-B).

4.6.3 Uncertainties in the Risk Assessment

The risk assessment includes several uncertainties that warrant discussion. Many of the assumptions used in this risk assessment, regarding the representativeness of the sampling data, potential human exposures, fate and transport modeling, and chemical toxicity are conservative, follow agency guidance and reflect a 90th or 95th percentile value rather than a typical or average value. The use of several conservative exposure assumptions and toxicity estimates can introduce considerable uncertainty into the risk assessment. By using conservative exposure assumptions or toxicity estimates, the assessment can develop a significant conservative bias that may result in the calculation of significantly higher estimates for cancer risks or noncancer hazards than are actually posed by the chemicals present in soil. These uncertainties are discussed in detail in Section 5.6 of the 2019 HHERA (Arcadis 2019). Uncertainties applicable only to the risk assessment for the AOC 11 potential exposure area are discussed in detail in this section.

Additional uncertainties for the AOC 11 potential exposure area include the use of the maximum depth-weighted soil concentration as the EPC. The maximum depth-weighted soil concentration was used for COPCs when the soil dataset had fewer than four detected values (i.e., concentrations reported above the detection limit) or fewer than eight total observations as shown in Table AOC11-3.1.

For the AOC 11 potential exposure area, the maximum depth-weighted concentration was used as the EPC for the following COPCs:

- Surface soil: one metal (mercury), PAHs (acenaphthene, acenaphthylene, fluorene, and naphthalene), and pesticides (4,4-DDE, alpha-chlordane, dieldrin, and gamma-chlordane)
- Shallow soil: one metal (mercury), one VOC (methyl acetate), PAHs (1-methylnaphthalene, acenaphthene, acenaphthylene, fluorene, and naphthalene), and pesticides (4,4-DDE, alpha-chlordane, dieldrin, and gamma-chlordane)

The use of the maximum depth-weighted soil concentration as the EPC for the COPCs listed previously may not appropriately represent exposures and resulting risks/hazards. This approach to estimating EPCs does not materially impact the results of the HHRA because the AOC 11 potential exposure area COPCs with low frequency of detection and/or fewer than eight observations are not risk drivers at the site.

This baseline risk assessment assumes that contact with soil is not limited by the presence of engineering or institutional controls in the future. The potential health risks estimated for recreational users do not account for potential vegetative covering, unsuitable topography (e.g. steep slopes) and backfill material cover placed during or after completion of N T C R A activities outside the TCS that would reduce exposure below that assumed in this analysis. In addition, as recommended by D O I (Arcadis 2015), it is assumed that each of the recreational activities could take place at any location on federal land. However, specific locations may be preferred for certain activities, while other locations may be less attractive or may have limited recreational options. A O C 11 is also referred to as the Topographic Low Areas. Low areas A O C 11 Subarea 11a (A O C 11a), Subarea 11b (A O C 11b), Subarea 11c (A O C 11c), and Subarea 11d (A O C 11d) are located on Havasu National Wildlife Refuge property and one low topographic area (Subarea 11e [A O C 11e]) is on PG&E property. A O C 11 potential exposure area may have limited accessibility and may be less attractive or limited for certain recreational activities. As such, the estimated risks are likely overestimated.

5 ECOLOGICAL RISK ASSESSMENT

This section briefly summarizes the post-NTCRA ERA approach evaluated in this Post-NTCRA HHERA; presents the COPECs, EPCs, dose, and risk tables for the post-NTCRA AOC 11 ERA Addendum; and characterizes potential risk to desert shrew exposed to COPECs in soil currently present at the AOC 11 potential exposure area. Details of the overall post-NTCRA ERA approach are presented in Section 6 of the main report. Supporting tables for the AOC 11 ERA based on risk calculations conducted using depth-weighted and area-weighted EPCs are presented in Attachment AOC11-C and described in this section.

Ecological risks were not calculated using maximum depth-weighted concentrations. Risks estimated using maximum depth-weighted concentrations are considered overly conservative and generally are used for screening-level purposes. Maximum concentrations were not used for making risk management decisions for the NTCRA at the AOC 11 potential exposure area and were not evaluated in this ERA.

5.1 Ecological Conceptual Site Model

In the 2019 HHERA (Arcadis 2019), risks were estimated for potentially complete and significant exposure pathways identified for a suite of potential ecological receptors exposed to COPECs in soil at the AOC 11 potential exposure area. These included plants, invertebrates, and small home-range receptors (Merriam's kangaroo rat, desert shrew, cactus wren, and Gambel's quail). Potential large home-range receptors (desert kit fox, red-tailed hawk, and Nelson's desert bighorn sheep) were evaluated for larger potential exposure areas (combined AOCs/investigation areas). These larger exposure areas included (1) all AOCs outside the TCS, and (2) the AOCs outside the TCS excluding Bat Cave Wash and AOC 4. Semi-quantitative and qualitative evaluations for special-status species were also conducted, as described in the 2019 HHERA.

The 2019 HHERA (Arcadis 2019) found no potential risk to ecological receptors, including special-status species, in AOC 11 and the larger exposure area relevant to large home-range receptors. However, consistent with the approach for the Post-NTCRA HHERA detailed in the January 30, 2024 Technical Memo (Arcadis 2024) to DOI and DTSC, an updated risk characterization for risk-driving receptors and COPECs for other site AOCs was completed to evaluate post-NTCRA conditions in AOC 11. Therefore, for transparency and consistency, this Post-NTCRA HHERA presents risk estimates for desert shrew and hexavalent chromium, total chromium, copper, and dioxin TEQ in surface soil that reflect current conditions in AOC 11 following soil remediation associated with the NTCRA.

The exposure assumptions for desert shrew, which are consistent with the 2019 HHERA (Arcadis 2019), are as follows: desert shrew—representative of invertivorous small mammal populations—are exposed only to surface soil (incidental and through biota uptake).

5.2 Constituents of Potential Ecological Concern

As stated in Section 5.1, for AOC 11, the 2019 HHERA (Arcadis 2019) found no potential risk to ecological receptors in AOC 11 and the larger exposure area relevant to large home-range receptors. However, consistent with the approach for the Post-NTCRA HHERA detailed in the January 30, 2024 Technical Memo (Arcadis 2024), to DOI and DTSC, updated risk estimates are presented for risk-driving receptors and

COPECs found at other site AOCs to evaluate post-NTCRA conditions. Therefore, risk estimates are provided for desert shrew and hexavalent chromium, total chromium, copper, and dioxin TEQ.

5.3 Exposure Point Concentration Summary

Soil EPCs were calculated as described in Section 4.2 of the main report and presented in Section 3 of this Post-NTCRA HHERA.

For the AOC 11 potential exposure area, risks to desert shrew were estimated using depth-weighted EPCs and area-weighted EPCs. Depth-weighted data used in the calculation of depth-weighted EPCs are presented in Attachment AOC11-A2, while area-weighted data used in the calculation of area-weighted EPCs are presented in Attachment AOC11-A3.

Biota tissue (i.e., terrestrial invertebrate) EPCs were calculated from the soil EPCs using soil-to-biota uptake relationships (i.e., bioaccumulation factors [BAFs]) for invertebrates, as described in Section 6.4.3 of the main report. As described in Section 6.4.2 of the main report, the surface soil (e.g., 0 to 0.5 foot bgs) depth interval was selected to represent exposure to soil and biota tissue for the risk calculations for desert shrew. For dioxin TEQ, the BAFs selected in the RAWP (Arcadis 2008) are based on uptake of a single congener: 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). Because of the uncertainty associated with use of a single congener-based BAF (e.g., ignores differences in congener uptake due to differences in their structure and physico-chemical properties), dioxin TEQ uptake was also estimated using two congener-specific approaches: congener-specific BAFs for soil invertebrates from USEPA (1999) and congener-specific BAFs for soil invertebrates from Fagervold et al. (2010), as discussed in the Section 6.4.3.2 of the main report.

Depth-weighted soil EPCs and biota tissue EPCs calculated from depth-weighted soil EPCs are presented in Table AOC11-5.1 for the baseline scenario. Similarly, area-weighted soil EPCs and biota tissue EPCs calculated from area-weighted soil EPCs are presented in Table AOC11-5.2. The alternate congener-specific BAFs and resulting biota tissue EPCs are presented in Table AOC11-5.3.

Risk calculations based on depth-weighted UCLs and area-weighted UCLs for each COPEC are provided. As mentioned earlier, use of maximum depth-weighted concentrations results in overly conservative risks and is not considered appropriate for evaluation of post-NTCRA exposures.

5.4 Estimation of Exposure Concentration or Dose

Potential exposures for wildlife (i.e., desert shrew) are quantified as doses (e.g., in milligram per kilogram body weight per day). Exposure doses for COPECs in soil and potentially complete pathways were calculated as described, including equations, in Section 6.4.3 of the main report. The exposure parameters selected to evaluate wildlife in this ERA include upper bound values from literature (e.g., ingestion rates) or assumed (e.g. 100% of one type of diet), which may result in conservative estimates of exposure dose and potential overestimation of actual exposure at the site.

For desert shrew, doses were calculated using the exposure parameters and equations presented in Section 6.4.3 of the main report. Exposure doses were calculated using the depth-weighted soil and biota tissue EPCs presented in Table AOC11-5.1 for the depth-weighted risk evaluations, and area-weighted soil and biota tissue EPCs presented in Table AOC11-5.2 for the area-weighted risk evaluations. Alternate congener-specific BAFs and resulting biota tissue EPCs are presented in Table AOC11-5.3.

Dose calculations using depth-weighted EPCs for desert shrew potentially exposed to COPECs via ingestion of soil and biota tissue for the baseline scenario are presented in Attachment AOC11-C. Dose calculations using area-weighted EPCs for desert shrew potentially exposed to COPECs via ingestion of soil and biota tissue for the baseline scenario are also presented in Attachment AOC11-C.

5.5 Effects Assessment

Dose-based toxicity reference values (TRVs) for wildlife for COPECs were used to estimate risks to desert shrew potentially exposed to COPECs in soil and biota tissue at the AOC 11 potential exposure area.

A range of risks to desert shrew was estimated using the TRVs based on a no-observed adverse effects level (NOAEL) and based on a lowest-observed adverse effects level (LOAEL). For hexavalent chromium, total chromium, and copper, the NOAEL- and LOAEL-based TRVs used in this Post-NTCRA HHERA are the selected TRVs from the RAWP documents (Arcadis 2008, 2009, 2015).

For dioxin TEQ, the selected mammalian TRVs in the RAWP documents (Arcadis 2008, 2009, 2015) are from Toxicological Benchmarks for Wildlife from Oak Ridge National Laboratory (Sample et al. 1996). However, as described in Section 6.5 of the main report, an alternate set of mammalian TRVs were evaluated, consistent with the 2019 HHERA (Arcadis 2019). Following the approach used by USEPA in developing TRVs for the ecological soil screening levels (USEPA 2008), alternate dioxin TEQ TRVs were developed for mammals based the geometric mean of the reproduction and growth endpoints for the NOAEL and LOAEL effect levels, respectively. These alternate TRVs for dioxin TEQ, presented in Section 6.5 of the main report, were used to estimate potential risk to desert shrew in this Post-NTCRA HHERA.

The LOAEL-based TRVs used in this Post-NTCRA HHERA are the same as the TRVs used to develop ecological risk-based remedial goals (RBRGs) in the 2019 HHERA (Arcadis 2019); RAGs selected based on RBRGs were then used to define the extent of NTCRA soil removals.

Although other additional sets of TRVs (i.e., Navy/Biological Technical Assistance Group [BTAG] TRVs [DTSC 2002, 2009]) were also evaluated in the 2019 HHERA (Arcadis 2019), BTAG TRVs are not available for hexavalent chromium, total chromium, or dioxin TEQ, and they were ultimately not used for making remedial decisions. BTAG TRVs were not evaluated in this Post-NTCRA HHERA.

Wildlife TRVs used for RBRG development are presented in Table 6-4 of the main report.

5.6 Ecological Risk Characterization

The risk characterization integrates the results of the exposure assessment and effects assessment and is subject to uncertainties in both those efforts. Risk characterization includes two major components: risk estimation and risk description. As presented in tables and discussed in this section, risk estimation (HQs) involved integrating exposure profiles with the exposure-effects information. For each potential receptor and COPEC, risk descriptions including various lines of evidence (LOEs) and uncertainties, including HQs, supporting statistical and site use information, and the direction of uncertainty in the risk estimates, are discussed in this section for interpreting the risk results and identifying potential unacceptable risk to desert shrew. Uncertainties specific to the AOC 11 potential exposure area are discussed in context with the risk characterization results presented in this section. Generic uncertainties in the ERA are discussed in Section 6.7 of the main report.

The 2019 HHERA (Arcadis 2019) found no potential risk to ecological receptors, including special-status species, in AOC 11 and the larger exposure areas relevant to large home-range receptors. However, consistent with the approach for the Post-NTCRA HHERA detailed in the January 30, 2024 Technical Memo (Arcadis 2024) to DOI and DTSC, this Post-NTCRA HHERA presents the risk characterization for desert shrew and risk-driving COPECs for other site AOCs (i.e., hexavalent chromium, total chromium, copper, and dioxin TEQ) to evaluate current conditions in the AOC 11 potential exposure area following soil remediation associated with the NTCRA.

For desert shrew, a range of HQs was calculated using NOAEL- and LOAEL-based TRVs that were used in this Post-NTCRA HHERA (see Section 5.5). HQs based on LOAEL-based TRVs are referred to as "LOAEL-based HQs." HQs based on NOAEL-based TRVs are referred as "NOAEL-based HQs." As noted above, the 2019 HHERA (Arcadis 2019) did not identify potential for unacceptable risk to sensitive species and therefore protection of individual invertivorous small mammals is not warranted. This Post-NTCRA HHERA presents NOAEL-based HQs for completeness, however, LOAEL-based HQs were used to evaluate population-level protection of invertivorous small mammals.

Risk conclusions for populations of desert shrew used the following criteria:

- COPECs with NOAEL-based HQs less than or equal to 1 pose de minimis risk to individuals and populations of potential wildlife receptors.
- COPECs with a NOAEL-based HQ greater than 1, but LOAEL-based HQ less than or equal to 1, pose no unacceptable risks to wildlife populations. As described in the RAWP (Arcadis 2008), unacceptable risk to individuals is uncertain because the NOAEL-based TRVs are thresholds with an interval that is an artifact of the dosing study and the nature and magnitude of the effects, if any, that may occur at exposures between these values is unknown. Because protection at the individual level is not warranted for desert shrew, COPECs with NOAEL-based HQs greater than 1 and LOAEL-based HQs less than 1 were not further evaluated using a weight-of-evidence (WOE) approach.
- COPECs with LOAEL-based HQs greater than 1 indicate unacceptable risk is possible for populations of potential wildlife receptors. However, these LOAEL-based HQs are based on individual-level effects thresholds and only account for a single LOE. In such cases, a WOE approach was used to reduce uncertainty for characterizing potential risk to wildlife populations at the AOC 11 potential exposure area.

Ultimately, three risk outcomes are possible for desert shrew based on the LOAEL-based HQs greater than 1 and WOE: 1) unacceptable risk to wildlife populations is possible (i.e., indicated by sufficient and strong supporting LOEs); 2) unacceptable risk to wildlife populations is unlikely (i.e., indicated by sufficient and strong LOEs supporting a conclusion of no unacceptable risk); or 3) unacceptable risk to wildlife populations is uncertain (i.e., indicated by insufficient LOEs).

The results of individual LOE evaluations were evaluated collectively to derive an overall WOE conclusion. Key uncertainties were considered along with the strength, relevance, and other qualities of the LOEs in reaching the WOE conclusions. In this post-NTCRA ERA, the additional LOEs were evaluated and discussed when LOAEL-based HQs greater than 1 were estimated.

For the AOC 11 potential exposure area, evaluations were completed for the following scenarios and are discussed in this section:

- Baseline scenario using depth-weighted EPCs; and
- Baseline scenario using area-weighted EPCs.

In these evaluations, risk calculations were completed for hexavalent chromium, total chromium, copper, and dioxin TEQ, as presented in Table AOC11-5.4 using depth-weighted EPCs, Table AOC11-5.5 using area-weighted EPCs, and Table AOC11-5.6 using depth-weighted EPCs and refined BAFs for dioxin TEQ. Risk results were discussed in the evaluations using area-weighted EPCs only if the depth-weighted EPC evaluation indicated potential for unacceptable risk to desert shrew populations. For example, COPECs with LOAEL-based HQs greater than 1 based on the depth-weighted EPC were discussed in the area-weighted EPC evaluations. If any COPECs were identified with LOAEL-based HQs greater than 1 in the area-weighted EPC evaluations that had HQs less than 1 in the depth-weighted evaluations, these results were also discussed in the area-weighted EPC evaluation.

At the conclusion of the baseline scenario evaluation, risk conclusions were based on whether COPECs remain for which unacceptable population-level risk was predicted using LOAEL-based HQs calculated from the most refined exposure and effects assumptions and LOEs supporting the conclusion of unacceptable risk.

5.6.1 Desert Shrew Baseline Risk Characterization Using Depth-Weighted EPCs

Desert shrew is an invertivorous small mammal that could potentially be exposed to COPECs in surface soil (0 to 0.5 foot bgs) directly and through its diet. Risk estimates for desert shrew for the baseline scenario using depth-weighted EPCs, a site use factor (SUF) of 1, and TRVs used for RBRG development are summarized in this section and presented in Table AOC11-5.4.

Site-specific SUFs were not evaluated for desert shrew. Based on the AOC 11 potential exposure area and home ranges for desert shrew, the site-specific SUF was estimated as 1 (i.e., home range is less than or equal to the size of the potential exposure area). Therefore, the risk results would be the same as when calculated using a generic SUF of 1.

Detailed dose and risk calculations for desert shrew are presented in Attachment AOC11-C. Hexavalent chromium, total chromium, copper, and dioxin TEQ in soil were evaluated to determine potential risks associated with post-NTCRA conditions.

LOAEL-based HQs for desert shrew are greater than 1 for dioxin TEQ; potential risk for constituents evaluated in this ERA is characterized below.

- For dioxin TEQ, the NOAEL- and LOAEL-based HQs are greater than 1. As described in Section 6.7.4 of the main report, uptake factors selected for dioxins at this site likely overestimate exposure and risk for this COPEC. Conservative assumptions were used to estimate the HQs, including use of BAFs based on uptake of a single congener (2,3,7,8-TCDD) to earthworms, and a diet assumed to consist entirely of earthworms which is unlikely given the desert habitat present at the site. As discussed in Section 6.5 of the main report, the alternate LOAEL-based TRV is based on the geometric mean of reproduction and growth LOAELs for rodents and is considered a robust estimate of toxicity to small mammals. Dioxin TEQ was detected at all 38 locations in surface soil (frequency of detection = 100% in 0 to 0.5 foot bgs), with 22 of 38 surface soil locations having depth-weighted concentrations above the background threshold value (BTV) (BTV = 5.58 nanograms per kilogram). Concentrations exceeding 10 times the BTV include ten locations, some of the highest concentrations were measured in samples collected from along the

TCS fence line (PA-10, PA-11, PA-12, and SD-11A) and the remaining six elevated locations within the TAA (i.e., AOC11TAA1-CF-2, AOC11TAA1-CF-3, AOC11TAA1-CF4, AOC11TAA1-CF6, AOC11TAA1-CW5a, and AOC11TAA1-CW6a). All but one of the dioxin TEQ concentrations exceeding the BTV are equal to or below the RBRG range of 190 to 360 nanograms per kilogram. Based on the dispersed nature of the highest remaining dioxin TEQ concentrations (AOC11TAA1-CW6a and PA-12) and small home range of desert shrew, it is likely that desert shrew would primarily be exposed to lower soil concentrations in their habitat and only a few individuals could be substantially exposed to the higher concentrations. Although the LOAEL-based HQ exceeds 1, additional LOEs include a low LOAEL HQ, conservative dietary and uptake assumptions, and spatially dispersed nature of the highest remaining dioxin TEQ concentrations. Based on the HQ and additional LOEs, unacceptable risk to individual and populations of desert shrew is considered unlikely based on the assumptions in this scenario.

- For hexavalent chromium, total chromium, and copper at the AOC 11 potential exposure area, NOAEL- and LOAEL-based HQs are less than 1 indicating de minimis risk to individual and populations of invertivorous small mammals.

Based on the risk estimates and potential uncertainties associated with the baseline risk to invertivorous small mammals from exposure to dioxin TEQ, area-weighted EPCs were also evaluated as discussed in Section 5.6.2.

5.6.2 Desert Shrew Baseline Risk Characterization Using Area-Weighted EPCs

Based on the risk characterization using depth-weighted EPCs (Section 5.6.1), risks to the desert shrew were characterized for dioxin TEQ using area-weighted EPCs. Risk estimates for hexavalent chromium, total chromium, and copper were also presented using area-weighted EPCs.

Potential risks to desert shrew from COPECs listed in this section and characterized for the baseline scenario using area-weighted EPCs, a SUF of 1, selected BAFs, and TRVs used for RBRG development are presented in Table AOC11-5.5 Detailed dose and risk calculations for desert shrew are presented in Attachment AOC11-C.

In the baseline scenario using area-weighted EPCs, the LOAEL-based HQs for desert shrew are greater than 1 only for dioxin TEQ.

- For dioxin TEQ, the magnitude of NOAEL- and LOAEL-based HQs were reduced from the depth-weighted EPC analysis but are still greater than 1. However, the uncertainties and additional LOEs, as discussed above in Section 5.6.1, also apply in this scenario and support the conclusion that unacceptable risk to populations of shrew is unlikely.
- Similar to the evaluation using depth-weighted EPCs, for hexavalent chromium, total chromium, and copper, the NOAEL- and LOAEL-based HQs using area-weighted EPCs are also less than 1 indicating de minimis risk to individuals and populations of invertivorous small mammals from exposure to these constituents at the AOC 11 potential exposure area.

Based on the risk estimates and potential uncertainties associated with the baseline scenario risk from dioxin TEQ, congener-specific BAFs were evaluated for dioxin TEQ, as discussed in Section 5.6.3.

5.6.3 Desert Shrew Baseline Risk Characterization Using Congener-Specific Bioaccumulation Factors for Dioxin TEQ

Based on the risk characterization using area-weighted EPCs (Section 5.6.2), risks were characterized for dioxin TEQ using alternate BAFs (i.e., BAFs used for RBRG development in the 2019 HHERA[Arcadis 2019]). Consistent with the 2019 HHERA, depth-weighted EPCs were used in this evaluation. Risk estimates for total chromium, hexavalent chromium, and copper are de minimis (Section 5.6.2) and were not refined further in this section.

As discussed in Section 6.4.3.2 of the main report and summarized above in Section 5.3, the BAFs used for RBRG development in the 2019 HHERA (Arcadis 2019) are based on congener-specific uptake from soil-to-biota, rather than assuming all dioxin congener uptake is equivalent to soil-to-biota uptake of 2,3,7,8-TCDD. Two sets of congener-specific uptake factors were evaluated: congener-specific uptake factors available from USEPA (1999) as well as congener-specific uptake factors from Fagervold et al. (2010). These are described in detail in Section 6.4.3.2 of the main report. The congener-specific uptake factors and estimated biota tissue EPCs for dioxin TEQ in AOC 11 in this post-NTCRA ERA are presented in Table AOC11-5.3.

Potential risks to desert shrew for dioxin TEQ characterized for the baseline scenario using depth-weighted EPCs, a SUF of 1, congener-specific BAFs, and alternate TRVs are presented in Table AOC11-5.6. Using congener-specific BAFs from USEPA (1999) and Fagervold et al. (2010), the LOAEL-based HQs are less than 1 indicating that no unacceptable risk is expected for desert shrew populations.

Detailed dose and risk calculations for desert shrew are presented in Attachment AOC11-C.

5.6.4 Risk Conclusions for Desert Shrew

The 2019 HHERA(Arcadis 2019) found no potential risk to ecological receptors, including special-status species, in AOC 11 and the larger exposure areas relevant to large home-range receptors. However, consistent with the approach for the Post-NTCRA HHERA detailed in the January 30, 2024 Technical Memo (Arcadis 2024) to DOI and DTSC, this Post-NTCRA HHERA presents the risk characterization for desert shrew and risk-driving COPECs for other site AOCs (i.e., hexavalent chromium, total chromium, copper, and dioxin TEQ) to evaluate current conditions in the AOC 11 potential exposure area following soil remediation associated with the NTCRA. This Post-NTCRA HHERA presents risk estimates for desert shrew and hexavalent chromium, total chromium, copper, and dioxin TEQ in surface soil that reflect current conditions in the AOC 11 potential exposure area following soil remediation associated with the NTCRA. Risk conclusions for desert shrew populations are presented below.

- For dioxin TEQ, risk conclusions are based on LOAEL-based HQs estimated in the most refined exposure scenario (Section 5.6.3) using assumptions used for RBRG development (i.e., a SUF of 1, congener-specific BAFs, and alternate TRVs) and depth-weighted EPCs. Using these assumptions, LOAEL-based HQs are less than 1 using both sets of congener-specific BAFs (i.e., USEPA 1999, Fagervold et al. 2010) indicating that no unacceptable risk is expected for populations of invertivorous small mammals.
- For hexavalent chromium, total chromium, and copper, the NOAEL- and LOAEL-based HQs are less than 1 for the baseline scenario indicating de minimis risk to individuals and populations of invertivorous small mammals at the AOC 11 potential exposure area.

In conclusion, no unacceptable risk to wildlife receptor populations is identified at the AOC 11 potential exposure area. For desert shrew, the conclusions are based on post-NTCRA conditions as evaluated in this Post-NTCRAHHERA and summarized above. For remaining ecological receptors, the conclusions are based on pre-NTCRA conditions as evaluated in the 2019 HHERA (Arcadis 2019).

6 SUMMARY AND CONCLUSIONS FOR THE HHERA

Potential cumulative cancer risks and noncancer hazards for potential human receptors were estimated, as presented in Section 4. For potential ecological receptors, potential risks were estimated as presented in Section 5. Uncertainties related to the HHRA and ERAs at the site in general are discussed in detail in Sections 5.6 and 6.7 of the 2019 HHERA (Arcadis 2019) and are summarized in Sections 5.5 and 6.7 of the main report. Uncertainties specific to the evaluation of post-NTCRA conditions in AOC 11 potential exposure area are discussed in this Post-NTCRA HHERA. The approach for the Post-NTCRA HHERA was detailed in the January 30, 2024 Technical Memo (Arcadis 2024) to DOI and DTSC which specified that updated risk characterization would be presented only for risk-driving receptors.

One potential exposure scenario was evaluated (baseline [no scouring]) consistent with the scenario evaluated in the 2019 HHERA (Arcadis 2019). Risks were estimated for various potential receptors using depth-weighted EPCs and area-weighted EPCs. For desert shrew, additional refinements to the soil-to-invertebrate uptake factors were also evaluated consistent with the approach used for RBRG development in the 2019 HHERA (Arcadis 2019).

At the AOC 11 potential exposure area, the COPCs evaluated for the Post-NTCRA HHERA include metals (arsenic, hexavalent chromium, total chromium, copper, lead, mercury, and zinc), one VOC (methyl acetate), HMW PAHs, LMW PAHs, PAHs, pesticides (4,4-DDE, alpha-chlordane, dieldrin, and gamma-chlordane), PCBs, TPH as diesel, TPH as motor oil, and D/F. Although the 2019 HHERA (Arcadis 2019) did not identify risk-driving COPECs for AOC 11, hexavalent chromium, total chromium, copper, and dioxin TEQ were evaluated for the Post-NTCRA HHERA based on unacceptable risk estimated for desert shrew in the 2019 HHERA for other site AOCs. A summary of these results and conclusions regarding potential risk associated with exposure to these COPCs/COPECs in soil at the AOC 11 potential exposure area based on the risk/hazard estimates and uncertainties inherent in the risk assessment process are presented in this section.

6.1 Summary and Conclusions for the HHRA

The cumulative ILCRs and HIs associated with potential exposure to COPCs post-NTCRA in soil at the AOC 11 potential exposure area using depth- and area-weighted EPCs under the baseline scenario were estimated. Assuming lifetime soil contact is limited to the AOC 11 potential exposure area for the potential receptors evaluated, the estimated potential ILCR and HI results are summarized in this section and in Exhibit AOC 11-6.1.

Exhibit AOC 11-6.1 Baseline Scenario Estimated Cumulative Incremental Lifetime Cancer Risk and Hazard Index for the AOC 11 Potential Exposure Area

Potential Receptor	Exposure Depth	Cumulative ILCR Depth-Weighted	Cumulative ILCR Area-Weighted	HI—Depth-Weighted	HI—Area-Weighted
Camper	Surface	**2×10^{-6}** (Arsenic and dioxin TEQ)	**2×10^{-6}** (Arsenic, dioxin TEQ, and Hexavalent chromium)	Less than or equal to 1	Less than or equal to 1

Potential Receptor	Exposure Depth	Cumulative ILCR Depth-Weighted	Cumulative ILCR Area-Weighted	HI—Depth-Weighted	HI—Area-Weighted
Camper	Shallow	**3 x 10^{-6}** (Arsenic and dioxin TEQ)	**2 x 10^{-6}** (Arsenic, dioxin TEQ, and Hexavalent chromium)	Less than or equal to 1	Less than or equal to 1
Hiker	Surface	**5 x 10^{-6}** (Arsenic, dioxin TEQ, and Hexavalent chromium)	**5 x 10^{-6}** (Arsenic, dioxin TEQ, and Hexavalent chromium)	Less than or equal to 1	Less than or equal to 1
Hiker	Shallow	**6 x 10^{-6}** (Arsenic and dioxin TEQ)	**5 x 10^{-6}** (Arsenic, dioxin TEQ, and Hexavalent chromium)	Less than or equal to 1	Less than or equal to 1
OHV rider	Surface	**3 x 10^{-6}** (Arsenic, dioxin TEQ, and Hexavalent chromium)	**3 x 10^{-6}** (Arsenic, Hexavalent chromium, and dioxin TEQ)	Less than or equal to 1	Less than or equal to 1
OHV rider	Shallow	**4 x 10^{-6}** (Arsenic, dioxin TEQ, and Hexavalent chromium)	**3 x 10^{-6}** (Arsenic, Hexavalent chromium, and dioxin TEQ)	Less than or equal to 1	Less than or equal to 1

Note:
not calculated = area-weighted estimate was not calculated because the depth-weighted estimate for the potential receptor was below de minimis levels

Depth-Weighted

Potential exposures that are at or below de minimis levels include the following:

- **HI less than or equal to 1 for all soil depths**—camper, hiker, hunter, and OHV rider; and
- **ILCR less than or equal to 1 × 10^{-6}**—none.

Potential exposures that are above the *de minimis* levels of an HI greater than 1 and within the risk management range of 1 × 10^{-6} and 1 × 10^{-4} include the following:

- **ILCR greater than 1 × 10^{-6} and less than or equal to 5 x 10^{-6}** —camper (surface and shallow soil), hiker (surface), and OHV rider (surface and shallow soil);
- **ILCR greater than 5 x 10^{-6} and less than or equal to 1 x 10^{-5}—**hiker (shallow soil); and
- **ILCR greater than 1 × 10^{-5} and less than or equal to 1 × 10^{-4}**—none.

Assuming lifetime soil contact is limited to the AOC 11 potential exposure area, the depth-weighted estimated risks and hazards above de minimis levels for the camper, hiker, and OHV rider were due to arsenic,

hexavalent chromium, and/or dioxin TEQ. Therefore, potential risks and hazards for these potential receptors were evaluated using area-weighted EPCs and are provided in this section. It should be noted that a substantial portion of the ILCRs for arsenic can be attributed to background levels of arsenic in soil.

Area-Weighted

Potential exposures that are at or below the de minimis levels include the following:

- **HI less than or equal to 1 for all soil depths**—camper, hiker, and OHV rider; and
- **ILCR less than or equal to 1×10^{-6} for all soil depths**—none.

Potential exposures that are above the *de minimis* level of an HI greater than 1 and within the risk management range of 1×10^{-6} and 1×10^{-4} include the following:

- **ILCR greater than 1×10^{-6} and less than or equal to —**camper (surface and shallow soil), hiker (surface and shallow soil), and OHV rider (surface and shallow soil);
- **ILCR greater than 5×10^{-6} and less than or equal to 1×10^{-5}**—none; and
- **ILCR greater than 1×10^{-5} and less than or equal to 1×10^{-4}**—none.

OVERALL SUMMARY

Assuming lifetime soil contact is limited to the AOC 11 potential exposure area, the estimated cumulative ILCRs associated with potential exposure to COPCs in post-NTCRA soil using depth-weighted EPCs for the camper, hiker, and OHV rider are above 1×10^{-6}. Therefore, the camper, hiker, and OHV rider were carried forward in the area-weighted evaluation. The estimated cumulative ILCRs using the depth- and area-weighted EPCs for the camper, hiker, and OHV rider were above the point of departure for risk management decisions of 1×10^{-6} but well within the risk management range of 1×10^{-6} and 1×10^{-4}. The depth- and area-weighted estimated cumulative ILCRs are also below the Fish and Wildlife's cancer risk threshold level of 1×10^{-5} for soil deeper than 2 feet below ground surface (February 12, 2021 Topock Soil EE/CA Response to Comment Consultation Meeting Agenda).

As demonstrated by comparing the values, the area-weighted estimated cumulative ILCRs for the camper, hiker, and OHV rider are not materially different than the depth-weighted cumulative ILCRs for all exposure depths. Approximately 78 to 85% of the estimated ILCRs for arsenic are attributed to background concentrations of arsenic in soil. Considering the substantial contribution of background arsenic in soil to the estimated cumulative ILCRs for all the receptors potentially exposed to AOC 11 potential exposure area soil, it is likely that incremental risks for site-related COPCs in soil are at or only slightly above 1×10^{-6}, but below 5×10^{-6}, which is well within the risk management range of 1×10^{-6} and 1×10^{-4}.

The cumulative HIs estimated using the depth- and area-weighted EPCs for the campers, hikers, and OHV riders were at or below HI of 1. The depth- and area-weighted EPCs for lead in the AOC 11 potential exposure area soil at all exposure depths are not expected to result in an increase in blood lead levels above OEHHA's benchmark value of 1 µg/dL in child recreational user.

Risks/hazards estimated for an individual AOC/SWMU/UA potential exposure area like AOC 11 are not considered representative of the realistic or likely potential exposures for the human populations that could be present in the areas outside the TCS (such as recreational users). Risks/hazards calculated separately for individual AOCs are conservative and likely overestimate site risks/hazards. As described in the RAWP

documents (Arcadis 2008, 2009, 2015), these human populations would more likely be exposed randomly, over the course of a lifetime, to soil present in all individual AOC/SWMU/UA potential exposure areas located outside the TCS, rather than have a lifetime of contact limited to the area of a single potential exposure area. Therefore, estimated risk/hazards presented for individual AOC/SWMU/UA potential exposure areas are not believed to be representative of the potential health risks to humans potentially contacting the soil outside the TCS. As stated previously, the Post-NTCRA HHERA provides updated risk estimates for human health and the environment based on potential exposures to current soil conditions in the NTCRA areas. Therefore, updated risk estimates were not performed for the OCS potential exposure area in the Post-NTCRA HHERA It is noted that due to NTCRA soil removal, the potential post-NTCRA soil risks for the OCS are likely lower than estimated in the 2019 HHERA. The HHRA results and conclusions of the 2019 HHERA and of this Post-NTCRA HHERA will be considered for making risk-management decisions for the site in the Corrective Measure Study/Feasibility Study to be prepared for the site.

6.2 Summary and Conclusions for the ERA

At the AOC 11 potential exposure area, hexavalent chromium, total chromium, copper, and dioxin TEQ were evaluated in this Post-NTCRA HHERA to assess potential for unacceptable risk associated with post-NTCRA conditions. Updated risk estimates for hexavalent chromium, total chromium, copper, and dioxin TEQ are presented only for desert shrew. The 2019 HHERA (Arcadis 2019) did not identify potential for unacceptable risk to sensitive species and therefore protection of individual invertivorous small mammals is not warranted. This Post-NTCRA HHERA presents NOAEL-based HQs for completeness, however, only the LOAEL-based HQs were used to evaluate population-level protection of invertivorous small mammals.

Risks were estimated using depth-weighted and area-weighted EPCs as well as refined BAFs based on congener-specific soil-to-biota uptake for dioxin TEQ. HQs are summarized in Table AOC11-6.1. Risk conclusions for desert shrew populations were based on the following criteria:

- COPECs with NOAEL-based HQs less than or equal to 1 pose de minimis risk to potential wildlife receptors.
- COPECs with NOAEL-based HQs greater than 1 but LOAEL-based HQs less than or equal to 1 pose no unacceptable risks to wildlife populations; however, the potential for unacceptable risk to individuals is uncertain based on the HQ. Because protection at the individual level is not warranted for desert shrew, COPECs with NOAEL-based HQs greater than 1 and LOAEL-based HQs less than 1 were not further evaluated using a WOE approach.
- COPECs with LOAEL-based HQs greater than 1 pose possible unacceptable risk to populations of potential wildlife receptors based on the HQ. In such cases, a WOE approach was used in reducing uncertainty for characterizing potential risk to wildlife populations at the AOC 11 potential exposure area.

The risk estimates (HQs) represent only one LOE for risk characterization. A qualitative WOE approach, incorporating other LOEs and uncertainties, was used to characterize possible risk to wildlife populations at the AOC 11 potential exposure area. Alternate congener-specific BAFs and alternate TRVs demonstrating the magnitude of the risk overestimation are evaluated together in Section 5.6.3. These alternate BAFs and TRVs are based on current understanding of uptake and toxicity of TEQ mixtures and represent key LOEs considered for dioxin TEQ.

For COPECs with LOAEL-based HQs greater than 1 using the most refined exposure and effects assumptions, a WOE assessment was used to draw risk conclusions for the AOC 11 potential exposure area.

Overall, no unacceptable risks to populations of invertivorous small mammals (i.e., desert shrew) exposed to hexavalent chromium, total chromium, copper, and dioxin TEQ in soil is expected. Conclusions for hexavalent chromium, total chromium, copper, and dioxin TEQ in the baseline scenario evaluations are presented in Section 5.6.4 and summarized below in the text and Exhibit AOC 11-6.2:

- For dioxin TEQ, LOAEL-based HQs are less than 1 using both sets of congener-specific BAFs indicating no unacceptable risk to populations of invertivorous small mammals.
- For hexavalent chromium, total chromium, and copper, the NOAEL- and LOAEL-based HQs are less than 1 for the baseline scenario indicating de minimis risk to individuals and populations of invertivorous small mammals at the AOC 11 potential exposure area.

Exhibit AOC 11-6.2 Potential for Unacceptable Risk to Desert Shrew at the AOC 11 Potential Exposure Area

Scenario	Dioxin TEQ	Total Chromium	Hexavalent Chromium	Copper
Baseline	None for wildlife populations	None for wildlife populations	None for wildlife populations	None for wildlife populations

7 REFERENCES

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TABLES

Table AOC11-1.1
Samples and Sampling Locations Included in the AOC 11 Potential Exposure Area

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

SampleID	Sample Date	Location ID	RFI Area	Original Upper Depth (ft bgs)	Original Lower Depth (ft bgs)	Used for EPCs (2019 H H E R A)?	Original Baseline (ft bgs)	Excavation Status	Excavation Depth (ft)	Backfill Depth (ft)	Current Upper Depth (ft bgs)	Current Lower Depth (ft bgs)	Current Baseline (ft bgs)	Sample Source (2019 H H E R A, N T C R A, or R F I Addition)	Used for Post-N T C R A H H E R A EPCs?[b]
AOC11-1-6100	1/5/2016	AOC11-1	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-1-6102	1/5/2016	AOC11-1	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-1-6103	1/5/2016	AOC11-1	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11-1-6104	1/5/2016	AOC11-1	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11-2-6105	1/5/2016	AOC11-2	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-2-6106	1/5/2016	AOC11-2	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-2-6107	1/5/2016	AOC11-2	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11-2-6108	1/5/2016	AOC11-2	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11-3-6110	1/5/2016	AOC11-3	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-3-6111	1/5/2016	AOC11-3	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-3-6112	1/5/2016	AOC11-3	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11-3-6113	1/5/2016	AOC11-3	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11-3-6114	1/5/2016	AOC11-3	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11-4-6115	1/5/2016	AOC11-4	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-4-6116	1/5/2016	AOC11-4	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-4-OS1-D1	6/11/2014	AOC11-4-OS1	AOC11	0	0	Yes	0-0.5	In Place	0	0	0	0	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-4-OS1-D2	6/11/2014	AOC11-4-OS1	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-4-OS3-D1	6/11/2014	AOC11-4-OS3	AOC11	0	0	Yes	0-0.5	In Place	0	0	0	0	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-4-OS3-D2	6/11/2014	AOC11-4-OS3	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-4-OS3-D99	6/11/2014	AOC11-4-OS3	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-4-OS4-D1	6/11/2014	AOC11-4-OS4	AOC11	0	0	Yes	0-0.5	In Place	0	0	0	0	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-4-OS4-D2	6/11/2014	AOC11-4-OS4	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-4-OS4-D3	6/11/2014	AOC11-4-OS4	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11-4-OS5-D1	6/11/2014	AOC11-4-OS5	AOC11	0	0	Yes	0-0.5	In Place	0	0	0	0	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-4-OS5-D2	6/11/2014	AOC11-4-OS5	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-4-OS5-D99	6/11/2014	AOC11-4-OS5	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11-4-OS6-D1	6/11/2014	AOC11-4-OS6	AOC11	0	0	Yes	0-0.5	In Place	0	0	0	0	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-4-OS6-D2	6/11/2014	AOC11-4-OS6	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-5-6119	2/3/2016	AOC11-5	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-5-6120	2/3/2016	AOC11-5	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-5-6121	2/3/2016	AOC11-5	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11-5-6122	2/3/2016	AOC11-5	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11-6-6123	1/6/2016	AOC11-6	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-6-6124	1/6/2016	AOC11-6	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-6-6125	1/6/2016	AOC11-6	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11-6-6126	1/6/2016	AOC11-6	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11-7-6127	1/6/2016	AOC11-7	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-7-6128	1/6/2016	AOC11-7	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-7-6129	1/6/2016	AOC11-7	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11-8-6131	12/6/2015	AOC11-8	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-8-6132	12/6/2015	AOC11-8	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11-9-6135	12/6/2015	AOC11-9	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11-9-6136	12/6/2015	AOC11-9	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11a-1-6001	9/21/2008	AOC11a-1	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11a-1-6002	9/21/2008	AOC11a-1	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11a-1-6003	9/21/2008	AOC11a-1	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11a-1-6004	9/21/2008	AOC11a-1	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11a-2-6005	9/21/2008	AOC11a-2	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11a-2-6006	9/21/2008	AOC11a-2	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11a-2-6007	9/21/2008	AOC11a-2	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11a-2-6008	9/21/2008	AOC11a-2	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11a-3-6009	9/20/2008	AOC11a-3	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11a-3-6010	9/20/2008	AOC11a-3	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11a-3-6011	9/20/2008	AOC11a-3	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11a-3-6012	9/20/2008	AOC11a-3	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11a-3-6013	9/20/2008	AOC11a-3	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11a-4-6014	9/20/2008	AOC11a-4	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11a-4-6015	9/20/2008	AOC11a-4	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11a-4-6016	9/20/2008	AOC11a-4	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11a-4-6017	9/20/2008	AOC11a-4	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA

Table AOC11-1.1
Samples and Sampling Locations Included in the AOC 11 Potential Exposure Area

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

SampleID	Sample Date	Location ID	RFI Area	Original Upper Depth (ft bgs)	Original Lower Depth (ft bgs)	Used for EPCs (2019 H H E R A)?	Original Baseline (ft bgs)	Excavation Status	Excavation Depth (ft)	Backfill Depth (ft)	Current Upper Depth (ft bgs)	Current Lower Depth (ft bgs)	Current Baseline (ft bgs)	Sample Source (2019 H H E R A, N T C R A, or R F I Addition)	Used for Post-N T C R A H H E R A EPCs?[b]
AOC11a-5-6018	9/21/2008	AOC11a-5	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11a-5-6019	9/21/2008	AOC11a-5	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11a-5-6020	9/21/2008	AOC11a-5	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11a-5-6021	9/21/2008	AOC11a-5	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11a-5-6022	9/21/2008	AOC11a-5	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11a-SS-1-6055	9/21/2008	AOC11a-SS-1	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11a-SS-1-6056	9/21/2008	AOC11a-SS-1	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11a-SS-1-6057	9/21/2008	AOC11a-SS-1	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11a-SS-1-6058	9/21/2008	AOC11a-SS-1	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11a-SS-2-6059	9/21/2008	AOC11a-SS-2	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11a-SS-2-6060	9/21/2008	AOC11a-SS-2	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11a-SS-3-6063	9/20/2008	AOC11a-SS-3	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11a-SS-3-6064	9/20/2008	AOC11a-SS-3	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11a-SS-3-6065	9/20/2008	AOC11a-SS-3	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11a-SS-3-6066	9/20/2008	AOC11a-SS-3	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11b-1-6023	9/17/2008	AOC11b-1	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11b-1-6024	9/17/2008	AOC11b-1	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11b-1-6025	9/17/2008	AOC11b-1	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11b-1-6026	9/17/2008	AOC11b-1	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11b-1-6027	9/17/2008	AOC11b-1	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11b-2-6028	9/17/2008	AOC11b-2	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11b-2-6029	9/17/2008	AOC11b-2	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11b-2-6030	9/17/2008	AOC11b-2	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11b-2-6031	9/17/2008	AOC11b-2	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11c-1-6032	9/21/2008	AOC11c-1	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11c-1-6033	9/22/2008	AOC11c-1	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11c-1-6035	9/22/2008	AOC11c-1	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11c-1-6036	9/22/2008	AOC11c-1	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11c-2-6037	9/21/2008	AOC11c-2	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11c-2-6038	9/22/2008	AOC11c-2	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11c-2-6039	9/22/2008	AOC11c-2	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11c-2-6040	9/22/2008	AOC11c-2	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11c-4-6146	1/28/2016	AOC11c-4	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11c-4-6147	1/28/2016	AOC11c-4	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11c-4-6148	1/28/2016	AOC11c-4	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11c-4-6149	1/28/2016	AOC11c-4	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11c-SS-1-6067	9/21/2008	AOC11c-SS-1	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11c-SS-1-6068	9/22/2008	AOC11c-SS-1	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11c-SS-1-6069	9/22/2008	AOC11c-SS-1	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11c-SS-1-6070	9/22/2008	AOC11c-SS-1	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11c-SS-2-6071	9/22/2008	AOC11c-SS-2	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11c-SS-2-6072	9/22/2008	AOC11c-SS-2	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11c-SS-2-6073	9/22/2008	AOC11c-SS-2	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11c-SS-2-6074	9/22/2008	AOC11c-SS-2	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11d-1-6041	9/23/2008	AOC11d-1	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11d-1-6042	9/23/2008	AOC11d-1	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11d-1-6043	9/23/2008	AOC11d-1	AOC11	2.5	3	Yes	0-03	In Place	0	0	2.5	3	0-03 ft	2019 HHERA	Yes
AOC11d-1-6044	9/23/2008	AOC11d-1	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11d-1-6045	9/23/2008	AOC11d-1	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11e-1-6046	9/23/2008	AOC11e-1	AOC11	0	0.5	Yes	0-0.5	Removed	--	0	NE	NE	NE	2019 HHERA	No, Excavated
AOC11e-1-6047	9/23/2008	AOC11e-1	AOC11	2.5	3	Yes	0-03	Removed	--	0	NE	NE	NE	2019 HHERA	No, Excavated
AOC11e-1-6048	9/23/2008	AOC11e-1	AOC11	5.5	6	Yes	0-06	Removed	--	0	NE	NE	NE	2019 HHERA	No, Excavated
AOC11e-1-6049	9/23/2008	AOC11e-1	AOC11	9.5	10	Yes	0-10	In Place	7	0	2.5	3	0-03 ft	2019 HHERA	Yes
AOC11e-2-6050	9/24/2008	AOC11e-2	AOC11	0	0.5	Yes	0-0.5	Removed	--	0	NE	NE	NE	2019 HHERA	No, Excavated
AOC11e-2-6051	9/24/2008	AOC11e-2	AOC11	2	3	Yes	0-03	Removed	--	0	NE	NE	NE	2019 HHERA	No, Excavated
AOC11e-2-6053	9/24/2008	AOC11e-2	AOC11	5	6	Yes	0-06	Removed	--	0	NE	NE	NE	2019 HHERA	No, Excavated
AOC11e-2-6054	9/24/2008	AOC11e-2	AOC11	9	10	Yes	0-10	In Place	7	0	2	3	0-03 ft	2019 HHERA	Yes
AOC11e-3-6153	1/8/2016	AOC11e-3	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11e-3-6154	1/8/2016	AOC11e-3	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11e-3-6155	1/10/2016	AOC11e-3	AOC11	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes

Table AOC11-1.1
Samples and Sampling Locations Included in the AOC 11 Potential Exposure Area

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

SampleID	Sample Date	Location ID	RFI Area	Original Upper Depth (ft bgs)	Original Lower Depth (ft bgs)	Used for EPCs (2019 H H E R A)?	Original Baseline (ft bgs)	Excavation Status	Excavation Depth (ft)	Backfill Depth (ft)	Current Upper Depth (ft bgs)	Current Lower Depth (ft bgs)	Current Baseline (ft bgs)	Sample Source (2019 H H E R A, N T C R A, or R F I Addition)	Used for Post-N T C R A H H E R A EPCs?[b]
AOC11e-3-6156	1/10/2016	AOC11e-3	AOC11	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
AOC11e-3-6157	1/10/2016	AOC11e-3	AOC11	9	10	Yes	0-10	In Place	0	0	9	10	NE	2019 HHERA	No, Depth NA
AOC11e-4-6159	1/28/2016	AOC11e-4	AOC11	0	1	Yes	0-0.5	Removed	--	0	NE	NE	NE	2019 HHERA	No, Excavated
AOC11e-4-6160	1/28/2016	AOC11e-4	AOC11	2	3	Yes	0-03	Removed	--	0	NE	NE	NE	2019 HHERA	No, Excavated
AOC11e-4-6161	1/28/2016	AOC11e-4	AOC11	5	6	Yes	0-06	Removed	--	0	NE	NE	NE	2019 HHERA	No, Excavated
AOC11E-6-6172	12/3/2015	AOC11e-6	AOC11	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
AOC11e-SS-1-6075	9/23/2008	AOC11e-SS-1	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11e-SS-1-6076	9/23/2008	AOC11e-SS-1	AOC11	2.5	3	Yes	0-03	In Place	0	0	2.5	3	0-03 ft	2019 HHERA	Yes
AOC11e-SS-1-6077	9/23/2008	AOC11e-SS-1	AOC11	5.5	6	Yes	0-06	In Place	0	0	5.5	6	NE	2019 HHERA	No, Depth NA
AOC11e-SS-1-6078	9/23/2008	AOC11e-SS-1	AOC11	9.5	10	Yes	0-10	In Place	0	0	9.5	10	NE	2019 HHERA	No, Depth NA
AOC11e-SS-2-6079	9/23/2008	AOC11e-SS-2	AOC11	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
AOC11e-SS-2-6080	9/23/2008	AOC11e-SS-2	AOC11	2.5	3	Yes	0-03	In Place	0	0	2.5	3	0-03 ft	2019 HHERA	Yes
AOC11e-SS-2-6081	9/23/2008	AOC11e-SS-2	AOC11	5.5	6	Yes	0-06	In Place	0	0	5.5	6	NE	2019 HHERA	No, Depth NA
AOC11e-SS-2-6082	9/23/2008	AOC11e-SS-2	AOC11	5.5	6	Yes	0-06	In Place	0	0	5.5	6	NE	2019 HHERA	No, Depth NA
AOC11e-SS-2-6083	9/23/2008	AOC11e-SS-2	AOC11	9.5	10	Yes	0-10	In Place	0	0	9.5	10	NE	2019 HHERA	No, Depth NA
300b-103-1083	4/6/2011	AOC11g-OS1	AOC11	8.5	9	Yes	0-10	In Place	0	0	8.5	9	NE	2019 HHERA	No, Depth NA
AOC11TAA1-CF-1-7.5	7/28/2022	AOC11TAA1-CF-1	AOC11	7.5	8	No	--	In Place	7.5	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CF-2-7.5	7/28/2022	AOC11TAA1-CF-2	AOC11	7.5	8	No	--	In Place	7.5	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CF-2-7.5FD	7/28/2022	AOC11TAA1-CF-2	AOC11	7.5	8	No	--	In Place	7.5	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CF-3-10	7/28/2022	AOC11TAA1-CF-3	AOC11	10	10.5	No	--	In Place	10	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CF4-7	9/15/2022	AOC11TAA1-CF4	AOC11	7	7.5	No	--	In Place	7	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CF5-7	9/15/2022	AOC11TAA1-CF5	AOC11	7	7.5	No	--	In Place	7	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CF6-7	9/15/2022	AOC11TAA1-CF6	AOC11	7	7.5	No	--	In Place	7	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CF7-7	9/15/2022	AOC11TAA1-CF7	AOC11	7	7.5	No	--	In Place	7	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CW11a-4	9/14/2022	AOC11TAA1-CW11a	AOC11	4	4.5	No	--	In Place	4	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CW5a-4	9/15/2022	AOC11TAA1-CW5a	AOC11	4	4.5	No	--	In Place	4	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CW6a-4	9/14/2022	AOC11TAA1-CW6a	AOC11	4	4.5	No	--	In Place	4	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CW6a-4FD	9/14/2022	AOC11TAA1-CW6a	AOC11	4	4.5	No	--	In Place	4	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CW7a-4	9/15/2022	AOC11TAA1-CW7a	AOC11	4	4.5	No	--	In Place	4	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CW8-3	8/3/2022	AOC11TAA1-CW8	AOC11	3	3.5	No	--	In Place	3	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
AOC11TAA1-CW9a-4	9/15/2022	AOC11TAA1-CW9a	AOC11	4	4.5	No	--	In Place	4	0	0	0.5	0-005, 0-03 ft	NTCRA	Yes
PA-07-1	11/9/2015	PA-07	Perimeter	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
PA-09-01	1/27/2016	PA-09	Perimeter	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
PA-10-01	1/27/2016	PA-10	Perimeter	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
PA-11-01	1/27/2016	PA-11	Perimeter	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
PA-11-02	1/25/2017	PA-11	Perimeter	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
PA-12-01	1/27/2016	PA-12	Perimeter	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
PA-12-02	1/25/2017	PA-12	Perimeter	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-8-01	11/11/2015	SD-08	StormDrains	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
SD-8-01-FD	11/11/2015	SD-08	StormDrains	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
SD-8-03	11/11/2015	SD-08	StormDrains	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-9-01	11/10/2015	SD-09	StormDrains	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
SD-9-03	11/10/2015	SD-09	StormDrains	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-9-05	11/10/2015	SD-09	StormDrains	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
SD-10-01	11/10/2015	SD-10	StormDrains	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
SD-10-03	11/10/2015	SD-10	StormDrains	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-11-0	12/6/2015	SD-11	StormDrains	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
SD-11-3	12/6/2015	SD-11	StormDrains	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-11-01	3/7/2016	SD-11A	StormDrains	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
SD-11-02	3/7/2016	SD-11A	StormDrains	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-11-04	3/7/2016	SD-11A	StormDrains	5	6	Yes	0-06	In Place	0	0	5	6	NE	2019 HHERA	No, Depth NA
SD-12-01	11/10/2015	SD-12	StormDrains	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes

Table AOC11-1.1
Samples and Sampling Locations Included in the AOC 11 Potential Exposure Area

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

SampleID	Sample Date	Location ID	RFI Area	Original Upper Depth (ft bgs)	Original Lower Depth (ft bgs)	Used for EPCs (2019 H H E R A)?	Original Baseline (ft bgs)	Excavation Status	Excavation Depth (ft)	Backfill Depth (ft)	Current Upper Depth (ft bgs)	Current Lower Depth (ft bgs)	Current Baseline (ft bgs)	Sample Source (2019 H H E R A, N T C R A, or R F I Addition)	Used for Post-N T C R A H H E R A EPCs?[b]
SD-12-03	11/10/2015	SD-12	StormDrains	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-13-01	11/10/2015	SD-13	StormDrains	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
SD-13-03	11/10/2015	SD-13	StormDrains	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-20-01	11/11/2015	SD-20	StormDrains	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
SD-20-01-FD	11/11/2015	SD-20	StormDrains	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
SD-20-03	11/11/2015	SD-20	StormDrains	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-23-01	3/9/2016	SD-23	StormDrains	0	1	Yes	0-0.5	In Place	0	0	0	1	0-005, 0-03 ft	2019 HHERA	Yes
SD-23-03	3/9/2016	SD-23	StormDrains	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-27-02	2/15/2017	SD-27	StormDrains	2	3	Yes	0-03	In Place	0	0	2	3	0-03 ft	2019 HHERA	Yes
SD-37-OS1-1001	11/30/2016	SD-OS37	StormDrains	0	0.5	Yes	0-0.5	In Place	0	0	0	0.5	0-005, 0-03 ft	2019 HHERA	Yes
SD-37-OS1-1002	11/30/2016	SD-OS37	StormDrains	3	3.5	Yes	0-06	In Place	0	0	3	3.5	NE	2019 HHERA	No, Depth NA
SD-37-OS1-1003	11/30/2016	SD-OS37	StormDrains	5	5.5	Yes	0-06	In Place	0	0	5	5.5	NE	2019 HHERA	No, Depth NA

Notes:
[a] Samples evaluated in the 2019 HHERA for the 0 to 10 foot bgs interval for the baseline scenario are presented in this table.
[b] Sample locations represent data evaluated in the Post-NTCRA HHERA for the 0 to 3 foot bgs interval in the baseline scenario.

Abbreviations:
"--" = not applicable
< = less than
> = greater than
A O C = area of concern
bgs = below ground surface
ft = foot
H H E R A = human health and ecological risk assessment
Depth NA = depth not applicable to the dataset
NE = not evaluated (i.e., sample was excavated or depth interval not applicable to the dataset)
N T C R A = non time critical removal action
R F I = RCRA Facility Investigation

Table AOC11-2.1
Comparison of Soil Data for Non-Risk-Driving Constituents in the 2019 HHERA and NTCRA/RFI Additions for the Baseline (No Scouring) Scenario for AOC 11 (0 to 0.5 foot bgs and 0 to 3 feet bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Category	Constituent [a]	Units	Soil Depth Interval (ft bgs)	Detects	Total Samples	Frequency of Detection	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect	Mean Detected	Kaplan Meier Mean	Median	Variance	Standard Deviation
HHERA	Lead	mg/kg	0-0.5	52	52	100	2.4	220	N/A	N/A	20.08	20.08	9.7	1281	35.78
HHERA	Mercury	mg/kg	0-0.5	1	52	2	0.18	0.18	0.098	0.13	0.18	0.0996	0.18	N/A	N/A
HHERA	Molybdenum	mg/kg	0-0.5	9	52	17	1.1	3.3	1	5	1.911	1.172	1.6	0.771	0.878
HHERA	Zinc	mg/kg	0-0.5	52	52	100	23	1100	N/A	N/A	87.71	87.71	51.5	23126	152.1
HHERA	Lead	mg/kg	0-3	99	100	99	1.7	220	1	1	14.94	14.8	7.4	730.1	27.02
HHERA	Mercury	mg/kg	0-3	2	100	2	0.18	0.37	0.098	0.13	0.275	0.102	0.275	0.0181	0.134
HHERA	Molybdenum	mg/kg	0-3	15	100	15	1.1	3.3	1	5.1	2.08	1.171	2.3	0.613	0.783
HHERA	Zinc	mg/kg	0-3	100	100	100	17	1100	N/A	N/A	73.91	73.91	45.5	13374	115.6
NTCRA	Lead	mg/kg	0-0.5	13	13	100	2.5	12	N/A	N/A	4.815	4.815	3.6	8.695	2.949
NTCRA	Mercury	mg/kg	0-0.5	0	13	0	N/A	N/A	0.099	0.11	N/A	N/A	N/A	N/A	N/A
NTCRA	Molybdenum	mg/kg	0-0.5	0	13	0	N/A	N/A	1	1.1	N/A	N/A	N/A	N/A	N/A
NTCRA	Zinc	mg/kg	0-0.5	13	13	100	27	64	N/A	N/A	42.54	42.54	40	160.8	12.68
NTCRA	Lead	mg/kg	0-3	13	13	100	2.5	12	N/A	N/A	4.815	4.815	3.6	8.695	2.949
NTCRA	Mercury	mg/kg	0-3	0	13	0	N/A	N/A	0.099	0.11	N/A	N/A	N/A	N/A	N/A
NTCRA	Molybdenum	mg/kg	0-3	0	13	0	N/A	N/A	1	1.1	N/A	N/A	N/A	N/A	N/A
NTCRA	Zinc	mg/kg	0-3	13	13	100	27	64	N/A	N/A	42.54	42.54	40	160.8	12.68

Notes:

[a] The HHERA dataset is consistent with the 2019 HHERA (Arcadis 2019). The NTCRA dataset consists of 1) data collected as part of the NTCRA and 2) data collected after the submittal of the 2019 HHERA to support the RFI.

Abbreviations:

"--" = not applicable
AOC = area of concern
ft bgs = feet below ground surface
HHERA = human health and ecological risk assessment
mg/kg = milligrams per kilogram
N/A = not applicable
PG&E = Pacific Gas and Electric Company
NTCRA = non time critical removal action
RFI = RCRA Facility Investigation

References:

Arcadis. 2019. Final Soil Human Health and Ecological Risk Assessment Report, Topock Compressor Station, Needles, California.

Table AOC11-3.1
Summary Statistics for Depth-Weighted Soil Data and Exposure Point Concentrations for the Baseline (No Scouring) Scenario for AOC 11 (0 to 0.5 foot bgs and 0 to 3 feet bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Category	Constituent [a]	Units	Soil Depth Interval (ft bgs)	Detects	Total Samples	Frequency of Detection	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect	Mean Detected	Kaplan Meier Mean	Median	Variance	Standard Deviation	COPC/ COPEC? [b]	EPC (Depth-Weighted UCL) [c,d]	EPC Basis (Depth-Weighted UCL)	EPC (Area-Weighted UCL) [c,d]	EPC Basis (Area-Weighted UCL)
Inorganics	Aluminum	mg/kg	0-0.5	13	13	100	4400	20000	NA	NA	9746	9746	7900	27662692	5260	--	--	--	--	--
Inorganics	Antimony	mg/kg	0-0.5	0	52	0	NA	NA	1	1.25	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Arsenic	mg/kg	0-0.5	52	52	100	2.4	9.5	NA	NA	4.862	4.862	4.55	3.212	1.792	X	5.28	95% Modified-t UCL	5.73	Bootstrap BCA 95UCL
Inorganics	Barium	mg/kg	0-0.5	52	52	100	57	500	NA	NA	142.8	142.8	120	5662	75.24	--	--	--	--	--
Inorganics	Beryllium	mg/kg	0-0.5	0	52	0	NA	NA	0.5	2.5	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Cadmium	mg/kg	0-0.5	0	52	0	NA	NA	0.5	0.6	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Chromium, hexavalent	mg/kg	0-0.5	35	62	56	0.22	16	0.1	0.205	1.076	0.651	0.55	6.946	2.636	X	1.084	95% KM (t) UCL	1.55	Bootstrap BCA 95UCL
Inorganics	Chromium, total	mg/kg	0-0.5	62	62	100	7.9	320	N/A	N/A	30.05	30.05	21	1658	40.72	X	38.68	95% Student's-t UCL	45.65	Bootstrap BCA 95UCL
Inorganics	Cobalt	mg/kg	0-0.5	52	52	100	2.7	8.6	NA	NA	5.356	5.356	5.25	1.768	1.33	--	--	--	--	--
Inorganics	Copper	mg/kg	0-0.5	62	62	100	4.9	31	N/A	N/A	12.29	12.29	10.5	31.39	5.603	X	13.58	95% H-UCL	12.38	Bootstrap BCA 95UCL
Inorganics	Cyanide	mg/kg	0-0.5	0	13	0	NA	NA	0.1	0.5	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Iron	mg/kg	0-0.5	14	14	100	8700	26000	NA	NA	15521	15521	14500	23387967	4836	--	--	--	--	--
Inorganics	Lead	mg/kg	0-0.5	52	52	100	2.4	220	NA	NA	20.08	20.08	9.7	1281	35.78	X	23.6	95% H-UCL	38.2	Bootstrap BCA 95UCL
Inorganics	Manganese	mg/kg	0-0.5	14	14	100	160	440	NA	NA	265	265	240	8442	91.88	--	--	--	--	--
Inorganics	Mercury	mg/kg	0-0.5	1	52	2	0.18	0.18	0.049	0.065	0.18	0.0515	0.18	NA	NA	X	0.18	Max Detect	0.18	Max Detect
Inorganics	Molybdenum	mg/kg	0-0.5	9	52	17	1.1	3.3	0.5	2.5	1.911	0.746	1.6	0.771	0.878	--	--	--	--	--
Inorganics	Nickel	mg/kg	0-0.5	52	52	100	5.1	20	NA	NA	11.52	11.52	11	13.76	3.71	--	--	--	--	--
Inorganics	Selenium	mg/kg	0-0.5	0	52	0	NA	NA	0.5	1.05	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Silver	mg/kg	0-0.5	0	52	0	NA	NA	0.5	2.5	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Thallium	mg/kg	0-0.5	0	52	0	NA	NA	1	5	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Vanadium	mg/kg	0-0.5	52	52	100	13	44	NA	NA	24.25	24.25	23	47.33	6.88	--	--	--	--	--
Inorganics	Zinc	mg/kg	0-0.5	52	52	100	23	1100	NA	NA	87.71	87.71	51.5	23126	152.1	X	180	95% Chebyshev (Mean, Sd) UCL	112	Bootstrap BCA 95UCL
Semi-Volatile Organic Compounds	4-Methylphenol	µg/kg	0-0.5	0	34	0	NA	NA	165	415	NA	NA	NA	NA	NA	--	--	--	--	--
Semi-Volatile Organic Compounds	Bis (2-ethylhexyl) phthalate	µg/kg	0-0.5	0	34	0	NA	NA	165	1700	NA	NA	NA	NA	NA	--	--	--	--	--
Semi-Volatile Organic Compounds	Butylbenzylphthalate	µg/kg	0-0.5	0	34	0	NA	NA	165	1700	NA	NA	NA	NA	NA	--	--	--	--	--
Semi-Volatile Organic Compounds	Di-n-butyl phthalate	µg/kg	0-0.5	0	34	0	NA	NA	165	415	NA	NA	NA	NA	NA	--	--	--	--	--
Semi-Volatile Organic Compounds	Isophorone	µg/kg	0-0.5	0	34	0	NA	NA	165	415	NA	NA	NA	NA	NA	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons	PAH low molecular weight	µg/kg	0-0.5	35	52	67	5.4	1380	0	0	108	72.68	21	64496	254	X	369	99% KM (Chebyshev) UCL	115	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	PAH high molecular weight	µg/kg	0-0.5	51	52	98	5	18200	0	0	1051	1031	175	7709061	2777	X	4830	99% KM (Chebyshev) UCL	1549	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	1-Methyl naphthalene	µg/kg	0-0.5	0	52	0	NA	NA	2.5	12.5	NA	NA	NA	NA	NA	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons	2-Methyl naphthalene	µg/kg	0-0.5	4	52	8	7.5	10	2.5	50	8.75	3	8.75	2.083	1.443	X	3.47	95% KM (t) UCL	10.6	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Acenaphthene	µg/kg	0-0.5	1	52	2	11	11	2.5	12.5	11	2.667	11	NA	NA	X	11	Max Detect	11	Max Detect
Polycyclic Aromatic Hydrocarbons	Acenaphthylene	µg/kg	0-0.5	2	52	4	6.1	9.2	2.5	12.5	7.65	2.702	7.65	4.805	2.192	X	9.2	Max Detect	9.2	Max Detect
Polycyclic Aromatic Hydrocarbons	Anthracene	µg/kg	0-0.5	5	52	10	5	38	2.5	12.5	18.4	4.034	18	151.3	12.3	X	5.54	95% KM (t) UCL	5.44	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Benzo (a) anthracene	µg/kg	0-0.5	36	52	69	5.1	1600	2.5	25.5	117.2	81.99	20.5	77882	279.1	X	226	95% KM (Chebyshev) UCL	129	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Benzo (a) pyrene	µg/kg	0-0.5	38	52	73	5.1	1600	2.5	25.5	133.8	98.99	27	81978	286.3	X	179	KM H-UCL	147	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Benzo (b) fluoranthene	µg/kg	0-0.5	46	52	88	5	2600	2.5	25.5	196.5	174.4	45	209459	457.7	X	342	KM H-UCL	237	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Benzo (ghi) perylene	µg/kg	0-0.5	36	52	69	5	750	2.5	260	57.4	41.84	14	16534	128.6	X	108	95% KM (Chebyshev) UCL	71.6	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Benzo (k) fluoranthene	µg/kg	0-0.5	36	52	69	5.2	930	2.5	260	82.71	59.09	23.5	30264	174	X	86.4	KM H-UCL	86.3	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Chrysene	µg/kg	0-0.5	43	52	83	6.7	2600	2.5	25.5	161.3	134	36	172986	415.9	X	233	KM H-UCL	203	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Dibenzo (a,h) anthracene	µg/kg	0-0.5	11	52	21	6.4	210	2.5	260	40.58	10.98	12	3639	60.32	X	23.7	95% KM Approximate Gamma UCL	27.7	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Fluoranthene	µg/kg	0-0.5	48	52	92	5.1	3700	2.5	2.7	228.5	211.1	39.5	357559	598	X	374	KM H-UCL	322	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Fluorene	µg/kg	0-0.5	1	52	2	8.9	8.9	2.5	12.5	8.9	2.625	8.9	NA	NA	X	8.9	Max Detect	8.9	Max Detect
Polycyclic Aromatic Hydrocarbons	Indeno (1,2,3-cd) pyrene	µg/kg	0-0.5	32	52	62	5.3	790	2.5	260	63.28	41.14	17	20151	142	X	111	95% KM (Chebyshev) UCL	72.3	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Naphthalene	µg/kg	0-0.5	3	52	6	5	10	2.5	50	7.867	2.822	8.6	6.653	2.579	X	10	Max Detect	10	Max Detect
Polycyclic Aromatic Hydrocarbons	Phenanthrene	µg/kg	0-0.5	34	52	65	5.4	1300	2.5	2.75	105.2	69.66	20.5	59303	243.5	X	192	95% KM (Chebyshev) UCL	114	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Pyrene	µg/kg	0-0.5	48	52	92	5	3400	2.5	2.55	204.5	189	35	291535	539.9	X	332	KM H-UCL	296	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	B(a)P equivalent	µg/kg	0-0.5	51	52	98	5.8	2300	5.9	5.9	153.3	150.5	36	133712	365.7	X	232	KM H-UCL	213	Bootstrap BCA 95UCL
Pesticides	4,4-DDE	µg/kg	0-0.5	1	10	10	6.1	6.1	1	1.05	6.1	1.51	6.1	NA	NA	X	6.1	Max Detect	6.1	Max Detect
Pesticides	4,4-DDT	µg/kg	0-0.5	0	10	0	NA	NA	1	1.05	NA	NA	NA	NA	NA	--	--	--	--	--
Pesticides	Alpha-Chlordane	µg/kg	0-0.5	1	10	10	12	12	0.5	0.5	12	1.65	12	NA	NA	X	12	Max Detect	12	Max Detect
Pesticides	Dieldrin	µg/kg	0-0.5	1	10	10	6.7	6.7	1	1.05	6.7	1.57	6.7	NA	NA	X	6.7	Max Detect	6.7	Max Detect
Pesticides	Gamma-Chlordane	µg/kg	0-0.5	1	10	10	13	13	0.5	0.5	13	1.75	13	NA	NA	X	13	Max Detect	13	Max Detect
Polychlorinated Biphenyls	Total PCBs	µg/kg	0-0.5	17	32	53	37.5	1930	17	34	407.6	224.5	149	270109	519.7	X	444	Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	231	Bootstrap BCA 95UCL

Table AOC11-3.1
Summary Statistics for Depth-Weighted Soil Data and Exposure Point Concentrations for the Baseline (No Scouring) Scenario for AOC 11 (0 to 0.5 foot bgs and 0 to 3 feet bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Category	Constituent [a]	Units	Soil Depth Interval (ft bgs)	Detects	Total Samples	Frequency of Detection	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect	Mean Detected	Kaplan Meier Mean	Median	Variance	Standard Deviation	C O P C/ C O P E C? [b]	EPC (Depth-Weighted UCL) [c,d]	EPC Basis (Depth-Weighted UCL)	EPC (Area-Weighted UCL) [c,d]	EPC Basis (Area-Weighted UCL)
Dioxins	TEQ Human	ng/kg	0-0.5	38	38	100	0.24	520	N/A	N/A	47.87	47.87	10.4	8897	94.32	X	80.05	95% Adjusted Gamma UCL	64.35	Bootstrap BCA 95UCL
Dioxins	TEQ Avian	ng/kg	0-0.5	38	38	100	0.24	280	N/A	N/A	25.08	25.08	6.25	2576	50.75	X	40.71	95% Adjusted Gamma UCL	40.38	Bootstrap BCA 95UCL
Dioxins	TEQ Mammals	ng/kg	0-0.5	38	38	100	0.24	520	N/A	N/A	47.87	47.87	10.4	8897	94.32	X	80.05	95% Adjusted Gamma UCL	64.35	Bootstrap BCA 95UCL
Dioxins	2,3,7,8-TCDD	ng/kg	0-0.5	2	26	8	0.63	1	0.019	2.2	0.815	0.0914	0.815	0.0685	0.262	X	1	Max Detect	1	Max Detect
Total Petroleum Hydrocarbons	TPH as diesel	mg/kg	0-0.5	14	44	32	10.3	840	5	50.5	90.58	32.4	25.5	46989	216.8	X	25.3	KM H-UCL	50.7	Bootstrap BCA 95UCL
Total Petroleum Hydrocarbons	TPH as gasoline	mg/kg	0-0.5	0	1	0	NA	NA	1.1	1.1	NA	NA	NA	NA	NA	--	--	--	--	--
Total Petroleum Hydrocarbons	TPH as motor oil	mg/kg	0-0.5	29	44	66	10	1400	5	50.5	138.9	93.67	29	70254	265.1	X	241	95% KM (Chebyshev) UCL	109	Bootstrap BCA 95UCL
Inorganics	Aluminum	mg/kg	0-3	15	15	100	4370	20000	NA	NA	9314	9314	7900	25327826	5033	--	--	--	--	--
Inorganics	Antimony	mg/kg	0-3	0	53	0	NA	NA	1	1.18	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Arsenic	mg/kg	0-3	53	53	100	2.33	8.93	NA	NA	4.821	4.821	4.5	2.987	1.728	X	5.23	95% Approximate Gamma UCL	5.78	Bootstrap BCA 95UCL
Inorganics	Barium	mg/kg	0-3	53	53	100	55.7	497	NA	NA	141.5	141.5	127	5638	75.08	--	--	--	--	--
Inorganics	Beryllium	mg/kg	0-3	0	53	0	NA	NA	0.5	2	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Cadmium	mg/kg	0-3	1	53	2	1.2	1.2	0.5	0.583	1.2	0.513	1.2	NA	NA	--	--	--	--	--
Inorganics	Chromium, hexavalent	mg/kg	0-3	43	65	66	0.182	16	0.1	0.22	0.999	0.696	0.46	5.79	2.406	X	1.11	95% KM (t) UCL	1.54	Bootstrap BCA 95UCL
Inorganics	Chromium, total	mg/kg	0-3	65	65	100	10.1	320	N/A	N/A	30.77	30.77	22	1582	39.78	X	32.6	95% H-UCL	45.53	Bootstrap BCA 95UCL
Inorganics	Cobalt	mg/kg	0-3	53	53	100	3.2	8.67	NA	NA	5.501	5.501	5.4	1.66	1.288	--	--	--	--	--
Inorganics	Copper	mg/kg	0-3	65	65	100	4.9	31	N/A	N/A	12.65	12.65	11.1	29.99	5.476	X	13.85	95% H-UCL	12.52	Bootstrap BCA 95UCL
Inorganics	Cyanide	mg/kg	0-3	0	15	0	NA	NA	0.1	0.5	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Iron	mg/kg	0-3	16	16	100	8670	26000	NA	NA	14853	14853	14000	24802113	4980	--	--	--	--	--
Inorganics	Lead	mg/kg	0-3	52	53	98	2.23	157	0.5	0.5	17.95	17.62	9.615	852.9	29.2	X	22.3	KM H-UCL	29.3	Bootstrap BCA 95UCL
Inorganics	Manganese	mg/kg	0-3	16	16	100	150	440	NA	NA	255	255	215	8215	90.63	--	--	--	--	--
Inorganics	Mercury	mg/kg	0-3	2	53	4	0.157	0.18	0.0492	0.0617	0.169	0.0537	0.169	0.000265	0.0163	X	0.18	Max Detect	0.18	Max Detect
Inorganics	Molybdenum	mg/kg	0-3	13	53	25	1.03	2.57	0.5	2	1.598	0.775	1.53	0.256	0.506	--	--	--	--	--
Inorganics	Nickel	mg/kg	0-3	53	53	100	5.97	18.7	NA	NA	11.61	11.61	11.9	11.77	3.43	--	--	--	--	--
Inorganics	Selenium	mg/kg	0-3	0	53	0	NA	NA	0.5	0.867	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Silver	mg/kg	0-3	0	53	0	NA	NA	0.5	2	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Thallium	mg/kg	0-3	0	53	0	NA	NA	1	4	NA	NA	NA	NA	NA	--	--	--	--	--
Inorganics	Vanadium	mg/kg	0-3	53	53	100	14.7	42	NA	NA	24.96	24.96	23.7	42.54	6.522	--	--	--	--	--
Inorganics	Zinc	mg/kg	0-3	53	53	100	23.7	747	NA	NA	79.26	79.26	55.3	10777	103.8	X	141	95% Chebyshev (Mean, Sd) UCL	75.6	Bootstrap BCA 95UCL
Volatile Organic Compounds	1,2,4-Trimethylbenzene	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	1,3,5-Trimethylbenzene	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Acetone	µg/kg	0-3	0	9	0	NA	NA	22	47.5	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Bromomethane	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Chloro methane	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Chloroform	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Ethyl- benzene	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Isopropylbenzene	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Methyl acetate	µg/kg	0-3	1	9	11	17	17	2.2	8	17	3.844	17	NA	NA	X	17	Max Detect	17	Max Detect
Volatile Organic Compounds	Methyl ethyl ketone	µg/kg	0-3	0	17	0	NA	NA	22	80	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Methylene chloride	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	N-Butylbenzene	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	N-Propylbenzene	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	sec-Butylbenzene	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Toluene	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Xylene, m,p-	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Xylene, o-	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Volatile Organic Compounds	Xylenes, total	µg/kg	0-3	0	17	0	NA	NA	2.2	8	NA	NA	NA	NA	NA	--	--	--	--	--
Semi-Volatile Organic Compounds	4-Methylphenol	µg/kg	0-3	0	34	0	NA	NA	165	415	NA	NA	NA	NA	NA	--	--	--	--	--
Semi-Volatile Organic Compounds	Bis (2-ethylhexyl) phthalate	µg/kg	0-3	0	34	0	NA	NA	165	1650	NA	NA	NA	NA	NA	--	--	--	--	--
Semi-Volatile Organic Compounds	Butylbenzylphthalate	µg/kg	0-3	0	34	0	NA	NA	165	1650	NA	NA	NA	NA	NA	--	--	--	--	--
Semi-Volatile Organic Compounds	Di-n-butyl phthalate	µg/kg	0-3	0	34	0	NA	NA	165	415	NA	NA	NA	NA	NA	--	--	--	--	--
Semi-Volatile Organic Compounds	Isophorone	µg/kg	0-3	0	34	0	NA	NA	165	415	NA	NA	NA	NA	NA	--	--	--	--	--

Table AOC11-3.1
Summary Statistics for Depth-Weighted Soil Data and Exposure Point Concentrations for the Baseline (No Scouring) Scenario for AOC 11 (0 to 0.5 foot bgs and 0 to 3 feet bgs)

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Needles, California

Category	Constituent [a]	Units	Soil Depth Interval (ft bgs)	Detects	Total Samples	Frequency of Detection	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect	Mean Detected	Kaplan Meier Mean	Median	Variance	Standard Deviation	C O P C/ C O P E C? [b]	EPC (Depth-Weighted UCL) [c,d]	EPC Basis (Depth-Weighted UCL)	EPC (Area-Weighted UCL) [c,d]	EPC Basis (Area-Weighted UCL)
Polycyclic Aromatic Hydrocarbons	PAH low molecular weight	µg/kg	0-3	36	53	68	3.6	920	0	0	79.55	54.03	18	29694	172.3	X	255	99% KM (Chebyshev) UCL	79.3	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	PAH high molecular weight	µg/kg	0-3	52	53	98	1.77	12100	0	0	800.5	785.4	182	3707682	1926	X	3396	99% KM (Chebyshev) UCL	1050	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	1-Methyl naphthalene	µg/kg	0-3	1	53	2	6.37	6.37	2.5	12.5	6.37	2.574	6.37	NA	NA	X	6.37	Max Detect	6.37	Max Detect
Polycyclic Aromatic Hydrocarbons	2-Methyl naphthalene	µg/kg	0-3	4	53	8	5.85	11	2.5	45.8	8.195	2.947	7.965	4.617	2.149	X	3.39	95% KM (t) UCL	9.94	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Acenaphthene	µg/kg	0-3	1	53	2	8.18	8.18	2.5	12.5	8.18	2.609	8.18	NA	NA	X	8.18	Max Detect	8.18	Max Detect
Polycyclic Aromatic Hydrocarbons	Acenaphthylene	µg/kg	0-3	2	53	4	6.1	6.98	2.5	12.5	6.54	2.655	6.54	0.387	0.622	X	6.98	Max Detect	6.98	Max Detect
Polycyclic Aromatic Hydrocarbons	Anthracene	µg/kg	0-3	5	53	9	4.22	26.2	2.5	12.5	14.15	3.603	13.5	71.79	8.473	X	4.67	95% KM (t) UCL	4.64	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Benzo (a) anthracene	µg/kg	0-3	38	53	72	4.27	1070	2.5	25.5	84.46	61.35	17.85	34800	186.5	X	91.7	KM H-UCL	87.1	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Benzo (a) pyrene	µg/kg	0-3	39	53	74	4.27	1070	2.5	25	103.2	76.85	25.5	40319	200.8	X	139	KM H-UCL	104	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Benzo (b) fluoranthene	µg/kg	0-3	48	53	91	3.47	1730	2.5	17.5	147.2	133.6	42.85	101894	319.2	X	260	KM H-UCL	167	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Benzo (ghi) perylene	µg/kg	0-3	38	53	72	4.17	501	2.5	25.5	49.47	36.87	15.25	7868	88.7	X	52.4	KM H-UCL	53.3	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Benzo (k) fluoranthene	µg/kg	0-3	37	53	70	4.33	621	2.5	174	67.12	48.29	22.9	15535	124.6	X	75.1	KM H-UCL	60.8	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Chrysene	µg/kg	0-3	45	53	85	3.53	1730	2.5	2.65	119	101.4	35	79095	281.2	X	175	KM H-UCL	139	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Dibenzo (a,h) anthracene	µg/kg	0-3	14	53	26	4	141	2.5	174	26.24	9.183	10.6	1423	37.72	X	8.72	KM H-UCL	20.4	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Fluoranthene	µg/kg	0-3	50	53	94	4.52	2470	2.58	2.65	170	160.5	33.2	168082	410	X	281	KM H-UCL	230	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Fluorene	µg/kg	0-3	1	53	2	6.78	6.78	2.5	12.5	6.78	2.582	6.78	NA	NA	X	6.78	Max Detect	6.78	Max Detect
Polycyclic Aromatic Hydrocarbons	Indeno (1,2,3-cd) pyrene	µg/kg	0-3	32	53	60	4.58	528	2.5	174	51.32	33.03	16.35	9483	97.38	X	44.5	KM H-UCL	52.6	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Naphthalene	µg/kg	0-3	3	53	6	4.17	7.53	2.46	42.5	6.093	2.674	6.58	3	1.732	X	7.53	Max Detect	7.53	Max Detect
Polycyclic Aromatic Hydrocarbons	Phenanthrene	µg/kg	0-3	36	53	68	4.07	868	2.5	2.7	75.73	52.24	17.25	26673	163.3	X	71.6	KM H-UCL	75.1	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	Pyrene	µg/kg	0-3	49	53	92	4.17	2270	2.5	2.6	155.9	144.3	33.9	140468	374.8	X	265	KM H-UCL	203	Bootstrap BCA 95UCL
Polycyclic Aromatic Hydrocarbons	B(a)P equivalent	µg/kg	0-3	52	53	98	5.8	1540	6	6	119	116.8	33.4	65201	255.3	X	180	KM H-UCL	154	Bootstrap BCA 95UCL
Pesticides	4,4-DDE	µg/kg	0-3	1	12	8	6.1	6.1	1	1.05	6.1	1.425	6.1	NA	NA	X	6.1	Max Detect	6.1	Max Detect
Pesticides	4,4-DDT	µg/kg	0-3	0	12	0	NA	NA	1	1.05	NA	NA	NA	NA	NA	--	--	--	--	--
Pesticides	Alpha-Chlordane	µg/kg	0-3	1	12	8	12	12	0.5	0.55	12	1.458	12	NA	NA	X	12	Max Detect	12	Max Detect
Pesticides	Dieldrin	µg/kg	0-3	1	12	8	6.7	6.7	1	1.05	6.7	1.475	6.7	NA	NA	X	6.7	Max Detect	6.7	Max Detect
Pesticides	Gamma-Chlordane	µg/kg	0-3	1	12	8	13	13	0.5	0.55	13	1.542	13	NA	NA	X	13	Max Detect	13	Max Detect
Polychlorinated Biphenyls	Total PCBs	µg/kg	0-3	17	33	52	34.9	1930	17	34.7	341.2	184	157	235137	484.9	X	386	Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	206	Bootstrap BCA 95UCL
Dioxins	TEQ Human	ng/kg	0-3	38	38	100	0.181	520	N/A	N/A	47.19	47.19	9.3	8910	94.39	X	293.7	95% H-UCL	63.59	Bootstrap BCA 95UCL
Dioxins	TEQ Avian	ng/kg	0-3	38	38	100	0.186	280	N/A	N/A	25.4	25.4	6.1	2727	52.22	X	97.24	95% H-UCL	42.76	Bootstrap BCA 95UCL
Dioxins	TEQ Mammals	ng/kg	0-3	38	38	100	0.181	520	N/A	N/A	47.19	47.19	9.3	8910	94.39	X	293.7	95% H-UCL	63.59	Bootstrap BCA 95UCL
Dioxins	2,3,7,8-TCDD	ng/kg	0-3	2	26	8	0.453	0.693	0.0215	2.15	0.573	0.0716	0.573	0.0288	0.17	X	0.693	Max Detect	0.693	Max Detect
Total Petroleum Hydrocarbons	TPH as diesel	mg/kg	0-3	20	45	44	6.67	873	5	35.3	76.96	37.19	18	37590	193.9	X	30.7	KM H-UCL	54.6	Bootstrap BCA 95UCL
Total Petroleum Hydrocarbons	TPH as gasoline	mg/kg	0-3	0	31	0	NA	NA	0.45	1.2	NA	NA	NA	NA	NA	--	--	--	--	--
Total Petroleum Hydrocarbons	TPH as motor oil	mg/kg	0-3	35	45	78	8.33	1430	5	35.3	131.3	103.7	29.7	66802	258.5	X	256	95% KM (Chebyshev) UCL	107	Bootstrap BCA 95UCL

Notes:

[a] The constituents presented consists of analytes detected at least once at the Topock Compressor Station site and measured in soil in this exposure area. The datasets for chromium (total and hexavalent), copper, and dioxins (TEQ Human, TEQ Mammal, and TEQ Avian) were updated to reflect the non-time critical removal actions outlined in Arcadis (2024).

[b] COPCs selected in the 2019 Soil Risk Assessment (Arcadis 2019) were also evaluated in this Post-NTCRA HHERA. However, no COPECs were identified in this AOC.

[c] If fewer than eight total locations and four total detected concentrations, the maximum depth-weighted concentration was selected as the EPC. Otherwise, the UCL was selected as the EPC.

[d] EPCs and summary statistics were not calculated for some constituents (i.e., dioxin congeners and essential nutrients). Those data, if available, are presented in Attachment A1 of each exposure area-specific appendix in the Soil Human Health and Ecological Risk Assessment Report (Arcadis 2019).

Abbreviations:

"--" = not applicable
µg/kg = micrograms per kilogram
AOC = area of concern
B(a)P equivalent = benzo(a)pyrene equivalent
BCA = Bias-corrected accelerated bootstrap method
COPC = constituent of potential concern
COPEC = constituent of potential ecological concern
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
EPC = exposure point concentration
FOD = frequency of detection
ft bgs = feet below ground surface
KM = Kaplan-Meier
mg/kg = milligrams per kilogram
NA = not applicable
ND = not detected
ng/kg = nanograms per kilogram
PAH = polycyclic aromatic hydrocarbons
PCB = polychlorinated biphenyls
PG&E = Pacific Gas and Electric Company
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = toxic equivalent
TPH = total petroleum hydrocarbons
UCL = upper confidence limit
X = COPC/COPEC in the exposure depth interval

References:

Arcadis. 2019. Final Soil Human Health and Ecological Risk Assessment Report, Topock Compressor Station, Needles, California.
Arcadis. 2024. Soil Risk Assessment Addendum: Proposed Approach to Update the Human Health and Ecological Risk Assessment after Completion of the 2023 Non-Time Critical Removal Action. January 30.

Table AOC11-4.1
Summary of C O P Cs Evaluated in the HHRA for AOC 11: Baseline Scenario

Post-Soil N T C R A Human Health and Ecological Risk Assessment Repo
PG&E Topock Compressor Station
Needles, California

COPC	C O P Cs in Surface Soil (0 to 0.5 foot bgs)	C O P Cs in Shallow Soil (0 to 3 feet bgs)	C O P Cs in Subsurface II Soil (0 to 10 feet bgs)
Inorganics			
Arsenic	x	x	x
Chromium, Hexavalent	x	x	x
Chromium, total	x	x	x
Copper	x	x	x
Lead	x	x	x
Mercury (inorganic)	x	x	x
Zinc	x	x	x
Volatile Organic Compounds			
Methyl acetate	--	x	x
Polycyclic Aromatic Hydrocarbons			
1-Methyl naphthalene	--	x	x
2-Methyl naphthalene	x	x	x
Acenaphthene	x	x	x
Acenaphthylene	x	x	x
Anthracene	x	x	x
Benzo (a) anthracene	x	x	x
Benzo (a) pyrene	x	x	x
Benzo (b) fluoranthene	x	x	x
Benzo (ghi) perylene	x	x	x
Benzo (k) fluoranthene	x	x	x
Chrysene	x	x	x
Dibenzo (a,h) anthracene	x	x	x
Fluoranthene	x	x	x
Fluorene	x	x	x
Indeno (1,2,3-cd) pyrene	x	x	x
Naphthalene	x	x	x
Phenanthrene	x	x	x
Pyrene	x	x	x
B(a)P Equivalent	x	x	x
Pesticides			
4,4-DDE	x	x	x
alpha-Chlordane	x	x	x
Dieldrin	x	x	x
gamma-Chlordane	x	x	x

Table AOC11-4.1
Summary of C O P Cs Evaluated in the HHRA for AOC 11: Baseline Scenario

Post-Soil N T C R A Human Health and Ecological Risk Assessment Repo
PG&E Topock Compressor Station
Needles, California

COPC	C O P Cs in Surface Soil (0 to 0.5 foot bgs)	C O P Cs in Shallow Soil (0 to 3 feet bgs)	C O P Cs in Subsurface II Soil (0 to 10 feet bgs)
Polychlorinated Biphenyls			
Total PCBs	x	x	x
Total Petroleum Hydrocarbons			
TPH as diesel	x	x	x
TPH as motor oil	x	x	x
Dioxins/Furans			
TEQ Human	x	x	x

Abbreviations:
B(a)P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
-- = not detected or not analyzed.
x = Chemical included as C O P C in human health risk assessment.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-4.2a
Baseline Scenario Depth-Weighted Exposure Point Concentrations and Predicted Outdoor Air Concentrations for Recreational Users:
C O P Cs in AOC 11 Surface Soil (0 to 0.5 foot bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Exposure Point Concentration for Surface Soil: 0 to 0.5 foot bgs (mg/kg) [a]	Exposure Point Concentration for Subsurface II Soil: 0 to 10 feet bgs (mg/kg) [b]	Recreational User - Camper Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Camper Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Hiker Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Hiker Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Off Highway Vehicle Rider Outdoor Airborne Particulate Concentration (mg/m^3) [e]	Recreational User - Off Highway Vehicle Rider Outdoor Vapor Concentration (mg/m^3) [d]
Inorganics								
Arsenic	5.3E+00	5.3E+00	3.9E-09	NV	3.9E-09	NV	6.2E-06	NV
Chromium, Hexavalent	1.1E+00	1.0E+00	8.0E-10	NV	8.0E-10	NV	1.3E-06	NV
Chromium, total	3.9E+01	5.7E+01	2.8E-08	NV	2.8E-08	NV	4.6E-05	NV
Copper	1.4E+01	1.3E+01	1.0E-08	NV	1.0E-08	NV	1.6E-05	NV
Lead	2.4E+01	2.6E+01	1.7E-08	NV	1.7E-08	NV	2.8E-05	NV
Mercury (inorganic)	1.8E-01	3.1E-01	1.3E-10	NV	1.3E-10	NV	2.1E-07	NV
Zinc	1.8E+02	9.5E+01	1.3E-07	NV	1.3E-07	NV	2.1E-04	NV
Volatile Organic Compounds								
Methyl acetate	NS	1.7E-02	NA	1.7E-06	NA	1.7E-06	NA	1.7E-06
Polycyclic Aromatic Hydrocarbons								
1-Methyl naphthalene	ND	1.2E-02	NA	1.6E-07	NA	1.6E-07	NA	1.6E-07
2-Methyl naphthalene	3.5E-03	3.4E-03	2.6E-12	4.5E-08	2.6E-12	4.5E-08	4.1E-09	4.5E-08
Acenaphthene	1.1E-02	4.2E-03	8.1E-12	2.3E-08	8.1E-12	2.3E-08	1.3E-08	2.3E-08
Acenaphthylene	9.2E-03	3.9E-03	6.8E-12	NV	6.8E-12	NV	1.1E-08	NV
Anthracene	5.5E-03	3.2E-03	4.1E-12	5.0E-09	4.1E-12	5.0E-09	6.5E-09	5.0E-09
Benzo (a) anthracene	2.3E-01	6.1E-02	1.7E-10	1.1E-08	1.7E-10	1.1E-08	2.7E-07	1.1E-08
Benzo (a) pyrene	1.8E-01	5.4E-02	1.3E-10	NV	1.3E-10	NV	2.1E-07	NV
Benzo (b) fluoranthene	3.4E-01	1.0E-01	2.5E-10	NV	2.5E-10	NV	4.0E-07	NV
Benzo (ghi) perylene	1.1E-01	2.5E-02	7.9E-11	NV	7.9E-11	NV	1.3E-07	NV
Benzo (k) fluoranthene	8.6E-02	3.6E-02	6.4E-11	NV	6.4E-11	NV	1.0E-07	NV
Chrysene	2.3E-01	6.6E-02	1.7E-10	NV	1.7E-10	NV	2.8E-07	NV
Dibenzo (a,h) anthracene	2.4E-02	9.7E-03	1.7E-11	NV	1.7E-11	NV	2.8E-08	NV
Fluoranthene	3.7E-01	1.1E-01	2.8E-10	NV	2.8E-10	NV	4.4E-07	NV
Fluorene	8.9E-03	3.8E-03	6.5E-12	1.1E-08	6.5E-12	1.1E-08	1.1E-08	1.1E-08
Indeno (1,2,3-cd) pyrene	1.1E-01	2.1E-02	8.2E-11	NV	8.2E-11	NV	1.3E-07	NV
Naphthalene	1.0E-02	4.1E-03	7.4E-12	6.9E-08	7.4E-12	6.9E-08	1.2E-08	6.9E-08
Phenanthrene	1.9E-01	2.9E-02	1.4E-10	NV	1.4E-10	NV	2.3E-07	NV
Pyrene	3.3E-01	1.0E-01	2.4E-10	3.3E-08	2.4E-10	3.3E-08	3.9E-07	3.3E-08
B(a)P Equivalent	2.3E-01	7.8E-02	1.7E-10	NV	1.7E-10	NV	2.7E-07	NV
Pesticides								
4,4-DDE	6.1E-03	6.1E-03	4.5E-12	2.9E-09	4.5E-12	2.9E-09	7.2E-09	2.9E-09
alpha-Chlordane	1.2E-02	1.2E-02	8.8E-12	NV	8.8E-12	NV	1.4E-08	NV
Dieldrin	6.7E-03	6.7E-03	4.9E-12	NV	4.9E-12	NV	7.9E-09	NV
gamma-Chlordane	1.3E-02	1.3E-02	9.6E-12	NV	9.6E-12	NV	1.5E-08	NV

Table AOC11-4.2a
Baseline Scenario Depth-Weighted Exposure Point Concentrations and Predicted Outdoor Air Concentrations for Recreational Users:
C O P Cs in AOC 11 Surface Soil (0 to 0.5 foot bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Exposure Point Concentration for Surface Soil: 0 to 0.5 foot bgs (mg/kg) [a]	Exposure Point Concentration for Subsurface II Soil: 0 to 10 feet bgs (mg/kg) [b]	Recreational User - Camper Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Camper Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Hiker Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Hiker Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Off Highway Vehicle Rider Outdoor Airborne Particulate Concentration (mg/m^3) [e]	Recreational User - Off Highway Vehicle Rider Outdoor Vapor Concentration (mg/m^3) [d]
Polychlorinated Biphenyls								
Total PCBs	4.4E-01	1.3E-01	3.3E-10	1.9E-07	3.3E-10	1.9E-07	5.2E-07	1.9E-07
Total Petroleum Hydrocarbons								
TPH as diesel	2.5E+01	1.1E+02	1.9E-08	4.3E-02	1.9E-08	4.3E-02	3.0E-05	4.3E-02
TPH as motor oil	2.4E+02	2.3E+02	1.8E-07	NV	1.8E-07	NV	2.8E-04	NV
Dioxins/Furans								
TEQ Human	8.0E-05	2.1E-04	5.9E-14	8.8E-11	5.9E-14	8.8E-11	9.5E-11	8.8E-11

Notes:

[a] Exposure point concentrations (EPCs) for surface soil (0 to 0.5 foot bgs) are used to evaluate inhalation of particulates in outdoor air.

[b] EPCs for subsurface II soil (0 to 10 feet bgs) are used to evaluate inhalation of volatiles in outdoor air.

[c] Outdoor airborne particulate concentration is calculated by dividing the soil EPCs by the particulate emission factor (PEF). Default PEF of 1.4×10^9 m^3/kg was used for recreational users (campers and hikers) as recommended by Department of Toxic Substances Control (2014).

[d] Chemical-specific volatilization factors (VFs) were estimated as discussed in Section 4.0, Exposure Assessment, of the main report. Outdoor vapor concentration is calculated by dividing the soil EPC by the VF.

[e] PEF of 8.5×10^5 m^3/kg was used for recreational users (off-highway vehicle rider) as calculated in United States Environmental Protection Agency (2008, 2009) and recommended in "Revised Technical Memorandum, Recreational Visitor Exposure Scenario for Federal Land, PG&E Topock Compressor Station Remediation Project, California," prepared by the Department of the Interior (DOI).

Abbreviations:

B(a)P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
mg/kg = milligrams per kilogram.
mg/m^3 = milligrams per cubic meter.
NA = not applicable.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

References:

Department of Toxic Substances Control (DTSC). 2014. DTSC/HERO Human Health Risk Assessment (HHRA) Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities. September 30.

United States Environmental Protection Agency (U S E P A). 2008. Clear Creek Management Areas Asbestos Exposure and Human Health Risk Assessment. Region 9. May. Available at: http://www.epa.gov/region09/toxic/noa/clearcreek/pdf/CCMARiskDoc24Apr08-withoutAppxG.pdf

U S E P A. 2009. Baseline Human Health Risk Assessment for the Standard Mine Site, Gunnison County, CO; Addendum. Prepared by SRC for U S E P A Region 8. November 24. Available at: http://www2.epa.gov/sites/production/files/documents/SM_HHRA_Addendum.pdf

Table AOC11-4.2b
Baseline Scenario Depth-Weighted Exposure Point Concentrations and Predicted Outdoor Air Concentrations for Recreational Users:
C O P Cs in AOC 11 Shallow Soil (0 to 3 feet bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Exposure Point Concentration for Shallow Soil: 0 to 3 feet bgs (mg/kg) [a]	Exposure Point Concentration for Subsurface II Soil: 0 to 10 feet bgs (mg/kg) [b]	Recreational User - Camper Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Camper Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Hiker Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Hiker Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Off Highway Vehicle Rider Outdoor Airborne Particulate Concentration (mg/m^3) [e]	Recreational User - Off Highway Vehicle Rider Outdoor Vapor Concentration (mg/m^3) [d]
Inorganics								
Arsenic	5.2E+00	5.3E+00	3.8E-09	NV	3.8E-09	NV	6.2E-06	NV
Chromium, Hexavalent	1.1E+00	1.0E+00	8.2E-10	NV	8.2E-10	NV	1.3E-06	NV
Chromium, total	3.3E+01	5.7E+01	2.4E-08	NV	2.4E-08	NV	3.8E-05	NV
Copper	1.4E+01	1.3E+01	1.0E-08	NV	1.0E-08	NV	1.6E-05	NV
Lead	2.2E+01	2.6E+01	1.6E-08	NV	1.6E-08	NV	2.6E-05	NV
Mercury (inorganic)	1.8E-01	3.1E-01	1.3E-10	NV	1.3E-10	NV	2.1E-07	NV
Zinc	1.4E+02	9.5E+01	1.0E-07	NV	1.0E-07	NV	1.7E-04	NV
Volatile Organic Compounds								
Methyl acetate	1.7E-02	1.7E-02	1.3E-11	1.7E-06	1.3E-11	1.7E-06	2.0E-08	1.7E-06
Polycyclic Aromatic Hydrocarbons								
1-Methyl naphthalene	6.4E-03	1.2E-02	4.7E-12	1.6E-07	4.7E-12	1.6E-07	7.5E-09	1.6E-07
2-Methyl naphthalene	3.4E-03	3.4E-03	2.5E-12	4.5E-08	2.5E-12	4.5E-08	4.0E-09	4.5E-08
Acenaphthene	8.2E-03	4.2E-03	6.0E-12	2.3E-08	6.0E-12	2.3E-08	9.7E-09	2.3E-08
Acenaphthylene	7.0E-03	3.9E-03	5.1E-12	NV	5.1E-12	NV	8.2E-09	NV
Anthracene	4.7E-03	3.2E-03	3.4E-12	5.0E-09	3.4E-12	5.0E-09	5.5E-09	5.0E-09
Benzo (a) anthracene	9.2E-02	6.1E-02	6.7E-11	1.1E-08	6.7E-11	1.1E-08	1.1E-07	1.1E-08
Benzo (a) pyrene	1.4E-01	5.4E-02	1.0E-10	NV	1.0E-10	NV	1.6E-07	NV
Benzo (b) fluoranthene	2.6E-01	1.0E-01	1.9E-10	NV	1.9E-10	NV	3.1E-07	NV
Benzo (ghi) perylene	5.2E-02	2.5E-02	3.9E-11	NV	3.9E-11	NV	6.2E-08	NV
Benzo (k) fluoranthene	7.5E-02	3.6E-02	5.5E-11	NV	5.5E-11	NV	8.9E-08	NV
Chrysene	1.8E-01	6.6E-02	1.3E-10	NV	1.3E-10	NV	2.1E-07	NV
Dibenzo (a,h) anthracene	8.7E-03	9.7E-03	6.4E-12	NV	6.4E-12	NV	1.0E-08	NV
Fluoranthene	2.8E-01	1.1E-01	2.1E-10	NV	2.1E-10	NV	3.3E-07	NV
Fluorene	6.8E-03	3.8E-03	5.0E-12	1.1E-08	5.0E-12	1.1E-08	8.0E-09	1.1E-08
Indeno (1,2,3-cd) pyrene	4.5E-02	2.1E-02	3.3E-11	NV	3.3E-11	NV	5.3E-08	NV
Naphthalene	7.5E-03	4.1E-03	5.5E-12	6.9E-08	5.5E-12	6.9E-08	8.9E-09	6.9E-08
Phenanthrene	7.2E-02	2.9E-02	5.3E-11	NV	5.3E-11	NV	8.5E-08	NV
Pyrene	2.7E-01	1.0E-01	1.9E-10	3.3E-08	1.9E-10	3.3E-08	3.1E-07	3.3E-08
B(a)P Equivalent	1.8E-01	7.8E-02	1.3E-10	NV	1.3E-10	NV	2.1E-07	NV
Pesticides								
4,4-DDE	6.1E-03	6.1E-03	4.5E-12	2.9E-09	4.5E-12	2.9E-09	7.2E-09	2.9E-09
alpha-Chlordane	1.2E-02	1.2E-02	8.8E-12	NV	8.8E-12	NV	1.4E-08	NV
Dieldrin	6.7E-03	6.7E-03	4.9E-12	NV	4.9E-12	NV	7.9E-09	NV
gamma-Chlordane	1.3E-02	1.3E-02	9.6E-12	NV	9.6E-12	NV	1.5E-08	NV

Table AOC11-4.2b
Baseline Scenario Depth-Weighted Exposure Point Concentrations and Predicted Outdoor Air Concentrations for Recreational Users:
C O P Cs in AOC 11 Shallow Soil (0 to 3 feet bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Exposure Point Concentration for Shallow Soil: 0 to 3 feet bgs (mg/kg) [a]	Exposure Point Concentration for Subsurface II Soil: 0 to 10 feet bgs (mg/kg) [b]	Recreational User - Camper Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Camper Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Hiker Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Hiker Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Off Highway Vehicle Rider Outdoor Airborne Particulate Concentration (mg/m^3) [e]	Recreational User - Off Highway Vehicle Rider Outdoor Vapor Concentration (mg/m^3) [d]
Polychlorinated Biphenyls								
Total PCBs	3.9E-01	1.3E-01	2.8E-10	1.9E-07	2.8E-10	1.9E-07	4.6E-07	1.9E-07
Total Petroleum Hydrocarbons								
TPH as diesel	3.1E+01	1.1E+02	2.3E-08	4.3E-02	2.3E-08	4.3E-02	3.6E-05	4.3E-02
TPH as motor oil	2.6E+02	2.3E+02	1.9E-07	NV	1.9E-07	NV	3.0E-04	NV
Dioxins/Furans								
TEQ Human	2.2E-04	2.1E-04	1.6E-13	8.8E-11	1.6E-13	8.8E-11	2.6E-10	8.8E-11

Notes:

[a] Exposure point concentrations (EPCs) for shallow soil (0 to 3 feet bgs) are used to evaluate inhalation of particulates in outdoor air.

[b] EPCs for subsurface II soil (0 to 10 feet bgs) are used to evaluate inhalation of volatiles in outdoor air.

[c] Outdoor airborne particulate concentration is calculated by dividing the soil EPCs by the particulate emission factor (PEF). Default PEF of 1.4×10^9 m^3/kg was used for recreational users (campers and hikers) as recommended by Department of Toxic Substances Control (2014).

[d] Chemical-specific volatilization factors (VFs) were estimated as discussed in Section 4.0, Exposure Assessment, of the main report. Outdoor vapor concentration is calculated by dividing the soil EPC by the VF.

[e] PEF of 8.5×10^5 m^3/kg was used for recreational users (off-highway vehicle rider) as calculated in United States Environmental Protection Agency (2008, 2009) and recommended in "Revised Technical Memorandum, Recreational Visitor Exposure Scenario for Federal Land, PG&E Topock Compressor Station Remediation Project, California," prepared by the Department of the Interior (DOI).

Abbreviations:

B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
mg/kg = milligrams per kilogram.
mg/m^3 = milligrams per cubic meter.
NA = not applicable.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

References:

Department of Toxic Substances Control (DTSC). 2014. DTSC/HERO Human Health Risk Assessment (HHRA) Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities. September 30.

United States Environmental Protection Agency (U S E P A). 2008. Clear Creek Management Areas Asbestos Exposure and Human Health Risk Assessment. Region 9. May. Available at: http://www.epa.gov/region09/toxic/noa/clearcreek/pdf/CCMARiskDoc24Apr08-withoutAppxG.pdf

U S E P A. 2009. Baseline Human Health Risk Assessment for the Standard Mine Site, Gunnison County, CO; Addendum. Prepared by SRC for U S E P A Region 8. November 24. Available at: http://www2.epa.gov/sites/production/files/documents/SM_HHRA_Addendum.pdf

Table AOC11-4.3a
Baseline Scenario Area-Weighted Exposure Point Concentrations and Predicted Outdoor Air Concentrations for Recreational Users:
C O P Cs in AOC 11 Surface Soil (0 to 0.5 foot bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Exposure Point Concentration for Surface Soil: 0 to 0.5 foot bgs (mg/kg) [a]	Exposure Point Concentration for Subsurface II Soil: 0 to 10 feet bgs (mg/kg) [b]	Recreational User - Camper Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Camper Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Hiker Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Hiker Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Off Highway Vehicle Rider Outdoor Airborne Particulate Concentration (mg/m^3) [e]	Recreational User - Off Highway Vehicle Rider Outdoor Vapor Concentration (mg/m^3) [d]
Inorganics								
Arsenic	5.7E+00	6.2E+00	4.2E-09	NV	4.2E-09	NV	6.8E-06	NV
Chromium, Hexavalent	1.6E+00	2.1E+00	1.1E-09	NV	1.1E-09	NV	1.8E-06	NV
Chromium, total	4.6E+01	5.3E+01	3.4E-08	NV	3.4E-08	NV	5.4E-05	NV
Copper	1.2E+01	1.4E+01	9.1E-09	NV	9.1E-09	NV	1.5E-05	NV
Lead	3.8E+01	1.8E+01	2.8E-08	NV	2.8E-08	NV	4.5E-05	NV
Mercury (inorganic)	1.8E-01	3.1E-01	1.3E-10	NV	1.3E-10	NV	2.1E-07	NV
Zinc	1.1E+02	6.7E+01	8.2E-08	NV	8.2E-08	NV	1.3E-04	NV
Volatile Organic Compounds								
Methyl acetate	NS	1.7E-02	NA	1.7E-06	NA	1.7E-06	NA	1.7E-06
Polycyclic Aromatic Hydrocarbons								
1-Methyl naphthalene	ND	1.2E-02	NA	1.6E-07	NA	1.6E-07	NA	1.6E-07
2-Methyl naphthalene	1.1E-02	7.4E-03	7.8E-12	1.0E-07	7.8E-12	1.0E-07	1.3E-08	1.0E-07
Acenaphthene	1.1E-02	4.2E-03	8.1E-12	2.3E-08	8.1E-12	2.3E-08	1.3E-08	2.3E-08
Acenaphthylene	9.2E-03	3.9E-03	6.8E-12	NV	6.8E-12	NV	1.1E-08	NV
Anthracene	5.4E-03	3.3E-03	4.0E-12	5.1E-09	4.0E-12	5.1E-09	6.4E-09	5.1E-09
Benzo (a) anthracene	1.3E-01	3.3E-02	9.5E-11	6.0E-09	9.5E-11	6.0E-09	1.5E-07	6.0E-09
Benzo (a) pyrene	1.5E-01	4.1E-02	1.1E-10	NV	1.1E-10	NV	1.7E-07	NV
Benzo (b) fluoranthene	2.4E-01	6.7E-02	1.7E-10	NV	1.7E-10	NV	2.8E-07	NV
Benzo (ghi) perylene	7.2E-02	2.3E-02	5.3E-11	NV	5.3E-11	NV	8.5E-08	NV
Benzo (k) fluoranthene	8.6E-02	2.7E-02	6.3E-11	NV	6.3E-11	NV	1.0E-07	NV
Chrysene	2.0E-01	5.1E-02	1.5E-10	NV	1.5E-10	NV	2.4E-07	NV
Dibenzo (a,h) anthracene	2.8E-02	1.1E-02	2.0E-11	NV	2.0E-11	NV	3.3E-08	NV
Fluoranthene	3.2E-01	8.2E-02	2.4E-10	NV	2.4E-10	NV	3.8E-07	NV
Fluorene	8.9E-03	3.8E-03	6.5E-12	1.1E-08	6.5E-12	1.1E-08	1.1E-08	1.1E-08
Indeno (1,2,3-cd) pyrene	7.2E-02	2.3E-02	5.3E-11	NV	5.3E-11	NV	8.5E-08	NV
Naphthalene	1.0E-02	4.1E-03	7.4E-12	6.9E-08	7.4E-12	6.9E-08	1.2E-08	6.9E-08
Phenanthrene	1.1E-01	2.8E-02	8.4E-11	NV	8.4E-11	NV	1.3E-07	NV
Pyrene	3.0E-01	7.5E-02	2.2E-10	2.4E-08	2.2E-10	2.4E-08	3.5E-07	2.4E-08
B(a)P Equivalent	2.1E-01	6.4E-02	1.6E-10	NV	1.6E-10	NV	2.5E-07	NV
Pesticides								
4,4-DDE	6.1E-03	6.1E-03	4.5E-12	2.9E-09	4.5E-12	2.9E-09	7.2E-09	2.9E-09
alpha-Chlordane	1.2E-02	1.2E-02	8.8E-12	NV	8.8E-12	NV	1.4E-08	NV
Dieldrin	6.7E-03	6.7E-03	4.9E-12	NV	4.9E-12	NV	7.9E-09	NV
gamma-Chlordane	1.3E-02	1.3E-02	9.6E-12	NV	9.6E-12	NV	1.5E-08	NV

Table AOC11-4.3a
Baseline Scenario Area-Weighted Exposure Point Concentrations and Predicted Outdoor Air Concentrations for Recreational Users:
C O P Cs in AOC 11 Surface Soil (0 to 0.5 foot bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Exposure Point Concentration for Surface Soil: 0 to 0.5 foot bgs (mg/kg) [a]	Exposure Point Concentration for Subsurface II Soil: 0 to 10 feet bgs (mg/kg) [b]	Recreational User - Camper Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Camper Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Hiker Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Hiker Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Off Highway Vehicle Rider Outdoor Airborne Particulate Concentration (mg/m^3) [e]	Recreational User - Off Highway Vehicle Rider Outdoor Vapor Concentration (mg/m^3) [d]
Polychlorinated Biphenyls								
Total PCBs	2.3E-01	9.1E-02	1.7E-10	1.4E-07	1.7E-10	1.4E-07	2.7E-07	1.4E-07
Total Petroleum Hydrocarbons								
TPH as diesel	5.1E+01	4.4E+01	3.7E-08	1.8E-02	3.7E-08	1.8E-02	6.0E-05	1.8E-02
TPH as motor oil	1.1E+02	8.1E+01	8.0E-08	NV	8.0E-08	NV	1.3E-04	NV
Dioxins/Furans								
TEQ Human	6.4E-05	1.1E-04	4.7E-14	4.7E-11	4.7E-14	4.7E-11	7.6E-11	4.7E-11

Notes:

[a] Exposure point concentrations (EPCs) for surface soil (0 to 0.5 foot bgs) are used to evaluate inhalation of particulates in outdoor air.

[b] EPCs for subsurface II soil (0 to 10 feet bgs) are used to evaluate inhalation of volatiles in outdoor air.

[c] Outdoor airborne particulate concentration is calculated by dividing the soil EPCs by the particulate emission factor (PEF). Default PEF of 1.4×10^9 m^3/kg was used for recreational users (campers and hikers) as recommended by Department of Toxic Substances Control (2014).

[d] Chemical-specific volatilization factors (VFs) were estimated as discussed in Section 4.0, Exposure Assessment, of the main report. Outdoor vapor concentration is calculated by dividing the soil EPC by the VF.

[e] PEF of 8.5×10^5 m^3/kg was used for recreational users (off-highway vehicle rider) as calculated in United States Environmental Protection Agency (2008, 2009) and recommended in "Revised Technical Memorandum, Recreational Visitor Exposure Scenario for Federal Land, PG&E Topock Compressor Station Remediation Project, California," prepared by the Department of the Interior (DOI).

Abbreviations:

B(a)P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
mg/kg = milligrams per kilogram.
mg/m^3 = milligrams per cubic meter.
NA = not applicable.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

References:

Department of Toxic Substances Control (DTSC). 2014. DTSC/HERO Human Health Risk Assessment (HHRA) Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and
United States Environmental Protection Agency (U S E P A). 2008. Clear Creek Management Areas Asbestos Exposure and Human Health Risk Assessment. Region 9. May. Available at:
U S E P A. 2009. Baseline Human Health Risk Assessment for the Standard Mine Site, Gunnison County, CO; Addendum. Prepared by SRC for U S E P A Region 8. November 24. Available at: http://www2.epa.gov/sites/production/files/documents/SM_H

Table AOC11-4.3b
Baseline Scenario Area-Weighted Exposure Point Concentrations and Predicted Outdoor Air Concentrations for Recreational Users:
C O P Cs in AOC 11 Shallow Soil (0 to 3 feet bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Exposure Point Concentration for Shallow Soil: 0 to 3 feet bgs (mg/kg) [a]	Exposure Point Concentration for Subsurface II Soil: 0 to 10 feet bgs (mg/kg) [b]	Recreational User - Camper Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Camper Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Hiker Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Hiker Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Off Highway Vehicle Rider Outdoor Airborne Particulate Concentration (mg/m^3) [e]	Recreational User - Off Highway Vehicle Rider Outdoor Vapor Concentration (mg/m^3) [d]
Inorganics								
Arsenic	5.8E+00	6.2E+00	4.3E-09	NV	4.3E-09	NV	6.8E-06	NV
Chromium, Hexavalent	1.5E+00	2.1E+00	1.1E-09	NV	1.1E-09	NV	1.8E-06	NV
Chromium, total	4.6E+01	5.3E+01	3.3E-08	NV	3.3E-08	NV	5.4E-05	NV
Copper	1.3E+01	1.4E+01	9.2E-09	NV	9.2E-09	NV	1.5E-05	NV
Lead	2.9E+01	1.8E+01	2.2E-08	NV	2.2E-08	NV	3.5E-05	NV
Mercury (inorganic)	1.8E-01	3.1E-01	1.3E-10	NV	1.3E-10	NV	2.1E-07	NV
Zinc	7.6E+01	6.7E+01	5.6E-08	NV	5.6E-08	NV	8.9E-05	NV
Volatile Organic Compounds								
Methyl acetate	1.7E-02	1.7E-02	1.3E-11	1.7E-06	1.3E-11	1.7E-06	2.0E-08	1.7E-06
Polycyclic Aromatic Hydrocarbons								
1-Methyl naphthalene	6.4E-03	1.2E-02	4.7E-12	1.6E-07	4.7E-12	1.6E-07	7.5E-09	1.6E-07
2-Methyl naphthalene	9.9E-03	7.4E-03	7.3E-12	1.0E-07	7.3E-12	1.0E-07	1.2E-08	1.0E-07
Acenaphthene	8.2E-03	4.2E-03	6.0E-12	2.3E-08	6.0E-12	2.3E-08	9.7E-09	2.3E-08
Acenaphthylene	7.0E-03	3.9E-03	5.1E-12	NV	5.1E-12	NV	8.2E-09	NV
Anthracene	4.6E-03	3.3E-03	3.4E-12	5.1E-09	3.4E-12	5.1E-09	5.5E-09	5.1E-09
Benzo (a) anthracene	8.7E-02	3.3E-02	6.4E-11	6.0E-09	6.4E-11	6.0E-09	1.0E-07	6.0E-09
Benzo (a) pyrene	1.0E-01	4.1E-02	7.6E-11	NV	7.6E-11	NV	1.2E-07	NV
Benzo (b) fluoranthene	1.7E-01	6.7E-02	1.2E-10	NV	1.2E-10	NV	2.0E-07	NV
Benzo (ghi) perylene	5.3E-02	2.3E-02	3.9E-11	NV	3.9E-11	NV	6.3E-08	NV
Benzo (k) fluoranthene	6.1E-02	2.7E-02	4.5E-11	NV	4.5E-11	NV	7.2E-08	NV
Chrysene	1.4E-01	5.1E-02	1.0E-10	NV	1.0E-10	NV	1.6E-07	NV
Dibenzo (a,h) anthracene	2.0E-02	1.1E-02	1.5E-11	NV	1.5E-11	NV	2.4E-08	NV
Fluoranthene	2.3E-01	8.2E-02	1.7E-10	NV	1.7E-10	NV	2.7E-07	NV
Fluorene	6.8E-03	3.8E-03	5.0E-12	1.1E-08	5.0E-12	1.1E-08	8.0E-09	1.1E-08
Indeno (1,2,3-cd) pyrene	5.3E-02	2.3E-02	3.9E-11	NV	3.9E-11	NV	6.2E-08	NV
Naphthalene	7.5E-03	4.1E-03	5.5E-12	6.9E-08	5.5E-12	6.9E-08	8.9E-09	6.9E-08
Phenanthrene	7.5E-02	2.8E-02	5.5E-11	NV	5.5E-11	NV	8.9E-08	NV
Pyrene	2.0E-01	7.5E-02	1.5E-10	2.4E-08	1.5E-10	2.4E-08	2.4E-07	2.4E-08
B(a)P Equivalent	1.5E-01	6.4E-02	1.1E-10	NV	1.1E-10	NV	1.8E-07	NV
Pesticides								
4,4-DDE	6.1E-03	6.1E-03	4.5E-12	2.9E-09	4.5E-12	2.9E-09	7.2E-09	2.9E-09
alpha-Chlordane	1.2E-02	1.2E-02	8.8E-12	NV	8.8E-12	NV	1.4E-08	NV
Dieldrin	6.7E-03	6.7E-03	4.9E-12	NV	4.9E-12	NV	7.9E-09	NV
gamma-Chlordane	1.3E-02	1.3E-02	9.6E-12	NV	9.6E-12	NV	1.5E-08	NV

Table AOC11-4.3b
Baseline Scenario Area-Weighted Exposure Point Concentrations and Predicted Outdoor Air Concentrations for Recreational Users:
C O P Cs in AOC 11 Shallow Soil (0 to 3 feet bgs)

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Exposure Point Concentration for Shallow Soil: 0 to 3 feet bgs (mg/kg) [a]	Exposure Point Concentration for Subsurface II Soil: 0 to 10 feet bgs (mg/kg) [b]	Recreational User - Camper Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Camper Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Hiker Outdoor Airborne Particulate Concentration (mg/m^3) [c]	Recreational User - Hiker Outdoor Vapor Concentration (mg/m^3) [d]	Recreational User - Off Highway Vehicle Rider Outdoor Airborne Particulate Concentration (mg/m^3) [e]	Recreational User - Off Highway Vehicle Rider Outdoor Vapor Concentration (mg/m^3) [d]
Polychlorinated Biphenyls								
Total PCBs	2.1E-01	9.1E-02	1.5E-10	1.4E-07	1.5E-10	1.4E-07	2.4E-07	1.4E-07
Total Petroleum Hydrocarbons								
TPH as diesel	5.5E+01	4.4E+01	4.0E-08	1.8E-02	4.0E-08	1.8E-02	6.4E-05	1.8E-02
TPH as motor oil	1.1E+02	8.1E+01	7.9E-08	NV	7.9E-08	NV	1.3E-04	NV
Dioxins/Furans								
TEQ Human	6.4E-05	1.1E-04	4.7E-14	4.7E-11	4.7E-14	4.7E-11	7.5E-11	4.7E-11

Notes:

[a] Exposure point concentrations (EPCs) for shallow soil (0 to 3 feet bgs) are used to evaluate inhalation of particulates in outdoor air.

[b] EPCs for subsurface II soil (0 to 10 feet bgs) are used to evaluate inhalation of volatiles in outdoor air.

[c] Outdoor airborne particulate concentration is calculated by dividing the soil EPCs by the particulate emission factor (PEF). Default PEF of 1.4×10^9 m^3/kg was used for recreational users (campers and hikers) as recommended by Department of Toxic Substances Control (2014).

[d] Chemical-specific volatilization factors (VFs) were estimated as discussed in Section 4.0, Exposure Assessment, of the main report. Outdoor vapor concentration is calculated by dividing the soil EPC by the VF.

[e] PEF of 8.5×10^5 m^3/kg was used for recreational users (off-highway vehicle rider) as calculated in United States Environmental Protection Agency (2008, 2009) and recommended in "Revised Technical Memorandum, Recreational Visitor Exposure Scenario for Federal Land, PG&E Topock Compressor Station Remediation Project, California," prepared by the Department of the Interior (DOI).

Abbreviations:

B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
mg/kg = milligrams per kilogram.
mg/m^3 = milligrams per cubic meter.
NA = not applicable.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

References:

Department of Toxic Substances Control (DTSC). 2014. DTSC/HERO Human Health Risk Assessment (HHRA) Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities. September 30.

United States Environmental Protection Agency (U S E P A). 2008. Clear Creek Management Areas Asbestos Exposure and Human Health Risk Assessment. Region 9. May. Available at: http://www.epa.gov/region09/toxic/noa/clearcreek/pdf/CCMARiskDoc24Apr08-withoutAppxG.pdf

U S E P A. 2009. Baseline Human Health Risk Assessment for the Standard Mine Site, Gunnison County, CO; Addendum. Prepared by SRC for U S E P A Region 8. November 24. Available at: http://www2.epa.gov/sites/production/files/documents/SM_HHRA_Addendum.pdf

Table AOC11-4.4
Human Health Risk and Hazard Estimate Summary at AOC 11 for the Baseline Scenario Using Depth-Weighted Exposure Point Concentrations

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Receptor	Depth Interval	ILCR	H I
Recreational User - Camper	Surface	2E-06	5E-01
Recreational User - Camper	Shallow	3E-06	6E-01
Recreational User - Hiker	Surface	5E-06	1E+00
Recreational User - Hiker	Shallow	6E-06	1E+00
Recreational User - OHV Rider	Surface	3E-06	2E-01
Recreational User - OHV Rider	Shallow	4E-06	3E-01

Abbreviations:
ILCR = Incremental Lifetime Cancer Risk
H I = Hazard Index

Table AOC11-4.5
Human Health Risk and Hazard Estimate Summary at AOC 11 for the Baseline Scenario Using Area-Weighted Exposure Point Concentrations

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Receptor	Depth Interval	ILCR	H I
Recreational User - Camper	Surface	2E-06	6E-01
Recreational User - Camper	Shallow	2E-06	6E-01
Recreational User - Hiker	Surface	5E-06	1E+00
Recreational User - Hiker	Shallow	5E-06	1E+00
Recreational User - OHV Rider	Surface	3E-06	2E-01
Recreational User - OHV Rider	Shallow	3E-06	2E-01

Abbreviations:
ILCR = Incremental Lifetime Cancer Risk
H I = Hazard Index

Table AOC11-5.1
Depth-Weighted Exposure Point Concentrations for Soil and Biota for AOC 11

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Category	C O P E C	Units	Soil EPC (0-0.5 ft bgs)	Biota EPC (0-0.5 ft bgs) [a]
Inorganics	Chromium, hexavalent	mg/kg	1.08E+00	3.32E-01
Inorganics	Chromium, total	mg/kg	3.87E+01	1.18E+01
Inorganics	Copper	mg/kg	1.36E+01	6.99E+00
Dioxins	TEQ Mammals	ng/kg	8.01E+01	4.92E+02

Notes:
[a] Calculated using selected soil EPC and uptake model. See Section 6 of the main report.

Abbreviations:
C O P E C = constituent of potential ecological concern
EPC = exposure point concentration
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
ng/kg = nanograms per kilogram
TEQ = toxicity equivalent

Table AOC11-5.2
Area-Weighted Exposure Point Concentrations for Soil and Biota for AOC 11

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Category	C O P E C	Units	Soil EPC (0-0.5 ft bgs)	Biota EPC (0-0.5 ft bgs) [a]
Inorganics	Chromium, hexavalent	mg/kg	1.55E+00	4.76E-01
Inorganics	Chromium, total	mg/kg	4.56E+01	1.40E+01
Inorganics	Copper	mg/kg	1.24E+01	6.38E+00
Dioxins	TEQ Mammals	ng/kg	6.44E+01	3.80E+02

Notes:

[a] Calculated using selected soil EPC and uptake model. See Section 6 of the main report.

Abbreviations:

C O P E C = constituent of potential ecological concern
EPC = exposure point concentration
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
ng/kg = nanograms per kilogram
TEQ = toxicity equivalent

Table AOC11-5.3
Toxic Equivalency Factors for Dioxin Congeners and Calculated Tissue Exposure Point Concentrations for Dioxin TEQ for AOC 11

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Constituent	Units	Soil EPC 95% UCL (0-0.5 ft bgs)	Terrestrial Invertebrate Bioaccumulation Factors	Terrestrial Invertebrate Tissue EPC (0-0.5 ft bgs)	Mammal TEFs[a]	Terrestrial Invertebrate Tissue EPCs (0-0.5 ft bgs, Mammal TEF Applied)
Congener-Specific Approach (USEPA 1999)						
1,2,3,4,6,7,8-hpcdd	ng/kg	3530	0.081	286	0.01	2.86
1,2,3,4,6,7,8-hpcdf	ng/kg	404.2	0.017	6.87	0.01	0.069
1,2,3,4,7,8,9-hpcdf	ng/kg	33.9	0.62	21.02	0.01	0.210
1,2,3,4,7,8-hxcdd	ng/kg	14	0.49	6.86	0.1	0.69
1,2,3,4,7,8-hxcdf	ng/kg	27.95	0.121	3.38	0.1	0.338
1,2,3,6,7,8-hxcdd	ng/kg	77.17	0.19	14.66	0.1	1.47
1,2,3,6,7,8-hxcdf	ng/kg	13.74	0.3	4.12	0.1	0.41
1,2,3,7,8,9-hxcdd	ng/kg	25.13	0.22	5.53	0.1	0.55
1,2,3,7,8,9-hxcdf	ng/kg	9.443	1	9.44	0.1	0.94
1,2,3,7,8-pecdd	ng/kg	24.01	1.46	35.05	1	35.05
1,2,3,7,8-pecdf	ng/kg	2.518	0.32	0.81	0.03	0.024
2,3,4,6,7,8-hxcdf	ng/kg	7.606	1.07	8.14	0.1	0.81
2,3,4,7,8-pecdf	ng/kg	10.38	2.54	26.37	0.3	7.91
2,3,7,8-tcdd	ng/kg	0.158	1.59	0.25	1	0.25
2,3,7,8-tcdf	ng/kg	1.52	1.27	1.93	0.1	0.19
ocdd	ng/kg	42045	0.019	799	0.0003	0.240
ocdf	ng/kg	2104	0.025	52.6	0.0003	0.0158
Dioxin TEQ	ng/kg					**52.0**
Congener-Specific Approach (Fagervold et al. 2010)[b]						
1,2,3,4,6,7,8-hpcdd	ng/kg	3530	0.20	698.65	0.01	6.99
1,2,3,4,6,7,8-hpcdf	ng/kg	404.2	0.36	143.63	0.01	1.44
1,2,3,4,7,8,9-hpcdf	ng/kg	33.9	0.34	11.46	0.01	0.115
1,2,3,4,7,8-hxcdd	ng/kg	14	0.23	3.21	0.1	0.32
1,2,3,4,7,8-hxcdf	ng/kg	27.95	0.48	13.29	0.1	1.33
1,2,3,6,7,8-hxcdd	ng/kg	77.17	0.19	14.86	0.1	1.49
1,2,3,6,7,8-hxcdf	ng/kg	13.74	0.59	8.05	0.1	0.80
1,2,3,7,8,9-hxcdd	ng/kg	25.13	0.13	3.23	0.1	0.32
1,2,3,7,8,9-hxcdf	ng/kg	9.443	1.22	11.53	0.1	1.15
1,2,3,7,8-pecdd	ng/kg	24.01	0.18	4.40	1	4.40
1,2,3,7,8-pecdf	ng/kg	2.518	0.79	1.98	0.03	0.059
2,3,4,6,7,8-hxcdf	ng/kg	7.606	0.33	2.53	0.1	0.25
2,3,4,7,8-pecdf	ng/kg	10.38	0.56	5.86	0.3	1.76
2,3,7,8-tcdd	ng/kg	0.158	1.65	0.26	1	0.26
2,3,7,8-tcdf	ng/kg	1.52	1.21	1.84	0.1	0.18
ocdd	ng/kg	42045	0.25	10612.86	0.0003	3.18
ocdf	ng/kg	2104	0.27	576.67	0.0003	0.173
Dioxin TEQ	ng/kg	80.05				**24.2**

Table AOC11-5.3
Toxic Equivalency Factors for Dioxin Congeners and Calculated Tissue Exposure Point Concentrations for Dioxin TEQ for AOC 11

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Constituent	Units	Soil EPC 95% UCL (0-0.5 ft bgs)	Terrestrial Invertebrate Bioaccumulation Factors	Terrestrial Invertebrate Tissue EPC (0-0.5 ft bgs)	Mammal TEFs[a]	Terrestrial Invertebrate Tissue EPCs (0-0.5 ft bgs, Mammal TEF Applied)
ERA Approach[c]						
TEQ mammals	ng/kg	80.1	ln(Ci) = 1.182 * ln(Cs) + 3.533	--	--	**492**

Notes:
[a] Toxic Equivalentcy Factors (TEFs) from Van den Berg (2006) for mammals.
[b] Fagervold et al. (2010) bioaccumulation factors calculated using soil-to-earthworm 2,3,7,8-TCDD BAF for soil at location SW-20 (BAF = 1.65) and congener-specific earthworm bioaccumulation equivalency factors. See Table 6-34 of the 2019 H H E R A (Arcadis 2019).
[c] ERA approach bioaccumulation factor based on tetrachlorodibenzo-p-dioxin (TCDD) in Sample et al. (1998).

Abbreviations:
C O P E C = constituent of potential ecological concern
EPC = exposure point concentration
ft bgs = feet below ground surface
ng/kg = nanograms per kilogram
TEQ = toxicity equivalent
TEF = toxic equivalency factor

References:
Arcadis. 2019. Final Soil Human Health and Ecological Risk Assessment Report, Topock Compressor Station, Needles, California.
Fagervold, SK, Y Chai, JW Davis, M Wilken, G Cornelissen, and U Ghosh. 2010. Bioaccumulation of polychlorinated dibenzo-p-dioxins/dibenzofurans in E. fetida from floodplain soils and the effect of activated carbon amendment. Environ Sci Technol. 44(14):5546-52.
Sample, B.E., J.J. Beauchamp, R.A. Efroymson, G.W. Suter, II, and T.L. Ashwood. 1998. Development and Validation of Bioaccumulation Models for Earthworms. ES/ER/TM-220. Oak Ridge National Laboratory, Oak Ridge TN. 93 pp.47
USEPA. 1999. Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities. U.S. Environmental Protection Agency Peer Review Draft. August
Van den Berg, et al. 1998. Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. Environ Health Perspect 106(12):775-792.
Van den Berg, et al. 2006. The 2005 World Health Organization reevaluation of human and mammalian TEFs for dioxins and dioxin-like compounds. Toxicological Sciences 93:223-241.

Table AOC11-5.4
Desert Shrew Risk Estimate Summary Using Depth-Weighted Exposure Point Concentrations (Wildlife SUF = 1, TRVs used for RBRG Development, and Selected BAFs) for AOC 11

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Scenario	Category	C O P E C	Desert Shrew N O A E L HQ TRV Used for RBRG Development SUF = 1	N O A E L HQ TRV Basis[a]	N O A E L HQ Notes	Desert Shrew L O A E L HQ TRV Used for RBRG Development SUF = 1	L O A E L HQ TRV Basis[a]	L O A E L HQ Notes
Baseline	Inorganics	Chromium, hexavalent	8E-03	Selected TRV	None	2E-03	Selected TRV	None
Baseline	Inorganics	Chromium, total	1E+00	Selected TRV	None	3E-01	Selected TRV	None
Baseline	Inorganics	Copper	2E-01	Selected TRV	None	9E-02	Selected TRV	None
Baseline	Dioxins	TEQ Mammals	**2E+01**	Alternate TRV	Note 1	**3E+00**	Alternate TRV	Note 2

Notes:

[a] Selected TRVs for metals are based on the TRVs used to develop the U S E P A Ecological Soil Screening Levels (U S E P A 2005). Alternate TRVs for dioxin TEQ were developed for mammals based the geometric mean of the reproduction and growth endpoints for the NOAEL and LOAEL effect levels, respectively.

Note 1	N O A E L HQ greater than 1
Note 2	L O A E L HQ greater than 1
Note 3	L O A E L HQ greater than 10
Note 4	L O A E L HQ greater than 100

Abbreviations:

BAF = bioaccumulation factor
C O P E C = constituent of potential ecological concern
HQ = hazard quotient
LOAEL = lowest observed adverse effect level
NOAEL = no-observed adverse effect level
RBRG = risk-based remedial goal
S U F = site use factor
TEQ = toxicity equivalent
TRV = toxicity reference value
U S E P A = United States Environmental Protection Agency

Table AOC11-5.5

Desert Shrew Risk Estimate Summary Using Area-Weighted Exposure Point Concentrations (Wildlife SUF = 1, TRVs used for RBRG Development, and Selected BAFs) for AOC 11

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Scenario	Category	C O P E C	Desert Shrew N O A E L HQ TRV Used for RBRG Development SUF = 1	N O A E L HQ TRV Basis[a]	N O A E L HQ Notes	Desert Shrew L O A E L HQ TRV Used for RBRG Development SUF = 1	L O A E L HQ TRV Basis[a]	L O A E L HQ Notes
Baseline	Inorganics	Chromium, hexavalent	1E-02	Selected TRV	None	3E-03	Selected TRV	None
Baseline	Inorganics	Chromium, total	1E+00	Selected TRV	None	3E-01	Selected TRV	None
Baseline	Inorganics	Copper	1E-01	Selected TRV	None	9E-02	Selected TRV	None
Baseline	Dioxins	TEQ Mammals	**2E+01**	Alternate TRV	Note 1	**3E+00**	Alternate TRV	Note 2

Notes:

[a] Selected TRVs for metals are based on the TRVs used to develop the U S E P A Ecological Soil Screening Levels (U S E P A 2005). Alternate TRVs for dioxin TEQ were developed for mammals based the geometric mean of the reproduction and growth endpoints for the NOAEL and LOAEL effect levels, respectively.

Note 1	N O A E L HQ greater than 1
Note 2	L O A E L HQ greater than 1
Note 3	L O A E L HQ greater than 10
Note 4	L O A E L HQ greater than 100

Abbreviations:

BAF = bioaccumulation factor
C O P E C = constituent of potential ecological concern
HQ = hazard quotient
LOAEL = lowest observed adverse effect level
NOAEL = no-observed adverse effect level
RBRG = risk-based remedial goal
S U F = site use factor
TEQ = toxicity equivalent
TRV = toxicity reference value
U S E P A = United States Environmental Protection Agency

Table AOC11-5.6
Desert Shrew Risk Estimate Summary for Dioxin TEQ Using Depth-Weighted Exposure Point Concentrations and Congener-Specific BAFs (Wildlife SUF = 1, TRVs used for RBRG Development) for AOC 11

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Scenario	Category	BAF Type	C O P E C	Desert Shrew N O A E L HQ TRV Used for RBRG Development SUF = 1	N O A E L HQ TRV Basis[a]	N O A E L HQ Notes	Desert Shrew L O A E L HQ TRV Used for RBRG Development SUF = 1	L O A E L HQ TRV Basis[a]	L O A E L HQ Notes
Baseline	Dioxins	Congener-Specific (USEPA 1999)	TEQ Mammals	**2E+00**	Alternate TRV	Note 1	4E-01	Alternate TRV	None
Baseline	Dioxins	Congener-Specific (Fagervold et al. 2010)	TEQ Mammals	1E+00	Alternate TRV	None	2E-01	Alternate TRV	None

Notes:
[a] Selected TRVs for metals are based on the TRVs used to develop the U S E P A Ecological Soil Screening Levels (U S E P A 2005). Alternate TRVs for dioxin TEQ were developed for mammals based the geometric mean of the reproduction and growth endpoints for the NOAEL and LOAEL effect levels, respectively.

Note 1	N O A E L HQ greater than 1
Note 2	L O A E L HQ greater than 1
Note 3	L O A E L HQ greater than 10
Note 4	L O A E L HQ greater than 100

Abbreviations:
BAF = bioaccumulation factor
C O P E C = constituent of potential ecological concern
HQ = hazard quotient
LOAEL = lowest observed adverse effect level
NOAEL = no-observed adverse effect level
RBRG = risk-based remedial goal
S U F = site use factor
TEQ = toxicity equivalent
TRV = toxicity reference value
U S E P A = United States Environmental Protection Agency

Table AOC11-6.1
Desert Shrew Risk Estimate Summary Using Depth-Weighted and Area-Weighted Exposure Point Concentrations for AOC 11

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Scenario	Category	C O P E C	BAF Type	Desert Shrew Depth-Weighted N O A E L HQ TRV Used for RBRG Development SUF = 1	Desert Shrew Depth-Weighted N O A E L HQ Notes	Desert Shrew Depth-Weighted L O A E L HQ TRV Used for RBRG Development SUF = 1	Desert Shrew Depth-Weighted L O A E L HQ Notes	Desert Shrew Area-Weighted N O A E L HQ TRV Used for RBRG Development SUF = 1	Desert Shrew Area-Weighted N O A E L HQ Notes	Desert Shrew Area-Weighted L O A E L HQ TRV Used for RBRG Development SUF = 1	Desert Shrew Area-Weighted L O A E L HQ Notes	W O E Result[a]
Baseline	Inorganics	Chromium, hexavalent	Selected BAF	8E-03	None	2E-03	None	1E-02	None	3E-03	None	HQ less than or equal to 1
Baseline	Inorganics	Chromium, total	Selected BAF	1E+00	None	3E-01	None	1E+00	None	3E-01	None	HQ less than or equal to 1
Baseline	Inorganics	Copper	Selected BAF	2E-01	None	9E-02	None	1E-01	None	9E-02	None	HQ less than or equal to 1
Baseline	Dioxins	TEQ Mammals	Selected BAF	**2E+01**	Note 1	**3E+00**	Note 2	**2E+01**	Note 1	**3E+00**	Note 2	See W O E for Alternate BAFs
Baseline	Dioxins	TEQ Mammals	Alternate BAF (USEPA 1999)	**2E+00**	Note 1	4E-01	None	--	None	--	None	HQ less than or equal to 1
Baseline	Dioxins	TEQ Mammals	Alternate BAF (Fagervold et al. 2010)	1E+00	None	2E-01	None	--	None	--	None	HQ less than or equal to 1

Notes:
[a] W O E result for dioxin TEQ is risk conclusion based on 1) L O A E L HQ based on depth-weighted EPCs and assumptions used for RBRG development (i.e., a SUF of 1, congener-specific BAFs, and alternate TRVs), and 2) supporting L O E s. W O E result for metals is risk conclusion based on 1) L O A E L HQ based on area-weighted EPCs and assumptions used for RBRG development (i.e., a SUF of 1 and selected BAFs and TRVs), and 2) supporting L O E s.

Note 1	N O A E L HQ greater than 1
Note 2	L O A E L HQ greater than 1
Note 3	L O A E L HQ greater than 10
Note 4	L O A E L HQ greater than 100

Abbreviations:
"--" = not applicable
B A F = bioaccumulation factor
C O P E C = constituent of potential ecological concern
E P C = exposure point concentration
H Q = hazard quotient
L O A E L = lowest observed adverse effect level
L O E = line of evidence
N O A E L = no-observed adverse effect level
R B R G = risk-based remedial goal
S U F = site use factor
T E Q = toxicity equivalent
T R V = toxicity reference value
U S E P A = United States Environmental Protection Agency
W O E = weight of evidence, considering multiple L O E s. If HQs/L O A E L HQs are greater than 1, W O E Result is either 1) not expected, 2) unlikely, or 3) possible.

FIGURES

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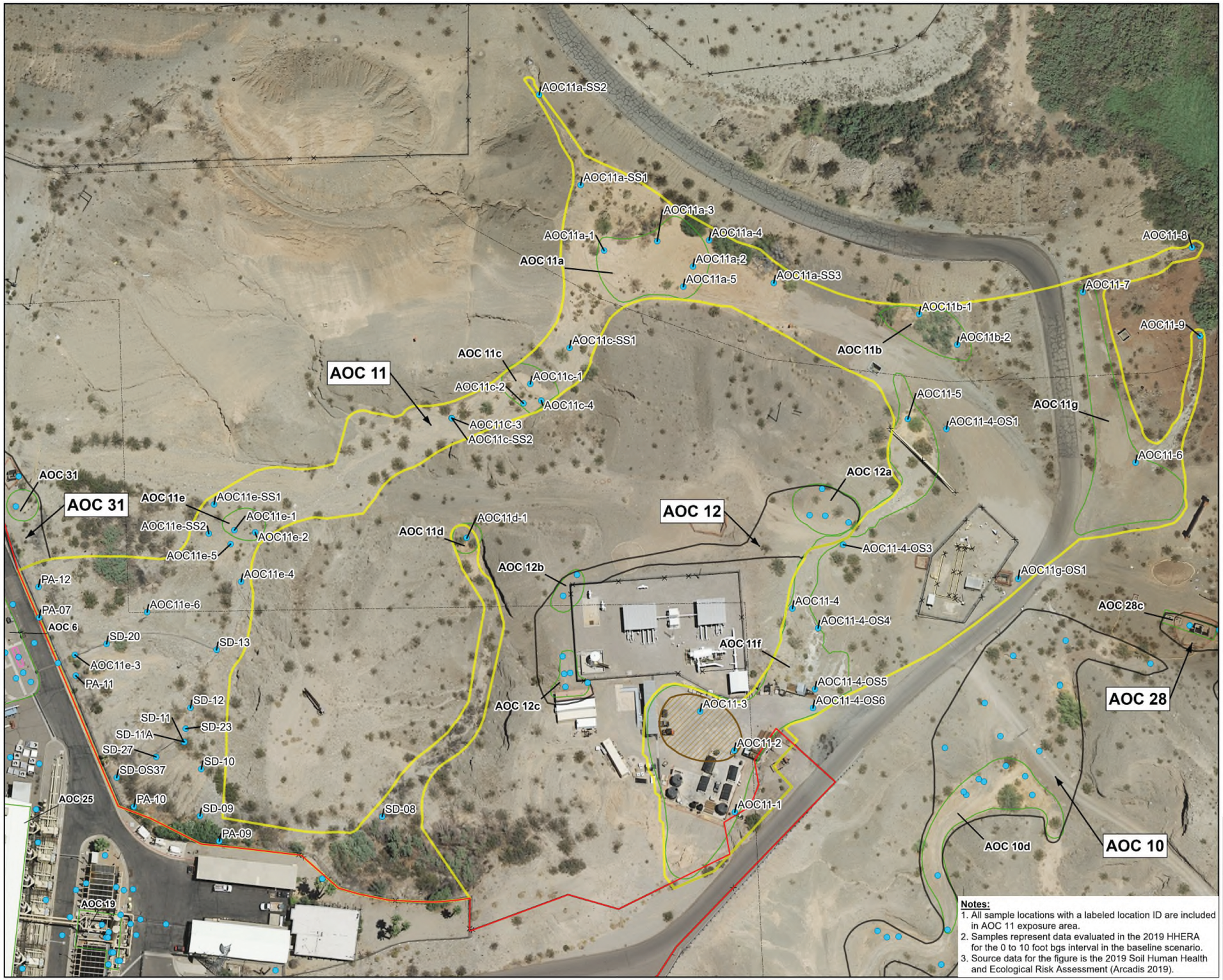

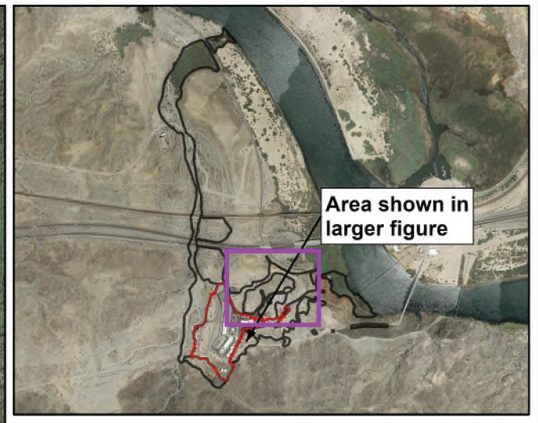

Legend:

- Soil Sampling Location
- Area of Concern
- Solid Waste Management Unit
- Potential Burning Related Location
- AOC 11 Exposure Area
- Exposure Area
- Property Boundaries
- Fencing
- Inside the Topock Compressor Station boundary, as defined by current fenceline
- AOC 28 — Label for Exposure Area
- AOC 28a — Label for Area of Concern

0 100 200

SCALE IN FEET

Notes:

1. All sample locations with a labeled location ID are included in AOC 11 exposure area.
2. Samples represent data evaluated in the 2019 HHERA for the 0 to 10 foot bgs interval in the baseline scenario.
3. Source data for the figure is the 2019 Soil Human Health and Ecological Risk Assessment (Arcadis 2019).

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

POST-SOIL NTCRA HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT REPORT

SOIL SAMPLING LOCATIONS
AOC 11 EXPOSURE AREA (PRE-NTCRA)

ARCADIS

FIGURE
AOC11-1.1

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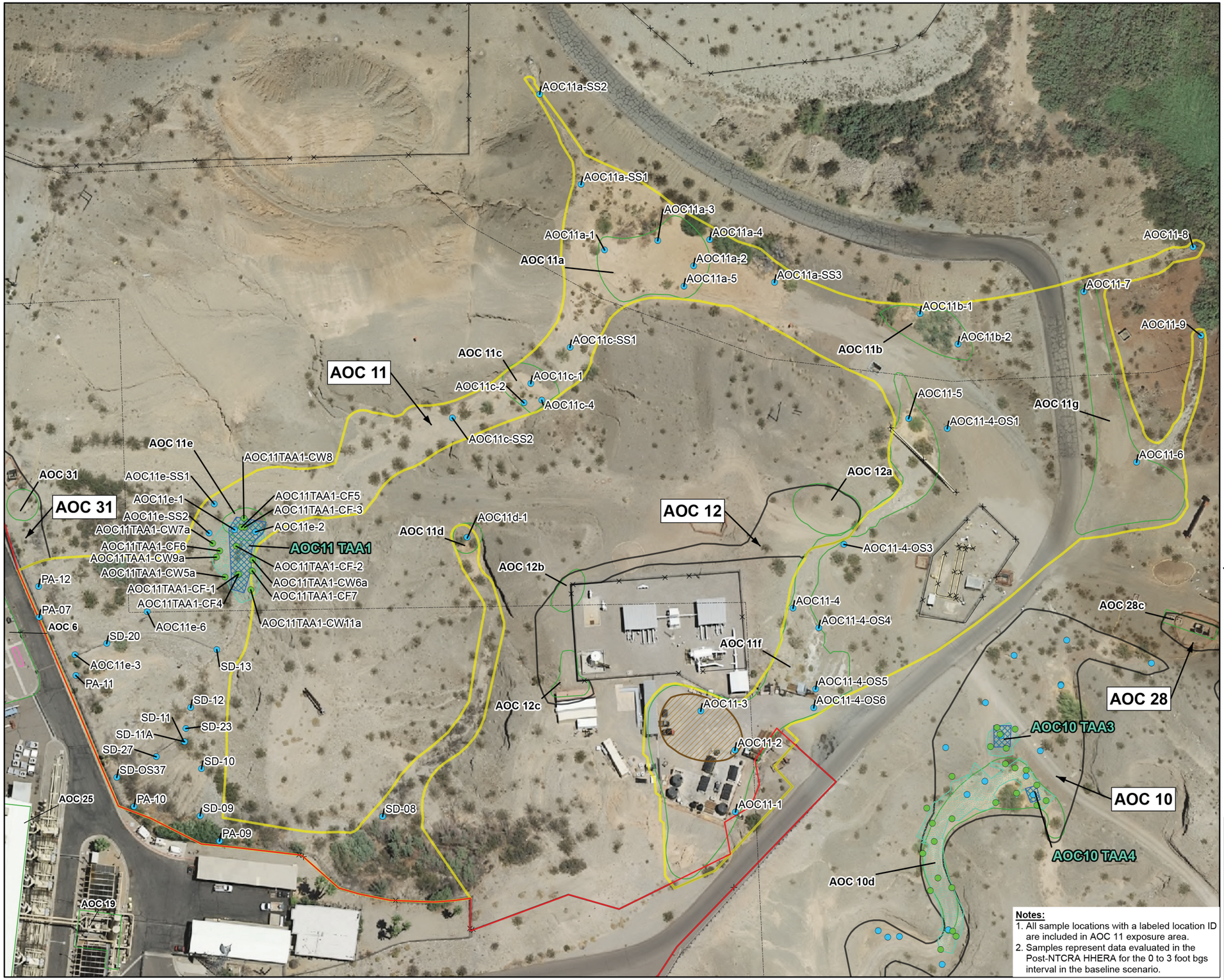
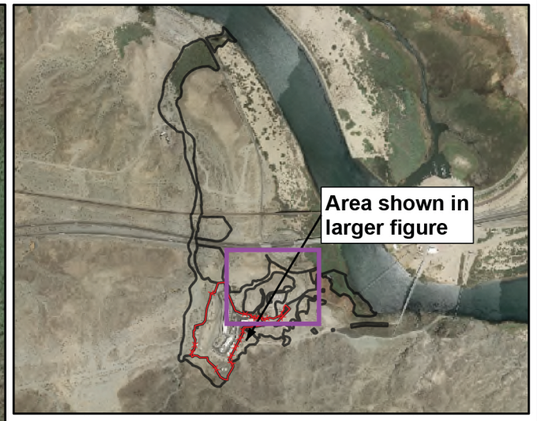




Legend:

- Soil Sampling Location
- NTCRA Confirmation Samples
- Area of Concern
- Solid Waste Management Unit
- Potential Burning Related Location
- AOC 11 Exposure Area
- Exposure Area
- Property Boundaries
- Fencing
- Inside the Topock Compressor Station boundary, as defined by current fenceline
- Target Action Area
- NTCRA Removal Area

AOC 28 — Label for Exposure Area

AOC 28a — Label for Area of Concern

AOC11 TAA1 — Target Action Area (TAA)

0 100 200

SCALE IN FEET

Notes:

1. All sample locations with a labeled location ID are included in AOC 11 exposure area.
2. Samples represent data evaluated in the Post-NTCRA HHERA for the 0 to 3 foot bgs interval in the baseline scenario.

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

POST-SOIL NTCRA HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT REPORT

CURRENT SOIL SAMPLING LOCATIONS AND NTCRA AREAS FOR AOC 11 EXPOSURE AREA

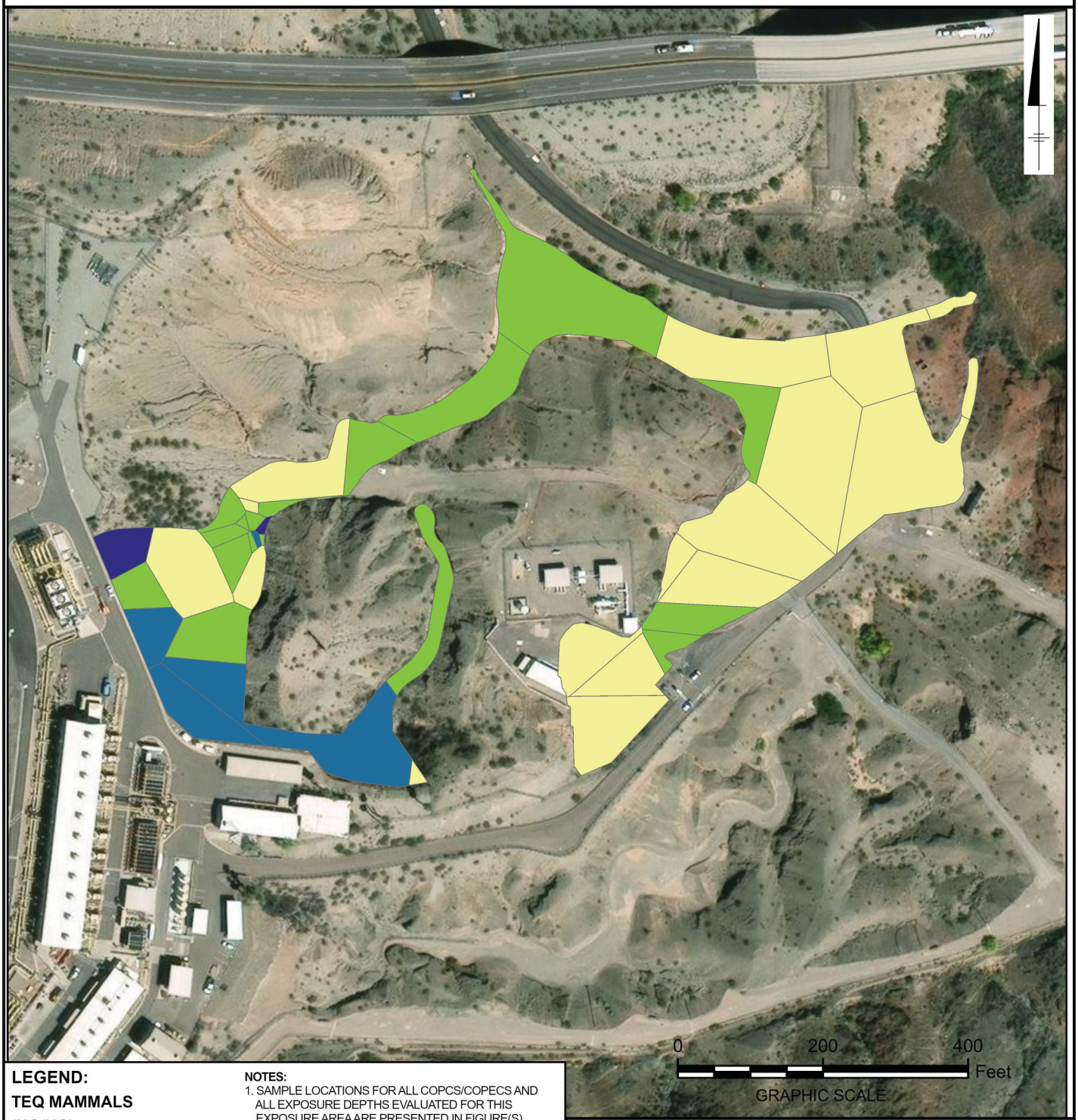
ARCADIS

FIGURE
AOC11-1.2

ATTACHMENT A

Dataset and Exposure Point Concentration Calculations for the AOC 11 HHERA

AOC 11
0 - 0.5 FEET BELOW GROUND SURFACE
TEQ MAMMALS



LEGEND:

TEQ MAMMALS (NG/KG)

- 0 - 5.58
- >5.58 - 100
- >100 - 190
- >190

NOTES:

1. SAMPLE LOCATIONS FOR ALL COPCS/COPECS AND ALL EXPOSURE DEPTHS EVALUATED FOR THIS EXPOSURE AREA ARE PRESENTED IN FIGURE(S) AOC11-1.2.
2. DEPTH-WEIGHTED CONCENTRATIONS ARE DISPLAYED FOR EACH LOCATION.
3. SOIL REMOVAL ACTION GOALS AS SELECTED IN THE SOIL ENGINEERING EVALUATION/COST ANALYSIS (JACOBS 2021).
4. NG/KG = NANOGRAMS PER KILOGRAM
5. RBRG = RISK-BASED REMEDIAL GOAL

TEQ Mammals	Units	Value	Basis
Background	ng/kg	5.58	Site-specific Soil Background Value
Human Health RBRG	ng/kg	100	Soil Removal Action Goal (Hiker at 10-6 excess risk)
Ecological RBRG	ng/kg	190	Soil Removal Action Goal (Desert shrew)
Human Health RBRG	ng/kg	1000	Hiker at 10-5 excess risk

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

POST-NTCRA HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

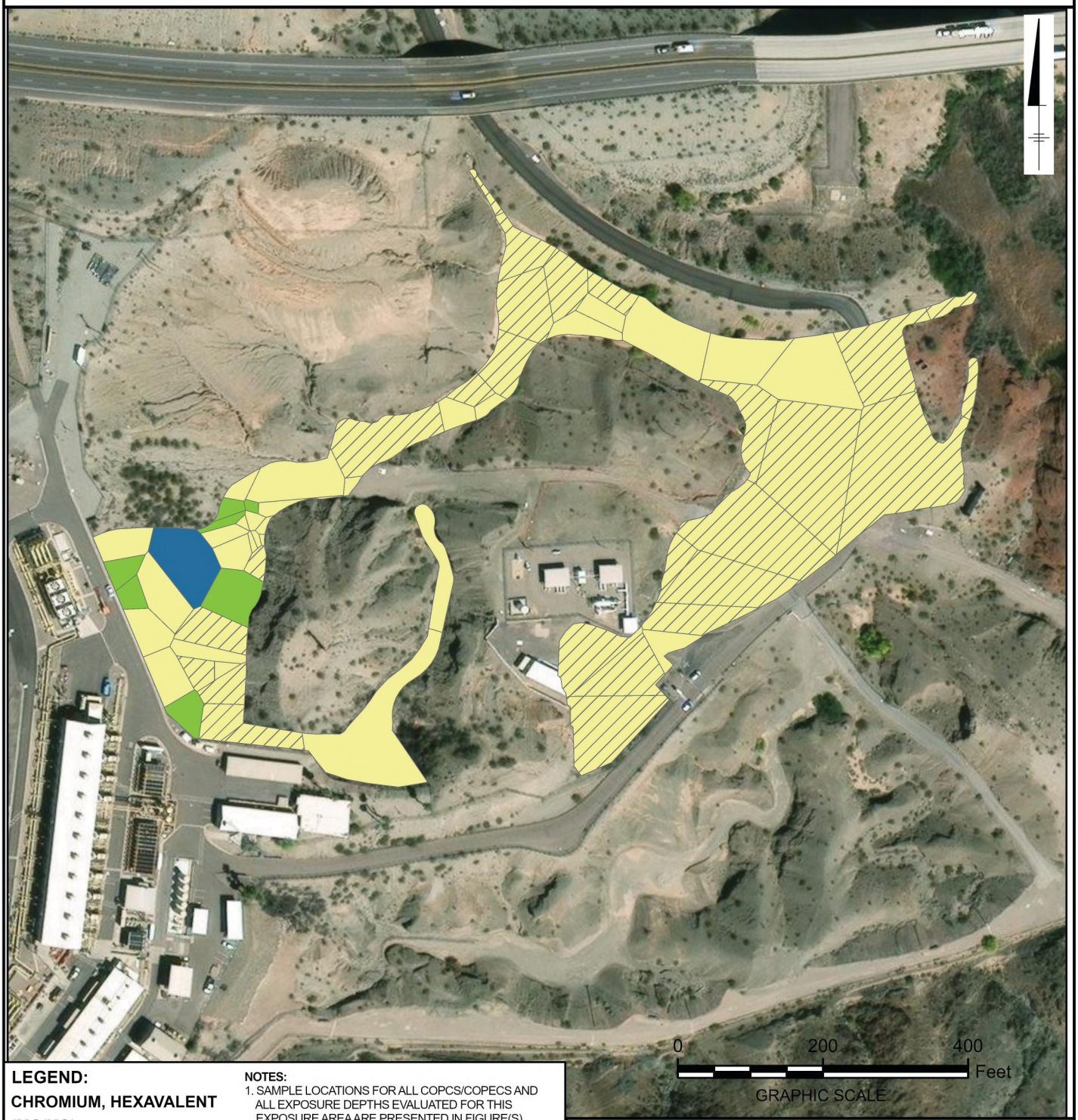
THIESSEN POLYGONS FOR AREA WEIGHTING

ARCADIS

FIGURE AOC11-A3.1

T:_ENV\PGE_Topock\ArcPro\PostNTCRA_EcoRisk\PostNTCRA_ERA_ThiessMapbook_2025.aprx ThiessenWeighting_2025Nov Saved: 12/11/2025 ksinsabaugh

AOC 11
0 - 0.5 FEET BELOW GROUND SURFACE
CHROMIUM, HEXAVALENT



LEGEND:

CHROMIUM, HEXAVALENT (MG/KG)

- 0 - 0.83
- >0.83 - 3.1
- >3.1 - 31
- >31
- NOT DETECTED

NOTES:

1. SAMPLE LOCATIONS FOR ALL COPCS/COPECS AND ALL EXPOSURE DEPTHS EVALUATED FOR THIS EXPOSURE AREA ARE PRESENTED IN FIGURE(S) AOC11-1.2.
2. DEPTH-WEIGHTED CONCENTRATIONS ARE DISPLAYED FOR EACH LOCATION.
3. SOIL REMOVAL ACTION GOALS AS SELECTED IN THE SOIL ENGINEERING EVALUATION/COST ANALYSIS (JACOBS 2021).
4. MG/KG = MILLIGRAMS PER KILOGRAM
5. RBRG = RISK-BASED REMEDIAL GOAL
6. THIESSEN POLYGONS WITH A NON-DETECT CONCENTRATION ARE REPRESENTED BY THE REPORTING LIMIT.

Chromium, hexavalent	Units	Value	Basis
Background	mg/kg	0.83	Site-specific Soil Background Value
Human Health RBRG	mg/kg	3.1	Soil Removal Action Goal (Off-highway vehicle rider at 10-6 excess risk)
Human Health RBRG	mg/kg	31	Soil Removal Action Goal (Off-highway vehicle rider at 10-5 excess risk)

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

POST-NTCRA HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

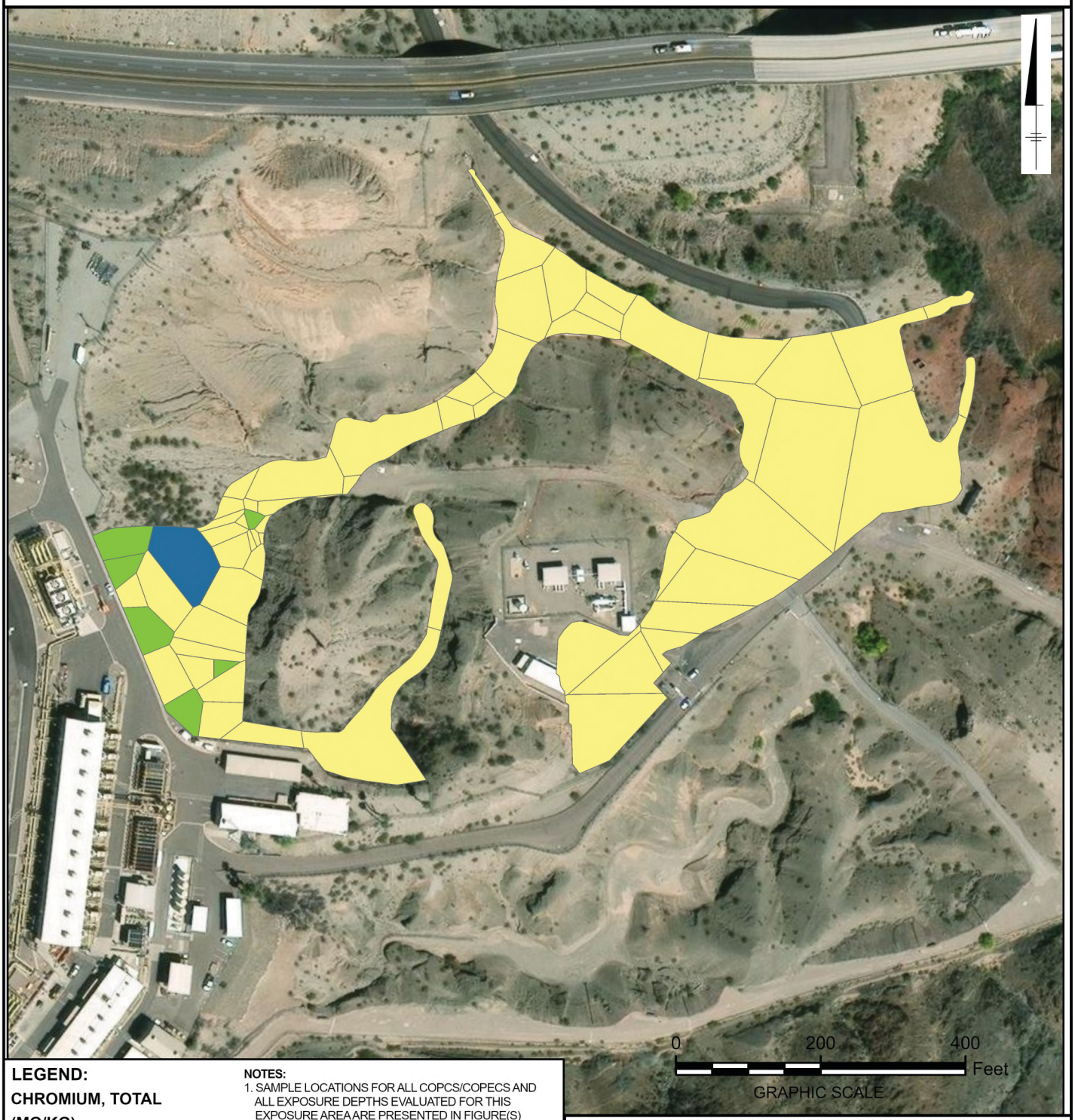
THIESSEN POLYGONS FOR AREA WEIGHTING

ARCADIS

FIGURE
AOC11-A3.2

T:_ENV\PGE_Topock\ArcPro\PostNTCRA_EcoRisk\PostNTCRA_ERA_ThiessMapbook_2025.aprx ThiessenWeighting_2025Nov Saved: 12/11/2025 ksinsabaugh

AOC 11
0 - 0.5 FEET BELOW GROUND SURFACE
CHROMIUM, TOTAL



LEGEND:

CHROMIUM, TOTAL (MG/KG)

- 0 - 39.8
- >39.8 - 145
- >145

NOTES:

1. SAMPLE LOCATIONS FOR ALL COPCS/COPECS AND ALL EXPOSURE DEPTHS EVALUATED FOR THIS EXPOSURE AREA ARE PRESENTED IN FIGURE(S) AOC11-1.2.
2. DEPTH-WEIGHTED CONCENTRATIONS ARE DISPLAYED FOR EACH LOCATION.
3. SOIL REMOVAL ACTION GOALS AS SELECTED IN THE SOIL ENGINEERING EVALUATION/COST ANALYSIS (JACOBS 2021).
4. MG/KG = MILLIGRAMS PER KILOGRAM
5. RBRG = RISK-BASED REMEDIAL GOAL

Chromium, total	Units	Value	Basis
Background	mg/kg	39.8	Site-specific Soil Background Value
Ecological RBRG	mg/kg	145	Soil Removal Action Goal (Desert shrew)

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

POST-NTCRA HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

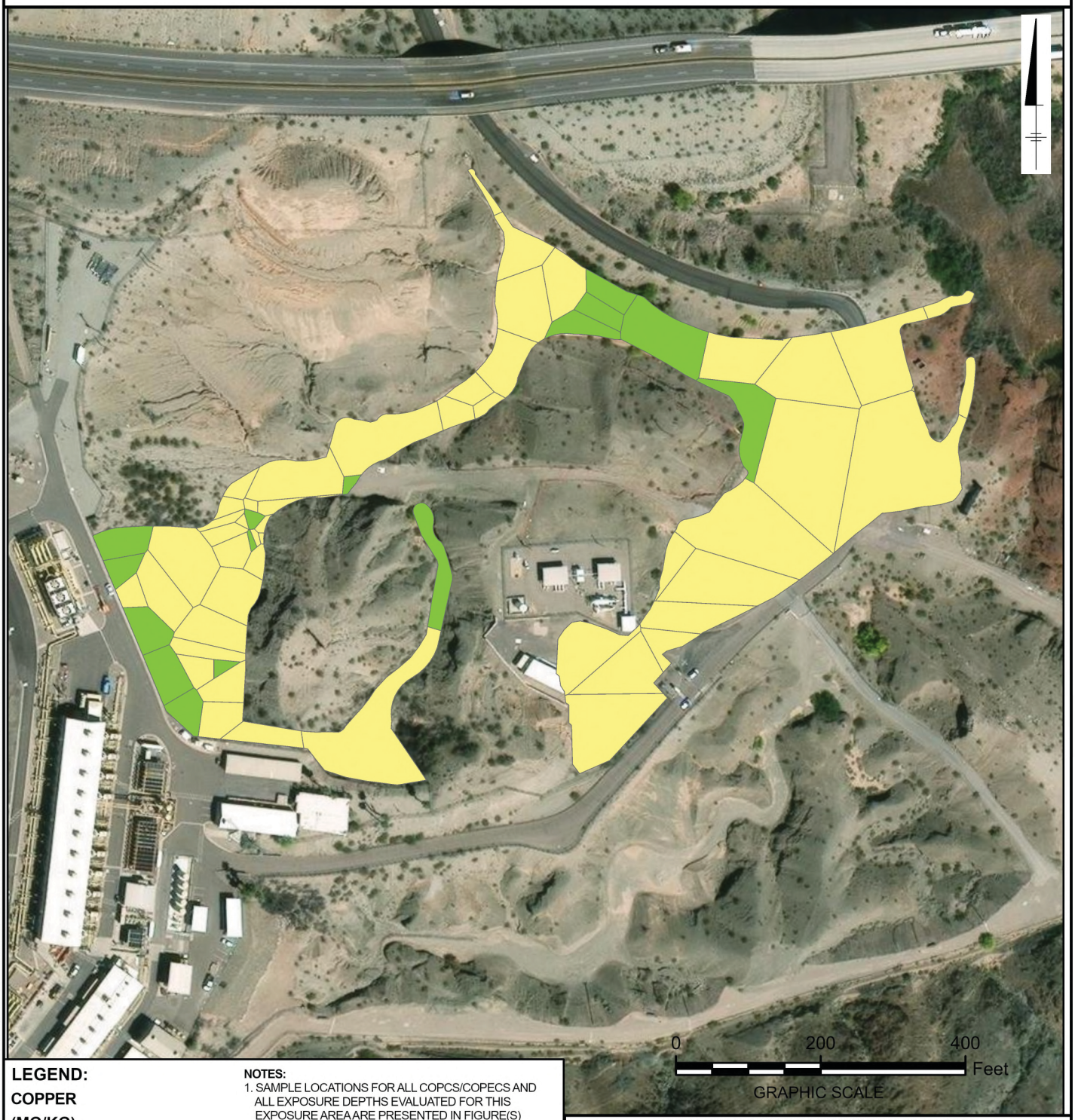
THIESSEN POLYGONS FOR AREA WEIGHTING

ARCADIS

FIGURE
AOC11-A3.3

T:_ENV\PGE_Topock\ArcPro\PostNTCRA_EcoRisk\PostNTCRA_ERA_ThiessMapbook_2025.aprx ThiessenWeighting_2025Nov Saved: 12/11/2025 ksinsabaugh

AOC 11
0 - 0.5 FEET BELOW GROUND SURFACE
COPPER



LEGEND:

COPPER

(MG/KG)

- 0 - 16.8
- >16.8 - 145
- >145

NOTES:

1. SAMPLE LOCATIONS FOR ALL COPCS/COPECS AND ALL EXPOSURE DEPTHS EVALUATED FOR THIS EXPOSURE AREA ARE PRESENTED IN FIGURE(S) AOC11-1.2.
2. DEPTH-WEIGHTED CONCENTRATIONS ARE DISPLAYED FOR EACH LOCATION.
3. SOIL REMOVAL ACTION GOALS AS SELECTED IN THE SOIL ENGINEERING EVALUATION/COST ANALYSIS (JACOBS 2021).
4. MG/KG = MILLIGRAMS PER KILOGRAM
5. RBRG = RISK-BASED REMEDIAL GOAL

Copper	Units	Value	Basis
Background	mg/kg	16.8	Site-specific Soil Background Value
Ecological RBRG	mg/kg	145	Soil Removal Action Goal (Desert shrew)

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

POST-NTCRA HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

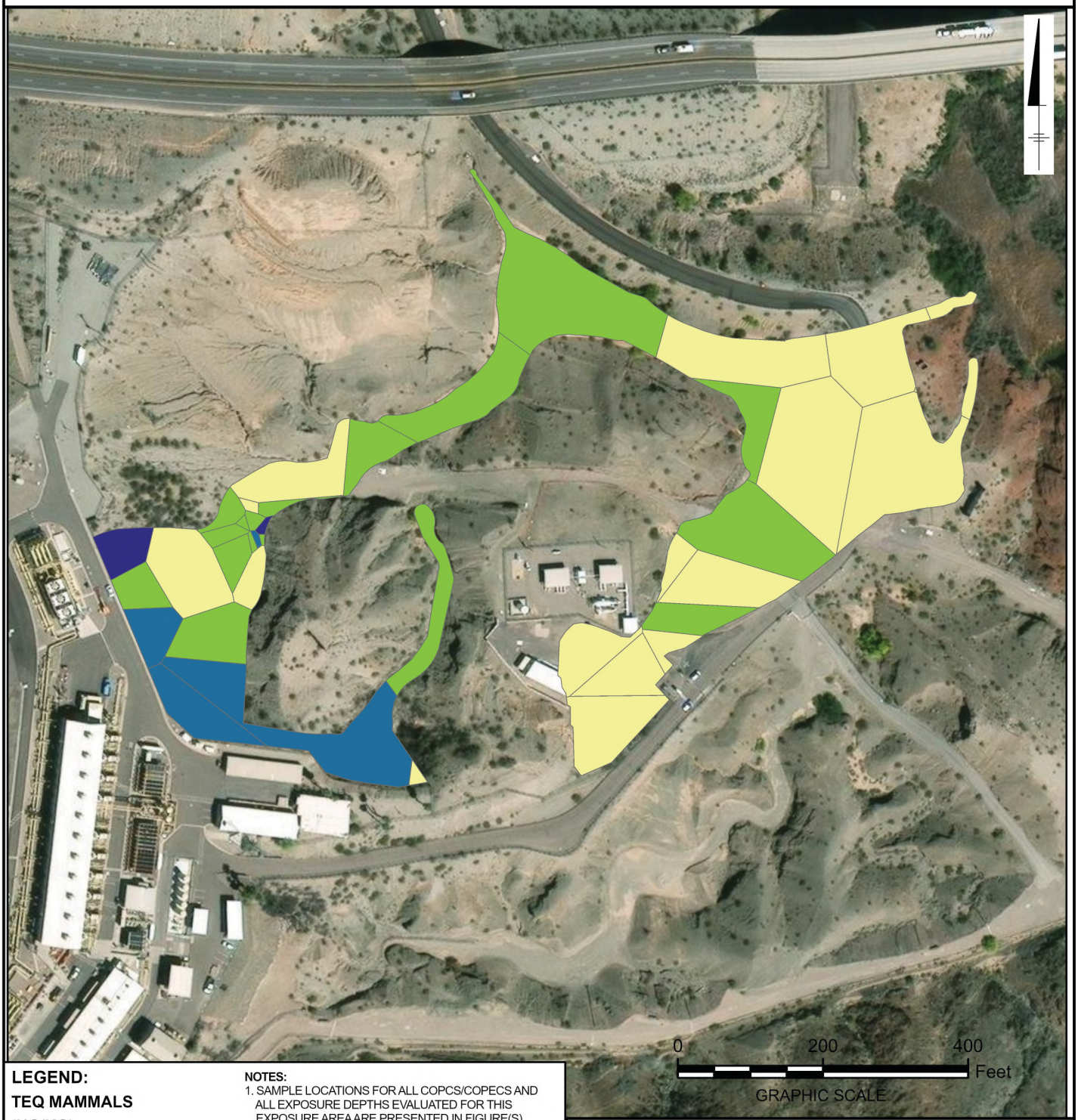
THIESSEN POLYGONS FOR AREA WEIGHTING

ARCADIS

FIGURE
AOC11-A3.4

T:_ENV\PGE_Topock\ArcPro\PostNTCRA_EcoRisk\PostNTCRA_ERA_ThiessMapbook_2025.aprx ThiessenWeighting_2025Nov Saved: 12/11/2025 ksinsabaugh

AOC 11
0 - 3 FEET BELOW GROUND SURFACE
TEQ MAMMALS



LEGEND:

TEQ MAMMALS (NG/KG)

- 0 - 5.58
- >5.58 - 100
- >100 - 190
- >190

NOTES:

1. SAMPLE LOCATIONS FOR ALL COPCS/COPECS AND ALL EXPOSURE DEPTHS EVALUATED FOR THIS EXPOSURE AREA ARE PRESENTED IN FIGURE(S) AOC11-1.2.
2. DEPTH-WEIGHTED CONCENTRATIONS ARE DISPLAYED FOR EACH LOCATION.
3. SOIL REMOVAL ACTION GOALS AS SELECTED IN THE SOIL ENGINEERING EVALUATION/COST ANALYSIS (JACOBS 2021).
4. NG/KG = NANOGRAMS PER KILOGRAM
5. RBRG = RISK-BASED REMEDIAL GOAL

TEQ Mammals	Units	Value	Basis
Background	ng/kg	5.58	Site-specific Soil Background Value
Human Health RBRG	ng/kg	100	Soil Removal Action Goal (Hiker at 10-6 excess risk)
Ecological RBRG	ng/kg	190	Soil Removal Action Goal (Desert shrew)
Human Health RBRG	ng/kg	1000	Hiker at 10-5 excess risk

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

POST-NTCRA HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

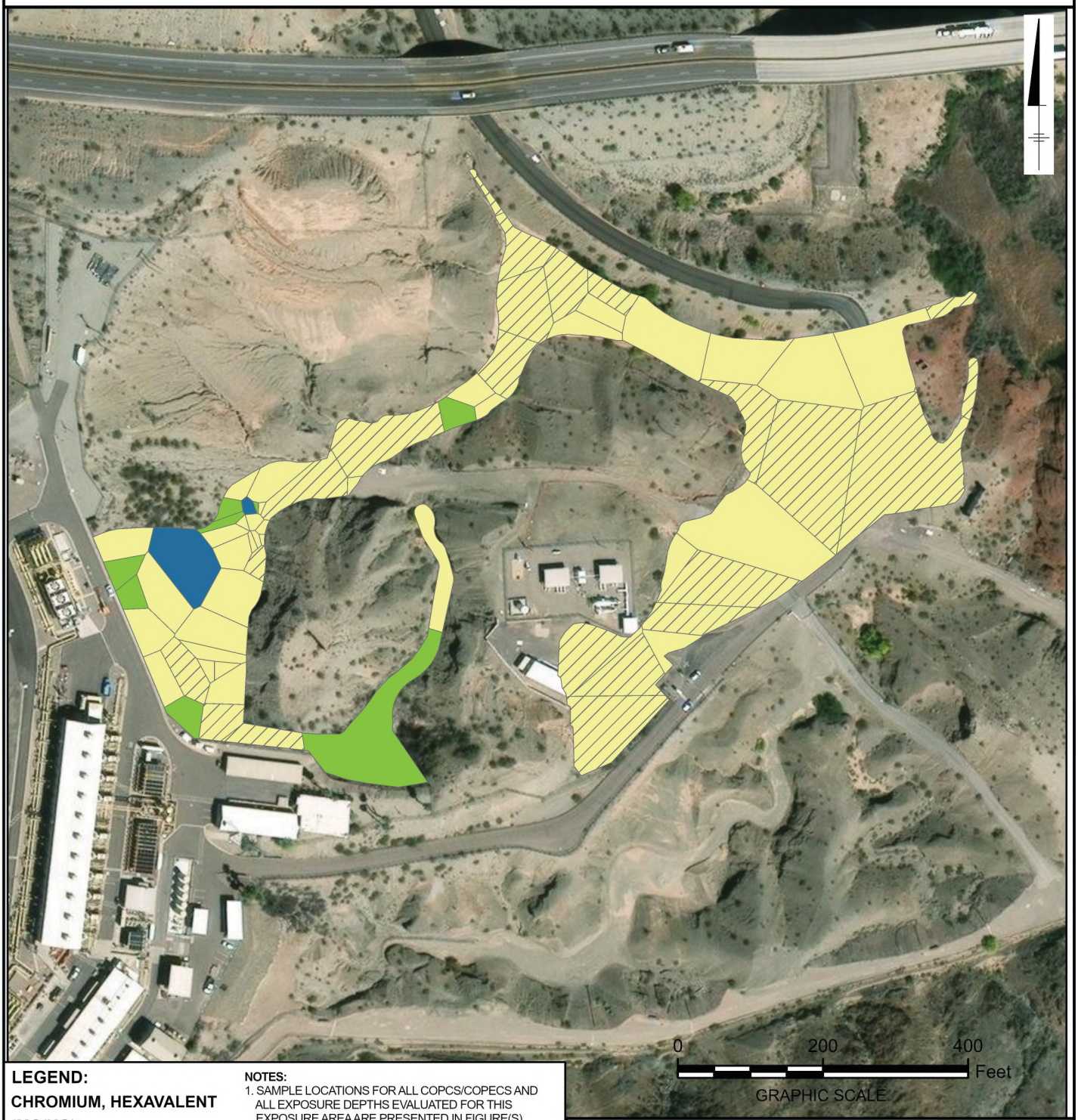
THIESSEN POLYGONS FOR AREA WEIGHTING

ARCADIS

FIGURE AOC11-A3.5

T:_ENV\PGE_Topock\ArcPro\PostNTCRA_EcoRisk\PostNTCRA_ERA_ThiessMapbook_2025.aprx ThiessenWeighting_2025Nov Saved: 12/11/2025 ksinsabaugh

AOC 11
0 - 3 FEET BELOW GROUND SURFACE
CHROMIUM, HEXAVALENT



LEGEND:

CHROMIUM, HEXAVALENT (MG/KG)

- 0 - 0.83
- >0.83 - 3.1
- >3.1 - 31
- >31
- NOT DETECTED

NOTES:

1. SAMPLE LOCATIONS FOR ALL COPCS/COPECS AND ALL EXPOSURE DEPTHS EVALUATED FOR THIS EXPOSURE AREA ARE PRESENTED IN FIGURE(S) AOC11-1.2.
2. DEPTH-WEIGHTED CONCENTRATIONS ARE DISPLAYED FOR EACH LOCATION.
3. SOIL REMOVAL ACTION GOALS AS SELECTED IN THE SOIL ENGINEERING EVALUATION/COST ANALYSIS (JACOBS 2021).
4. MG/KG = MILLIGRAMS PER KILOGRAM
5. RBRG = RISK-BASED REMEDIAL GOAL
6. THIESSEN POLYGONS WITH A NON-DETECT CONCENTRATION ARE REPRESENTED BY THE REPORTING LIMIT.

Chromium, hexavalent	Units	Value	Basis
Background	mg/kg	0.83	Site-specific Soil Background Value
Human Health RBRG	mg/kg	3.1	Soil Removal Action Goal (Off-highway vehicle rider at 10-6 excess risk)
Human Health RBRG	mg/kg	31	Soil Removal Action Goal (Off-highway vehicle rider at 10-5 excess risk)

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

POST-NTCRA HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

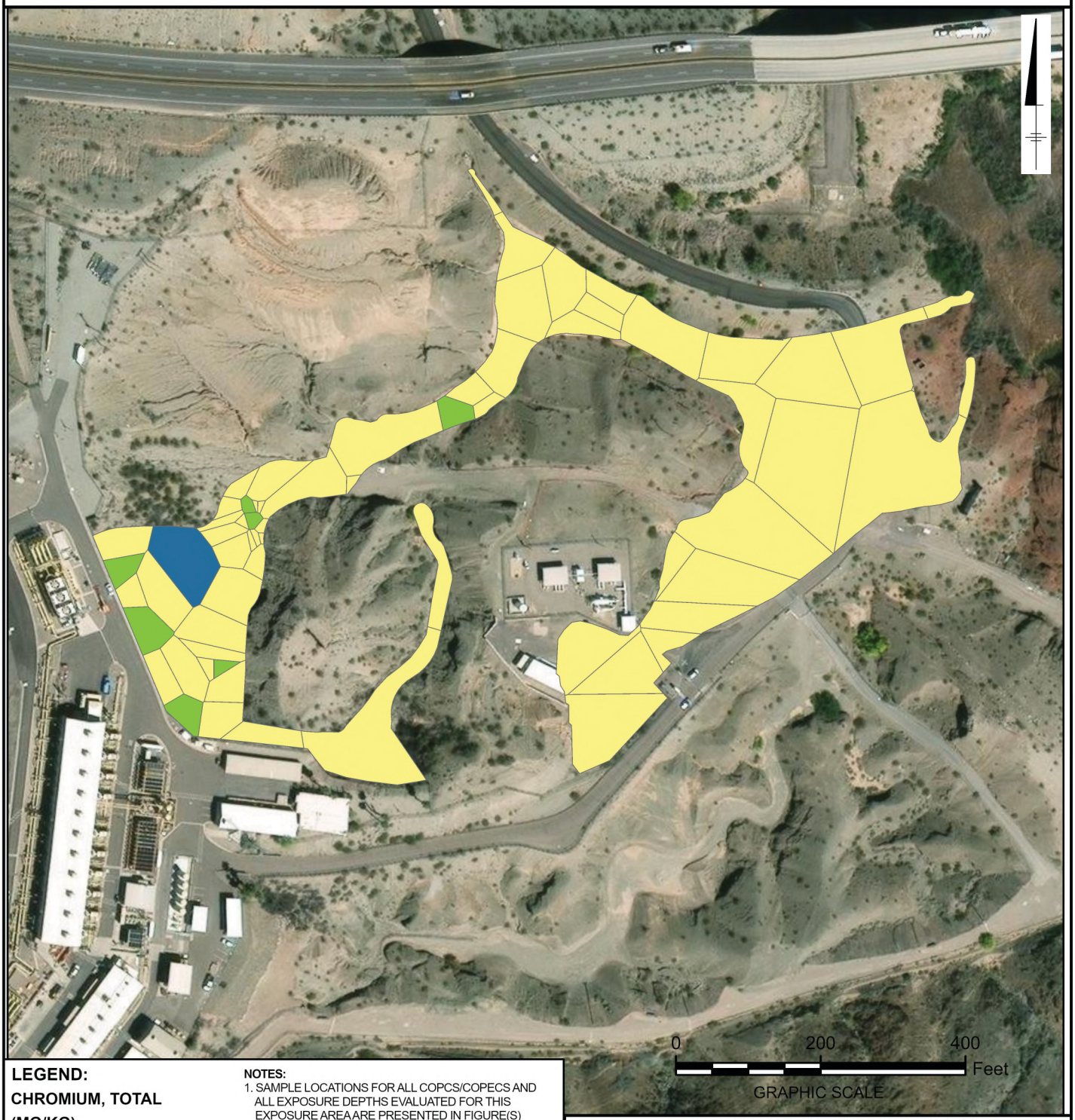
THIESSEN POLYGONS FOR AREA WEIGHTING

ARCADIS

FIGURE
AOC11-A3.6

T:_ENV\PGE_Topock\ArcPro\PostNTCRA_EcoRisk\PostNTCRA_ERA_ThiessMapbook_2025.aprx ThiessenWeighting_2025Nov Saved: 12/11/2025 ksinsabaugh

AOC 11
0 - 3 FEET BELOW GROUND SURFACE
CHROMIUM, TOTAL



LEGEND:

CHROMIUM, TOTAL (MG/KG)

- 0 - 39.8
- >39.8 - 145
- >145

NOTES:

1. SAMPLE LOCATIONS FOR ALL COPCS/COPECS AND ALL EXPOSURE DEPTHS EVALUATED FOR THIS EXPOSURE AREA ARE PRESENTED IN FIGURE(S) AOC11-1.2.
2. DEPTH-WEIGHTED CONCENTRATIONS ARE DISPLAYED FOR EACH LOCATION.
3. SOIL REMOVAL ACTION GOALS AS SELECTED IN THE SOIL ENGINEERING EVALUATION/COST ANALYSIS (JACOBS 2021).
4. MG/KG = MILLIGRAMS PER KILOGRAM
5. RBRG = RISK-BASED REMEDIAL GOAL

Chromium, total	Units	Value	Basis
Background	mg/kg	39.8	Site-specific Soil Background Value
Ecological RBRG	mg/kg	145	Soil Removal Action Goal (Desert shrew)

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

POST-NTCRA HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

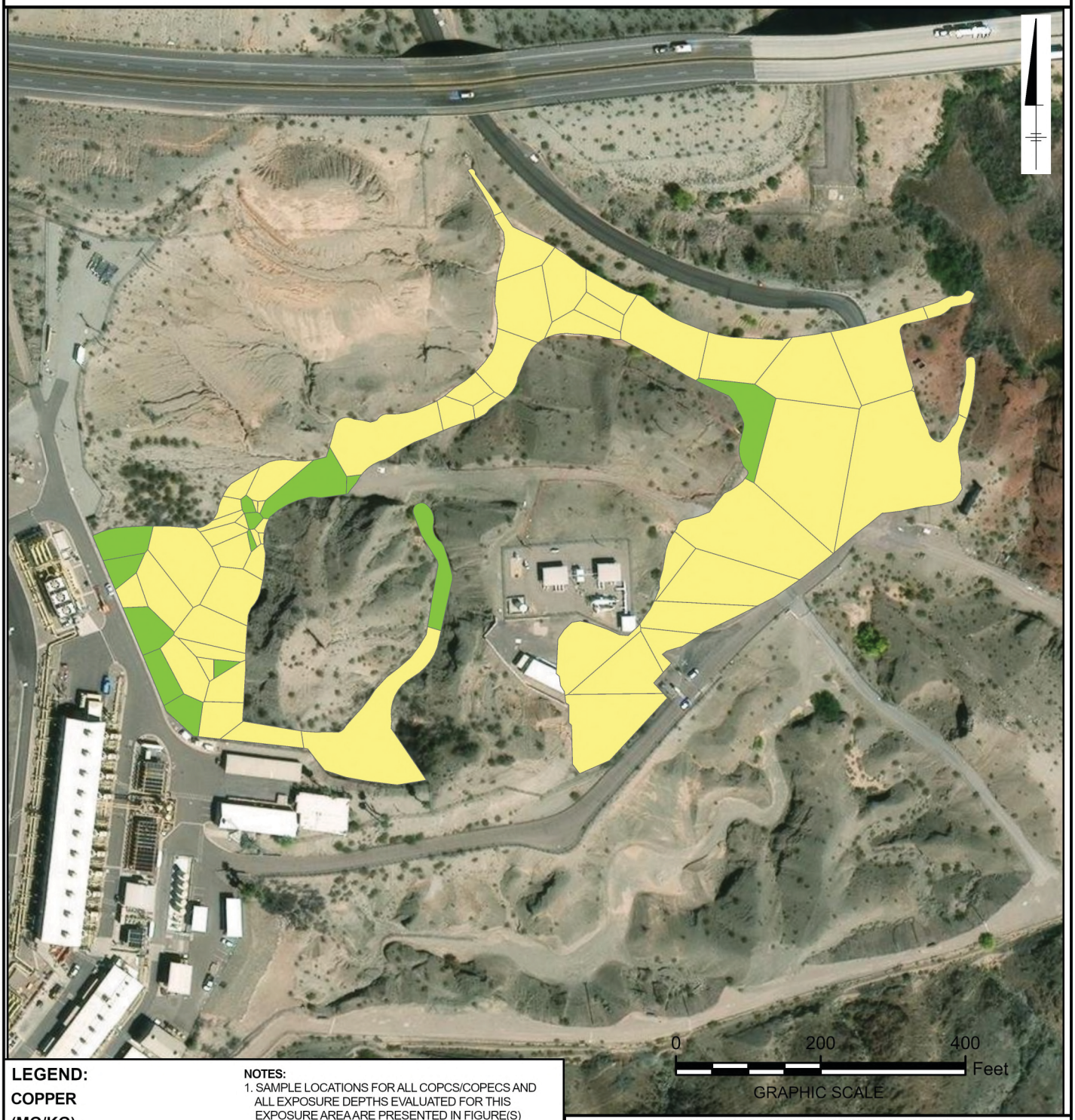
THIESSEN POLYGONS FOR AREA WEIGHTING

ARCADIS

FIGURE
AOC11-A3.7

T:_ENV\PGE_Topock\ArcPro\PostNTCRA_EcoRisk\PostNTCRA_ERA_ThiessMapbook_2025.aprx ThiessenWeighting_2025Nov Saved: 12/11/2025 ksinsabaugh

AOC 11
0 - 3 FEET BELOW GROUND SURFACE
COPPER



LEGEND:

COPPER

(MG/KG)

- 0 - 16.8
- >16.8 - 145
- >145

NOTES:

1. SAMPLE LOCATIONS FOR ALL COPCS/COPECS AND ALL EXPOSURE DEPTHS EVALUATED FOR THIS EXPOSURE AREA ARE PRESENTED IN FIGURE(S) AOC11-1.2.
2. DEPTH-WEIGHTED CONCENTRATIONS ARE DISPLAYED FOR EACH LOCATION.
3. SOIL REMOVAL ACTION GOALS AS SELECTED IN THE SOIL ENGINEERING EVALUATION/COST ANALYSIS (JACOBS 2021).
4. MG/KG = MILLIGRAMS PER KILOGRAM
5. RBRG = RISK-BASED REMEDIAL GOAL

Copper	Units	Value	Basis
Background	mg/kg	16.8	Site-specific Soil Background Value
Ecological RBRG	mg/kg	145	Soil Removal Action Goal (Desert shrew)

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

POST-NTCRA HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

THIESSEN POLYGONS FOR AREA WEIGHTING

ARCADIS

FIGURE
AOC11-A3.8

T:_ENV\PGE_Topock\ArcPro\PostNTCRA_EcoRisk\PostNTCRA_ERA_ThiessMapbook_2025.aprx ThiessenWeighting_2025Nov Saved: 12/11/2025 ksinsabaugh

ATTACHMENT B

Dose, Exposure Concentration, Risk, and Hazard Calculations for Human Health Receptors at AOC 11 Using Depth-Weighted EPCs and Area-Weighted EPCs

For additional help with the information provided in Attachment B, please contact Susan Shiu, Haley and Aldrich Associate Risk Assessor, at 1-510-879-4549.

Table AOC11-B1.1a
Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment R
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics								
Arsenic	3.2E-11	NV	1.7E-08	1.7E-07	3.1E-11	NV	1.7E-08	1.7E-07
Chromium, Hexavalent	1.8E-11	NV	NA	1.6E-07	1.8E-11	NV	NA	1.7E-07
Chromium, total	NC	NV	NC	NC	NC	NV	NC	NC
Copper	NC	NV	NC	NC	NC	NV	NC	NC
Lead	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	NC	NC	NC	NC
Zinc	NC	NV	NC	NC	NC	NV	NC	NC
Volatile Organic Compounds								
Methyl acetate	NS	NV	NS	NS	NC	NV	NC	NC
Polycyclic Aromatic Hydrocarbons								
1-Methyl naphthalene	ND	1.3E-09	ND	ND	3.8E-14	1.3E-09	1.0E-10	2.1E-10
2-Methyl naphthalene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthylene	NC	NV	NC	NC	NC	NV	NC	NC
Anthracene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (a) anthracene	NA	2.5E-10	NA	NA	NA	2.5E-10	NA	NA
Benzo (a) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (b) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (ghi) perylene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (k) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Chrysene	NA	NV	NA	NA	NA	NV	NA	NA
Dibenzo (a,h) anthracene	NA	NV	NA	NA	NA	NV	NA	NA
Fluoranthene	NC	NV	NC	NC	NC	NV	NC	NC
Fluorene	NC	NV	NC	NC	NC	NV	NC	NC
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Naphthalene	6.0E-14	5.6E-10	1.6E-10	3.3E-10	4.5E-14	5.6E-10	1.2E-10	2.5E-10
Phenanthrene	NC	NV	NC	NC	NC	NV	NC	NC
Pyrene	NC	NV	NC	NC	NC	NV	NC	NC
B(a)P Equivalent	3.8E-12	NV	1.6E-08	3.5E-08	3.0E-12	NV	1.2E-08	2.7E-08
Pesticides								
4,4-DDE	3.7E-14	2.4E-11	3.2E-11	2.0E-10	3.7E-14	2.4E-11	3.2E-11	2.0E-10
alpha-Chlordane	7.2E-14	NV	6.3E-11	3.9E-10	7.2E-14	NV	6.3E-11	3.9E-10
Dieldrin	4.0E-14	NV	3.5E-11	2.2E-10	4.0E-14	NV	3.5E-11	2.2E-10
gamma-Chlordane	7.8E-14	NV	6.9E-11	4.3E-10	7.8E-14	NV	6.9E-11	4.3E-10

Table AOC11-B1.1a
Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment R
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls								
Total PCBs	2.7E-12	1.6E-09	7.0E-09	1.5E-08	2.3E-12	1.6E-09	6.1E-09	1.3E-08
Total Petroleum Hydrocarbons								
TPH as diesel	NC	NC	NC	NC	NC	NC	NC	NC
TPH as motor oil	NC	NC	NC	NC	NC	NC	NC	NC
Dioxins/Furans								
TEQ Human	4.8E-16	7.2E-13	2.5E-13	2.6E-12	1.3E-15	7.2E-13	7.0E-13	7.3E-12

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
mg/kg-day = milligrams per kilogram per day.
mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.1b
Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment R
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics								
Arsenic	6.3E-11	NV	3.3E-08	3.5E-07	6.3E-11	NV	3.3E-08	3.4E-07
Chromium, Hexavalent	3.6E-11	NV	NA	3.2E-07	3.7E-11	NV	NA	3.3E-07
Chromium, total	NC	NV	NC	NC	NC	NV	NC	NC
Copper	NC	NV	NC	NC	NC	NV	NC	NC
Lead	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	NC	NC	NC	NC
Zinc	NC	NV	NC	NC	NC	NV	NC	NC
Volatile Organic Compounds								
Methyl acetate	NS	NV	NS	NS	NC	NV	NC	NC
Polycyclic Aromatic Hydrocarbons								
1-Methyl naphthalene	ND	2.6E-09	ND	ND	7.6E-14	2.6E-09	2.0E-10	4.2E-10
2-Methyl naphthalene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthylene	NC	NV	NC	NC	NC	NV	NC	NC
Anthracene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (a) anthracene	NA	5.0E-10	NA	NA	NA	5.0E-10	NA	NA
Benzo (a) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (b) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (ghi) perylene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (k) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Chrysene	NA	NV	NA	NA	NA	NV	NA	NA
Dibenzo (a,h) anthracene	NA	NV	NA	NA	NA	NV	NA	NA
Fluoranthene	NC	NV	NC	NC	NC	NV	NC	NC
Fluorene	NC	NV	NC	NC	NC	NV	NC	NC
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Naphthalene	1.2E-13	1.1E-09	3.2E-10	6.6E-10	9.0E-14	1.1E-09	2.4E-10	5.0E-10
Phenanthrene	NC	NV	NC	NC	NC	NV	NC	NC
Pyrene	NC	NV	NC	NC	NC	NV	NC	NC
B(a)P Equivalent	7.7E-12	NV	3.2E-08	6.9E-08	6.0E-12	NV	2.4E-08	5.4E-08
Pesticides								
4,4-DDE	7.3E-14	4.8E-11	6.4E-11	4.0E-10	7.3E-14	4.8E-11	6.4E-11	4.0E-10
alpha-Chlordane	1.4E-13	NV	1.3E-10	7.9E-10	1.4E-13	NV	1.3E-10	7.9E-10
Dieldrin	8.0E-14	NV	7.1E-11	4.4E-10	8.0E-14	NV	7.1E-11	4.4E-10
gamma-Chlordane	1.6E-13	NV	1.4E-10	8.5E-10	1.6E-13	NV	1.4E-10	8.5E-10

Table AOC11-B1.1b
Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment R
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls								
Total PCBs	5.3E-12	3.2E-09	1.4E-08	2.9E-08	4.6E-12	3.2E-09	1.2E-08	2.5E-08
Total Petroleum Hydrocarbons								
TPH as diesel	NC	NC	NC	NC	NC	NC	NC	NC
TPH as motor oil	NC	NC	NC	NC	NC	NC	NC	NC
Dioxins/Furans								
TEQ Human	9.6E-16	1.4E-12	5.1E-13	5.3E-12	2.7E-15	1.4E-12	1.4E-12	1.5E-11

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
mg/kg-day = milligrams per kilogram per day.
mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.1c
Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

C O P C	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics								
Arsenic	6.3E-09	NV	1.6E-07	4.4E-08	6.3E-09	NV	1.6E-07	4.4E-08
Chromium, Hexavalent	2.3E-09	NV	NA	1.9E-08	2.4E-09	NV	NA	1.9E-08
Chromium, total	NC	NV	NC	NC	NC	NV	NC	NC
Copper	NC	NV	NC	NC	NC	NV	NC	NC
Lead	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	NC	NC	NC	NC
Zinc	NC	NV	NC	NC	NC	NV	NC	NC
Volatile Organic Compounds								
Methyl acetate	NS	NV	NS	NS	NC	NV	NC	NC
Polycyclic Aromatic Hydrocarbons								
1-Methyl naphthalene	ND	1.6E-10	ND	ND	7.7E-12	1.6E-10	9.7E-10	5.3E-11
2-Methyl naphthalene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthylene	NC	NV	NC	NC	NC	NV	NC	NC
Anthracene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (a) anthracene	NA	2.0E-11	NA	NA	NA	2.0E-11	NA	NA
Benzo (a) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (b) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (ghi) perylene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (k) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Chrysene	NA	NV	NA	NA	NA	NV	NA	NA
Dibenzo (a,h) anthracene	NA	NV	NA	NA	NA	NV	NA	NA
Fluoranthene	NC	NV	NC	NC	NC	NV	NC	NC
Fluorene	NC	NV	NC	NC	NC	NV	NC	NC
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Naphthalene	1.2E-11	7.0E-11	1.5E-09	8.4E-11	9.0E-12	7.0E-11	1.2E-09	6.3E-11
Phenanthrene	NC	NV	NC	NC	NC	NV	NC	NC
Pyrene	NC	NV	NC	NC	NC	NV	NC	NC
B(a)P Equivalent	4.9E-10	NV	6.4E-08	4.0E-09	3.8E-10	NV	5.0E-08	3.1E-09
Pesticides								
4,4-DDE	7.3E-12	3.0E-12	3.1E-10	5.1E-11	7.3E-12	3.0E-12	3.1E-10	5.1E-11
alpha-Chlordane	1.4E-11	NV	6.1E-10	1.0E-10	1.4E-11	NV	6.1E-10	1.0E-10
Dieldrin	8.0E-12	NV	3.4E-10	5.6E-11	8.0E-12	NV	3.4E-10	5.6E-11
gamma-Chlordane	1.6E-11	NV	6.6E-10	1.1E-10	1.6E-11	NV	6.6E-10	1.1E-10

Table AOC11-B1.1c
Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

C O P C	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls								
Total PCBs	5.3E-10	2.0E-10	6.8E-08	3.7E-09	4.6E-10	2.0E-10	5.9E-08	3.2E-09
Total Petroleum Hydrocarbons								
TPH as diesel	NC	NC	NC	NC	NC	NC	NC	NC
TPH as motor oil	NC	NC	NC	NC	NC	NC	NC	NC
Dioxins/Furans								
TEQ Human	9.6E-14	9.0E-14	2.4E-12	6.7E-13	2.7E-13	9.0E-14	6.8E-12	1.9E-12

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
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mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.2a
Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics																
Arsenic	8.5E-11	NV	1.3E-07	1.5E-06	8.5E-11	NV	1.8E-08	1.4E-07	8.4E-11	NV	1.3E-07	1.5E-06	8.4E-11	NV	1.8E-08	1.4E-07
Chromium, Hexavalent	1.7E-11	NV	NA	3.2E-07	1.7E-11	NV	NA	3.0E-08	1.8E-11	NV	NA	3.2E-07	1.8E-11	NV	NA	3.0E-08
Chromium, total	6.2E-10	NV	3.3E-07	1.1E-05	6.2E-10	NV	4.5E-08	1.1E-06	5.3E-10	NV	2.8E-07	9.5E-06	5.3E-10	NV	3.8E-08	8.9E-07
Copper	2.2E-10	NV	1.2E-07	4.0E-06	2.2E-10	NV	1.6E-08	3.7E-07	2.2E-10	NV	1.2E-07	4.0E-06	2.2E-10	NV	1.6E-08	3.8E-07
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	2.9E-12	NV	1.5E-09	5.3E-08	2.9E-12	NV	2.1E-10	4.9E-09	2.9E-12	NV	1.5E-09	5.3E-08	2.9E-12	NV	2.1E-10	4.9E-09
Zinc	2.9E-09	NV	1.5E-06	5.3E-05	2.9E-09	NV	2.1E-07	4.9E-06	2.3E-09	NV	1.2E-06	4.1E-05	2.3E-09	NV	1.6E-07	3.9E-06
Volatile Organic Compounds																
Methyl acetate	NS	3.6E-08	NS	NS	NS	3.6E-08	NS	NS	2.7E-13	3.6E-08	1.4E-09	5.0E-09	2.7E-13	3.6E-08	2.0E-10	4.7E-10
Polycyclic Aromatic Hydrocarbons																
1-Methyl naphthalene	ND	3.6E-09	ND	ND	ND	3.6E-09	ND	ND	1.0E-13	3.6E-09	8.1E-10	1.9E-09	1.0E-13	3.6E-09	1.1E-10	1.7E-10
2-Methyl naphthalene	5.6E-14	9.9E-10	4.4E-10	1.0E-09	5.6E-14	9.9E-10	6.0E-11	9.5E-11	5.5E-14	9.9E-10	4.3E-10	9.9E-10	5.5E-14	9.9E-10	5.9E-11	9.3E-11
Acenaphthene	1.8E-13	5.1E-10	1.4E-09	3.2E-09	1.8E-13	5.1E-10	1.9E-10	3.0E-10	1.3E-13	5.1E-10	1.0E-09	2.4E-09	1.3E-13	5.1E-10	1.4E-10	2.2E-10
Acenaphthylene	1.5E-13	NV	1.2E-09	2.7E-09	1.5E-13	NV	1.6E-10	2.5E-10	1.1E-13	NV	8.9E-10	2.0E-09	1.1E-13	NV	1.2E-10	1.9E-10
Anthracene	8.9E-14	1.1E-10	7.0E-10	1.6E-09	8.9E-14	1.1E-10	9.6E-11	1.5E-10	7.5E-14	1.1E-10	5.9E-10	1.4E-09	7.5E-14	1.1E-10	8.1E-11	1.3E-10
Benzo (a) anthracene	3.6E-12	2.4E-10	2.9E-08	6.6E-08	3.6E-12	2.4E-10	3.9E-09	6.2E-09	1.5E-12	2.4E-10	1.2E-08	2.7E-08	1.5E-12	2.4E-10	1.6E-09	2.5E-09
Benzo (a) pyrene	2.9E-12	NV	2.3E-08	5.2E-08	2.9E-12	NV	3.1E-09	4.9E-09	2.2E-12	NV	1.8E-08	4.1E-08	2.2E-12	NV	2.4E-09	3.8E-09
Benzo (b) fluoranthene	5.5E-12	NV	4.3E-08	1.0E-07	5.5E-12	NV	5.9E-09	9.4E-09	4.2E-12	NV	3.3E-08	7.6E-08	4.2E-12	NV	4.5E-09	7.1E-09
Benzo (ghi) perylene	1.7E-12	NV	1.4E-08	3.2E-08	1.7E-12	NV	1.9E-09	3.0E-09	8.4E-13	NV	6.7E-09	1.5E-08	8.4E-13	NV	9.1E-10	1.4E-09
Benzo (k) fluoranthene	1.4E-12	NV	1.1E-08	2.5E-08	1.4E-12	NV	1.5E-09	2.4E-09	1.2E-12	NV	9.5E-09	2.2E-08	1.2E-12	NV	1.3E-09	2.1E-09
Chrysene	3.8E-12	NV	3.0E-08	6.8E-08	3.8E-12	NV	4.0E-09	6.4E-09	2.8E-12	NV	2.2E-08	5.1E-08	2.8E-12	NV	3.0E-09	4.8E-09
Dibenzo (a,h) anthracene	3.8E-13	NV	3.0E-09	6.9E-09	3.8E-13	NV	4.1E-10	6.5E-10	1.4E-13	NV	1.1E-09	2.5E-09	1.4E-13	NV	1.5E-10	2.4E-10
Fluoranthene	6.0E-12	NV	4.8E-08	1.1E-07	6.0E-12	NV	6.5E-09	1.0E-08	4.5E-12	NV	3.6E-08	8.2E-08	4.5E-12	NV	4.9E-09	7.7E-09
Fluorene	1.4E-13	2.3E-10	1.1E-09	2.6E-09	1.4E-13	2.3E-10	1.5E-10	2.4E-10	1.1E-13	2.3E-10	8.6E-10	2.0E-09	1.1E-13	2.3E-10	1.2E-10	1.9E-10
Indeno (1,2,3-cd) pyrene	1.8E-12	NV	1.4E-08	3.2E-08	1.8E-12	NV	1.9E-09	3.0E-09	7.2E-13	NV	5.7E-09	1.3E-08	7.2E-13	NV	7.7E-10	1.2E-09
Naphthalene	1.6E-13	1.5E-09	1.3E-09	2.9E-09	1.6E-13	1.5E-09	1.7E-10	2.7E-10	1.2E-13	1.5E-09	9.6E-10	2.2E-09	1.2E-13	1.5E-09	1.3E-10	2.1E-10
Phenanthrene	3.1E-12	NV	2.4E-08	5.6E-08	3.1E-12	NV	3.3E-09	5.3E-09	1.2E-12	NV	9.1E-09	2.1E-08	1.2E-12	NV	1.2E-09	2.0E-09
Pyrene	5.4E-12	7.2E-10	4.2E-08	9.7E-08	5.4E-12	7.2E-10	5.8E-09	9.1E-09	4.3E-12	7.2E-10	3.4E-08	7.7E-08	4.3E-12	7.2E-10	4.6E-09	7.3E-09
B(a)P Equivalent	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA
Pesticides																
4,4-DDE	9.8E-14	6.4E-11	2.6E-10	1.8E-09	9.8E-14	6.4E-11	3.5E-11	1.7E-10	9.8E-14	6.4E-11	2.6E-10	1.8E-09	9.8E-14	6.4E-11	3.5E-11	1.7E-10
alpha-Chlordane	1.9E-13	NV	5.1E-10	3.5E-09	1.9E-13	NV	6.9E-11	3.3E-10	1.9E-13	NV	5.1E-10	3.5E-09	1.9E-13	NV	6.9E-11	3.3E-10
Dieldrin	1.1E-13	NV	2.8E-10	2.0E-09	1.1E-13	NV	3.9E-11	1.8E-10	1.1E-13	NV	2.8E-10	2.0E-09	1.1E-13	NV	3.9E-11	1.8E-10
gamma-Chlordane	2.1E-13	NV	5.5E-10	3.8E-09	2.1E-13	NV	7.5E-11	3.6E-10	2.1E-13	NV	5.5E-10	3.8E-09	2.1E-13	NV	7.5E-11	3.6E-10

Table AOC11-B1.2a
Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Camper

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C O P C	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls																
Total PCBs	7.2E-12	4.2E-09	5.6E-08	1.3E-07	7.2E-12	4.2E-09	7.7E-09	1.2E-08	6.2E-12	4.2E-09	4.9E-08	1.1E-07	6.2E-12	4.2E-09	6.7E-09	1.1E-08
Total Petroleum Hydrocarbons																
TPH as diesel	4.1E-10	9.4E-04	2.1E-06	7.4E-06	4.1E-10	9.4E-04	2.9E-07	6.9E-07	4.9E-10	9.4E-04	2.6E-06	9.0E-06	4.9E-10	9.4E-04	3.6E-07	8.4E-07
TPH as motor oil	3.9E-09	NV	2.0E-05	7.0E-05	3.9E-09	NV	2.8E-06	6.6E-06	4.1E-09	NV	2.2E-05	7.5E-05	4.1E-09	NV	3.0E-06	7.0E-06
Dioxins/Furans																
TEQ Human	1.3E-15	1.9E-12	2.0E-12	2.3E-11	1.3E-15	1.9E-12	2.8E-13	2.2E-12	3.6E-15	1.9E-12	5.7E-12	6.5E-11	3.6E-15	1.9E-12	7.7E-13	6.1E-12

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
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mg/kg-day = milligrams per kilogram per day.
mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.

ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.2b
Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics																
Arsenic	1.7E-10	NV	2.7E-07	3.1E-06	1.7E-10	NV	3.7E-08	2.9E-07	1.7E-10	NV	2.7E-07	3.1E-06	1.7E-10	NV	3.6E-08	2.9E-07
Chromium, Hexavalent	3.5E-11	NV	NA	6.3E-07	3.5E-11	NV	NA	5.9E-08	3.6E-11	NV	NA	6.5E-07	3.6E-11	NV	NA	6.1E-08
Chromium, total	1.2E-09	NV	6.6E-07	2.3E-05	1.2E-09	NV	8.9E-08	2.1E-06	1.1E-09	NV	5.5E-07	1.9E-05	1.1E-09	NV	7.5E-08	1.8E-06
Copper	4.4E-10	NV	2.3E-07	7.9E-06	4.4E-10	NV	3.1E-08	7.4E-07	4.5E-10	NV	2.3E-07	8.1E-06	4.5E-10	NV	3.2E-08	7.6E-07
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	5.8E-12	NV	3.1E-09	1.1E-07	5.8E-12	NV	4.2E-10	9.9E-09	5.8E-12	NV	3.1E-09	1.1E-07	5.8E-12	NV	4.2E-10	9.9E-09
Zinc	5.8E-09	NV	3.1E-06	1.1E-04	5.8E-09	NV	4.2E-07	9.9E-06	4.5E-09	NV	2.4E-06	8.2E-05	4.5E-09	NV	3.3E-07	7.7E-06
Volatile Organic Compounds																
Methyl acetate	NS	7.3E-08	NS	NS	NS	7.3E-08	NS	NS	5.5E-13	7.3E-08	2.9E-09	9.9E-09	5.5E-13	7.3E-08	3.9E-10	9.3E-10
Polycyclic Aromatic Hydrocarbons																
1-Methyl naphthalene	ND	7.1E-09	ND	ND	ND	7.1E-09	ND	ND	2.1E-13	7.1E-09	1.6E-09	3.7E-09	2.1E-13	7.1E-09	2.2E-10	3.5E-10
2-Methyl naphthalene	1.1E-13	2.0E-09	8.8E-10	2.0E-09	1.1E-13	2.0E-09	1.2E-10	1.9E-10	1.1E-13	2.0E-09	8.6E-10	2.0E-09	1.1E-13	2.0E-09	1.2E-10	1.9E-10
Acenaphthene	3.5E-13	1.0E-09	2.8E-09	6.4E-09	3.5E-13	1.0E-09	3.8E-10	6.0E-10	2.6E-13	1.0E-09	2.1E-09	4.8E-09	2.6E-13	1.0E-09	2.8E-10	4.5E-10
Acenaphthylene	3.0E-13	NV	2.3E-09	5.4E-09	3.0E-13	NV	3.2E-10	5.0E-10	2.2E-13	NV	1.8E-09	4.1E-09	2.2E-13	NV	2.4E-10	3.8E-10
Anthracene	1.8E-13	2.2E-10	1.4E-09	3.2E-09	1.8E-13	2.2E-10	1.9E-10	3.0E-10	1.5E-13	2.2E-10	1.2E-09	2.7E-09	1.5E-13	2.2E-10	1.6E-10	2.6E-10
Benzo (a) anthracene	7.3E-12	4.9E-10	5.7E-08	1.3E-07	7.3E-12	4.9E-10	7.8E-09	1.2E-08	3.0E-12	4.9E-10	2.3E-08	5.4E-08	3.0E-12	4.9E-10	3.2E-09	5.0E-09
Benzo (a) pyrene	5.8E-12	NV	4.6E-08	1.0E-07	5.8E-12	NV	6.2E-09	9.8E-09	4.5E-12	NV	3.5E-08	8.1E-08	4.5E-12	NV	4.8E-09	7.6E-09
Benzo (b) fluoranthene	1.1E-11	NV	8.7E-08	2.0E-07	1.1E-11	NV	1.2E-08	1.9E-08	8.4E-12	NV	6.6E-08	1.5E-07	8.4E-12	NV	9.0E-09	1.4E-08
Benzo (ghi) perylene	3.5E-12	NV	2.7E-08	6.3E-08	3.5E-12	NV	3.7E-09	5.9E-09	1.7E-12	NV	1.3E-08	3.1E-08	1.7E-12	NV	1.8E-09	2.9E-09
Benzo (k) fluoranthene	2.8E-12	NV	2.2E-08	5.0E-08	2.8E-12	NV	3.0E-09	4.7E-09	2.4E-12	NV	1.9E-08	4.4E-08	2.4E-12	NV	2.6E-09	4.1E-09
Chrysene	7.5E-12	NV	5.9E-08	1.4E-07	7.5E-12	NV	8.1E-09	1.3E-08	5.6E-12	NV	4.4E-08	1.0E-07	5.6E-12	NV	6.1E-09	9.6E-09
Dibenzo (a,h) anthracene	7.6E-13	NV	6.0E-09	1.4E-08	7.6E-13	NV	8.2E-10	1.3E-09	2.8E-13	NV	2.2E-09	5.1E-09	2.8E-13	NV	3.0E-10	4.8E-10
Fluoranthene	1.2E-11	NV	9.5E-08	2.2E-07	1.2E-11	NV	1.3E-08	2.0E-08	9.1E-12	NV	7.1E-08	1.6E-07	9.1E-12	NV	9.8E-09	1.5E-08
Fluorene	2.9E-13	4.6E-10	2.3E-09	5.2E-09	2.9E-13	4.6E-10	3.1E-10	4.9E-10	2.2E-13	4.6E-10	1.7E-09	4.0E-09	2.2E-13	4.6E-10	2.4E-10	3.7E-10
Indeno (1,2,3-cd) pyrene	3.6E-12	NV	2.8E-08	6.5E-08	3.6E-12	NV	3.9E-09	6.1E-09	1.4E-12	NV	1.1E-08	2.6E-08	1.4E-12	NV	1.5E-09	2.4E-09
Naphthalene	3.2E-13	3.0E-09	2.5E-09	5.8E-09	3.2E-13	3.0E-09	3.5E-10	5.5E-10	2.4E-13	3.0E-09	1.9E-09	4.4E-09	2.4E-13	3.0E-09	2.6E-10	4.1E-10
Phenanthrene	6.2E-12	NV	4.9E-08	1.1E-07	6.2E-12	NV	6.7E-09	1.1E-08	2.3E-12	NV	1.8E-08	4.2E-08	2.3E-12	NV	2.5E-09	3.9E-09
Pyrene	1.1E-11	1.4E-09	8.4E-08	1.9E-07	1.1E-11	1.4E-09	1.2E-08	1.8E-08	8.5E-12	1.4E-09	6.7E-08	1.5E-07	8.5E-12	1.4E-09	9.2E-09	1.5E-08
B(a)P Equivalent	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA
Pesticides																
4,4-DDE	2.0E-13	1.3E-10	5.2E-10	3.6E-09	2.0E-13	1.3E-10	7.1E-11	3.3E-10	2.0E-13	1.3E-10	5.2E-10	3.6E-09	2.0E-13	1.3E-10	7.1E-11	3.3E-10
alpha-Chlordane	3.9E-13	NV	1.0E-09	7.0E-09	3.9E-13	NV	1.4E-10	6.6E-10	3.9E-13	NV	1.0E-09	7.0E-09	3.9E-13	NV	1.4E-10	6.6E-10
Dieldrin	2.2E-13	NV	5.7E-10	3.9E-09	2.2E-13	NV	7.8E-11	3.7E-10	2.2E-13	NV	5.7E-10	3.9E-09	2.2E-13	NV	7.8E-11	3.7E-10
gamma-Chlordane	4.2E-13	NV	1.1E-09	7.6E-09	4.2E-13	NV	1.5E-10	7.1E-10	4.2E-13	NV	1.1E-09	7.6E-09	4.2E-13	NV	1.5E-10	7.1E-10

Table AOC11-B1.2b
Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls																
Total PCBs	1.4E-11	8.5E-09	1.1E-07	2.6E-07	1.4E-11	8.5E-09	1.5E-08	2.4E-08	1.2E-11	8.5E-09	9.8E-08	2.3E-07	1.2E-11	8.5E-09	1.3E-08	2.1E-08
Total Petroleum Hydrocarbons																
TPH as diesel	8.2E-10	1.9E-03	4.3E-06	1.5E-05	8.2E-10	1.9E-03	5.9E-07	1.4E-06	9.9E-10	1.9E-03	5.2E-06	1.8E-05	9.9E-10	1.9E-03	7.1E-07	1.7E-06
TPH as motor oil	7.8E-09	NV	4.1E-05	1.4E-04	7.8E-09	NV	5.6E-06	1.3E-05	8.3E-09	NV	4.3E-05	1.5E-04	8.3E-09	NV	5.9E-06	1.4E-05
Dioxins/Furans																
TEQ Human	2.6E-15	3.9E-12	4.1E-12	4.7E-11	2.6E-15	3.9E-12	5.6E-13	4.4E-12	7.2E-15	3.9E-12	1.1E-11	1.3E-10	7.2E-15	3.9E-12	1.5E-12	1.2E-11

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
mg/kg-day = milligrams per kilogram per day.
mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.

ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.2c
Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs:
Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics																
Arsenic	1.7E-08	NV	4.9E-07	2.2E-07	1.7E-08	NV	4.2E-07	9.0E-08	1.7E-08	NV	4.8E-07	2.1E-07	1.7E-08	NV	4.1E-07	8.9E-08
Chromium, Hexavalent	3.5E-09	NV	NA	4.5E-08	3.5E-09	NV	NA	1.8E-08	3.6E-09	NV	NA	4.6E-08	3.6E-09	NV	NA	1.9E-08
Chromium, total	1.3E-07	NV	1.2E-06	1.6E-06	1.3E-07	NV	1.0E-06	6.6E-07	1.1E-07	NV	1.0E-06	1.3E-06	1.1E-07	NV	8.6E-07	5.5E-07
Copper	4.4E-08	NV	4.2E-07	5.6E-07	4.4E-08	NV	3.6E-07	2.3E-07	4.5E-08	NV	4.3E-07	5.7E-07	4.5E-08	NV	3.7E-07	2.3E-07
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	5.8E-10	NV	5.5E-09	7.4E-09	5.8E-10	NV	4.8E-09	3.1E-09	5.8E-10	NV	5.5E-09	7.4E-09	5.8E-10	NV	4.8E-09	3.1E-09
Zinc	5.8E-07	NV	5.5E-06	7.4E-06	5.8E-07	NV	4.8E-06	3.1E-06	4.6E-07	NV	4.3E-06	5.8E-06	4.6E-07	NV	3.7E-06	2.4E-06
Volatile Organic Compounds																
Methyl acetate	NS	4.6E-09	NS	NS	NS	4.6E-09	NS	NS	5.5E-11	4.6E-09	5.2E-09	7.0E-10	5.5E-11	4.6E-09	4.5E-09	2.9E-10
Polycyclic Aromatic Hydrocarbons																
1-Methyl naphthalene	ND	4.4E-10	ND	ND	ND	4.4E-10	ND	ND	2.1E-11	4.4E-10	2.9E-09	2.6E-10	2.1E-11	4.4E-10	2.5E-09	1.1E-10
2-Methyl naphthalene	1.1E-11	1.2E-10	1.6E-09	1.4E-10	1.1E-11	1.2E-10	1.4E-09	5.9E-11	1.1E-11	1.2E-10	1.6E-09	1.4E-10	1.1E-11	1.2E-10	1.3E-09	5.7E-11
Acenaphthene	3.6E-11	6.4E-11	5.1E-09	4.5E-10	3.6E-11	6.4E-11	4.4E-09	1.9E-10	2.6E-11	6.4E-11	3.8E-09	3.4E-10	2.6E-11	6.4E-11	3.2E-09	1.4E-10
Acenaphthylene	3.0E-11	NV	4.3E-09	3.8E-10	3.0E-11	NV	3.6E-09	1.6E-10	2.3E-11	NV	3.2E-09	2.9E-10	2.3E-11	NV	2.8E-09	1.2E-10
Anthracene	1.8E-11	1.4E-11	2.6E-09	2.3E-10	1.8E-11	1.4E-11	2.2E-09	9.4E-11	1.5E-11	1.4E-11	2.2E-09	1.9E-10	1.5E-11	1.4E-11	1.9E-09	7.9E-11
Benzo (a) anthracene	7.3E-10	3.1E-11	1.0E-07	9.3E-09	7.3E-10	3.1E-11	9.0E-08	3.8E-09	3.0E-10	3.1E-11	4.2E-08	3.8E-09	3.0E-10	3.1E-11	3.6E-08	1.6E-09
Benzo (a) pyrene	5.8E-10	NV	8.3E-08	7.4E-09	5.8E-10	NV	7.1E-08	3.0E-09	4.5E-10	NV	6.4E-08	5.7E-09	4.5E-10	NV	5.5E-08	2.4E-09
Benzo (b) fluoranthene	1.1E-09	NV	1.6E-07	1.4E-08	1.1E-09	NV	1.4E-07	5.8E-09	8.4E-10	NV	1.2E-07	1.1E-08	8.4E-10	NV	1.0E-07	4.4E-09
Benzo (ghi) perylene	3.5E-10	NV	5.0E-08	4.4E-09	3.5E-10	NV	4.3E-08	1.8E-09	1.7E-10	NV	2.4E-08	2.2E-09	1.7E-10	NV	2.1E-08	8.9E-10
Benzo (k) fluoranthene	2.8E-10	NV	4.0E-08	3.6E-09	2.8E-10	NV	3.4E-08	1.5E-09	2.4E-10	NV	3.5E-08	3.1E-09	2.4E-10	NV	3.0E-08	1.3E-09
Chrysene	7.5E-10	NV	1.1E-07	9.6E-09	7.5E-10	NV	9.2E-08	3.9E-09	5.7E-10	NV	8.1E-08	7.2E-09	5.7E-10	NV	6.9E-08	3.0E-09
Dibenzo (a,h) anthracene	7.7E-11	NV	1.1E-08	9.7E-10	7.7E-11	NV	9.4E-09	4.0E-10	2.8E-11	NV	4.0E-09	3.6E-10	2.8E-11	NV	3.5E-09	1.5E-10
Fluoranthene	1.2E-09	NV	1.7E-07	1.5E-08	1.2E-09	NV	1.5E-07	6.3E-09	9.1E-10	NV	1.3E-07	1.2E-08	9.1E-10	NV	1.1E-07	4.8E-09
Fluorene	2.9E-11	2.9E-11	4.1E-09	3.7E-10	2.9E-11	2.9E-11	3.5E-09	1.5E-10	2.2E-11	2.9E-11	3.1E-09	2.8E-10	2.2E-11	2.9E-11	2.7E-09	1.1E-10
Indeno (1,2,3-cd) pyrene	3.6E-10	NV	5.1E-08	4.6E-09	3.6E-10	NV	4.4E-08	1.9E-09	1.4E-10	NV	2.1E-08	1.8E-09	1.4E-10	NV	1.8E-08	7.5E-10
Naphthalene	3.2E-11	1.9E-10	4.6E-09	4.1E-10	3.2E-11	1.9E-10	4.0E-09	1.7E-10	2.4E-11	1.9E-10	3.5E-09	3.1E-10	2.4E-11	1.9E-10	3.0E-09	1.3E-10
Phenanthrene	6.2E-10	NV	8.9E-08	7.9E-09	6.2E-10	NV	7.6E-08	3.3E-09	2.3E-10	NV	3.3E-08	2.9E-09	2.3E-10	NV	2.8E-08	1.2E-09
Pyrene	1.1E-09	9.0E-11	1.5E-07	1.4E-08	1.1E-09	9.0E-11	1.3E-07	5.6E-09	8.6E-10	9.0E-11	1.2E-07	1.1E-08	8.6E-10	9.0E-11	1.1E-07	4.5E-09
B(a)P Equivalent	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA
Pesticides																
4,4-DDE	2.0E-11	8.0E-12	9.4E-10	2.5E-10	2.0E-11	8.0E-12	8.1E-10	1.0E-10	2.0E-11	8.0E-12	9.4E-10	2.5E-10	2.0E-11	8.0E-12	8.1E-10	1.0E-10
alpha-Chlordane	3.9E-11	NV	1.8E-09	4.9E-10	3.9E-11	NV	1.6E-09	2.0E-10	3.9E-11	NV	1.8E-09	4.9E-10	3.9E-11	NV	1.6E-09	2.0E-10
Dieldrin	2.2E-11	NV	1.0E-09	2.8E-10	2.2E-11	NV	8.9E-10	1.1E-10	2.2E-11	NV	1.0E-09	2.8E-10	2.2E-11	NV	8.9E-10	1.1E-10
gamma-Chlordane	4.2E-11	NV	2.0E-09	5.3E-10	4.2E-11	NV	1.7E-09	2.2E-10	4.2E-11	NV	2.0E-09	5.3E-10	4.2E-11	NV	1.7E-09	2.2E-10

Table AOC11-B1.2c
Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs:
Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls																
Total PCBs	1.4E-09	5.3E-10	2.1E-07	1.8E-08	1.4E-09	5.3E-10	1.8E-07	7.5E-09	1.2E-09	5.3E-10	1.8E-07	1.6E-08	1.2E-09	5.3E-10	1.5E-07	6.5E-09
Total Petroleum Hydrocarbons																
TPH as diesel	8.2E-08	1.2E-04	7.8E-06	1.0E-06	8.2E-08	1.2E-04	6.7E-06	4.3E-07	9.9E-08	1.2E-04	9.5E-06	1.3E-06	9.9E-08	1.2E-04	8.1E-06	5.2E-07
TPH as motor oil	7.8E-07	NV	7.4E-05	9.9E-06	7.8E-07	NV	6.4E-05	4.1E-06	8.3E-07	NV	7.9E-05	1.1E-05	8.3E-07	NV	6.8E-05	4.3E-06
Dioxins/Furans																
TEQ Human	2.6E-13	2.4E-13	7.4E-12	3.3E-12	2.6E-13	2.4E-13	6.3E-12	1.4E-12	7.2E-13	2.4E-13	2.1E-11	9.1E-12	7.2E-13	2.4E-13	1.8E-11	3.8E-12

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
mg/kg-day = milligrams per kilogram per day.
mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.

ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.3a
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User- Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Inorganics										
Arsenic	1.4E-10	NV	1.6E-07	1.6E-06	1.8E-06	1.3E-10	NV	1.6E-07	1.6E-06	1.8E-06
Chromium, Hexavalent	2.7E-09	NV	NA	8.1E-08	8.4E-08	2.8E-09	NV	NA	8.3E-08	8.6E-08
Chromium, total	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Copper	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Lead	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Zinc	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Volatile Organic Compounds										
Methyl acetate	NS	NC	NS	NS	--	NC	NC	NC	NC	--
Polycyclic Aromatic Hydrocarbons										
1-Methyl naphthalene	ND	1.7E-11	ND	ND	1.7E-11	4.9E-16	1.7E-11	5.2E-12	1.1E-11	3.3E-11
2-Methyl naphthalene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Anthracene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (a) anthracene	NA	2.8E-11	NA	NA	2.8E-11	NA	2.8E-11	NA	NA	2.8E-11
Benzo (a) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (b) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (ghi) perylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (k) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Chrysene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Dibenzo (a,h) anthracene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Fluoranthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Fluorene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Naphthalene	2.0E-15	1.9E-11	1.9E-11	3.9E-11	7.8E-11	1.5E-15	1.9E-11	1.4E-11	3.0E-11	6.3E-11
Phenanthrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Pyrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
B(a)P Equivalent	4.2E-12	NV	1.6E-08	3.5E-08	5.0E-08	3.3E-12	NV	1.2E-08	2.7E-08	3.9E-08
Pesticides										
4,4-DDE	3.5E-15	2.3E-12	1.1E-11	6.8E-11	8.1E-11	3.5E-15	2.3E-12	1.1E-11	6.8E-11	8.1E-11
alpha-Chlordane	7.2E-15	NV	2.2E-11	1.4E-10	1.6E-10	7.2E-15	NV	2.2E-11	1.4E-10	1.6E-10
Dieldrin	1.8E-13	NV	5.7E-10	3.5E-09	4.1E-09	1.8E-13	NV	5.7E-10	3.5E-09	4.1E-09
gamma-Chlordane	7.8E-15	NV	2.4E-11	1.5E-10	1.7E-10	7.8E-15	NV	2.4E-11	1.5E-10	1.7E-10

Table AOC11-B1.3a
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User- Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Polychlorinated Biphenyls										
Total PCBs	2.7E-13	1.6E-10	1.4E-08	2.9E-08	4.3E-08	2.3E-13	1.6E-10	1.2E-08	2.5E-08	3.8E-08
Total Petroleum Hydrocarbons										
TPH as diesel	NC	NC	NC	NC	--	NC	NC	NC	NC	--
TPH as motor oil	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Dioxins/Furans										
TEQ Human	1.8E-11	2.7E-08	3.3E-08	3.4E-07	4.0E-07	5.1E-11	2.7E-08	9.2E-08	9.5E-07	1.1E-06
Cumulative ILCR	**3E-09**	**3E-08**	**2E-07**	**2E-06**	**2E-06**	**3E-09**	**3E-08**	**3E-07**	**3E-06**	**3E-06**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
ILCR = Incremental Lifetime Cancer Risk.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.3b
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Inorganics										
Arsenic	2.7E-10	NV	3.2E-07	3.3E-06	3.6E-06	2.7E-10	NV	3.2E-07	3.3E-06	3.6E-06
Chromium, Hexavalent	5.4E-09	NV	NA	1.6E-07	1.7E-07	5.5E-09	NV	NA	1.7E-07	1.7E-07
Chromium, total	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Copper	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Lead	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Zinc	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Volatile Organic Compounds										
Methyl acetate	NS	NC	NS	NS	--	NC	NC	NC	NC	--
Polycyclic Aromatic Hydrocarbons										
1-Methyl naphthalene	ND	3.4E-11	ND	ND	3.4E-11	9.7E-16	3.4E-11	1.0E-11	2.1E-11	6.5E-11
2-Methyl naphthalene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Anthracene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (a) anthracene	NA	5.5E-11	NA	NA	5.5E-11	NA	5.5E-11	NA	NA	5.5E-11
Benzo (a) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (b) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (ghi) perylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (k) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Chrysene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Dibenzo (a,h) anthracene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Fluoranthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Fluorene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Naphthalene	4.1E-15	3.8E-11	3.8E-11	7.9E-11	1.6E-10	3.1E-15	3.8E-11	2.9E-11	5.9E-11	1.3E-10
Phenanthrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Pyrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
B(a)P Equivalent	8.5E-12	NV	3.2E-08	6.9E-08	1.0E-07	6.6E-12	NV	2.4E-08	5.4E-08	7.8E-08
Pesticides										
4,4-DDE	7.1E-15	4.6E-12	2.2E-11	1.4E-10	1.6E-10	7.1E-15	4.6E-12	2.2E-11	1.4E-10	1.6E-10
alpha-Chlordane	1.4E-14	NV	4.4E-11	2.8E-10	3.2E-10	1.4E-14	NV	4.4E-11	2.8E-10	3.2E-10
Dieldrin	3.7E-13	NV	1.1E-09	7.0E-09	8.2E-09	3.7E-13	NV	1.1E-09	7.0E-09	8.2E-09
gamma-Chlordane	1.6E-14	NV	4.8E-11	3.0E-10	3.5E-10	1.6E-14	NV	4.8E-11	3.0E-10	3.5E-10

Table AOC11-B1.3b
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Polychlorinated Biphenyls										
Total PCBs	5.3E-13	3.2E-10	2.8E-08	5.8E-08	8.7E-08	4.6E-13	3.2E-10	2.4E-08	5.1E-08	7.6E-08
Total Petroleum Hydrocarbons										
TPH as diesel	NC	NC	NC	NC	--	NC	NC	NC	NC	--
TPH as motor oil	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Dioxins/Furans										
TEQ Human	3.6E-11	5.5E-08	6.6E-08	6.8E-07	8.0E-07	1.0E-10	5.5E-08	1.8E-07	1.9E-06	2.1E-06
Cumulative ILCR	**6E-09**	**5E-08**	**4E-07**	**4E-06**	**5E-06**	**6E-09**	**5E-08**	**5E-07**	**5E-06**	**6E-06**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
ILCR = Incremental Lifetime Cancer Risk.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.3c
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Inorganics										
Arsenic	2.7E-08	NV	1.5E-06	4.2E-07	2.0E-06	2.7E-08	NV	1.5E-06	4.2E-07	2.0E-06
Chromium, Hexavalent	3.5E-07	NV	NA	9.4E-09	3.6E-07	3.5E-07	NV	NA	9.6E-09	3.6E-07
Chromium, total	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Copper	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Lead	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Zinc	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Volatile Organic Compounds										
Methyl acetate	NS	NC	NS	NS	--	NC	NC	NC	NC	--
Polycyclic Aromatic Hydrocarbons										
1-Methyl naphthalene	ND	2.1E-12	ND	ND	2.1E-12	9.8E-14	2.1E-12	5.0E-11	2.7E-12	5.5E-11
2-Methyl naphthalene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Anthracene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (a) anthracene	NA	2.2E-12	NA	NA	2.2E-12	NA	2.2E-12	NA	NA	2.2E-12
Benzo (a) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (b) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (ghi) perylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (k) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Chrysene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Dibenzo (a,h) anthracene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Fluoranthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Fluorene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Naphthalene	4.1E-13	2.4E-12	1.8E-10	1.0E-11	2.0E-10	3.1E-13	2.4E-12	1.4E-10	7.6E-12	1.5E-10
Phenanthrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Pyrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
B(a)P Equivalent	5.4E-10	NV	6.4E-08	4.0E-09	6.9E-08	4.2E-10	NV	5.0E-08	3.1E-09	5.3E-08
Pesticides										
4,4-DDE	7.1E-13	2.9E-13	1.1E-10	1.7E-11	1.2E-10	7.1E-13	2.9E-13	1.1E-10	1.7E-11	1.2E-10
alpha-Chlordane	1.4E-12	NV	2.1E-10	3.5E-11	2.5E-10	1.4E-12	NV	2.1E-10	3.5E-11	2.5E-10
Dieldrin	3.7E-11	NV	5.5E-09	9.0E-10	6.4E-09	3.7E-11	NV	5.5E-09	9.0E-10	6.4E-09
gamma-Chlordane	1.6E-12	NV	2.3E-10	3.8E-11	2.7E-10	1.6E-12	NV	2.3E-10	3.8E-11	2.7E-10

Table AOC11-B1.3c
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Polychlorinated Biphenyls										
Total PCBs	5.3E-11	2.0E-11	1.4E-07	7.4E-09	1.4E-07	4.6E-11	2.0E-11	1.2E-07	6.5E-09	1.2E-07
Total Petroleum Hydrocarbons										
TPH as diesel	NC	NC	NC	NC	--	NC	NC	NC	NC	--
TPH as motor oil	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Dioxins/Furans										
TEQ Human	3.7E-09	3.4E-09	3.2E-07	8.7E-08	4.1E-07	1.0E-08	3.4E-09	8.8E-07	2.4E-07	1.1E-06
Cumulative ILCR	**4E-07**	**3E-09**	**2E-06**	**5E-07**	**3E-06**	**4E-07**	**3E-09**	**3E-06**	**7E-07**	**4E-06**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
ILCR = Incremental Lifetime Cancer Risk.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.4a
Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Inorganics																				
Arsenic	5.7E-06	NV	3.8E-02	4.4E-01	4.8E-01	5.7E-06	NV	5.2E-03	4.1E-02	4.7E-02	5.6E-06	NV	3.8E-02	4.4E-01	4.7E-01	5.6E-06	NV	5.2E-03	4.1E-02	4.6E-02
Chromium, Hexavalent	1.7E-07	NV	NA	1.1E-04	1.1E-04	1.7E-07	NV	NA	9.9E-06	1.0E-05	1.8E-07	NV	NA	1.1E-04	1.1E-04	1.8E-07	NV	NA	1.0E-05	1.0E-05
Chromium, total	1.0E-05	NV	2.2E-07	7.5E-06	1.8E-05	1.0E-05	NV	3.0E-08	7.1E-07	1.1E-05	8.8E-06	NV	1.8E-07	6.4E-06	1.5E-05	8.8E-06	NV	2.5E-08	6.0E-07	9.4E-06
Copper	1.4E-09	NV	2.9E-06	9.9E-05	1.0E-04	1.4E-09	NV	3.9E-07	9.3E-06	9.7E-06	1.4E-09	NV	2.9E-06	1.0E-04	1.0E-04	1.4E-09	NV	4.0E-07	9.5E-06	9.9E-06
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	9.7E-08	NV	9.5E-06	3.3E-04	3.4E-04	9.7E-08	NV	1.3E-06	3.1E-05	3.2E-05	9.7E-08	NV	9.5E-06	3.3E-04	3.4E-04	9.7E-08	NV	1.3E-06	3.1E-05	3.2E-05
Zinc	2.4E-09	NV	5.1E-06	1.8E-04	1.8E-04	2.4E-09	NV	6.9E-07	1.6E-05	1.7E-05	1.9E-09	NV	4.0E-06	1.4E-04	1.4E-04	1.9E-09	NV	5.4E-07	1.3E-05	1.3E-05
Volatile Organic Compounds																				
Methyl acetate	NS	9.1E-09	NS	NS	9.1E-09	NS	9.1E-09	NS	NS	9.1E-09	6.8E-14	9.1E-09	1.4E-09	5.0E-09	1.6E-08	6.8E-14	9.1E-09	2.0E-10	4.7E-10	9.8E-09
Polycyclic Aromatic Hydrocarbons																				
1-Methyl naphthalene	ND	1.3E-08	ND	ND	1.3E-08	ND	1.3E-08	ND	ND	1.3E-08	3.7E-13	1.3E-08	1.2E-08	2.7E-08	5.1E-08	3.7E-13	1.3E-08	1.6E-09	2.5E-09	1.7E-08
2-Methyl naphthalene	3.5E-12	6.2E-08	1.1E-07	2.5E-07	4.3E-07	3.5E-12	6.2E-08	1.5E-08	2.4E-08	1.0E-07	3.4E-12	6.2E-08	1.1E-07	2.5E-07	4.2E-07	3.4E-12	6.2E-08	1.5E-08	2.3E-08	1.0E-07
Acenaphthene	7.4E-13	2.1E-09	2.3E-08	5.4E-08	7.9E-08	7.4E-13	2.1E-09	3.2E-09	5.0E-09	1.0E-08	5.5E-13	2.1E-09	1.7E-08	4.0E-08	5.9E-08	5.5E-13	2.1E-09	2.4E-09	3.7E-09	8.2E-09
Acenaphthylene	6.2E-13	NV	1.9E-08	4.5E-08	6.4E-08	6.2E-13	NV	2.7E-09	4.2E-09	6.9E-09	4.7E-13	NV	1.5E-08	3.4E-08	4.9E-08	4.7E-13	NV	2.0E-09	3.2E-09	5.2E-09
Anthracene	7.4E-14	9.1E-11	2.3E-09	5.4E-09	7.8E-09	7.4E-14	9.1E-11	3.2E-10	5.1E-10	9.2E-10	6.3E-14	9.1E-11	2.0E-09	4.5E-09	6.6E-09	6.3E-14	9.1E-11	2.7E-10	4.3E-10	7.9E-10
Benzo (a) anthracene	3.0E-11	2.0E-09	9.6E-07	2.2E-06	3.2E-06	3.0E-11	2.0E-09	1.3E-07	2.1E-07	3.4E-07	1.2E-11	2.0E-09	3.9E-07	8.9E-07	1.3E-06	1.2E-11	2.0E-09	5.3E-08	8.4E-08	1.4E-07
Benzo (a) pyrene	1.4E-06	NV	7.6E-05	1.7E-04	2.5E-04	1.4E-06	NV	1.0E-05	1.6E-05	2.8E-05	1.1E-06	NV	5.9E-05	1.4E-04	2.0E-04	1.1E-06	NV	8.0E-06	1.3E-05	2.2E-05
Benzo (b) fluoranthene	4.6E-11	NV	1.4E-06	3.3E-06	4.8E-06	4.6E-11	NV	2.0E-07	3.1E-07	5.1E-07	3.5E-11	NV	1.1E-06	2.5E-06	3.6E-06	3.5E-11	NV	1.5E-07	2.4E-07	3.9E-07
Benzo (ghi) perylene	1.5E-11	NV	4.6E-07	1.1E-06	1.5E-06	1.5E-11	NV	6.2E-08	9.9E-08	1.6E-07	7.0E-12	NV	2.2E-07	5.1E-07	7.3E-07	7.0E-12	NV	3.0E-08	4.8E-08	7.8E-08
Benzo (k) fluoranthene	1.2E-11	NV	3.7E-07	8.4E-07	1.2E-06	1.2E-11	NV	5.0E-08	7.9E-08	1.3E-07	1.0E-11	NV	3.2E-07	7.3E-07	1.0E-06	1.0E-11	NV	4.3E-08	6.9E-08	1.1E-07
Chrysene	3.1E-11	NV	9.9E-07	2.3E-06	3.3E-06	3.1E-11	NV	1.3E-07	2.1E-07	3.5E-07	2.4E-11	NV	7.4E-07	1.7E-06	2.4E-06	2.4E-11	NV	1.0E-07	1.6E-07	2.6E-07
Dibenzo (a,h) anthracene	1.9E-07	NV	1.0E-05	2.3E-05	3.3E-05	1.9E-07	NV	1.4E-06	2.2E-06	3.7E-06	7.0E-08	NV	3.7E-06	8.5E-06	1.2E-05	7.0E-08	NV	5.0E-07	8.0E-07	1.4E-06
Fluoranthene	3.8E-11	NV	1.2E-06	2.7E-06	3.9E-06	3.8E-11	NV	1.6E-07	2.6E-07	4.2E-07	2.8E-11	NV	8.9E-07	2.1E-06	2.9E-06	2.8E-11	NV	1.2E-07	1.9E-07	3.1E-07
Fluorene	9.0E-13	1.4E-09	2.8E-08	6.5E-08	9.5E-08	9.0E-13	1.4E-09	3.9E-09	6.1E-09	1.1E-08	6.8E-13	1.4E-09	2.2E-08	5.0E-08	7.3E-08	6.8E-13	1.4E-09	2.9E-09	4.6E-09	9.0E-09
Indeno (1,2,3-cd) pyrene	1.5E-11	NV	4.7E-07	1.1E-06	1.6E-06	1.5E-11	NV	6.4E-08	1.0E-07	1.7E-07	6.0E-12	NV	1.9E-07	4.3E-07	6.2E-07	6.0E-12	NV	2.6E-08	4.1E-08	6.6E-08
Naphthalene	5.4E-11	5.0E-07	6.4E-08	1.5E-07	7.1E-07	5.4E-11	5.0E-07	8.7E-09	1.4E-08	5.3E-07	4.0E-11	5.0E-07	4.8E-08	1.1E-07	6.6E-07	4.0E-11	5.0E-07	6.5E-09	1.0E-08	5.2E-07
Phenanthrene	2.6E-12	NV	8.1E-08	1.9E-07	2.7E-07	2.6E-12	NV	1.1E-08	1.8E-08	2.9E-08	9.6E-13	NV	3.0E-08	7.0E-08	1.0E-07	9.6E-13	NV	4.1E-09	6.5E-09	1.1E-08
Pyrene	4.5E-11	6.0E-09	1.4E-06	3.2E-06	4.6E-06	4.5E-11	6.0E-09	1.9E-07	3.0E-07	5.0E-07	3.6E-11	6.0E-09	1.1E-06	2.6E-06	3.7E-06	3.6E-11	6.0E-09	1.5E-07	2.4E-07	4.0E-07
B(a)P Equivalent	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Pesticides																				
4,4-DDE	4.9E-11	3.2E-08	5.2E-07	3.6E-06	4.1E-06	4.9E-11	3.2E-08	7.1E-08	3.3E-07	4.4E-07	4.9E-11	3.2E-08	5.2E-07	3.6E-06	4.1E-06	4.9E-11	3.2E-08	7.1E-08	3.3E-07	4.4E-07
alpha-Chlordane	2.8E-10	NV	1.0E-06	7.0E-06	8.0E-06	2.8E-10	NV	1.4E-07	6.6E-07	8.0E-07	2.8E-10	NV	1.0E-06	7.0E-06	8.0E-06	2.8E-10	NV	1.4E-07	6.6E-07	8.0E-07
Dieldrin	5.4E-10	NV	5.7E-06	3.9E-05	4.5E-05	5.4E-10	NV	7.8E-07	3.7E-06	4.4E-06	5.4E-10	NV	5.7E-06	3.9E-05	4.5E-05	5.4E-10	NV	7.8E-07	3.7E-06	4.4E-06
gamma-Chlordane	3.0E-10	NV	1.1E-06	7.6E-06	8.7E-06	3.0E-10	NV	1.5E-07	7.1E-07	8.6E-07	3.0E-10	NV	1.1E-06	7.6E-06	8.7E-06	3.0E-10	NV	1.5E-07	7.1E-07	8.6E-07

Table AOC11-B1.4a
Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Polychlorinated Biphenyls																				
Total PCBs	8.9E-08	5.3E-05	2.8E-03	6.5E-03	9.4E-03	8.9E-08	5.3E-05	3.9E-04	6.1E-04	1.0E-03	7.8E-08	5.3E-05	2.5E-03	5.6E-03	8.1E-03	7.8E-08	5.3E-05	3.3E-04	5.3E-04	9.2E-04
Total Petroleum Hydrocarbons																				
TPH as diesel	1.6E-09	3.6E-03	1.1E-04	3.9E-04	4.1E-03	1.6E-09	3.6E-03	1.5E-05	3.6E-05	3.7E-03	1.9E-09	3.6E-03	1.4E-04	4.7E-04	4.2E-03	1.9E-09	3.6E-03	1.9E-05	4.4E-05	3.7E-03
TPH as motor oil	6.5E-09	NV	1.4E-04	4.7E-04	6.1E-04	6.5E-09	NV	1.9E-05	4.4E-05	6.3E-05	6.9E-09	NV	1.4E-04	5.0E-04	6.4E-04	6.9E-09	NV	2.0E-05	4.7E-05	6.7E-05
Dioxins/Furans																				
TEQ Human	3.2E-08	4.8E-05	2.9E-03	3.3E-02	3.6E-02	3.2E-08	4.8E-05	4.0E-04	3.1E-03	3.6E-03	9.0E-08	4.8E-05	8.1E-03	9.3E-02	1.0E-01	9.0E-08	4.8E-05	1.1E-03	8.7E-03	9.9E-03
Total Hazard Index	**2E-05**	**4E-03**	**4E-02**	**5E-01**	**5E-01**	**2E-05**	**4E-03**	**6E-03**	**5E-02**	**6E-02**	**2E-05**	**4E-03**	**5E-02**	**5E-01**	**6E-01**	**2E-05**	**4E-03**	**7E-03**	**5E-02**	**6E-02**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
H I = Hazard Index
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.4b
Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Inorganics																				
Arsenic	1.1E-05	NV	7.7E-02	8.8E-01	9.6E-01	1.1E-05	NV	1.0E-02	8.3E-02	9.3E-02	1.1E-05	NV	7.6E-02	8.7E-01	9.5E-01	1.1E-05	NV	1.0E-02	8.2E-02	9.2E-02
Chromium, Hexavalent	3.5E-07	NV	NA	2.1E-04	2.1E-04	3.5E-07	NV	NA	2.0E-05	2.0E-05	3.6E-07	NV	NA	2.2E-04	2.2E-04	3.6E-07	NV	NA	2.0E-05	2.1E-05
Chromium, total	2.1E-05	NV	4.4E-07	1.5E-05	3.6E-05	2.1E-05	NV	6.0E-08	1.4E-06	2.2E-05	1.8E-05	NV	3.7E-07	1.3E-05	3.1E-05	1.8E-05	NV	5.0E-08	1.2E-06	1.9E-05
Copper	2.7E-09	NV	5.8E-06	2.0E-04	2.0E-04	2.7E-09	NV	7.9E-07	1.9E-05	1.9E-05	2.8E-09	NV	5.9E-06	2.0E-04	2.1E-04	2.8E-09	NV	8.0E-07	1.9E-05	2.0E-05
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	1.9E-07	NV	1.9E-05	6.6E-04	6.8E-04	1.9E-07	NV	2.6E-06	6.2E-05	6.4E-05	1.9E-07	NV	1.9E-05	6.6E-04	6.8E-04	1.9E-07	NV	2.6E-06	6.2E-05	6.4E-05
Zinc	4.8E-09	NV	1.0E-05	3.5E-04	3.6E-04	4.8E-09	NV	1.4E-06	3.3E-05	3.4E-05	3.8E-09	NV	8.0E-06	2.7E-04	2.8E-04	3.8E-09	NV	1.1E-06	2.6E-05	2.7E-05
Volatile Organic Compounds																				
Methyl acetate	NS	1.8E-08	NS	NS	1.8E-08	NS	1.8E-08	NS	NS	1.8E-08	1.4E-13	1.8E-08	2.9E-09	9.9E-09	3.1E-08	1.4E-13	1.8E-08	3.9E-10	9.3E-10	2.0E-08
Polycyclic Aromatic Hydrocarbons																				
1-Methyl naphthalene	ND	2.5E-08	ND	ND	2.5E-08	ND	2.5E-08	ND	ND	2.5E-08	7.3E-13	2.5E-08	2.3E-08	5.3E-08	1.0E-07	7.3E-13	2.5E-08	3.2E-09	5.0E-09	3.4E-08
2-Methyl naphthalene	7.0E-12	1.2E-07	2.2E-07	5.1E-07	8.5E-07	7.0E-12	1.2E-07	3.0E-08	4.8E-08	2.0E-07	6.8E-12	1.2E-07	2.2E-07	5.0E-07	8.4E-07	6.8E-12	1.2E-07	2.9E-08	4.6E-08	2.0E-07
Acenaphthene	1.5E-12	4.3E-09	4.7E-08	1.1E-07	1.6E-07	1.5E-12	4.3E-09	6.4E-09	1.0E-08	2.1E-08	1.1E-12	4.3E-09	3.5E-08	8.0E-08	1.2E-07	1.1E-12	4.3E-09	4.7E-09	7.5E-09	1.6E-08
Acenaphthylene	1.2E-12	NV	3.9E-08	9.0E-08	1.3E-07	1.2E-12	NV	5.3E-09	8.4E-09	1.4E-08	9.4E-13	NV	3.0E-08	6.8E-08	9.8E-08	9.4E-13	NV	4.0E-09	6.4E-09	1.0E-08
Anthracene	1.5E-13	1.8E-10	4.7E-09	1.1E-08	1.6E-08	1.5E-13	1.8E-10	6.4E-10	1.0E-09	1.8E-09	1.3E-13	1.8E-10	4.0E-09	9.1E-09	1.3E-08	1.3E-13	1.8E-10	5.4E-10	8.5E-10	1.6E-09
Benzo (a) anthracene	6.1E-11	4.1E-09	1.9E-06	4.4E-06	6.3E-06	6.1E-11	4.1E-09	2.6E-07	4.1E-07	6.8E-07	2.5E-11	4.1E-09	7.8E-07	1.8E-06	2.6E-06	2.5E-11	4.1E-09	1.1E-07	1.7E-07	2.8E-07
Benzo (a) pyrene	2.9E-06	NV	1.5E-04	3.5E-04	5.0E-04	2.9E-06	NV	2.1E-05	3.3E-05	5.6E-05	2.2E-06	NV	1.2E-04	2.7E-04	3.9E-04	2.2E-06	NV	1.6E-05	2.5E-05	4.4E-05
Benzo (b) fluoranthene	9.2E-11	NV	2.9E-06	6.7E-06	9.6E-06	9.2E-11	NV	4.0E-07	6.2E-07	1.0E-06	7.0E-11	NV	2.2E-06	5.1E-06	7.3E-06	7.0E-11	NV	3.0E-07	4.7E-07	7.8E-07
Benzo (ghi) perylene	2.9E-11	NV	9.2E-07	2.1E-06	3.0E-06	2.9E-11	NV	1.2E-07	2.0E-07	3.2E-07	1.4E-11	NV	4.4E-07	1.0E-06	1.5E-06	1.4E-11	NV	6.1E-08	9.6E-08	1.6E-07
Benzo (k) fluoranthene	2.3E-11	NV	7.3E-07	1.7E-06	2.4E-06	2.3E-11	NV	1.0E-07	1.6E-07	2.6E-07	2.0E-11	NV	6.4E-07	1.5E-06	2.1E-06	2.0E-11	NV	8.7E-08	1.4E-07	2.2E-07
Chrysene	6.3E-11	NV	2.0E-06	4.5E-06	6.5E-06	6.3E-11	NV	2.7E-07	4.3E-07	7.0E-07	4.7E-11	NV	1.5E-06	3.4E-06	4.9E-06	4.7E-11	NV	2.0E-07	3.2E-07	5.2E-07
Dibenzo (a,h) anthracene	3.8E-07	NV	2.0E-05	4.6E-05	6.7E-05	3.8E-07	NV	2.7E-06	4.3E-06	7.5E-06	1.4E-07	NV	7.4E-06	1.7E-05	2.5E-05	1.4E-07	NV	1.0E-06	1.6E-06	2.7E-06
Fluoranthene	7.5E-11	NV	2.4E-06	5.5E-06	7.8E-06	7.5E-11	NV	3.2E-07	5.1E-07	8.4E-07	5.7E-11	NV	1.8E-06	4.1E-06	5.9E-06	5.7E-11	NV	2.4E-07	3.8E-07	6.3E-07
Fluorene	1.8E-12	2.9E-09	5.7E-08	1.3E-07	1.9E-07	1.8E-12	2.9E-09	7.7E-09	1.2E-08	2.3E-08	1.4E-12	2.9E-09	4.3E-08	9.9E-08	1.5E-07	1.4E-12	2.9E-09	5.9E-09	9.3E-09	1.8E-08
Indeno (1,2,3-cd) pyrene	3.0E-11	NV	9.4E-07	2.2E-06	3.1E-06	3.0E-11	NV	1.3E-07	2.0E-07	3.3E-07	1.2E-11	NV	3.8E-07	8.7E-07	1.2E-06	1.2E-11	NV	5.1E-08	8.1E-08	1.3E-07
Naphthalene	1.1E-10	1.0E-06	1.3E-07	2.9E-07	1.4E-06	1.1E-10	1.0E-06	1.7E-08	2.7E-08	1.1E-06	8.1E-11	1.0E-06	9.6E-08	2.2E-07	1.3E-06	8.1E-11	1.0E-06	1.3E-08	2.1E-08	1.0E-06
Phenanthrene	5.2E-12	NV	1.6E-07	3.7E-07	5.4E-07	5.2E-12	NV	2.2E-08	3.5E-08	5.7E-08	1.9E-12	NV	6.1E-08	1.4E-07	2.0E-07	1.9E-12	NV	8.3E-09	1.3E-08	2.1E-08
Pyrene	8.9E-11	1.2E-08	2.8E-06	6.5E-06	9.3E-06	8.9E-11	1.2E-08	3.8E-07	6.1E-07	1.0E-06	7.1E-11	1.2E-08	2.2E-06	5.2E-06	7.4E-06	7.1E-11	1.2E-08	3.1E-07	4.8E-07	8.0E-07
B(a)P Equivalent	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Pesticides																				
4,4-DDE	9.8E-11	6.4E-08	1.0E-06	7.1E-06	8.2E-06	9.8E-11	6.4E-08	1.4E-07	6.7E-07	8.7E-07	9.8E-11	6.4E-08	1.0E-06	7.1E-06	8.2E-06	9.8E-11	6.4E-08	1.4E-07	6.7E-07	8.7E-07
alpha-Chlordane	5.5E-10	NV	2.0E-06	1.4E-05	1.6E-05	5.5E-10	NV	2.8E-07	1.3E-06	1.6E-06	5.5E-10	NV	2.0E-06	1.4E-05	1.6E-05	5.5E-10	NV	2.8E-07	1.3E-06	1.6E-06
Dieldrin	1.1E-09	NV	1.1E-05	7.8E-05	9.0E-05	1.1E-09	NV	1.6E-06	7.3E-06	8.9E-06	1.1E-09	NV	1.1E-05	7.8E-05	9.0E-05	1.1E-09	NV	1.6E-06	7.3E-06	8.9E-06
gamma-Chlordane	6.0E-10	NV	2.2E-06	1.5E-05	1.7E-05	6.0E-10	NV	3.0E-07	1.4E-06	1.7E-06	6.0E-10	NV	2.2E-06	1.5E-05	1.7E-05	6.0E-10	NV	3.0E-07	1.4E-06	1.7E-06

Table AOC11-B1.4b
Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Polychlorinated Biphenyls																				
Total PCBs	1.8E-07	1.1E-04	5.6E-03	1.3E-02	1.9E-02	1.8E-07	1.1E-04	7.7E-04	1.2E-03	2.1E-03	1.6E-07	1.1E-04	4.9E-03	1.1E-02	1.6E-02	1.6E-07	1.1E-04	6.7E-04	1.1E-03	1.8E-03
Total Petroleum Hydrocarbons																				
TPH as diesel	3.1E-09	7.2E-03	2.3E-04	7.8E-04	8.2E-03	3.1E-09	7.2E-03	3.1E-05	7.3E-05	7.3E-03	3.8E-09	7.2E-03	2.7E-04	9.4E-04	8.4E-03	3.8E-09	7.2E-03	3.7E-05	8.9E-05	7.3E-03
TPH as motor oil	1.3E-08	NV	2.7E-04	9.4E-04	1.2E-03	1.3E-08	NV	3.7E-05	8.8E-05	1.3E-04	1.4E-08	NV	2.9E-04	1.0E-03	1.3E-03	1.4E-08	NV	3.9E-05	9.4E-05	1.3E-04
Dioxins/Furans																				
TEQ Human	6.5E-08	9.7E-05	5.8E-03	6.7E-02	7.3E-02	6.5E-08	9.7E-05	7.9E-04	6.3E-03	7.2E-03	1.8E-07	9.7E-05	1.6E-02	1.9E-01	2.0E-01	1.8E-07	9.7E-05	2.2E-03	1.7E-02	2.0E-02
Total Hazard Index	**4E-05**	**7E-03**	**9E-02**	**1E+00**	**1E+00**	**4E-05**	**7E-03**	**1E-02**	**9E-02**	**1E-01**	**3E-05**	**7E-03**	**1E-01**	**1E+00**	**1E+00**	**3E-05**	**7E-03**	**1E-02**	**1E-01**	**1E-01**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
H I = Hazard Index
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.4c
Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Inorganics																					
Arsenic	1.1E-03	NV	1.4E-01	6.2E-02	2.0E-01	1.1E-03	NV	1.2E-01	2.6E-02	1.5E-01	1.1E-03	NV	1.4E-01	6.1E-02	2.0E-01	1.1E-03	NV	1.2E-01	2.5E-02	1.4E-01
Chromium, Hexavalent	3.5E-05	NV	NA	1.5E-05	5.0E-05	3.5E-05	NV	NA	6.1E-06	4.1E-05	3.6E-05	NV	NA	1.5E-05	5.1E-05	3.6E-05	NV	NA	6.3E-06	4.2E-05
Chromium, total	2.1E-03	NV	7.9E-07	1.1E-06	2.1E-03	2.1E-03	NV	6.8E-07	4.4E-07	2.1E-03	1.8E-03	NV	6.7E-07	8.9E-07	1.8E-03	1.8E-03	NV	5.7E-07	3.7E-07	1.8E-03
Copper	2.7E-07	NV	1.0E-05	1.4E-05	2.5E-05	2.7E-07	NV	9.0E-06	5.8E-06	1.5E-05	2.8E-07	NV	1.1E-05	1.4E-05	2.5E-05	2.8E-07	NV	9.2E-06	5.9E-06	1.5E-05
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	1.9E-05	NV	3.5E-05	4.6E-05	1.0E-04	1.9E-05	NV	3.0E-05	1.9E-05	6.8E-05	1.9E-05	NV	3.5E-05	4.6E-05	1.0E-04	1.9E-05	NV	3.0E-05	1.9E-05	6.8E-05
Zinc	4.9E-07	NV	1.8E-05	2.5E-05	4.4E-05	4.9E-07	NV	1.6E-05	1.0E-05	2.7E-05	3.8E-07	NV	1.4E-05	1.9E-05	3.4E-05	3.8E-07	NV	1.2E-05	8.0E-06	2.1E-05
Volatile Organic Compounds																				
Methyl acetate	NS	1.1E-09	NS	NS	1.1E-09	NS	1.1E-09	NS	NS	1.1E-09	1.4E-11	1.1E-09	5.2E-09	7.0E-10	7.1E-09	1.4E-11	1.1E-09	4.5E-09	2.9E-10	5.9E-09
Polycyclic Aromatic Hydrocarbons																				
1-Methyl naphthalene	ND	1.6E-09	ND	ND	1.6E-09	ND	1.6E-09	ND	ND	1.6E-09	7.4E-11	1.6E-09	4.2E-08	3.7E-09	4.7E-08	7.4E-11	1.6E-09	3.6E-08	1.5E-09	3.9E-08
2-Methyl naphthalene	7.0E-10	7.8E-09	4.0E-07	3.6E-08	4.5E-07	7.0E-10	7.8E-09	3.4E-07	1.5E-08	3.7E-07	6.9E-10	7.8E-09	3.9E-07	3.5E-08	4.4E-07	6.9E-10	7.8E-09	3.4E-07	1.4E-08	3.6E-07
Acenaphthene	1.5E-10	2.7E-10	8.5E-08	7.5E-09	9.3E-08	1.5E-10	2.7E-10	7.3E-08	3.1E-09	7.6E-08	1.1E-10	2.7E-10	6.3E-08	5.6E-09	6.9E-08	1.1E-10	2.7E-10	5.4E-08	2.3E-09	5.7E-08
Acenaphthylene	1.2E-10	NV	7.1E-08	6.3E-09	7.7E-08	1.2E-10	NV	6.1E-08	2.6E-09	6.4E-08	9.4E-11	NV	5.4E-08	4.8E-09	5.9E-08	9.4E-11	NV	4.6E-08	2.0E-09	4.8E-08
Anthracene	1.5E-11	1.1E-11	8.5E-09	7.6E-10	9.3E-09	1.5E-11	1.1E-11	7.3E-09	3.1E-10	7.7E-09	1.3E-11	1.1E-11	7.2E-09	6.4E-10	7.9E-09	1.3E-11	1.1E-11	6.2E-09	2.6E-10	6.5E-09
Benzo (a) anthracene	6.1E-09	2.5E-10	3.5E-06	3.1E-07	3.8E-06	6.1E-09	2.5E-10	3.0E-06	1.3E-07	3.1E-06	2.5E-09	2.5E-10	1.4E-06	1.3E-07	1.5E-06	2.5E-09	2.5E-10	1.2E-06	5.2E-08	1.3E-06
Benzo (a) pyrene	2.9E-04	NV	2.8E-04	2.5E-05	5.9E-04	2.9E-04	NV	2.4E-04	1.0E-05	5.4E-04	2.2E-04	NV	2.1E-04	1.9E-05	4.6E-04	2.2E-04	NV	1.8E-04	7.9E-06	4.2E-04
Benzo (b) fluoranthene	9.2E-09	NV	5.3E-06	4.7E-07	5.7E-06	9.2E-09	NV	4.5E-06	1.9E-07	4.7E-06	7.0E-09	NV	4.0E-06	3.6E-07	4.4E-06	7.0E-09	NV	3.4E-06	1.5E-07	3.6E-06
Benzo (ghi) perylene	2.9E-09	NV	1.7E-06	1.5E-07	1.8E-06	2.9E-09	NV	1.4E-06	6.1E-08	1.5E-06	1.4E-09	NV	8.1E-07	7.2E-08	8.8E-07	1.4E-09	NV	6.9E-07	3.0E-08	7.2E-07
Benzo (k) fluoranthene	2.3E-09	NV	1.3E-06	1.2E-07	1.5E-06	2.3E-09	NV	1.1E-06	4.9E-08	1.2E-06	2.0E-09	NV	1.2E-06	1.0E-07	1.3E-06	2.0E-09	NV	9.9E-07	4.2E-08	1.0E-06
Chrysene	6.3E-09	NV	3.6E-06	3.2E-07	3.9E-06	6.3E-09	NV	3.1E-06	1.3E-07	3.2E-06	4.7E-09	NV	2.7E-06	2.4E-07	2.9E-06	4.7E-09	NV	2.3E-06	9.9E-08	2.4E-06
Dibenzo (a,h) anthracene	3.8E-05	NV	3.7E-05	3.2E-06	7.8E-05	3.8E-05	NV	3.1E-05	1.3E-06	7.1E-05	1.4E-05	NV	1.3E-05	1.2E-06	2.9E-05	1.4E-05	NV	1.2E-05	4.9E-07	2.6E-05
Fluoranthene	7.6E-09	NV	4.3E-06	3.8E-07	4.7E-06	7.6E-09	NV	3.7E-06	1.6E-07	3.9E-06	5.7E-09	NV	3.2E-06	2.9E-07	3.5E-06	5.7E-09	NV	2.8E-06	1.2E-07	2.9E-06
Fluorene	1.8E-10	1.8E-10	1.0E-07	9.1E-09	1.1E-07	1.8E-10	1.8E-10	8.8E-08	3.8E-09	9.2E-08	1.4E-10	1.8E-10	7.8E-08	7.0E-09	8.6E-08	1.4E-10	1.8E-10	6.7E-08	2.9E-09	7.0E-08
Indeno (1,2,3-cd) pyrene	3.0E-09	NV	1.7E-06	1.5E-07	1.9E-06	3.0E-09	NV	1.5E-06	6.3E-08	1.5E-06	1.2E-09	NV	6.9E-07	6.1E-08	7.5E-07	1.2E-09	NV	5.9E-07	2.5E-08	6.1E-07
Naphthalene	1.1E-08	6.3E-08	2.3E-07	2.1E-08	3.3E-07	1.1E-08	6.3E-08	2.0E-07	8.5E-09	2.8E-07	8.1E-09	6.3E-08	1.7E-07	1.5E-08	2.6E-07	8.1E-09	6.3E-08	1.5E-07	6.4E-09	2.3E-07
Phenanthrene	5.2E-10	NV	3.0E-07	2.6E-08	3.2E-07	5.2E-10	NV	2.5E-07	1.1E-08	2.7E-07	1.9E-10	NV	1.1E-07	9.8E-09	1.2E-07	1.9E-10	NV	9.5E-08	4.0E-09	9.9E-08
Pyrene	8.9E-09	7.5E-10	5.1E-06	4.5E-07	5.6E-06	8.9E-09	7.5E-10	4.4E-06	1.9E-07	4.6E-06	7.1E-09	7.5E-10	4.1E-06	3.6E-07	4.5E-06	7.1E-09	7.5E-10	3.5E-06	1.5E-07	3.7E-06
B(a)P Equivalent	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Pesticides																				
4,4-DDE	9.9E-09	4.0E-09	1.9E-06	5.0E-07	2.4E-06	9.9E-09	4.0E-09	1.6E-06	2.1E-07	1.8E-06	9.9E-09	4.0E-09	1.9E-06	5.0E-07	2.4E-06	9.9E-09	4.0E-09	1.6E-06	2.1E-07	1.8E-06
alpha-Chlordane	5.5E-08	NV	3.7E-06	9.9E-07	4.7E-06	5.5E-08	NV	3.2E-06	4.1E-07	3.6E-06	5.5E-08	NV	3.7E-06	9.9E-07	4.7E-06	5.5E-08	NV	3.2E-06	4.1E-07	3.6E-06
Dieldrin	1.1E-07	NV	2.1E-05	5.5E-06	2.6E-05	1.1E-07	NV	1.8E-05	2.3E-06	2.0E-05	1.1E-07	NV	2.1E-05	5.5E-06	2.6E-05	1.1E-07	NV	1.8E-05	2.3E-06	2.0E-05
gamma-Chlordane	6.0E-08	NV	4.0E-06	1.1E-06	5.1E-06	6.0E-08	NV	3.4E-06	4.4E-07	3.9E-06	6.0E-08	NV	4.0E-06	1.1E-06	5.1E-06	6.0E-08	NV	3.4E-06	4.4E-07	3.9E-06

Table AOC11-B1.4c
Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Depth-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Polychlorinated Biphenyls																				
Total PCBs	1.8E-05	6.6E-06	1.0E-02	9.1E-04	1.1E-02	1.8E-05	6.6E-06	8.8E-03	3.8E-04	9.2E-03	1.6E-05	6.6E-06	8.9E-03	7.9E-04	9.7E-03	1.6E-05	6.6E-06	7.7E-03	3.3E-04	8.0E-03
Total Petroleum Hydrocarbons																				
TPH as diesel	3.1E-07	4.5E-04	4.1E-04	5.5E-05	9.2E-04	3.1E-07	4.5E-04	3.5E-04	2.3E-05	8.3E-04	3.8E-07	4.5E-04	5.0E-04	6.6E-05	1.0E-03	3.8E-07	4.5E-04	4.3E-04	2.7E-05	9.1E-04
TPH as motor oil	1.3E-06	NV	5.0E-04	6.6E-05	5.6E-04	1.3E-06	NV	4.2E-04	2.7E-05	4.5E-04	1.4E-06	NV	5.3E-04	7.0E-05	6.0E-04	1.4E-06	NV	4.5E-04	2.9E-05	4.8E-04
Dioxins/Furans																				
TEQ Human	6.5E-06	6.0E-06	1.1E-02	4.7E-03	1.5E-02	6.5E-06	6.0E-06	9.1E-03	1.9E-03	1.1E-02	1.8E-05	6.0E-06	2.9E-02	1.3E-02	4.2E-02	1.8E-05	6.0E-06	2.5E-02	5.4E-03	3.1E-02
Total Hazard Index	**4E-03**	**5E-04**	**2E-01**	**7E-02**	**2E-01**	**4E-03**	**5E-04**	**1E-01**	**3E-02**	**2E-01**	**3E-03**	**5E-04**	**2E-01**	**8E-02**	**3E-01**	**3E-03**	**5E-04**	**2E-01**	**3E-02**	**2E-01**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
H I = Hazard Index
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B1.5a

Baseline Scenario Risk Evaluation for Lead in AOC 11 Surface Soil (0 to 0.5 foot bgs) Using Depth-Weighted EPCs: Recreational User (Camper)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	23.6
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.006	0.011	0.01	0.02	0.02	2159
BLOOD Pb, PICA CHILD	0.012	0.02	0.03	0.03	0.04	1084

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.25 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	200
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	100
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	6.8
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	2.1E-6	4.9E-05	1%	--	4.9E-05	0.4%
Soil Ingestion	2.5E-4	5.9E-03	99%	5.0E-4	1.2E-02	100%
Inhalation	7.0E-8	1.7E-06	0.03%	--	1.7E-06	0.01%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B1.5b

Baseline Scenario Risk Evaluation for Lead in AOC 11 Shallow Soil (0 to 3 feet bgs) Using Depth-Weighted EPCs: Recreational User (Camper)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	22.3
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.006	0.010	0.01	0.01	0.02	2159
BLOOD Pb, PICA CHILD	0.011	0.02	0.02	0.03	0.03	1084

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.25 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	200
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	100
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	6.8
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	2.1E-6	4.6E-05	1%	--	4.6E-05	0.4%
Soil Ingestion	2.5E-4	5.6E-03	99%	5.0E-4	1.1E-02	100%
Inhalation	7.0E-8	1.6E-06	0.03%	--	1.6E-06	0.01%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B1.5c

Baseline Scenario Risk Evaluation for Lead in AOC 11 Surface Soil (0 to 0.5 foot bgs) Using Depth-Weighted EPCs: Recreational User (Hiker)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	23.6
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.012	0.022	0.03	0.03	0.04	1079
BLOOD Pb, PICA CHILD	0.024	0.04	0.05	0.06	0.07	542

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.5 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	200
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	100
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	6.8
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	4.1E-6	9.8E-05	1%	--	9.8E-05	0.4%
Soil Ingestion	5.0E-4	1.2E-02	99%	1.0E-3	2.4E-02	100%
Inhalation	1.4E-7	3.3E-06	0.03%	--	3.3E-06	0.01%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B1.5d

Baseline Scenario Risk Evaluation for Lead in AOC 11 Shallow Soil (0 to 3 feet bgs) Using Depth-Weighted EPCs: Recreational User (Hiker)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	22.3
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.011	0.021	0.02	0.03	0.03	1079
BLOOD Pb, PICA CHILD	0.023	0.04	0.05	0.06	0.07	542

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.5 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	200
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	100
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	6.8
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	4.1E-6	9.2E-05	1%	--	9.2E-05	0.4%
Soil Ingestion	5.0E-4	1.1E-02	99%	1.0E-3	2.2E-02	100%
Inhalation	1.4E-7	3.1E-06	0.03%	--	3.1E-06	0.01%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B1.5e

Baseline Scenario Risk Evaluation for Lead in AOC 11 Surface Soil (0 to 0.5 foot bgs) Using Depth-Weighted EPCs: Recreational User (Off-Highway Vehicle Rider)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Click here for ABBREVIATED INSTRUCTIONS FOR LEADSPREAD 8

INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	23.6
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.004	0.007	0.01	0.01	0.01	3180
BLOOD Pb, PICA CHILD	0.024	0.04	0.05	0.06	0.07	535

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.5 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	800
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	31
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	0.425
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	1.7E-5	3.9E-04	10%	--	3.9E-04	1.6%
Soil Ingestion	1.6E-4	3.7E-03	90%	1.0E-3	2.4E-02	98%
Inhalation	8.7E-9	2.1E-07	0.01%	--	2.1E-07	0.00%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B1.5f
Baseline Scenario Risk Evaluation for Lead in AOC 11 Shallow Soil (0 to 3 feet bgs) Using Depth-Weighted EPCs:
Recreational User (Off-Highway Vehicle Rider)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Click here for ABBREVIATED INSTRUCTIONS FOR LEADSPREAD 8

INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	22.3
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.004	0.007	0.01	0.01	0.01	3180
BLOOD Pb, PICA CHILD	0.023	0.04	0.05	0.06	0.07	535

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.5 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	800
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	31
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	0.425
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	1.7E-5	3.7E-04	10%	--	3.7E-04	1.6%
Soil Ingestion	1.6E-4	3.5E-03	90%	1.0E-3	2.2E-02	98%
Inhalation	8.7E-9	1.9E-07	0.01%	--	1.9E-07	0.00%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B2.1a

Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics								
Arsenic	3.4E-11	NV	1.8E-08	1.9E-07	3.5E-11	NV	1.8E-08	1.9E-07
Chromium, Hexavalent	2.6E-11	NV	NA	2.3E-07	2.6E-11	NV	NA	2.3E-07
Chromium, total	NC	NV	NC	NC	NC	NV	NC	NC
Copper	NC	NV	NC	NC	NC	NV	NC	NC
Lead	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	NC	NC	NC	NC
Zinc	NC	NV	NC	NC	NC	NV	NC	NC
Volatile Organic Compounds								
Methyl acetate	NS	NV	NS	NS	NC	NV	NC	NC
Polycyclic Aromatic Hydrocarbons								
1-Methyl naphthalene	ND	1.3E-09	ND	ND	3.8E-14	1.3E-09	1.0E-10	2.1E-10
2-Methyl naphthalene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthylene	NC	NV	NC	NC	NC	NV	NC	NC
Anthracene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (a) anthracene	NA	1.4E-10	NA	NA	NA	1.4E-10	NA	NA
Benzo (a) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (b) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (ghi) perylene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (k) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Chrysene	NA	NV	NA	NA	NA	NV	NA	NA
Dibenzo (a,h) anthracene	NA	NV	NA	NA	NA	NV	NA	NA
Fluoranthene	NC	NV	NC	NC	NC	NV	NC	NC
Fluorene	NC	NV	NC	NC	NC	NV	NC	NC
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Naphthalene	6.0E-14	5.6E-10	1.6E-10	3.3E-10	4.5E-14	5.6E-10	1.2E-10	2.5E-10
Phenanthrene	NC	NV	NC	NC	NC	NV	NC	NC
Pyrene	NC	NV	NC	NC	NC	NV	NC	NC
B(a)P Equivalent	3.5E-12	NV	1.4E-08	3.2E-08	2.6E-12	NV	1.0E-08	2.3E-08
Pesticides								
4,4-DDE	3.7E-14	2.4E-11	3.2E-11	2.0E-10	3.7E-14	2.4E-11	3.2E-11	2.0E-10
alpha-Chlordane	7.2E-14	NV	6.3E-11	3.9E-10	7.2E-14	NV	6.3E-11	3.9E-10
Dieldrin	4.0E-14	NV	3.5E-11	2.2E-10	4.0E-14	NV	3.5E-11	2.2E-10
gamma-Chlordane	7.8E-14	NV	6.9E-11	4.3E-10	7.8E-14	NV	6.9E-11	4.3E-10

Table AOC11-B2.1a

Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls								
Total PCBs	1.4E-12	1.1E-09	3.7E-09	7.6E-09	1.2E-12	1.1E-09	3.3E-09	6.8E-09
Total Petroleum Hydrocarbons								
TPH as diesel	NC	NC	NC	NC	NC	NC	NC	NC
TPH as motor oil	NC	NC	NC	NC	NC	NC	NC	NC
Dioxins/Furans								
TEQ Human	3.9E-16	3.8E-13	2.0E-13	2.1E-12	3.8E-16	3.8E-13	2.0E-13	2.1E-12

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
mg/kg-day = milligrams per kilogram per day.
mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.1b

Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics								
Arsenic	6.9E-11	NV	3.6E-08	3.8E-07	6.9E-11	NV	3.7E-08	3.8E-07
Chromium, Hexavalent	5.2E-11	NV	NA	4.6E-07	5.1E-11	NV	NA	4.6E-07
Chromium, total	NC	NV	NC	NC	NC	NV	NC	NC
Copper	NC	NV	NC	NC	NC	NV	NC	NC
Lead	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	NC	NC	NC	NC
Zinc	NC	NV	NC	NC	NC	NV	NC	NC
Volatile Organic Compounds								
Methyl acetate	NS	NV	NS	NS	NC	NV	NC	NC
Polycyclic Aromatic Hydrocarbons								
1-Methyl naphthalene	ND	2.6E-09	ND	ND	7.6E-14	2.6E-09	2.0E-10	4.2E-10
2-Methyl naphthalene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthylene	NC	NV	NC	NC	NC	NV	NC	NC
Anthracene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (a) anthracene	NA	2.7E-10	NA	NA	NA	2.7E-10	NA	NA
Benzo (a) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (b) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (ghi) perylene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (k) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Chrysene	NA	NV	NA	NA	NA	NV	NA	NA
Dibenzo (a,h) anthracene	NA	NV	NA	NA	NA	NV	NA	NA
Fluoranthene	NC	NV	NC	NC	NC	NV	NC	NC
Fluorene	NC	NV	NC	NC	NC	NV	NC	NC
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Naphthalene	1.2E-13	1.1E-09	3.2E-10	6.6E-10	9.0E-14	1.1E-09	2.4E-10	5.0E-10
Phenanthrene	NC	NV	NC	NC	NC	NV	NC	NC
Pyrene	NC	NV	NC	NC	NC	NV	NC	NC
B(a)P Equivalent	7.1E-12	NV	2.9E-08	6.4E-08	5.1E-12	NV	2.1E-08	4.6E-08
Pesticides								
4,4-DDE	7.3E-14	4.8E-11	6.4E-11	4.0E-10	7.3E-14	4.8E-11	6.4E-11	4.0E-10
alpha-Chlordane	1.4E-13	NV	1.3E-10	7.9E-10	1.4E-13	NV	1.3E-10	7.9E-10
Dieldrin	8.0E-14	NV	7.1E-11	4.4E-10	8.0E-14	NV	7.1E-11	4.4E-10
gamma-Chlordane	1.6E-13	NV	1.4E-10	8.5E-10	1.6E-13	NV	1.4E-10	8.5E-10

Table AOC11-B2.1b

Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls								
Total PCBs	2.8E-12	2.3E-09	7.3E-09	1.5E-08	2.5E-12	2.3E-09	6.5E-09	1.4E-08
Total Petroleum Hydrocarbons								
TPH as diesel	NC	NC	NC	NC	NC	NC	NC	NC
TPH as motor oil	NC	NC	NC	NC	NC	NC	NC	NC
Dioxins/Furans								
TEQ Human	7.7E-16	7.6E-13	4.1E-13	4.2E-12	7.6E-16	7.6E-13	4.0E-13	4.2E-12

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
mg/kg-day = milligrams per kilogram per day.
mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.1c

Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics								
Arsenic	6.9E-09	NV	1.8E-07	4.8E-08	6.9E-09	NV	1.8E-07	4.8E-08
Chromium, Hexavalent	3.3E-09	NV	NA	2.7E-08	3.3E-09	NV	NA	2.7E-08
Chromium, total	NC	NV	NC	NC	NC	NV	NC	NC
Copper	NC	NV	NC	NC	NC	NV	NC	NC
Lead	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	NC	NC	NC	NC
Zinc	NC	NV	NC	NC	NC	NV	NC	NC
Volatile Organic Compounds								
Methyl acetate	NS	NV	NS	NS	NC	NV	NC	NC
Polycyclic Aromatic Hydrocarbons								
1-Methyl naphthalene	ND	1.6E-10	ND	ND	7.7E-12	1.6E-10	9.7E-10	5.3E-11
2-Methyl naphthalene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthene	NC	NV	NC	NC	NC	NV	NC	NC
Acenaphthylene	NC	NV	NC	NC	NC	NV	NC	NC
Anthracene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (a) anthracene	NA	1.1E-11	NA	NA	NA	1.1E-11	NA	NA
Benzo (a) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (b) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Benzo (ghi) perylene	NC	NV	NC	NC	NC	NV	NC	NC
Benzo (k) fluoranthene	NA	NV	NA	NA	NA	NV	NA	NA
Chrysene	NA	NV	NA	NA	NA	NV	NA	NA
Dibenzo (a,h) anthracene	NA	NV	NA	NA	NA	NV	NA	NA
Fluoranthene	NC	NV	NC	NC	NC	NV	NC	NC
Fluorene	NC	NV	NC	NC	NC	NV	NC	NC
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	NA	NV	NA	NA
Naphthalene	1.2E-11	7.0E-11	1.5E-09	8.4E-11	9.0E-12	7.0E-11	1.2E-09	6.3E-11
Phenanthrene	NC	NV	NC	NC	NC	NV	NC	NC
Pyrene	NC	NV	NC	NC	NC	NV	NC	NC
B(a)P Equivalent	4.5E-10	NV	5.9E-08	3.7E-09	3.3E-10	NV	4.3E-08	2.7E-09
Pesticides								
4,4-DDE	7.3E-12	3.0E-12	3.1E-10	5.1E-11	7.3E-12	3.0E-12	3.1E-10	5.1E-11
alpha-Chlordane	1.4E-11	NV	6.1E-10	1.0E-10	1.4E-11	NV	6.1E-10	1.0E-10
Dieldrin	8.0E-12	NV	3.4E-10	5.6E-11	8.0E-12	NV	3.4E-10	5.6E-11
gamma-Chlordane	1.6E-11	NV	6.6E-10	1.1E-10	1.6E-11	NV	6.6E-10	1.1E-10

Table AOC11-B2.1c

Baseline Scenario Exposure Concentration and Dose Calculations for Carcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls								
Total PCBs	2.8E-10	1.4E-10	3.5E-08	1.9E-09	2.5E-10	1.4E-10	3.2E-08	1.7E-09
Total Petroleum Hydrocarbons								
TPH as diesel	NC	NC	NC	NC	NC	NC	NC	NC
TPH as motor oil	NC	NC	NC	NC	NC	NC	NC	NC
Dioxins/Furans								
TEQ Human	7.7E-14	4.8E-14	2.0E-12	5.4E-13	7.6E-14	4.8E-14	1.9E-12	5.3E-13

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
mg/kg-day = milligrams per kilogram per day.
mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.2a

Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics																
Arsenic	9.2E-11	NV	1.5E-07	1.7E-06	9.2E-11	NV	2.0E-08	1.6E-07	9.3E-11	NV	1.5E-07	1.7E-06	9.3E-11	NV	2.0E-08	1.6E-07
Chromium, Hexavalent	2.5E-11	NV	NA	4.5E-07	2.5E-11	NV	NA	4.3E-08	2.5E-11	NV	NA	4.5E-07	2.5E-11	NV	NA	4.2E-08
Chromium, total	7.4E-10	NV	3.9E-07	1.3E-05	7.4E-10	NV	5.3E-08	1.3E-06	7.3E-10	NV	3.9E-07	1.3E-05	7.3E-10	NV	5.3E-08	1.2E-06
Copper	2.0E-10	NV	1.0E-07	3.6E-06	2.0E-10	NV	1.4E-08	3.4E-07	2.0E-10	NV	1.1E-07	3.7E-06	2.0E-10	NV	1.4E-08	3.4E-07
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	2.9E-12	NV	1.5E-09	5.3E-08	2.9E-12	NV	2.1E-10	4.9E-09	2.9E-12	NV	1.5E-09	5.3E-08	2.9E-12	NV	2.1E-10	4.9E-09
Zinc	1.8E-09	NV	9.5E-07	3.3E-05	1.8E-09	NV	1.3E-07	3.1E-06	1.2E-09	NV	6.4E-07	2.2E-05	1.2E-09	NV	8.7E-08	2.1E-06
Volatile Organic Compounds																
Methyl acetate	NS	3.6E-08	NS	NS	NS	3.6E-08	NS	NS	2.7E-13	3.6E-08	1.4E-09	5.0E-09	2.7E-13	3.6E-08	2.0E-10	4.7E-10
Polycyclic Aromatic Hydrocarbons																
1-Methyl naphthalene	ND	3.6E-09	ND	ND	ND	3.6E-09	ND	ND	1.0E-13	3.6E-09	8.1E-10	1.9E-09	1.0E-13	3.6E-09	1.1E-10	1.7E-10
2-Methyl naphthalene	1.7E-13	2.2E-09	1.3E-09	3.1E-09	1.7E-13	2.2E-09	1.8E-10	2.9E-10	1.6E-13	2.2E-09	1.3E-09	2.9E-09	1.6E-13	2.2E-09	1.7E-10	2.7E-10
Acenaphthene	1.8E-13	5.1E-10	1.4E-09	3.2E-09	1.8E-13	5.1E-10	1.9E-10	3.0E-10	1.3E-13	5.1E-10	1.0E-09	2.4E-09	1.3E-13	5.1E-10	1.4E-10	2.2E-10
Acenaphthylene	1.5E-13	NV	1.2E-09	2.7E-09	1.5E-13	NV	1.6E-10	2.5E-10	1.1E-13	NV	8.9E-10	2.0E-09	1.1E-13	NV	1.2E-10	1.9E-10
Anthracene	8.8E-14	1.1E-10	6.9E-10	1.6E-09	8.8E-14	1.1E-10	9.4E-11	1.5E-10	7.5E-14	1.1E-10	5.9E-10	1.4E-09	7.5E-14	1.1E-10	8.1E-11	1.3E-10
Benzo (a) anthracene	2.1E-12	1.3E-10	1.6E-08	3.8E-08	2.1E-12	1.3E-10	2.2E-09	3.5E-09	1.4E-12	1.3E-10	1.1E-08	2.5E-08	1.4E-12	1.3E-10	1.5E-09	2.4E-09
Benzo (a) pyrene	2.4E-12	NV	1.9E-08	4.3E-08	2.4E-12	NV	2.6E-09	4.0E-09	1.7E-12	NV	1.3E-08	3.0E-08	1.7E-12	NV	1.8E-09	2.8E-09
Benzo (b) fluoranthene	3.8E-12	NV	3.0E-08	6.9E-08	3.8E-12	NV	4.1E-09	6.5E-09	2.7E-12	NV	2.1E-08	4.9E-08	2.7E-12	NV	2.9E-09	4.6E-09
Benzo (ghi) perylene	1.2E-12	NV	9.1E-09	2.1E-08	1.2E-12	NV	1.2E-09	2.0E-09	8.6E-13	NV	6.8E-09	1.6E-08	8.6E-13	NV	9.2E-10	1.5E-09
Benzo (k) fluoranthene	1.4E-12	NV	1.1E-08	2.5E-08	1.4E-12	NV	1.5E-09	2.4E-09	9.8E-13	NV	7.7E-09	1.8E-08	9.8E-13	NV	1.1E-09	1.7E-09
Chrysene	3.3E-12	NV	2.6E-08	5.9E-08	3.3E-12	NV	3.5E-09	5.6E-09	2.2E-12	NV	1.8E-08	4.1E-08	2.2E-12	NV	2.4E-09	3.8E-09
Dibenzo (a,h) anthracene	4.5E-13	NV	3.5E-09	8.1E-09	4.5E-13	NV	4.8E-10	7.6E-10	3.3E-13	NV	2.6E-09	6.0E-09	3.3E-13	NV	3.5E-10	5.6E-10
Fluoranthene	5.2E-12	NV	4.1E-08	9.4E-08	5.2E-12	NV	5.6E-09	8.8E-09	3.7E-12	NV	2.9E-08	6.7E-08	3.7E-12	NV	4.0E-09	6.3E-09
Fluorene	1.4E-13	2.3E-10	1.1E-09	2.6E-09	1.4E-13	2.3E-10	1.5E-10	2.4E-10	1.1E-13	2.3E-10	8.6E-10	2.0E-09	1.1E-13	2.3E-10	1.2E-10	1.9E-10
Indeno (1,2,3-cd) pyrene	1.2E-12	NV	9.2E-09	2.1E-08	1.2E-12	NV	1.3E-09	2.0E-09	8.5E-13	NV	6.7E-09	1.5E-08	8.5E-13	NV	9.1E-10	1.4E-09
Naphthalene	1.6E-13	1.5E-09	1.3E-09	2.9E-09	1.6E-13	1.5E-09	1.7E-10	2.7E-10	1.2E-13	1.5E-09	9.6E-10	2.2E-09	1.2E-13	1.5E-09	1.3E-10	2.1E-10
Phenanthrene	1.8E-12	NV	1.4E-08	3.3E-08	1.8E-12	NV	2.0E-09	3.1E-09	1.2E-12	NV	9.5E-09	2.2E-08	1.2E-12	NV	1.3E-09	2.1E-09
Pyrene	4.8E-12	5.3E-10	3.8E-08	8.7E-08	4.8E-12	5.3E-10	5.1E-09	8.1E-09	3.3E-12	5.3E-10	2.6E-08	5.9E-08	3.3E-12	5.3E-10	3.5E-09	5.6E-09
B(a)P Equivalent	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA
Pesticides																
4,4-DDE	9.8E-14	6.4E-11	2.6E-10	1.8E-09	9.8E-14	6.4E-11	3.5E-11	1.7E-10	9.8E-14	6.4E-11	2.6E-10	1.8E-09	9.8E-14	6.4E-11	3.5E-11	1.7E-10
alpha-Chlordane	1.9E-13	NV	5.1E-10	3.5E-09	1.9E-13	NV	6.9E-11	3.3E-10	1.9E-13	NV	5.1E-10	3.5E-09	1.9E-13	NV	6.9E-11	3.3E-10
Dieldrin	1.1E-13	NV	2.8E-10	2.0E-09	1.1E-13	NV	3.9E-11	1.8E-10	1.1E-13	NV	2.8E-10	2.0E-09	1.1E-13	NV	3.9E-11	1.8E-10
gamma-Chlordane	2.1E-13	NV	5.5E-10	3.8E-09	2.1E-13	NV	7.5E-11	3.6E-10	2.1E-13	NV	5.5E-10	3.8E-09	2.1E-13	NV	7.5E-11	3.6E-10

Table AOC11-B2.2a

Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls																
Total PCBs	3.7E-12	3.0E-09	2.9E-08	6.8E-08	3.7E-12	3.0E-09	4.0E-09	6.3E-09	3.3E-12	3.0E-09	2.6E-08	6.0E-08	3.3E-12	3.0E-09	3.6E-09	5.6E-09
Total Petroleum Hydrocarbons																
TPH as diesel	8.2E-10	3.9E-04	4.3E-06	1.5E-05	8.2E-10	3.9E-04	5.9E-07	1.4E-06	8.8E-10	3.9E-04	4.6E-06	1.6E-05	8.8E-10	3.9E-04	6.3E-07	1.5E-06
TPH as motor oil	1.8E-09	NV	9.2E-06	3.2E-05	1.8E-09	NV	1.3E-06	3.0E-06	1.7E-09	NV	9.1E-06	3.1E-05	1.7E-09	NV	1.2E-06	2.9E-06
Dioxins/Furans																
TEQ Human	1.0E-15	1.0E-12	1.6E-12	1.9E-11	1.0E-15	1.0E-12	2.2E-13	1.8E-12	1.0E-15	1.0E-12	1.6E-12	1.9E-11	1.0E-15	1.0E-12	2.2E-13	1.7E-12

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
mg/kg-day = milligrams per kilogram per day.
mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.

ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.2b

Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics																
Arsenic	1.8E-10	NV	2.9E-07	3.3E-06	1.8E-10	NV	4.0E-08	3.1E-07	1.9E-10	NV	2.9E-07	3.4E-06	1.9E-10	NV	4.0E-08	3.2E-07
Chromium, Hexavalent	5.0E-11	NV	NA	9.1E-07	5.0E-11	NV	NA	8.5E-08	5.0E-11	NV	NA	9.0E-07	5.0E-11	NV	NA	8.5E-08
Chromium, total	1.5E-09	NV	7.7E-07	2.7E-05	1.5E-09	NV	1.1E-07	2.5E-06	1.5E-09	NV	7.7E-07	2.7E-05	1.5E-09	NV	1.1E-07	2.5E-06
Copper	4.0E-10	NV	2.1E-07	7.2E-06	4.0E-10	NV	2.9E-08	6.8E-07	4.0E-10	NV	2.1E-07	7.3E-06	4.0E-10	NV	2.9E-08	6.9E-07
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	5.8E-12	NV	3.1E-09	1.1E-07	5.8E-12	NV	4.2E-10	9.9E-09	5.8E-12	NV	3.1E-09	1.1E-07	5.8E-12	NV	4.2E-10	9.9E-09
Zinc	3.6E-09	NV	1.9E-06	6.5E-05	3.6E-09	NV	2.6E-07	6.1E-06	2.4E-09	NV	1.3E-06	4.4E-05	2.4E-09	NV	1.7E-07	4.1E-06
Volatile Organic Compounds																
Methyl acetate	NS	7.3E-08	NS	NS	NS	7.3E-08	NS	NS	5.5E-13	7.3E-08	2.9E-09	9.9E-09	5.5E-13	7.3E-08	3.9E-10	9.3E-10
Polycyclic Aromatic Hydrocarbons																
1-Methyl naphthalene	ND	7.1E-09	ND	ND	ND	7.1E-09	ND	ND	2.1E-13	7.1E-09	1.6E-09	3.7E-09	2.1E-13	7.1E-09	2.2E-10	3.5E-10
2-Methyl naphthalene	3.4E-13	4.4E-09	2.7E-09	6.2E-09	3.4E-13	4.4E-09	3.7E-10	5.8E-10	3.2E-13	4.4E-09	2.5E-09	5.8E-09	3.2E-13	4.4E-09	3.4E-10	5.4E-10
Acenaphthene	3.5E-13	1.0E-09	2.8E-09	6.4E-09	3.5E-13	1.0E-09	3.8E-10	6.0E-10	2.6E-13	1.0E-09	2.1E-09	4.8E-09	2.6E-13	1.0E-09	2.8E-10	4.5E-10
Acenaphthylene	3.0E-13	NV	2.3E-09	5.4E-09	3.0E-13	NV	3.2E-10	5.0E-10	2.2E-13	NV	1.8E-09	4.1E-09	2.2E-13	NV	2.4E-10	3.8E-10
Anthracene	1.8E-13	2.3E-10	1.4E-09	3.2E-09	1.8E-13	2.3E-10	1.9E-10	3.0E-10	1.5E-13	2.3E-10	1.2E-09	2.7E-09	1.5E-13	2.3E-10	1.6E-10	2.5E-10
Benzo (a) anthracene	4.2E-12	2.6E-10	3.3E-08	7.5E-08	4.2E-12	2.6E-10	4.5E-09	7.1E-09	2.8E-12	2.6E-10	2.2E-08	5.1E-08	2.8E-12	2.6E-10	3.0E-09	4.8E-09
Benzo (a) pyrene	4.7E-12	NV	3.7E-08	8.6E-08	4.7E-12	NV	5.1E-09	8.1E-09	3.4E-12	NV	2.6E-08	6.1E-08	3.4E-12	NV	3.6E-09	5.7E-09
Benzo (b) fluoranthene	7.6E-12	NV	6.0E-08	1.4E-07	7.6E-12	NV	8.2E-09	1.3E-08	5.4E-12	NV	4.2E-08	9.8E-08	5.4E-12	NV	5.8E-09	9.2E-09
Benzo (ghi) perylene	2.3E-12	NV	1.8E-08	4.2E-08	2.3E-12	NV	2.5E-09	3.9E-09	1.7E-12	NV	1.4E-08	3.1E-08	1.7E-12	NV	1.8E-09	2.9E-09
Benzo (k) fluoranthene	2.8E-12	NV	2.2E-08	5.0E-08	2.8E-12	NV	3.0E-09	4.7E-09	2.0E-12	NV	1.5E-08	3.6E-08	2.0E-12	NV	2.1E-09	3.3E-09
Chrysene	6.5E-12	NV	5.2E-08	1.2E-07	6.5E-12	NV	7.0E-09	1.1E-08	4.5E-12	NV	3.5E-08	8.1E-08	4.5E-12	NV	4.8E-09	7.6E-09
Dibenzo (a,h) anthracene	8.9E-13	NV	7.0E-09	1.6E-08	8.9E-13	NV	9.6E-10	1.5E-09	6.6E-13	NV	5.2E-09	1.2E-08	6.6E-13	NV	7.1E-10	1.1E-09
Fluoranthene	1.0E-11	NV	8.2E-08	1.9E-07	1.0E-11	NV	1.1E-08	1.8E-08	7.4E-12	NV	5.8E-08	1.3E-07	7.4E-12	NV	8.0E-09	1.3E-08
Fluorene	2.9E-13	4.6E-10	2.3E-09	5.2E-09	2.9E-13	4.6E-10	3.1E-10	4.9E-10	2.2E-13	4.6E-10	1.7E-09	4.0E-09	2.2E-13	4.6E-10	2.4E-10	3.7E-10
Indeno (1,2,3-cd) pyrene	2.3E-12	NV	1.8E-08	4.2E-08	2.3E-12	NV	2.5E-09	4.0E-09	1.7E-12	NV	1.3E-08	3.1E-08	1.7E-12	NV	1.8E-09	2.9E-09
Naphthalene	3.2E-13	3.0E-09	2.5E-09	5.8E-09	3.2E-13	3.0E-09	3.5E-10	5.5E-10	2.4E-13	3.0E-09	1.9E-09	4.4E-09	2.4E-13	3.0E-09	2.6E-10	4.1E-10
Phenanthrene	3.7E-12	NV	2.9E-08	6.7E-08	3.7E-12	NV	4.0E-09	6.2E-09	2.4E-12	NV	1.9E-08	4.4E-08	2.4E-12	NV	2.6E-09	4.1E-09
Pyrene	9.5E-12	1.1E-09	7.5E-08	1.7E-07	9.5E-12	1.1E-09	1.0E-08	1.6E-08	6.5E-12	1.1E-09	5.2E-08	1.2E-07	6.5E-12	1.1E-09	7.0E-09	1.1E-08
B(a)P Equivalent	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA
Pesticides																
4,4-DDE	2.0E-13	1.3E-10	5.2E-10	3.6E-09	2.0E-13	1.3E-10	7.1E-11	3.3E-10	2.0E-13	1.3E-10	5.2E-10	3.6E-09	2.0E-13	1.3E-10	7.1E-11	3.3E-10
alpha-Chlordane	3.9E-13	NV	1.0E-09	7.0E-09	3.9E-13	NV	1.4E-10	6.6E-10	3.9E-13	NV	1.0E-09	7.0E-09	3.9E-13	NV	1.4E-10	6.6E-10
Dieldrin	2.2E-13	NV	5.7E-10	3.9E-09	2.2E-13	NV	7.8E-11	3.7E-10	2.2E-13	NV	5.7E-10	3.9E-09	2.2E-13	NV	7.8E-11	3.7E-10
gamma-Chlordane	4.2E-13	NV	1.1E-09	7.6E-09	4.2E-13	NV	1.5E-10	7.1E-10	4.2E-13	NV	1.1E-09	7.6E-09	4.2E-13	NV	1.5E-10	7.1E-10

Table AOC11-B2.2b

Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls																
Total PCBs	7.4E-12	6.1E-09	5.9E-08	1.4E-07	7.4E-12	6.1E-09	8.0E-09	1.3E-08	6.6E-12	6.1E-09	5.2E-08	1.2E-07	6.6E-12	6.1E-09	7.1E-09	1.1E-08
Total Petroleum Hydrocarbons																
TPH as diesel	1.6E-09	7.8E-04	8.6E-06	3.0E-05	1.6E-09	7.8E-04	1.2E-06	2.8E-06	1.8E-09	7.8E-04	9.3E-06	3.2E-05	1.8E-09	7.8E-04	1.3E-06	3.0E-06
TPH as motor oil	3.5E-09	NV	1.8E-05	6.4E-05	3.5E-09	NV	2.5E-06	6.0E-06	3.4E-09	NV	1.8E-05	6.3E-05	3.4E-09	NV	2.5E-06	5.9E-06
Dioxins/Furans																
TEQ Human	2.1E-15	2.0E-12	3.3E-12	3.8E-11	2.1E-15	2.0E-12	4.5E-13	3.5E-12	2.0E-15	2.0E-12	3.2E-12	3.7E-11	2.0E-15	2.0E-12	4.4E-13	3.5E-12

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
mg/kg-day = milligrams per kilogram per day.
mg/m^3 = milligrams per cubic meter.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.

ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.2c

Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Inorganics																
Arsenic	1.9E-08	NV	5.3E-07	2.4E-07	1.9E-08	NV	4.5E-07	9.7E-08	1.9E-08	NV	5.3E-07	2.4E-07	1.9E-08	NV	4.6E-07	9.8E-08
Chromium, Hexavalent	5.0E-09	NV	NA	6.4E-08	5.0E-09	NV	NA	2.6E-08	5.0E-09	NV	NA	6.3E-08	5.0E-09	NV	NA	2.6E-08
Chromium, total	1.5E-07	NV	1.4E-06	1.9E-06	1.5E-07	NV	1.2E-06	7.7E-07	1.5E-07	NV	1.4E-06	1.9E-06	1.5E-07	NV	1.2E-06	7.7E-07
Copper	4.0E-08	NV	3.8E-07	5.1E-07	4.0E-08	NV	3.3E-07	2.1E-07	4.0E-08	NV	3.9E-07	5.1E-07	4.0E-08	NV	3.3E-07	2.1E-07
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	5.8E-10	NV	5.5E-09	7.4E-09	5.8E-10	NV	4.8E-09	3.1E-09	5.8E-10	NV	5.5E-09	7.4E-09	5.8E-10	NV	4.8E-09	3.1E-09
Zinc	3.6E-07	NV	3.5E-06	4.6E-06	3.6E-07	NV	3.0E-06	1.9E-06	2.4E-07	NV	2.3E-06	3.1E-06	2.4E-07	NV	2.0E-06	1.3E-06
Volatile Organic Compounds																
Methyl acetate	NS	4.6E-09	NS	NS	NS	4.6E-09	NS	NS	5.5E-11	4.6E-09	5.2E-09	7.0E-10	5.5E-11	4.6E-09	4.5E-09	2.9E-10
Polycyclic Aromatic Hydrocarbons																
1-Methyl naphthalene	ND	4.4E-10	ND	ND	ND	4.4E-10	ND	ND	2.1E-11	4.4E-10	2.9E-09	2.6E-10	2.1E-11	4.4E-10	2.5E-09	1.1E-10
2-Methyl naphthalene	3.4E-11	2.7E-10	4.9E-09	4.4E-10	3.4E-11	2.7E-10	4.2E-09	1.8E-10	3.2E-11	2.7E-10	4.6E-09	4.1E-10	3.2E-11	2.7E-10	3.9E-09	1.7E-10
Acenaphthene	3.6E-11	6.4E-11	5.1E-09	4.5E-10	3.6E-11	6.4E-11	4.4E-09	1.9E-10	2.6E-11	6.4E-11	3.8E-09	3.4E-10	2.6E-11	6.4E-11	3.2E-09	1.4E-10
Acenaphthylene	3.0E-11	NV	4.3E-09	3.8E-10	3.0E-11	NV	3.6E-09	1.6E-10	2.3E-11	NV	3.2E-09	2.9E-10	2.3E-11	NV	2.8E-09	1.2E-10
Anthracene	1.8E-11	1.4E-11	2.5E-09	2.2E-10	1.8E-11	1.4E-11	2.2E-09	9.2E-11	1.5E-11	1.4E-11	2.1E-09	1.9E-10	1.5E-11	1.4E-11	1.8E-09	7.9E-11
Benzo (a) anthracene	4.2E-10	1.6E-11	6.0E-08	5.3E-09	4.2E-10	1.6E-11	5.1E-08	2.2E-09	2.8E-10	1.6E-11	4.0E-08	3.6E-09	2.8E-10	1.6E-11	3.5E-08	1.5E-09
Benzo (a) pyrene	4.8E-10	NV	6.8E-08	6.0E-09	4.8E-10	NV	5.8E-08	2.5E-09	3.4E-10	NV	4.8E-08	4.3E-09	3.4E-10	NV	4.1E-08	1.8E-09
Benzo (b) fluoranthene	7.7E-10	NV	1.1E-07	9.7E-09	7.7E-10	NV	9.4E-08	4.0E-09	5.4E-10	NV	7.7E-08	6.9E-09	5.4E-10	NV	6.6E-08	2.8E-09
Benzo (ghi) perylene	2.3E-10	NV	3.3E-08	2.9E-09	2.3E-10	NV	2.8E-08	1.2E-09	1.7E-10	NV	2.5E-08	2.2E-09	1.7E-10	NV	2.1E-08	9.0E-10
Benzo (k) fluoranthene	2.8E-10	NV	4.0E-08	3.5E-09	2.8E-10	NV	3.4E-08	1.5E-09	2.0E-10	NV	2.8E-08	2.5E-09	2.0E-10	NV	2.4E-08	1.0E-09
Chrysene	6.6E-10	NV	9.4E-08	8.3E-09	6.6E-10	NV	8.1E-08	3.4E-09	4.5E-10	NV	6.4E-08	5.7E-09	4.5E-10	NV	5.5E-08	2.4E-09
Dibenzo (a,h) anthracene	9.0E-11	NV	1.3E-08	1.1E-09	9.0E-11	NV	1.1E-08	4.7E-10	6.6E-11	NV	9.4E-09	8.4E-10	6.6E-11	NV	8.1E-09	3.5E-10
Fluoranthene	1.0E-09	NV	1.5E-07	1.3E-08	1.0E-09	NV	1.3E-07	5.5E-09	7.4E-10	NV	1.1E-07	9.5E-09	7.4E-10	NV	9.1E-08	3.9E-09
Fluorene	2.9E-11	2.9E-11	4.1E-09	3.7E-10	2.9E-11	2.9E-11	3.5E-09	1.5E-10	2.2E-11	2.9E-11	3.1E-09	2.8E-10	2.2E-11	2.9E-11	2.7E-09	1.1E-10
Indeno (1,2,3-cd) pyrene	2.3E-10	NV	3.3E-08	3.0E-09	2.3E-10	NV	2.9E-08	1.2E-09	1.7E-10	NV	2.4E-08	2.2E-09	1.7E-10	NV	2.1E-08	8.9E-10
Naphthalene	3.2E-11	1.9E-10	4.6E-09	4.1E-10	3.2E-11	1.9E-10	4.0E-09	1.7E-10	2.4E-11	1.9E-10	3.5E-09	3.1E-10	2.4E-11	1.9E-10	3.0E-09	1.3E-10
Phenanthrene	3.7E-10	NV	5.3E-08	4.7E-09	3.7E-10	NV	4.5E-08	1.9E-09	2.4E-10	NV	3.5E-08	3.1E-09	2.4E-10	NV	3.0E-08	1.3E-09
Pyrene	9.6E-10	6.6E-11	1.4E-07	1.2E-08	9.6E-10	6.6E-11	1.2E-07	5.0E-09	6.6E-10	6.6E-11	9.4E-08	8.3E-09	6.6E-10	6.6E-11	8.1E-08	3.4E-09
B(a)P Equivalent	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA	NA	NV	NA	NA
Pesticides																
4,4-DDE	2.0E-11	8.0E-12	9.4E-10	2.5E-10	2.0E-11	8.0E-12	8.1E-10	1.0E-10	2.0E-11	8.0E-12	9.4E-10	2.5E-10	2.0E-11	8.0E-12	8.1E-10	1.0E-10
alpha-Chlordane	3.9E-11	NV	1.8E-09	4.9E-10	3.9E-11	NV	1.6E-09	2.0E-10	3.9E-11	NV	1.8E-09	4.9E-10	3.9E-11	NV	1.6E-09	2.0E-10
Dieldrin	2.2E-11	NV	1.0E-09	2.8E-10	2.2E-11	NV	8.9E-10	1.1E-10	2.2E-11	NV	1.0E-09	2.8E-10	2.2E-11	NV	8.9E-10	1.1E-10
gamma-Chlordane	4.2E-11	NV	2.0E-09	5.3E-10	4.2E-11	NV	1.7E-09	2.2E-10	4.2E-11	NV	2.0E-09	5.3E-10	4.2E-11	NV	1.7E-09	2.2E-10

Table AOC11-B2.2c

Baseline Scenario Exposure Concentration and Dose Calculations for Noncarcinogenic Effects for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Particulate Inhalation (mg/m^3)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway EC: Outdoor Vapor Inhalation (mg/m^3)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Dermal Contact (mg/kg-day)	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway CDI: Ingestion (mg/kg-day)
Polychlorinated Biphenyls																
Total PCBs	7.5E-10	3.8E-10	1.1E-07	9.5E-09	7.5E-10	3.8E-10	9.2E-08	3.9E-09	6.7E-10	3.8E-10	9.5E-08	8.5E-09	6.7E-10	3.8E-10	8.2E-08	3.5E-09
Total Petroleum Hydrocarbons																
TPH as diesel	1.6E-07	4.9E-05	1.6E-05	2.1E-06	1.6E-07	4.9E-05	1.3E-05	8.6E-07	1.8E-07	4.9E-05	1.7E-05	2.2E-06	1.8E-07	4.9E-05	1.4E-05	9.3E-07
TPH as motor oil	3.5E-07	NV	3.4E-05	4.5E-06	3.5E-07	NV	2.9E-05	1.8E-06	3.5E-07	NV	3.3E-05	4.4E-06	3.5E-07	NV	2.8E-05	1.8E-06
Dioxins/Furans																
TEQ Human	2.1E-13	1.3E-13	5.9E-12	2.6E-12	2.1E-13	1.3E-13	5.1E-12	1.1E-12	2.1E-13	1.3E-13	5.9E-12	2.6E-12	2.1E-13	1.3E-13	5.0E-12	1.1E-12

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
CDI = Chronic Daily Intake.
C O P C = Constituent of Potential Concern.
EC = Exposure Concentration.
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NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.

ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.3a
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User- Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Inorganics										
Arsenic	1.5E-10	NV	1.7E-07	1.8E-06	2.0E-06	1.5E-10	NV	1.7E-07	1.8E-06	2.0E-06
Chromium, Hexavalent	3.9E-09	NV	NA	1.2E-07	1.2E-07	3.8E-09	NV	NA	1.2E-07	1.2E-07
Chromium, total	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Copper	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Lead	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Zinc	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Volatile Organic Compounds										
Methyl acetate	NS	NC	NS	NS	--	NC	NC	NC	NC	--
Polycyclic Aromatic Hydrocarbons										
1-Methyl naphthalene	ND	1.7E-11	ND	ND	1.7E-11	4.9E-16	1.7E-11	5.2E-12	1.1E-11	3.3E-11
2-Methyl naphthalene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Anthracene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (a) anthracene	NA	1.5E-11	NA	NA	1.5E-11	NA	1.5E-11	NA	NA	1.5E-11
Benzo (a) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (b) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (ghi) perylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (k) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Chrysene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Dibenzo (a,h) anthracene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Fluoranthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Fluorene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Naphthalene	2.0E-15	1.9E-11	1.9E-11	3.9E-11	7.8E-11	1.5E-15	1.9E-11	1.4E-11	3.0E-11	6.3E-11
Phenanthrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Pyrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
B(a)P Equivalent	3.9E-12	NV	1.4E-08	3.2E-08	4.6E-08	2.8E-12	NV	1.0E-08	2.3E-08	3.3E-08
Pesticides										
4,4-DDE	3.5E-15	2.3E-12	1.1E-11	6.8E-11	8.1E-11	3.5E-15	2.3E-12	1.1E-11	6.8E-11	8.1E-11
alpha-Chlordane	7.2E-15	NV	2.2E-11	1.4E-10	1.6E-10	7.2E-15	NV	2.2E-11	1.4E-10	1.6E-10
Dieldrin	1.8E-13	NV	5.7E-10	3.5E-09	4.1E-09	1.8E-13	NV	5.7E-10	3.5E-09	4.1E-09
gamma-Chlordane	7.8E-15	NV	2.4E-11	1.5E-10	1.7E-10	7.8E-15	NV	2.4E-11	1.5E-10	1.7E-10

Table AOC11-B2.3a
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User- Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Polychlorinated Biphenyls										
Total PCBs	1.4E-13	1.1E-10	7.3E-09	1.5E-08	2.3E-08	1.2E-13	1.1E-10	6.5E-09	1.4E-08	2.0E-08
Total Petroleum Hydrocarbons										
TPH as diesel	NC	NC	NC	NC	--	NC	NC	NC	NC	--
TPH as motor oil	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Dioxins/Furans										
TEQ Human	1.5E-11	1.4E-08	2.7E-08	2.8E-07	3.2E-07	1.4E-11	1.4E-08	2.6E-08	2.7E-07	3.1E-07
Cumulative ILCR	**4E-09**	**1E-08**	**2E-07**	**2E-06**	**2E-06**	**4E-09**	**1E-08**	**2E-07**	**2E-06**	**2E-06**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
ILCR = Incremental Lifetime Cancer Risk.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.3b
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Inorganics										
Arsenic	2.9E-10	NV	3.5E-07	3.6E-06	3.9E-06	3.0E-10	NV	3.5E-07	3.6E-06	4.0E-06
Chromium, Hexavalent	7.7E-09	NV	NA	2.3E-07	2.4E-07	7.7E-09	NV	NA	2.3E-07	2.4E-07
Chromium, total	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Copper	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Lead	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Zinc	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Volatile Organic Compounds										
Methyl acetate	NS	NC	NS	NS	--	NC	NC	NC	NC	--
Polycyclic Aromatic Hydrocarbons										
1-Methyl naphthalene	ND	3.4E-11	ND	ND	3.4E-11	9.7E-16	3.4E-11	1.0E-11	2.1E-11	6.5E-11
2-Methyl naphthalene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Anthracene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (a) anthracene	NA	3.0E-11	NA	NA	3.0E-11	NA	3.0E-11	NA	NA	3.0E-11
Benzo (a) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (b) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (ghi) perylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (k) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Chrysene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Dibenzo (a,h) anthracene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Fluoranthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Fluorene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Naphthalene	4.1E-15	3.8E-11	3.8E-11	7.9E-11	1.6E-10	3.1E-15	3.8E-11	2.9E-11	5.9E-11	1.3E-10
Phenanthrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Pyrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
B(a)P Equivalent	7.8E-12	NV	2.9E-08	6.4E-08	9.3E-08	5.6E-12	NV	2.1E-08	4.6E-08	6.7E-08
Pesticides										
4,4-DDE	7.1E-15	4.6E-12	2.2E-11	1.4E-10	1.6E-10	7.1E-15	4.6E-12	2.2E-11	1.4E-10	1.6E-10
alpha-Chlordane	1.4E-14	NV	4.4E-11	2.8E-10	3.2E-10	1.4E-14	NV	4.4E-11	2.8E-10	3.2E-10
Dieldrin	3.7E-13	NV	1.1E-09	7.0E-09	8.2E-09	3.7E-13	NV	1.1E-09	7.0E-09	8.2E-09
gamma-Chlordane	1.6E-14	NV	4.8E-11	3.0E-10	3.5E-10	1.6E-14	NV	4.8E-11	3.0E-10	3.5E-10

Table AOC11-B2.3b
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Polychlorinated Biphenyls										
Total PCBs	2.8E-13	2.3E-10	1.5E-08	3.0E-08	4.5E-08	2.5E-13	2.3E-10	1.3E-08	2.7E-08	4.0E-08
Total Petroleum Hydrocarbons										
TPH as diesel	NC	NC	NC	NC	--	NC	NC	NC	NC	--
TPH as motor oil	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Dioxins/Furans										
TEQ Human	2.9E-11	2.9E-08	5.3E-08	5.5E-07	6.3E-07	2.9E-11	2.9E-08	5.2E-08	5.4E-07	6.2E-07
Cumulative ILCR	**8E-09**	**3E-08**	**4E-07**	**4E-06**	**5E-06**	**8E-09**	**3E-08**	**4E-07**	**4E-06**	**5E-06**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
ILCR = Incremental Lifetime Cancer Risk.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.3c
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Inorganics										
Arsenic	3.0E-08	NV	1.7E-06	4.6E-07	2.2E-06	3.0E-08	NV	1.7E-06	4.6E-07	2.2E-06
Chromium, Hexavalent	5.0E-07	NV	NA	1.3E-08	5.1E-07	4.9E-07	NV	NA	1.3E-08	5.1E-07
Chromium, total	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Copper	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Lead	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Zinc	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Volatile Organic Compounds										
Methyl acetate	NS	NC	NS	NS	--	NC	NC	NC	NC	--
Polycyclic Aromatic Hydrocarbons										
1-Methyl naphthalene	ND	2.1E-12	ND	ND	2.1E-12	9.8E-14	2.1E-12	5.0E-11	2.7E-12	5.5E-11
2-Methyl naphthalene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Acenaphthylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Anthracene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (a) anthracene	NA	1.2E-12	NA	NA	1.2E-12	NA	1.2E-12	NA	NA	1.2E-12
Benzo (a) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (b) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Benzo (ghi) perylene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Benzo (k) fluoranthene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Chrysene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Dibenzo (a,h) anthracene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Fluoranthene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Fluorene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Indeno (1,2,3-cd) pyrene	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Naphthalene	4.1E-13	2.4E-12	1.8E-10	1.0E-11	2.0E-10	3.1E-13	2.4E-12	1.4E-10	7.6E-12	1.5E-10
Phenanthrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Pyrene	NC	NC	NC	NC	--	NC	NC	NC	NC	--
B(a)P Equivalent	5.0E-10	NV	5.9E-08	3.7E-09	6.3E-08	3.6E-10	NV	4.3E-08	2.7E-09	4.6E-08
Pesticides										
4,4-DDE	7.1E-13	2.9E-13	1.1E-10	1.7E-11	1.2E-10	7.1E-13	2.9E-13	1.1E-10	1.7E-11	1.2E-10
alpha-Chlordane	1.4E-12	NV	2.1E-10	3.5E-11	2.5E-10	1.4E-12	NV	2.1E-10	3.5E-11	2.5E-10
Dieldrin	3.7E-11	NV	5.5E-09	9.0E-10	6.4E-09	3.7E-11	NV	5.5E-09	9.0E-10	6.4E-09
gamma-Chlordane	1.6E-12	NV	2.3E-10	3.8E-11	2.7E-10	1.6E-12	NV	2.3E-10	3.8E-11	2.7E-10

Table AOC11-B2.3c
Baseline Scenario ILCRs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Cancer Risk	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Age-Adjusted Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Cancer Risk
Polychlorinated Biphenyls										
Total PCBs	2.8E-11	1.4E-11	7.1E-08	3.9E-09	7.5E-08	2.5E-11	1.4E-11	6.3E-08	3.4E-09	6.6E-08
Total Petroleum Hydrocarbons										
TPH as diesel	NC	NC	NC	NC	--	NC	NC	NC	NC	--
TPH as motor oil	NC	NC	NC	NC	--	NC	NC	NC	NC	--
Dioxins/Furans										
TEQ Human	2.9E-09	1.8E-09	2.6E-07	7.0E-08	3.3E-07	2.9E-09	1.8E-09	2.5E-07	6.9E-08	3.3E-07
Cumulative ILCR	**5E-07**	**2E-09**	**2E-06**	**5E-07**	**3E-06**	**5E-07**	**2E-09**	**2E-06**	**5E-07**	**3E-06**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
ILCR = Incremental Lifetime Cancer Risk.
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated using benzo(a)pyrene equivalents. Hexavalent chromium is not absorbed via dermal contact.
NC = Not considered a carcinogen.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.4a

Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Inorganics																				
Arsenic	6.2E-06	NV	4.2E-02	4.8E-01	5.2E-01	6.2E-06	NV	5.7E-03	4.5E-02	5.1E-02	6.2E-06	NV	4.2E-02	4.8E-01	5.2E-01	6.2E-06	NV	5.7E-03	4.5E-02	5.1E-02
Chromium, Hexavalent	2.5E-07	NV	NA	1.5E-04	1.5E-04	2.5E-07	NV	NA	1.4E-05	1.4E-05	2.5E-07	NV	NA	1.5E-04	1.5E-04	2.5E-07	NV	NA	1.4E-05	1.4E-05
Chromium, total	1.2E-05	NV	2.6E-07	8.9E-06	2.1E-05	1.2E-05	NV	3.5E-08	8.3E-07	1.3E-05	1.2E-05	NV	2.6E-07	8.9E-06	2.1E-05	1.2E-05	NV	3.5E-08	8.3E-07	1.3E-05
Copper	1.2E-09	NV	2.6E-06	9.0E-05	9.3E-05	1.2E-09	NV	3.6E-07	8.5E-06	8.8E-06	1.3E-09	NV	2.7E-06	9.1E-05	9.4E-05	1.3E-09	NV	3.6E-07	8.6E-06	8.9E-06
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	9.7E-08	NV	9.5E-06	3.3E-04	3.4E-04	9.7E-08	NV	1.3E-06	3.1E-05	3.2E-05	9.7E-08	NV	9.5E-06	3.3E-04	3.4E-04	9.7E-08	NV	1.3E-06	3.1E-05	3.2E-05
Zinc	1.5E-09	NV	3.2E-06	1.1E-04	1.1E-04	1.5E-09	NV	4.3E-07	1.0E-05	1.1E-05	1.0E-09	NV	2.1E-06	7.4E-05	7.6E-05	1.0E-09	NV	2.9E-07	6.9E-06	7.2E-06
Volatile Organic Compounds																				
Methyl acetate	NS	9.1E-09	NS	NS	9.1E-09	NS	9.1E-09	NS	NS	9.1E-09	6.8E-14	9.1E-09	1.4E-09	5.0E-09	1.6E-08	6.8E-14	9.1E-09	2.0E-10	4.7E-10	9.8E-09
Polycyclic Aromatic Hydrocarbons																				
1-Methyl naphthalene	ND	1.3E-08	ND	ND	1.3E-08	ND	1.3E-08	ND	ND	1.3E-08	3.7E-13	1.3E-08	1.2E-08	2.7E-08	5.1E-08	3.7E-13	1.3E-08	1.6E-09	2.5E-09	1.7E-08
2-Methyl naphthalene	1.1E-11	1.4E-07	3.4E-07	7.7E-07	1.2E-06	1.1E-11	1.4E-07	4.6E-08	7.3E-08	2.5E-07	1.0E-11	1.4E-07	3.2E-07	7.3E-07	1.2E-06	1.0E-11	1.4E-07	4.3E-08	6.8E-08	2.5E-07
Acenaphthene	7.4E-13	2.1E-09	2.3E-08	5.4E-08	7.9E-08	7.4E-13	2.1E-09	3.2E-09	5.0E-09	1.0E-08	5.5E-13	2.1E-09	1.7E-08	4.0E-08	5.9E-08	5.5E-13	2.1E-09	2.4E-09	3.7E-09	8.2E-09
Acenaphthylene	6.2E-13	NV	1.9E-08	4.5E-08	6.4E-08	6.2E-13	NV	2.7E-09	4.2E-09	6.9E-09	4.7E-13	NV	1.5E-08	3.4E-08	4.9E-08	4.7E-13	NV	2.0E-09	3.2E-09	5.2E-09
Anthracene	7.3E-14	9.4E-11	2.3E-09	5.3E-09	7.7E-09	7.3E-14	9.4E-11	3.1E-10	5.0E-10	9.1E-10	6.2E-14	9.4E-11	2.0E-09	4.5E-09	6.6E-09	6.2E-14	9.4E-11	2.7E-10	4.2E-10	7.9E-10
Benzo (a) anthracene	1.7E-11	1.1E-09	5.5E-07	1.3E-06	1.8E-06	1.7E-11	1.1E-09	7.5E-08	1.2E-07	1.9E-07	1.2E-11	1.1E-09	3.7E-07	8.5E-07	1.2E-06	1.2E-11	1.1E-09	5.0E-08	8.0E-08	1.3E-07
Benzo (a) pyrene	1.2E-06	NV	6.2E-05	1.4E-04	2.1E-04	1.2E-06	NV	8.5E-06	1.3E-05	2.3E-05	8.4E-07	NV	4.4E-05	1.0E-04	1.5E-04	8.4E-07	NV	6.0E-06	9.5E-06	1.6E-05
Benzo (b) fluoranthene	3.2E-11	NV	1.0E-06	2.3E-06	3.3E-06	3.2E-11	NV	1.4E-07	2.2E-07	3.5E-07	2.2E-11	NV	7.1E-07	1.6E-06	2.3E-06	2.2E-11	NV	9.7E-08	1.5E-07	2.5E-07
Benzo (ghi) perylene	9.6E-12	NV	3.0E-07	7.0E-07	1.0E-06	9.6E-12	NV	4.1E-08	6.5E-08	1.1E-07	7.2E-12	NV	2.3E-07	5.2E-07	7.5E-07	7.2E-12	NV	3.1E-08	4.9E-08	8.0E-08
Benzo (k) fluoranthene	1.2E-11	NV	3.7E-07	8.4E-07	1.2E-06	1.2E-11	NV	5.0E-08	7.9E-08	1.3E-07	8.2E-12	NV	2.6E-07	5.9E-07	8.5E-07	8.2E-12	NV	3.5E-08	5.6E-08	9.1E-08
Chrysene	2.7E-11	NV	8.6E-07	2.0E-06	2.8E-06	2.7E-11	NV	1.2E-07	1.9E-07	3.0E-07	1.9E-11	NV	5.9E-07	1.4E-06	1.9E-06	1.9E-11	NV	8.0E-08	1.3E-07	2.1E-07
Dibenzo (a,h) anthracene	2.2E-07	NV	1.2E-05	2.7E-05	3.9E-05	2.2E-07	NV	1.6E-06	2.5E-06	4.4E-06	1.6E-07	NV	8.6E-06	2.0E-05	2.9E-05	1.6E-07	NV	1.2E-06	1.9E-06	3.2E-06
Fluoranthene	3.2E-11	NV	1.0E-06	2.4E-06	3.4E-06	3.2E-11	NV	1.4E-07	2.2E-07	3.6E-07	2.3E-11	NV	7.3E-07	1.7E-06	2.4E-06	2.3E-11	NV	1.0E-07	1.6E-07	2.6E-07
Fluorene	9.0E-13	1.4E-09	2.8E-08	6.5E-08	9.5E-08	9.0E-13	1.4E-09	3.9E-09	6.1E-09	1.1E-08	6.8E-13	1.4E-09	2.2E-08	5.0E-08	7.3E-08	6.8E-13	1.4E-09	2.9E-09	4.6E-09	9.0E-09
Indeno (1,2,3-cd) pyrene	9.7E-12	NV	3.1E-07	7.0E-07	1.0E-06	9.7E-12	NV	4.2E-08	6.6E-08	1.1E-07	7.1E-12	NV	2.2E-07	5.1E-07	7.4E-07	7.1E-12	NV	3.0E-08	4.8E-08	7.8E-08
Naphthalene	5.4E-11	5.0E-07	6.4E-08	1.5E-07	7.1E-07	5.4E-11	5.0E-07	8.7E-09	1.4E-08	5.3E-07	4.0E-11	5.0E-07	4.8E-08	1.1E-07	6.6E-07	4.0E-11	5.0E-07	6.5E-09	1.0E-08	5.2E-07
Phenanthrene	1.5E-12	NV	4.8E-08	1.1E-07	1.6E-07	1.5E-12	NV	6.6E-09	1.0E-08	1.7E-08	1.0E-12	NV	3.2E-08	7.3E-08	1.0E-07	1.0E-12	NV	4.3E-09	6.9E-09	1.1E-08
Pyrene	4.0E-11	4.4E-09	1.3E-06	2.9E-06	4.1E-06	4.0E-11	4.4E-09	1.7E-07	2.7E-07	4.5E-07	2.7E-11	4.4E-09	8.6E-07	2.0E-06	2.8E-06	2.7E-11	4.4E-09	1.2E-07	1.9E-07	3.1E-07
B(a)P Equivalent	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Pesticides																				
4,4-DDE	4.9E-11	3.2E-08	5.2E-07	3.6E-06	4.1E-06	4.9E-11	3.2E-08	7.1E-08	3.3E-07	4.4E-07	4.9E-11	3.2E-08	5.2E-07	3.6E-06	4.1E-06	4.9E-11	3.2E-08	7.1E-08	3.3E-07	4.4E-07
alpha-Chlordane	2.8E-10	NV	1.0E-06	7.0E-06	8.0E-06	2.8E-10	NV	1.4E-07	6.6E-07	8.0E-07	2.8E-10	NV	1.0E-06	7.0E-06	8.0E-06	2.8E-10	NV	1.4E-07	6.6E-07	8.0E-07
Dieldrin	5.4E-10	NV	5.7E-06	3.9E-05	4.5E-05	5.4E-10	NV	7.8E-07	3.7E-06	4.4E-06	5.4E-10	NV	5.7E-06	3.9E-05	4.5E-05	5.4E-10	NV	7.8E-07	3.7E-06	4.4E-06
gamma-Chlordane	3.0E-10	NV	1.1E-06	7.6E-06	8.7E-06	3.0E-10	NV	1.5E-07	7.1E-07	8.6E-07	3.0E-10	NV	1.1E-06	7.6E-06	8.7E-06	3.0E-10	NV	1.5E-07	7.1E-07	8.6E-07

Table AOC11-B2.4a

Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Camper

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult Camper (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child Camper (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult Camper (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Polychlorinated Biphenyls																				
Total PCBs	4.7E-08	3.8E-05	1.5E-03	3.4E-03	4.9E-03	4.7E-08	3.8E-05	2.0E-04	3.2E-04	5.5E-04	4.1E-08	3.8E-05	1.3E-03	3.0E-03	4.4E-03	4.1E-08	3.8E-05	1.8E-04	2.8E-04	5.0E-04
Total Petroleum Hydrocarbons																				
TPH as diesel	3.1E-09	1.5E-03	2.3E-04	7.8E-04	2.5E-03	3.1E-09	1.5E-03	3.1E-05	7.3E-05	1.6E-03	3.4E-09	1.5E-03	2.4E-04	8.4E-04	2.6E-03	3.4E-09	1.5E-03	3.3E-05	7.9E-05	1.6E-03
TPH as motor oil	2.9E-09	NV	6.2E-05	2.1E-04	2.7E-04	2.9E-09	NV	8.4E-06	2.0E-05	2.8E-05	2.9E-09	NV	6.0E-05	2.1E-04	2.7E-04	2.9E-09	NV	8.3E-06	2.0E-05	2.8E-05
Dioxins/Furans																				
TEQ Human	2.6E-08	2.6E-05	2.3E-03	2.7E-02	2.9E-02	2.6E-08	2.6E-05	3.2E-04	2.5E-03	2.9E-03	2.6E-08	2.6E-05	2.3E-03	2.7E-02	2.9E-02	2.6E-08	2.6E-05	3.2E-04	2.5E-03	2.8E-03
Total Hazard Index	**2E-05**	**2E-03**	**5E-02**	**5E-01**	**6E-01**	**2E-05**	**2E-03**	**6E-03**	**5E-02**	**6E-02**	**2E-05**	**2E-03**	**5E-02**	**5E-01**	**6E-01**	**2E-05**	**2E-03**	**6E-03**	**5E-02**	**6E-02**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
H I = Hazard Index
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.4b

Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Inorganics																					
Arsenic	1.2E-05	NV	8.3E-02	9.6E-01	1.0E+00	1.2E-05	NV	1.1E-02	9.0E-02	1.0E-01	1.2E-05	NV	8.4E-02	9.7E-01	1.0E+00	1.2E-05	NV	1.1E-02	9.0E-02	1.0E-01
Chromium, Hexavalent	5.0E-07	NV	NA	3.0E-04	3.0E-04	5.0E-07	NV	NA	2.8E-05	2.9E-05	5.0E-07	NV	NA	3.0E-04	3.0E-04	5.0E-07	NV	NA	2.8E-05	2.9E-05
Chromium, total	2.5E-05	NV	5.2E-07	1.8E-05	4.3E-05	2.5E-05	NV	7.0E-08	1.7E-06	2.6E-05	2.4E-05	NV	5.1E-07	1.8E-05	4.3E-05	2.4E-05	NV	7.0E-08	1.7E-06	2.6E-05
Copper	2.5E-09	NV	5.2E-06	1.8E-04	1.9E-04	2.5E-09	NV	7.2E-07	1.7E-05	1.8E-05	2.5E-09	NV	5.3E-06	1.8E-04	1.9E-04	2.5E-09	NV	7.2E-07	1.7E-05	1.8E-05
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	1.9E-07	NV	1.9E-05	6.6E-04	6.8E-04	1.9E-07	NV	2.6E-06	6.2E-05	6.4E-05	1.9E-07	NV	1.9E-05	6.6E-04	6.8E-04	1.9E-07	NV	2.6E-06	6.2E-05	6.4E-05
Zinc	3.0E-09	NV	6.3E-06	2.2E-04	2.2E-04	3.0E-09	NV	8.6E-07	2.0E-05	2.1E-05	2.0E-09	NV	4.3E-06	1.5E-04	1.5E-04	2.0E-09	NV	5.8E-07	1.4E-05	1.4E-05
Volatile Organic Compounds																				
Methyl acetate	NS	1.8E-08	NS	NS	1.8E-08	NS	1.8E-08	NS	NS	1.8E-08	1.4E-13	1.8E-08	2.9E-09	9.9E-09	3.1E-08	1.4E-13	1.8E-08	3.9E-10	9.3E-10	2.0E-08
Polycyclic Aromatic Hydrocarbons																				
1-Methyl naphthalene	ND	2.5E-08	ND	ND	2.5E-08	ND	2.5E-08	ND	ND	2.5E-08	7.3E-13	2.5E-08	2.3E-08	5.3E-08	1.0E-07	7.3E-13	2.5E-08	3.2E-09	5.0E-09	3.4E-08
2-Methyl naphthalene	2.1E-11	2.7E-07	6.7E-07	1.5E-06	2.5E-06	2.1E-11	2.7E-07	9.2E-08	1.5E-07	5.1E-07	2.0E-11	2.7E-07	6.3E-07	1.5E-06	2.4E-06	2.0E-11	2.7E-07	8.6E-08	1.4E-07	5.0E-07
Acenaphthene	1.5E-12	4.3E-09	4.7E-08	1.1E-07	1.6E-07	1.5E-12	4.3E-09	6.4E-09	1.0E-08	2.1E-08	1.1E-12	4.3E-09	3.5E-08	8.0E-08	1.2E-07	1.1E-12	4.3E-09	4.7E-09	7.5E-09	1.6E-08
Acenaphthylene	1.2E-12	NV	3.9E-08	9.0E-08	1.3E-07	1.2E-12	NV	5.3E-09	8.4E-09	1.4E-08	9.4E-13	NV	3.0E-08	6.8E-08	9.8E-08	9.4E-13	NV	4.0E-09	6.4E-09	1.0E-08
Anthracene	1.5E-13	1.9E-10	4.6E-09	1.1E-08	1.5E-08	1.5E-13	1.9E-10	6.3E-10	9.9E-10	1.8E-09	1.2E-13	1.9E-10	3.9E-09	9.0E-09	1.3E-08	1.2E-13	1.9E-10	5.4E-10	8.5E-10	1.6E-09
Benzo (a) anthracene	3.5E-11	2.2E-09	1.1E-06	2.5E-06	3.6E-06	3.5E-11	2.2E-09	1.5E-07	2.4E-07	3.9E-07	2.3E-11	2.2E-09	7.4E-07	1.7E-06	2.4E-06	2.3E-11	2.2E-09	1.0E-07	1.6E-07	2.6E-07
Benzo (a) pyrene	2.4E-06	NV	1.2E-04	2.9E-04	4.1E-04	2.4E-06	NV	1.7E-05	2.7E-05	4.6E-05	1.7E-06	NV	8.8E-05	2.0E-04	2.9E-04	1.7E-06	NV	1.2E-05	1.9E-05	3.3E-05
Benzo (b) fluoranthene	6.4E-11	NV	2.0E-06	4.6E-06	6.6E-06	6.4E-11	NV	2.7E-07	4.3E-07	7.1E-07	4.5E-11	NV	1.4E-06	3.3E-06	4.7E-06	4.5E-11	NV	1.9E-07	3.1E-07	5.0E-07
Benzo (ghi) perylene	1.9E-11	NV	6.1E-07	1.4E-06	2.0E-06	1.9E-11	NV	8.3E-08	1.3E-07	2.1E-07	1.4E-11	NV	4.5E-07	1.0E-06	1.5E-06	1.4E-11	NV	6.2E-08	9.7E-08	1.6E-07
Benzo (k) fluoranthene	2.3E-11	NV	7.3E-07	1.7E-06	2.4E-06	2.3E-11	NV	1.0E-07	1.6E-07	2.6E-07	1.6E-11	NV	5.2E-07	1.2E-06	1.7E-06	1.6E-11	NV	7.0E-08	1.1E-07	1.8E-07
Chrysene	5.5E-11	NV	1.7E-06	4.0E-06	5.7E-06	5.5E-11	NV	2.3E-07	3.7E-07	6.1E-07	3.7E-11	NV	1.2E-06	2.7E-06	3.9E-06	3.7E-11	NV	1.6E-07	2.5E-07	4.1E-07
Dibenzo (a,h) anthracene	4.5E-07	NV	2.3E-05	5.4E-05	7.8E-05	4.5E-07	NV	3.2E-06	5.1E-06	8.7E-06	3.3E-07	NV	1.7E-05	4.0E-05	5.7E-05	3.3E-07	NV	2.4E-06	3.7E-06	6.4E-06
Fluoranthene	6.5E-11	NV	2.0E-06	4.7E-06	6.8E-06	6.5E-11	NV	2.8E-07	4.4E-07	7.2E-07	4.6E-11	NV	1.5E-06	3.4E-06	4.8E-06	4.6E-11	NV	2.0E-07	3.2E-07	5.1E-07
Fluorene	1.8E-12	2.9E-09	5.7E-08	1.3E-07	1.9E-07	1.8E-12	2.9E-09	7.7E-09	1.2E-08	2.3E-08	1.4E-12	2.9E-09	4.3E-08	9.9E-08	1.5E-07	1.4E-12	2.9E-09	5.9E-09	9.3E-09	1.8E-08
Indeno (1,2,3-cd) pyrene	1.9E-11	NV	6.1E-07	1.4E-06	2.0E-06	1.9E-11	NV	8.4E-08	1.3E-07	2.2E-07	1.4E-11	NV	4.5E-07	1.0E-06	1.5E-06	1.4E-11	NV	6.1E-08	9.6E-08	1.6E-07
Naphthalene	1.1E-10	1.0E-06	1.3E-07	2.9E-07	1.4E-06	1.1E-10	1.0E-06	1.7E-08	2.7E-08	1.1E-06	8.1E-11	1.0E-06	9.6E-08	2.2E-07	1.3E-06	8.1E-11	1.0E-06	1.3E-08	2.1E-08	1.0E-06
Phenanthrene	3.1E-12	NV	9.7E-08	2.2E-07	3.2E-07	3.1E-12	NV	1.3E-08	2.1E-08	3.4E-08	2.0E-12	NV	6.4E-08	1.5E-07	2.1E-07	2.0E-12	NV	8.7E-09	1.4E-08	2.2E-08
Pyrene	8.0E-11	8.8E-09	2.5E-06	5.8E-06	8.3E-06	8.0E-11	8.8E-09	3.4E-07	5.4E-07	8.9E-07	5.5E-11	8.8E-09	1.7E-06	4.0E-06	5.7E-06	5.5E-11	8.8E-09	2.3E-07	3.7E-07	6.1E-07
B(a)P Equivalent	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Pesticides																				
4,4-DDE	9.8E-11	6.4E-08	1.0E-06	7.1E-06	8.2E-06	9.8E-11	6.4E-08	1.4E-07	6.7E-07	8.7E-07	9.8E-11	6.4E-08	1.0E-06	7.1E-06	8.2E-06	9.8E-11	6.4E-08	1.4E-07	6.7E-07	8.7E-07
alpha-Chlordane	5.5E-10	NV	2.0E-06	1.4E-05	1.6E-05	5.5E-10	NV	2.8E-07	1.3E-06	1.6E-06	5.5E-10	NV	2.0E-06	1.4E-05	1.6E-05	5.5E-10	NV	2.8E-07	1.3E-06	1.6E-06
Dieldrin	1.1E-09	NV	1.1E-05	7.8E-05	9.0E-05	1.1E-09	NV	1.6E-06	7.3E-06	8.9E-06	1.1E-09	NV	1.1E-05	7.8E-05	9.0E-05	1.1E-09	NV	1.6E-06	7.3E-06	8.9E-06
gamma-Chlordane	6.0E-10	NV	2.2E-06	1.5E-05	1.7E-05	6.0E-10	NV	3.0E-07	1.4E-06	1.7E-06	6.0E-10	NV	2.2E-06	1.5E-05	1.7E-05	6.0E-10	NV	3.0E-07	1.4E-06	1.7E-06

Table AOC11-B2.4b

Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Hiker

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult Hiker (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult Hiker (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Polychlorinated Biphenyls																				
Total PCBs	9.3E-08	7.6E-05	2.9E-03	6.8E-03	9.8E-03	9.3E-08	7.6E-05	4.0E-04	6.3E-04	1.1E-03	8.3E-08	7.6E-05	2.6E-03	6.0E-03	8.7E-03	8.3E-08	7.6E-05	3.6E-04	5.6E-04	1.0E-03
Total Petroleum Hydrocarbons																				
TPH as diesel	6.3E-09	3.0E-03	4.5E-04	1.6E-03	5.0E-03	6.3E-09	3.0E-03	6.2E-05	1.5E-04	3.2E-03	6.8E-09	3.0E-03	4.9E-04	1.7E-03	5.2E-03	6.8E-09	3.0E-03	6.6E-05	1.6E-04	3.2E-03
TPH as motor oil	5.9E-09	NV	1.2E-04	4.2E-04	5.5E-04	5.9E-09	NV	1.7E-05	4.0E-05	5.7E-05	5.7E-09	NV	1.2E-04	4.2E-04	5.4E-04	5.7E-09	NV	1.7E-05	3.9E-05	5.6E-05
Dioxins/Furans																				
TEQ Human	5.2E-08	5.1E-05	4.7E-03	5.4E-02	5.8E-02	5.2E-08	5.1E-05	6.4E-04	5.0E-03	5.7E-03	5.1E-08	5.1E-05	4.6E-03	5.3E-02	5.8E-02	5.1E-08	5.1E-05	6.3E-04	5.0E-03	5.7E-03
Total Hazard Index	**4E-05**	**3E-03**	**9E-02**	**1E+00**	**1E+00**	**4E-05**	**3E-03**	**1E-02**	**1E-01**	**1E-01**	**4E-05**	**3E-03**	**9E-02**	**1E+00**	**1E+00**	**4E-05**	**3E-03**	**1E-02**	**1E-01**	**1E-01**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
H I = Hazard Index
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.4c

Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Inorganics																					
Arsenic	1.2E-03	NV	1.5E-01	6.7E-02	2.2E-01	1.2E-03	NV	1.3E-01	2.8E-02	1.6E-01	1.2E-03	NV	1.5E-01	6.8E-02	2.2E-01	1.2E-03	NV	1.3E-01	2.8E-02	1.6E-01
Chromium, Hexavalent	5.0E-05	NV	NA	2.1E-05	7.2E-05	5.0E-05	NV	NA	8.8E-06	5.9E-05	5.0E-05	NV	NA	2.1E-05	7.1E-05	5.0E-05	NV	NA	8.7E-06	5.9E-05
Chromium, total	2.5E-03	NV	9.4E-07	1.3E-06	2.5E-03	2.5E-03	NV	8.0E-07	5.2E-07	2.5E-03	2.5E-03	NV	9.4E-07	1.2E-06	2.5E-03	2.5E-03	NV	8.0E-07	5.1E-07	2.5E-03
Copper	2.5E-07	NV	9.5E-06	1.3E-05	2.3E-05	2.5E-07	NV	8.2E-06	5.2E-06	1.4E-05	2.5E-07	NV	9.6E-06	1.3E-05	2.3E-05	2.5E-07	NV	8.3E-06	5.3E-06	1.4E-05
Lead	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mercury (inorganic)	1.9E-05	NV	3.5E-05	4.6E-05	1.0E-04	1.9E-05	NV	3.0E-05	1.9E-05	6.8E-05	1.9E-05	NV	3.5E-05	4.6E-05	1.0E-04	1.9E-05	NV	3.0E-05	1.9E-05	6.8E-05
Zinc	3.0E-07	NV	1.2E-05	1.5E-05	2.7E-05	3.0E-07	NV	9.9E-06	6.3E-06	1.7E-05	2.0E-07	NV	7.8E-06	1.0E-05	1.8E-05	2.0E-07	NV	6.7E-06	4.3E-06	1.1E-05
Volatile Organic Compounds																				
Methyl acetate	NS	1.1E-09	NS	NS	1.1E-09	NS	1.1E-09	NS	NS	1.1E-09	1.4E-11	1.1E-09	5.2E-09	7.0E-10	7.1E-09	1.4E-11	1.1E-09	4.5E-09	2.9E-10	5.9E-09
Polycyclic Aromatic Hydrocarbons																				
1-Methyl naphthalene	ND	1.6E-09	ND	ND	1.6E-09	ND	1.6E-09	ND	ND	1.6E-09	7.4E-11	1.6E-09	4.2E-08	3.7E-09	4.7E-08	7.4E-11	1.6E-09	3.6E-08	1.5E-09	3.9E-08
2-Methyl naphthalene	2.1E-09	1.7E-08	1.2E-06	1.1E-07	1.4E-06	2.1E-09	1.7E-08	1.1E-06	4.5E-08	1.1E-06	2.0E-09	1.7E-08	1.1E-06	1.0E-07	1.3E-06	2.0E-09	1.7E-08	9.9E-07	4.2E-08	1.0E-06
Acenaphthene	1.5E-10	2.7E-10	8.5E-08	7.5E-09	9.3E-08	1.5E-10	2.7E-10	7.3E-08	3.1E-09	7.6E-08	1.1E-10	2.7E-10	6.3E-08	5.6E-09	6.9E-08	1.1E-10	2.7E-10	5.4E-08	2.3E-09	5.7E-08
Acenaphthylene	1.2E-10	NV	7.1E-08	6.3E-09	7.7E-08	1.2E-10	NV	6.1E-08	2.6E-09	6.4E-08	9.4E-11	NV	5.4E-08	4.8E-09	5.9E-08	9.4E-11	NV	4.6E-08	2.0E-09	4.8E-08
Anthracene	1.5E-11	1.2E-11	8.4E-09	7.5E-10	9.2E-09	1.5E-11	1.2E-11	7.2E-09	3.1E-10	7.5E-09	1.3E-11	1.2E-11	7.1E-09	6.4E-10	7.8E-09	1.3E-11	1.2E-11	6.1E-09	2.6E-10	6.4E-09
Benzo (a) anthracene	3.5E-09	1.4E-10	2.0E-06	1.8E-07	2.2E-06	3.5E-09	1.4E-10	1.7E-06	7.3E-08	1.8E-06	2.3E-09	1.4E-10	1.3E-06	1.2E-07	1.5E-06	2.3E-09	1.4E-10	1.2E-06	4.9E-08	1.2E-06
Benzo (a) pyrene	2.4E-04	NV	2.3E-04	2.0E-05	4.8E-04	2.4E-04	NV	1.9E-04	8.3E-06	4.4E-04	1.7E-04	NV	1.6E-04	1.4E-05	3.4E-04	1.7E-04	NV	1.4E-04	5.9E-06	3.1E-04
Benzo (b) fluoranthene	6.4E-09	NV	3.7E-06	3.2E-07	4.0E-06	6.4E-09	NV	3.1E-06	1.3E-07	3.3E-06	4.5E-09	NV	2.6E-06	2.3E-07	2.8E-06	4.5E-09	NV	2.2E-06	9.4E-08	2.3E-06
Benzo (ghi) perylene	1.9E-09	NV	1.1E-06	9.8E-08	1.2E-06	1.9E-09	NV	9.5E-07	4.0E-08	9.9E-07	1.4E-09	NV	8.2E-07	7.3E-08	9.0E-07	1.4E-09	NV	7.0E-07	3.0E-08	7.4E-07
Benzo (k) fluoranthene	2.3E-09	NV	1.3E-06	1.2E-07	1.5E-06	2.3E-09	NV	1.1E-06	4.9E-08	1.2E-06	1.6E-09	NV	9.4E-07	8.3E-08	1.0E-06	1.6E-09	NV	8.0E-07	3.4E-08	8.4E-07
Chrysene	5.5E-09	NV	3.1E-06	2.8E-07	3.4E-06	5.5E-09	NV	2.7E-06	1.1E-07	2.8E-06	3.7E-09	NV	2.1E-06	1.9E-07	2.3E-06	3.7E-09	NV	1.8E-06	7.9E-08	1.9E-06
Dibenzo (a,h) anthracene	4.5E-05	NV	4.3E-05	3.8E-06	9.1E-05	4.5E-05	NV	3.7E-05	1.6E-06	8.3E-05	3.3E-05	NV	3.1E-05	2.8E-06	6.7E-05	3.3E-05	NV	2.7E-05	1.2E-06	6.1E-05
Fluoranthene	6.5E-09	NV	3.7E-06	3.3E-07	4.1E-06	6.5E-09	NV	3.2E-06	1.4E-07	3.3E-06	4.6E-09	NV	2.7E-06	2.4E-07	2.9E-06	4.6E-09	NV	2.3E-06	9.7E-08	2.4E-06
Fluorene	1.8E-10	1.8E-10	1.0E-07	9.1E-09	1.1E-07	1.8E-10	1.8E-10	8.8E-08	3.8E-09	9.2E-08	1.4E-10	1.8E-10	7.8E-08	7.0E-09	8.6E-08	1.4E-10	1.8E-10	6.7E-08	2.9E-09	7.0E-08
Indeno (1,2,3-cd) pyrene	1.9E-09	NV	1.1E-06	9.9E-08	1.2E-06	1.9E-09	NV	9.6E-07	4.1E-08	1.0E-06	1.4E-09	NV	8.1E-07	7.2E-08	8.8E-07	1.4E-09	NV	7.0E-07	3.0E-08	7.3E-07
Naphthalene	1.1E-08	6.3E-08	2.3E-07	2.1E-08	3.3E-07	1.1E-08	6.3E-08	2.0E-07	8.5E-09	2.8E-07	8.1E-09	6.3E-08	1.7E-07	1.5E-08	2.6E-07	8.1E-09	6.3E-08	1.5E-07	6.4E-09	2.3E-07
Phenanthrene	3.1E-10	NV	1.8E-07	1.6E-08	1.9E-07	3.1E-10	NV	1.5E-07	6.4E-09	1.6E-07	2.0E-10	NV	1.2E-07	1.0E-08	1.3E-07	2.0E-10	NV	9.9E-08	4.2E-09	1.0E-07
Pyrene	8.0E-09	5.5E-10	4.6E-06	4.1E-07	5.0E-06	8.0E-09	5.5E-10	3.9E-06	1.7E-07	4.1E-06	5.5E-09	5.5E-10	3.1E-06	2.8E-07	3.4E-06	5.5E-09	5.5E-10	2.7E-06	1.1E-07	2.8E-06
B(a)P Equivalent	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--	NA	NV	NA	NA	--
Pesticides																				
4,4-DDE	9.9E-09	4.0E-09	1.9E-06	5.0E-07	2.4E-06	9.9E-09	4.0E-09	1.6E-06	2.1E-07	1.8E-06	9.9E-09	4.0E-09	1.9E-06	5.0E-07	2.4E-06	9.9E-09	4.0E-09	1.6E-06	2.1E-07	1.8E-06
alpha-Chlordane	5.5E-08	NV	3.7E-06	9.9E-07	4.7E-06	5.5E-08	NV	3.2E-06	4.1E-07	3.6E-06	5.5E-08	NV	3.7E-06	9.9E-07	4.7E-06	5.5E-08	NV	3.2E-06	4.1E-07	3.6E-06
Dieldrin	1.1E-07	NV	2.1E-05	5.5E-06	2.6E-05	1.1E-07	NV	1.8E-05	2.3E-06	2.0E-05	1.1E-07	NV	2.1E-05	5.5E-06	2.6E-05	1.1E-07	NV	1.8E-05	2.3E-06	2.0E-05
gamma-Chlordane	6.0E-08	NV	4.0E-06	1.1E-06	5.1E-06	6.0E-08	NV	3.4E-06	4.4E-07	3.9E-06	6.0E-08	NV	4.0E-06	1.1E-06	5.1E-06	6.0E-08	NV	3.4E-06	4.4E-07	3.9E-06

Table AOC11-B2.4c

Baseline Scenario HIs for C O P Cs in AOC 11 Soil Using Area-Weighted EPCs: Recreational User - Off-Highway Vehicle Rider

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

C O P C	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Child OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Particulate Inhalation	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Vapor Inhalation	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Dermal Contact	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Ingestion	Adult OHV Rider (0 to 0.5 foot bgs)[a] Soil Pathway Total Hazard Index	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Child OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Particulate Inhalation	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Vapor Inhalation	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Dermal Contact	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Ingestion	Adult OHV Rider (0 to 3 feet bgs)[a] Soil Pathway Total Hazard Index
Polychlorinated Biphenyls																					
Total PCBs	9.3E-06	4.7E-06	5.3E-03	4.7E-04	5.8E-03	9.3E-06	4.7E-06	4.6E-03	2.0E-04	4.8E-03	8.3E-06	4.7E-06	4.8E-03	4.2E-04	5.2E-03	8.3E-06	4.7E-06	4.1E-03	1.7E-04	4.3E-03
Total Petroleum Hydrocarbons																					
TPH as diesel	6.3E-07	1.9E-04	8.2E-04	1.1E-04	1.1E-03	6.3E-07	1.9E-04	7.1E-04	4.5E-05	9.4E-04	6.8E-07	1.9E-04	8.9E-04	1.2E-04	1.2E-03	6.8E-07	1.9E-04	7.6E-04	4.9E-05	1.0E-03
TPH as motor oil	5.9E-07	NV	2.2E-04	3.0E-05	2.5E-04	5.9E-07	NV	1.9E-04	1.2E-05	2.1E-04	5.8E-07	NV	2.2E-04	2.9E-05	2.5E-04	5.8E-07	NV	1.9E-04	1.2E-05	2.0E-04
Dioxins/Furans																					
TEQ Human	5.2E-06	3.2E-06	8.5E-03	3.8E-03	1.2E-02	5.2E-06	3.2E-06	7.3E-03	1.6E-03	8.9E-03	5.1E-06	3.2E-06	8.4E-03	3.7E-03	1.2E-02	5.1E-06	3.2E-06	7.2E-03	1.5E-03	8.8E-03
Total Hazard Index	**4E-03**	**2E-04**	**2E-01**	**7E-02**	**2E-01**	**4E-03**	**2E-04**	**1E-01**	**3E-02**	**2E-01**	**4E-03**	**2E-04**	**2E-01**	**7E-02**	**2E-01**	**4E-03**	**2E-04**	**1E-01**	**3E-02**	**2E-01**

Notes:
[a] EPCs for exposure to subsurface II soil (0 to 10 feet bgs) are used to evaluate the vapor inhalation pathway.

Abbreviations:
-- = not calculated.
B (a) P equivalent = Benzo(a)pyrene equivalent.
bgs = below ground surface.
C O P C = Constituent of Potential Concern.
H I = Hazard Index
na = Not applicable. Potential exposure to lead is evaluated using California Environmental Protection Agency (Cal/E P A) Department of Toxic Substances Control's (DTSC) LeadSpread model. Please see text for discussion.
NA = Not applicable. Noncancer effects of carcinogenic polycyclic aromatic hydrocarbons (C P A Hs) are evaluated separately for each chemical (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene). Hexavalent chromium is not absorbed via dermal contact.
ND = Not detected.
NS = Not sampled.
NV = Not volatile.
PCB = Polychlorinated biphenyls.
TPH = Total Petroleum Hydrocarbons.
TEQ = Toxic Equivalent.

Table AOC11-B2.5a

Baseline Scenario Risk Evaluation for Lead in AOC 11 Surface Soil (0 to 0.5 foot bgs) Using Area-Weighted EPCs: Recreational User (Camper)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	38.2
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.010	0.018	0.02	0.03	0.03	2159
BLOOD Pb, PICA CHILD	0.019	0.04	0.04	0.05	0.06	1084

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.25 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	200
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	100
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	6.8
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	2.1E-6	7.9E-05	1%	--	7.9E-05	0.4%
Soil Ingestion	2.5E-4	9.6E-03	99%	5.0E-4	1.9E-02	100%
Inhalation	7.0E-8	2.7E-06	0.03%	--	2.7E-06	0.01%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B2.5a

Baseline Scenario Risk Evaluation for Lead in AOC 11 Shallow Soil (0 to 3 feet bgs) Using Area-Weighted EPCs: Recreational User (Camper)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	29.3
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.007	0.014	0.02	0.02	0.02	2159
BLOOD Pb, PICA CHILD	0.015	0.03	0.03	0.04	0.04	1084

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.25 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	200
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	100
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	6.8
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	2.1E-6	6.1E-05	1%	--	6.1E-05	0.4%
Soil Ingestion	2.5E-4	7.4E-03	99%	5.0E-4	1.5E-02	100%
Inhalation	7.0E-8	2.0E-06	0.03%	--	2.0E-06	0.01%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B2.5b

Baseline Scenario Risk Evaluation for Lead in AOC 11 Surface Soil (0 to 0.5 foot bgs) Using Area-Weighted EPCs: Recreational User (Hiker)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	38.2
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.019	0.035	0.04	0.05	0.06	1079
BLOOD Pb, PICA CHILD	0.039	0.07	0.08	0.10	0.12	542

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.5 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	200
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	100
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	6.8
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	4.1E-6	1.6E-04	1%	--	1.6E-04	0.4%
Soil Ingestion	5.0E-4	1.9E-02	99%	1.0E-3	3.8E-02	100%
Inhalation	1.4E-7	5.3E-06	0.03%	--	5.3E-06	0.01%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B2.5c

Baseline Scenario Risk Evaluation for Lead in AOC 11 Shallow Soil (0 to 3 feet bgs) Using Area-Weighted EPCs: Recreational User (Hiker)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	29.3
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.015	0.027	0.03	0.04	0.04	1079
BLOOD Pb, PICA CHILD	0.030	0.05	0.06	0.08	0.09	542

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.5[a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	200
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	100
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	6.8
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	4.1E-6	1.2E-04	1%	--	1.2E-04	0.4%
Soil Ingestion	5.0E-4	1.5E-02	99%	1.0E-3	2.9E-02	100%
Inhalation	1.4E-7	4.1E-06	0.03%	--	4.1E-06	0.01%

Notes:
[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B2.5e

Baseline Scenario Risk Evaluation for Lead in AOC 11 Surface Soil (0 to 0.5 foot bgs) Using Area-Weighted EPCs: Recreational User (Off-Highway Vehicle Rider)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	38.2
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.007	0.012	0.01	0.02	0.02	3180
BLOOD Pb, PICA CHILD	0.039	0.07	0.08	0.10	0.12	535

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.5 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	800
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	31
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	0.425
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	1.7E-5	6.3E-04	10%	--	6.3E-04	1.6%
Soil Ingestion	1.6E-4	5.9E-03	90%	1.0E-3	3.8E-02	98%
Inhalation	8.7E-9	3.3E-07	0.01%	--	3.3E-07	0.00%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

Table AOC11-B2.5f

Baseline Scenario Risk Evaluation for Lead in AOC 11 Shallow Soil (0 to 3 feet bgs) Using Area-Weighted EPCs: Recreational User (Off-Highway Vehicle Rider)

Soil Human Health and Ecological Risk Assessment
PG&E Topock Compressor Station
Needles, California

LEAD RISK ASSESSMENT SPREADSHEET 8
CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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INPUT MEDIUM	**INPUT** LEVEL
Lead in Soil/Dust (ug/g)	29.3
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl) 50th	Percentile Estimate of Blood Pb (ug/dl) 90th	Percentile Estimate of Blood Pb (ug/dl) 95th	Percentile Estimate of Blood Pb (ug/dl) 98th	Percentile Estimate of Blood Pb (ug/dl) 99th	PRG-90 (ug/g)
BLOOD Pb, CHILD	0.005	0.009	0.01	0.01	0.02	3180
BLOOD Pb, PICA CHILD	0.030	0.05	0.06	0.08	0.09	535

EXPOSURE PARAMETERS	units	children
Days per week	days/wk	0.5 [a]
Geometric Standard Deviation	ug/dl	1.6
Blood lead level of concern	ug/dl	1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	800
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	31
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	0.425
Inhalation constant	(ug/dl)/(ug/day	0.192

CHILDREN Pathway	typical Pathway contribution PEF	typical Pathway contribution ug/dl	typical Pathway contribution percent	with pica Pathway contribution PEF	with pica Pathway contribution ug/dl	with pica Pathway contribution percent
Soil Contact	1.7E-5	4.9E-04	10%	--	4.9E-04	1.6%
Soil Ingestion	1.6E-4	4.6E-03	90%	1.0E-3	2.9E-02	98%
Inhalation	8.7E-9	2.6E-07	0.01%	--	2.6E-07	0.00%

Notes:

[a] Highlighted values are Site-specific: days per week based on the assumption of 1 day per month (1 day/4 weeks = 0.25 days/week), 8 months per year. See Table 5.1 of the main report for details.

ATTACHMENT C

Dose and Risk Calculations for Ecological Receptors at AOC 11 Using Depth-Weighted EPCs and Area-Weighted EPCs

For additional help with the information provided in Attachment C, please contact Erin Osborn, Arcadis Principal Toxicologist, at 1-510-684-6760.

Table AOC11-C.1

Desert Shrew Risk Calculations Using Depth-Weighted and Area-Weighted Exposure Point Concentrations (Wildlife SUF = 1, TRVs used for RBRG Development, and Selected BAFs) for AOC 11

Post-Soil N T C R A Human Health and Ecological Risk Assessment Report
PG&E Topock Compressor Station
Needles, California

Scenario	Category	COPEC	Terrestrial Receptors	TRV Type	Soil EPC (mg/kg or ng/kg)[a]	Diet Composition (Biota)	Diet Composition (Soil Fraction)	Tissue EPCs (mg/kg dw)	Body Weight (kg)	Intake Estimates (F I R) (kg dw/kg-day)	Intake Estimates (S I R) (kg dw/kg-day)
Baseline (Depth-Weighted)	Inorganics	Chromium, hexavalent	Desert Shrew	Selected	1.1E+00	100% Insects	2.0E-02	3.3E-01	5.0E-03	2.0E-01	4.1E-03
Baseline (Depth-Weighted)	Inorganics	Chromium, total	Desert Shrew	Selected	3.9E+01	100% Insects	2.0E-02	1.2E+01	5.0E-03	2.0E-01	4.1E-03
Baseline (Depth-Weighted)	Inorganics	Copper	Desert Shrew	Selected	1.4E+01	100% Insects	2.0E-02	7.0E+00	5.0E-03	2.0E-01	4.1E-03
Baseline (Depth-Weighted)	Dioxins	TEQ Mammals	Desert Shrew	Alternate	8.0E+01	100% Insects	2.0E-02	4.9E+02	5.0E-03	2.0E-01	4.1E-03
Baseline (Area-Weighted)	Inorganics	Chromium, hexavalent	Desert Shrew	Selected	1.6E+00	100% Insects	2.0E-02	4.8E-01	5.0E-03	2.0E-01	4.1E-03
Baseline (Area-Weighted)	Inorganics	Chromium, total	Desert Shrew	Selected	4.6E+01	100% Insects	2.0E-02	1.4E+01	5.0E-03	2.0E-01	4.1E-03
Baseline (Area-Weighted)	Inorganics	Copper	Desert Shrew	Selected	1.2E+01	100% Insects	2.0E-02	6.4E+00	5.0E-03	2.0E-01	4.1E-03
Baseline (Area-Weighted)	Dioxins	TEQ Mammals	Desert Shrew	Alternate	6.4E+01	100% Insects	2.0E-02	3.8E+02	5.0E-03	2.0E-01	4.1E-03

Table AOC11-C.1

Desert Shrew Risk Calculations Using Depth-Weighted and Area-Weighted Exposure Point Concentrations (Wildlife SUF = 1, TRVs used for RBRG Development, and Selected BAFs) for AOC 11

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Scenario	Category	COPEC	Terrestrial Receptors	TRV Type	Site Use Factor (unitless)	Dose (Terrestrial Insects) (mg/kg-day)	Dose (Soil) (mg/kg-day)	Total Dose (mg/kg-day)	N O A E L TRV (mg/kg-day)	L O A E L TRV (mg/kg-day)	N O A E L HQ (unitless)	L O A E L HQ (unitless)	HQ Notes
Baseline (Depth-Weighted)	Inorganics	Chromium, hexavalent	Desert Shrew	Selected	1.0E+00	6.7E-02	4.4E-03	7.2E-02	9.2E+00	3.8E+01	8E-03	2E-03	None
Baseline (Depth-Weighted)	Inorganics	Chromium, total	Desert Shrew	Selected	1.0E+00	2.4E+00	1.6E-01	2.6E+00	2.4E+00	9.6E+00	1E+00	3E-01	None
Baseline (Depth-Weighted)	Inorganics	Copper	Desert Shrew	Selected	1.0E+00	1.4E+00	5.5E-02	1.5E+00	9.4E+00	1.6E+01	2E-01	9E-02	None
Baseline (Depth-Weighted)	Dioxins	TEQ Mammals	Desert Shrew	Alternate	1.0E+00	1.0E+02	3.3E-01	1.0E+02	4.9E+00	3.0E+01	**2E+01**	**3E+00**	Note 2
Baseline (Area-Weighted)	Inorganics	Chromium, hexavalent	Desert Shrew	Selected	1.0E+00	9.7E-02	6.3E-03	1.0E-01	9.2E+00	3.8E+01	1E-02	3E-03	None
Baseline (Area-Weighted)	Inorganics	Chromium, total	Desert Shrew	Selected	1.0E+00	2.8E+00	1.9E-01	3.0E+00	2.4E+00	9.6E+00	1E+00	3E-01	None
Baseline (Area-Weighted)	Inorganics	Copper	Desert Shrew	Selected	1.0E+00	1.3E+00	5.0E-02	1.3E+00	9.4E+00	1.6E+01	1E-01	9E-02	None
Baseline (Area-Weighted)	Dioxins	TEQ Mammals	Desert Shrew	Alternate	1.0E+00	7.7E+01	2.6E-01	7.7E+01	4.9E+00	3.0E+01	**2E+01**	**3E+00**	Note 2

Table AOC11-C.1
Desert Shrew Risk Calculations Using Depth-Weighted and Area-Weighted Exposure Point Concentrations (Wildlife SUF = 1, TRVs used for RBRG Development, and Selected BAFs) for AOC 11

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Notes:

[a] Inorganics presented in mg/kg; dioxin presented in ng/kg.
[b] Total dose equation is presented below:
Total Dose (mg/kg-day) = $[(EPC_{soil} \times SIR) + (C_{plants} \times FIR \times F_{plants}) + (C_{insects} \times FIR \times F_{insects}) + (C_{mammals} \times FIR \times F_{mammals})] \times SUF$
[c] HQ = Total Dose / TRV

Note 1	N O A E L HQ greater than 1
Note 2	L O A E L HQ greater than 1
Note 3	L O A E L HQ greater than 10
Note 4	L O A E L HQ greater than 100

Abbreviations:

AOC = area of concern
B A F = bioaccumulation factor
COPEC = constituent of potential ecological concern
dw = dry weight
EPC_{soil} = exposure point concentration in soil (mg/kg dw)
EPC_{plants} = exposure point concentration in plants (mg/kg dw)
$EPC_{insects}$ = exposure point concentration in insects (mg/kg dw)
$EPC_{mammals}$ = exposure point concentration in mammals (mg/kg dw)
F_{plants} = fraction of plants in diet
$F_{insects}$ = fraction of insects in diet
$F_{mammals}$ = fraction of mammals in diet
FIR = food ingestion rate (kg dw/kg bw-day)
HQ = hazard quotient (unitless)
kg = kilogram
kg dw/kg bw-day = kilograms per kilogram of body weight per day
LOAEL = lowest observed adverse effect level (mg/kg-day)
mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
ND = not detected
ng/kg = nanograms per kilogram
NOAEL = no observed adverse effect level (mg/kg-day)
SIR = soil ingestion rate (kg dw/kg bw-day)
SUF = site use factor (fraction)
TRV = toxicity reference value (mg/kg-day)

Table AOC11-C.2

Desert Shrew Risk Calculations Using Depth-Weighted Exposure Point Concentrations and Congener-Specific BAFs (Wildlife SUF = 1, TRVs used for RBRG Development) for AOC 11

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Scenario	Category	COPEC	Terrestrial Receptors	TRV Type	BAF Type	Soil EPC (mg/kg or ng/kg)[a]	Diet Composition (Biota)	Diet Composition (Soil Fraction)	Tissue EPCs (mg/kg dw)	Body Weight (kg)	Intake Estimates (F I R) (kg dw/kg-day)	Intake Estimates (S I R) (kg dw/kg-day)	Site Use Factor (unitless)
Baseline (Depth-Weighted)	Dioxins	TEQ Mammals	Desert Shrew	Alternate	Congener-Specific (USEPA 1999)	8.0E+01	100% Insects	2.0E-02	5.2E+01	5.0E-03	2.0E-01	4.1E-03	1.0E+00
Baseline (Depth-Weighted)	Dioxins	TEQ Mammals	Desert Shrew	Alternate	Congener-Specific (Fagervold et al. 2010)	8.0E+01	100% Insects	2.0E-02	2.4E+01	5.0E-03	2.0E-01	4.1E-03	1.0E+00

Table AOC11-C.2

Desert Shrew Risk Calculations Using Depth-Weighted Exposure Point Concentrations and Congener-Specific BAFs (Wildlife SUF = 1, TRVs used for RBRG Development) for AOC 11

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Scenario	Category	COPEC	Terrestrial Receptors	TRV Type	BAF Type	Dose (Terrestrial Insects) (mg/kg-day)	Dose (Soil) (mg/kg-day)	Total Dose (mg/kg-day)	N O A E L TRV (mg/kg-day)	L O A E L TRV (mg/kg-day)	N O A E L HQ (unitless)	L O A E L HQ (unitless)	HQ Notes
Baseline (Depth-Weighted)	Dioxins	TEQ Mammals	Desert Shrew	Alternate	Congener-Specific (USEPA 1999)	1.1E+01	3.3E-01	1.1E+01	4.9E+00	3.0E+01	**2E+00**	4E-01	Note 1
Baseline (Depth-Weighted)	Dioxins	TEQ Mammals	Desert Shrew	Alternate	Congener-Specific (Fagervold et al. 2010)	4.9E+00	3.3E-01	5.2E+00	4.9E+00	3.0E+01	1E+00	2E-01	None

Table AOC11-C.2
Desert Shrew Risk Calculations Using Depth-Weighted Exposure Point Concentrations and Congener-Specific BAFs (Wildlife SUF = 1, TRVs used for RBRG Development) for AOC 11

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[c] HQ = Total Dose / TRV

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mg/kg = milligrams per kilogram
mg/kg-day = milligrams per kilogram per day
ND = not detected
ng/kg = nanograms per kilogram
NOAEL = no observed adverse effect level (mg/kg-day)
SIR = soil ingestion rate (kg dw/kg bw-day)
SUF = site use factor (fraction)
TRV = toxicity reference value (mg/kg-day)

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