APPENDIX K HAZARDOUS MATERIALS REMEDIATION AND FINAL LANDFILL CLOSURE PLANS

APPENDIX K.1 OPERATING UNIT SAN MATEO (OU-SM) REMEDIAL ACTION PLAN (1 OF 4)

Geosyntec consultants

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FEASIBILITY STUDY/ REMEDIAL ACTION PLAN

SAN MATEO COUNTY PORTION OF UNIVERSAL PARAGON CORPORATION OPERABLE UNIT (UPC OU-SM) BRISBANE, CALIFORNIA

Prepared for

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Project Number: WG2445

October 11, 2021

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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
µg/kg	micrograms per kilogram
µS/cm	microSiemens per centimeter
1,1-DCE	1,1-dichloroethene
ACS	American Cancer Society
AMEC	AMEC Environment and Infrastructure, Inc.
ARARs	applicable or relevant and appropriate requirements
bgs	below ground surface
B&M	Burns and McDonnell, Inc.
BTEX	benzene, toluene, ethyl benzene, and xylenes
Cal-EPA	California Environmental Protection Agency
Caltrain	Peninsula Corridor Joint Powers Board
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cis-1,2-DCE	cis-1,2-dichloroethene
COPCs	chemicals of potential concern
COCs	chemicals of concern
CUL	cleanup level
CVOCs	chlorinated volatile organic compounds
Dhc	dehaloccocoides
DTSC	California Department of Toxic Substances Control
E&E	Ecology and Environment, Inc.
ESL	environmental screening level
EOS	emulsified oil substrate
EPC	exposure point concentration
ERD	enhanced reductive dechlorination
EVO	emulsified vegetable oil
FS	Feasibility Study
Ft/ft	foot/foot

gpd	gallons per day
GRAs	general response actions
GETS	groundwater extraction and treatment system
HCI	Hydrologic Consultants, Inc.
HI	hazard index
HQ	hazard quotient
HRA	Health Risk Assessment
HSC	California Health and Safety Code
ITC	International Technology Corporation
KMEP	Kinder Morgan Energy Partners
LBNL	Lawrence Berkeley National Laboratory
MACTEC	MACTEC Engineering and Consulting, Inc.
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MSL	mean sea level
MTBE	methyl tertiary butyl ether
NAVD88	North American Vertical Datum of 1988
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NGVD29	National Geodetic Vertical Datum of 1929
O&M	operation and maintenance
OBM	Old Bay Mud
OBMD	Old Bay Margin Deposits
OBMD-SU	Old Bay Margin Deposit Sand Unit
OCPs	organochlorine pesticides
OPC-SAT	California Ocean Protection Council Science Advisory Team
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCE	tetrachloroethene (also known as perchloroethene)

PEF	particulate emission factor
PMP	performance monitoring program
RAOs	remedial action objectives
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RDIP	Remedial Design and Implementation Plan
RSLs	Regional Screening Levels, US EPA Region IX (formerly PRGs)
Schlage OU	Schlage Operable Unit
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SMP	Soil Management Plan
SP OU-1	Southern Pacific Brisbane Railyard – Operable Unit 1
SPTC	Southern Pacific Transportation Company
SVOCs	semi-volatile organic compounds
SWBZ	shallow water-bearing zone (a.k.a. Fill zone or A-Fill zone)
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T&R	Treadwell and Rollo
TBC	To-be-Considered Requirement
TCE	tricholoroethene
TDS	total dissolved solids
TPH	total petroleum hydrocarbons
TPH-d	total petroleum hydrocarbons as diesel
TPH-g	total petroleum hydrocarbons as gasoline
trans-1,2-DCE	trans-1,2-dichloroethene
Tuntex	Tuntex USA, Inc.
UCL	Upper Confidence Limit
UPC OU	Universal Paragon Corporation Operable Unit
UPC	Universal Paragon Corporation, Inc.
UPC OU-SM	San Mateo County portion of Universal Paragon Corporation Operable Unit, the Site
UPC OU-SF	San Francisco County portion of Universal Paragon Corporation Operable Unit

USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound
YBMD	Young Bay Margin Deposits
YBM	Young Bay Mud

EXECUTIVE SUMMARY

This Feasibility Study/Remedial Action Plan (FS/RAP) was prepared by Geosyntec Consultants on behalf of Universal Paragon Corporation, Inc. (UPC) to address soil, soil vapor, and groundwater contamination at the former Southern Pacific – Brisbane North Area site at Geneva Avenue and Bayshore Boulevard in Brisbane, California (Site). The Site is part of a larger group of properties under environmental investigation/remediation that have been designated as operable units (OUs) under agreements with the California Department of Toxic Substances Control (DTSC) and the San Francisco Bay Regional Water Quality Control Board. The Site is known as UPC OU-SM as it is located in San Mateo County.

The Site is approximately 35 acres in size and occupies the northern portion of the former Southern Pacific Transportation Company Brisbane Railyard, which was used as a railroad switching yard from 1911 to 1982 [Lipps, 2013]. After 1982 the Site was unused. In 1989, Tuntex, USA (now known as UPC) purchased the property. The Site is currently vacant with various foundations and building slabs remaining. It is included as a portion of a larger mixed-use development project known as the Brisbane Baylands Development, which will include housing, commercial businesses, civic uses, and public open space. UPC has been designated as the master developer.

Numerous environmental investigations have been conducted at the Site since 1984 to characterize the distribution of contaminants resulting from historical railroad operations and a contaminant plume from the adjacent Schlage Lock site (Schlage OU). Investigations have identified the presence of metals (primarily arsenic, lead, and mercury), polynuclear aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs), chlorinated volatile organic compounds (CVOCs), and petroleum hydrocarbons, including gasoline-range hydrocarbons (TPH-g) and diesel-range hydrocarbons (TPH-d).

Site remediation completed to date includes the safe removal of hydrocarbon-impacted soil from the northwest portion of the Site. In addition, a groundwater extraction and treatment system operated in the northern portion of the Site from 1995 to 2008 to address CVOC contaminants that had migrated from the Schlage OU. Currently, the contaminated groundwater is being addressed as documented in the Schlage OU FS/RAP [MACTEC, 2009]. Remedial action at the Schlage OU was certified by DTSC in 2014 and operation and maintenance is ongoing [DTSC, 2014]. Because the CVOC groundwater plume at the Site is sourced from, and is the responsibility of the Schlage OU, any additional remediation or mitigation of CVOCs in groundwater implemented at the UPC OU-SM Site will be conducted under the Schlage OU FS/RAP. Impacts to soil vapor on the UPC OU-SM Site that result from the residual CVOCs in groundwater from the Schlage OU will be addressed in the remedial design phase and mitigated at the time occupied buildings are constructed, if necessary.

A Baseline Health Risk Assessment (HRA) for the Site was prepared under the assumption that no remediation or mitigation would be implemented. Using this assumption, the HRA evaluated potential risks to current and future populations that could be exposed to chemicals at the Site so that measures could be implemented to address risks appropriately. The results of the HRA found that present Site conditions are protective for current populations (i.e., site visitors, commercial/industrial workers at neighboring facilities, and residents of adjacent neighborhoods) but future action to remediate or mitigate potential exposure to chemicals of concern (COCs) in

soil and soil vapor are warranted to protect future commercial/industrial workers, construction workers, and residents at the Site under a high intensity, mixed-use redevelopment scenario.

For the Site, five remedial alternatives were subjected to a detailed alternatives analysis pursuant to the nine criteria of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and the six criteria of Section 25356.1 of the California Health and Safety Code (HSC). A comparative analysis was also completed that identified the advantages and disadvantages of each alternative when compared to other alternatives. Redevelopment activities that would serve to eliminate pathways to exposure for future Site receptors (e.g., the placement of up to 30 feet of fill over existing soils that minimizes direct exposure to impacted media) were integrated into the remedial technology screening and development of remedial alternatives.

Based on the evaluation and comparison of the five alternatives, Alternative 3: Land Use Restrictions, Excavation with Partial Off-Site Disposal and Partial On-Site Relocation, and Capping for Soils, is the preferred remedial alternative identified for implementation at the Site. This alternative includes:

- Capping of soil that contains COCs at concentrations exceeding cleanup levels in areas where significant fill (i.e., greater than 5 feet of fill) or other capping (e.g., foundations, roads) will be placed over existing soil;
- Excavation, partial off-haul and disposal, and partial relocation and capping of impacted soil that contains COCs at concentrations exceeding cleanup levels in areas that will not be filled (capped);
- Soil vapor mitigation systems as part of future building construction, if required based on subsequent soil vapor testing and Site-specific risk assessment after remediation is completed;
- Land use restrictions including administrative actions and engineered actions; and
- Ongoing operation and maintenance of caps and any engineered systems such as soil vapor mitigation systems.

After approval of the FS/RAP by DTSC, UPC will submit for DTSC review and approval one or more Remedial Design and Implementation Plans. Following completion of remediation activities, UPC will submit to DTSC a Remedial Action Completion Report documenting the implementation of remediation activities and noting any deviations from the approved plan. The completion report will include a post-remediation risk assessment that will evaluate the overall effectiveness of the remediation and will provide the technical basis for any mitigation measures (such as soil vapor mitigation systems) plus an operation and maintenance plan and a soil management plan to ensure the long-term protection of human health and the environment.

1. INTRODUCTION

This Feasibility Study/Remedial Action Plan (FS/RAP) describes the preferred remedial actions necessary to address soil and groundwater contamination at the San Mateo County portion of the Universal Paragon Corporation (UPC) Operable Unit (UPC OU-SM), located in Brisbane, California (the Site) (**Figure 1**). This FS/RAP was prepared on behalf of the Site owner [1] to comply with the California Department of Toxic Substances Control (DTSC) *Consent Order in the Matter of the Schlage OU and Brisbane Railyard (OU-1)* (Consent Order), Docket Number HSA CO 07/08 185, dated 22 May 2008 [DTSC, 2008a]. The Consent Order redefined OU-1 as the UPC OU. The UPC OU is further subdivided into UPC OU-SF, which is the portion in San Francisco County, and UPC OU-SM, which is the portion in San Mateo County.

The Consent Order signed in 2008 established legal and administrative responsibilities and procedures for cleanup of chemical releases at the Schlage OU, UPC OU-SF, and UPC OU-SM. The Schlage OU is defined as the former Schlage Lock property in addition to soil and groundwater impacted with chlorinated volatile organic compounds (CVOCs) located within UPC OU-SF and UPC OU-SM that have migrated from the Schlage OU. An FS/RAP was submitted to DTSC in 2009 for the Schlage OU and the UPC OU-SF and remediation was implemented at both sites.

For the purposes of this FS/RAP, the "Site" consists of the groundwater and soil portions of the UPC OU-SM that are impacted with chemicals other than CVOCs that have migrated from the Schlage OU. The remedial actions described in this FS/RAP were selected to address contaminated soil and groundwater at the Site, to meet the remedial action objectives (RAOs), and to prepare for the redevelopment and occupancy of the Site. CVOCs in groundwater at the UPC OU-SM are being addressed in accordance with the FS/RAP for the Schlage OU [MACTEC, 2009]. Any residual CVOCs in soil vapor from groundwater contamination at the UPC OU-SM that creates a significant risk, taking into account Site-specific factors, will be addressed with vapor mitigation prior to vertical construction in accordance with this FS/RAP.

1.1 Purpose of this Feasibility Study/Remedial Action Plan

The purpose of this FS/RAP is to identify the preferred remedy for the Site by assessing Site information and potential remedial alternatives consistent with the provisions of the California Health and Safety Code (HSC) Section 25356.1. This FS/RAP provides the following components specified in the California Environmental Protection Agency, DTSC Document No. EO-95-007-PP, Remedial Action Plan Policy [DTSC, 1995]:

- Site background, including a summary of Site history, Site use, previous investigations, identification of chemicals of potential concern (COPCs), and previous removal actions;[2]

[1] Sunquest Properties, Inc., holds title to the former SPTC parcels in San Mateo County.

[2] "COPC" refers to a chemical detected at a concentration above its screening level. "Chemical of concern", or "COC", refers to a chemical identified in the risk assessment that contributes significantly to an unacceptable exposure risk.

- Summary of Site risks, including an overview of the extent of Site contamination and chemicals of concern (COCs), the potential risks to human health and/or the environment, and the determination of cleanup levels (CULs);
- Summary and evaluation of remedial technologies considered, the development of remedial action alternatives, a summary of the alternatives evaluated, a description of the preferred remedy, and the basis for the remedy selection; and
- Summary of public relations activities, including a solicitation for public review and comments on the preferred remedies.

1.2 FS/RAP Organization

This FS/RAP was prepared in accordance with DTSC Document No. EO-95-007-PP, *Remedial Action Plan (RAP) Policy* [DTSC, 1995] and the U.S. Environmental Protection Agency's (EPA's) *Guidance for Conducting Remedial Investigations and Feasibility Studies* and *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* [EPA, 1999]. This report is organized as follows:

- Section 1, Introduction: Discusses the purpose of the document, presents the document organization, outlines the regulatory framework under which this work is being performed, and presents the project schedule;
- Section 2, Site Background: Summarizes and discusses the history of the Site, outlines UPC's redevelopment plans, summarizes the previous investigations and remedial activities, describes regional and Site geology and hydrogeology, and summarizes the results of the UPC OU-SM Data Gap Investigation;
- Section 3, Nature and Extent of Contamination: Summarizes the nature and extent of contamination in soil and groundwater at the UPC OU-SM and the Site contaminants retained as COPCs;
- Section 4, Site-Specific Health Risks: Includes a Site-specific health risk assessment and summarizes the CULs based on the Site-specific health risks;
- Section 5, Remedial Action Objectives: Presents potential applicable or relevant and appropriate requirements (ARARs) for remedial actions at the Site, and RAOs for cleanup of the Site;
- Section 6, Feasibility Study and Alternatives Analysis: Describes the screening of the general response actions and corresponding remedial technologies and presents an evaluation and comparison of remedial alternatives;
- Section 7, Preferred Remedial Alternative: Summarizes the preferred remedial alternative, discusses the remedial activities, outlines the sampling methodology to confirm cleanup levels have been met following remedial actions, and outlines post-remediation operation and maintenance plans and land use restrictions that will be implemented;
- Section 8, Schedule: Presents the schedule for completion of the Remedial Design and Implementation Plan (RDIP), and completion of the remedial actions at the Site;
- Section 9, References: Presents references to documents cited in this FS/RAP;

- Appendix A includes the Data Gap Investigation Report;
- Appendix B includes the Baseline Health Risk Assessment Report;
- Appendix C includes Estimated Cost Summary Tables for Remedial Alternatives evaluated for the UPC OU-SM;
- Appendix D includes import fill criteria for the Site;
- Appendix E includes the Administrative Record for the Site;
- Appendix F includes the Statement of Reasons and Preliminary Non-Binding Allocation of Responsibility;
- Appendix G, Responsiveness Summary, includes responses to public comments received on the FS/RAP; and
- Appendix H, California Environmental Quality Act (CEQA) Notice of Determination, summarizes DTSC's evaluation of environmental impacts resulting from implementation of the selected remedy.

1.3 Regulatory Framework

This FS/RAP has been prepared pursuant to California HSC Section 25356.1 in accordance with the DTSC Document No. EO-95-007-PP, Remedial Action Plan Policy [DTSC, 1995]. The preferred remedial actions meet the requirements specified in the California HSC Chapter 6.8. This FS/RAP is also consistent with the applicable Federal requirements for the evaluation and selection of a final remedial action as outlined in the EPA's National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (CFR), Part 300.400 [EPA, 1990], as required under HSC Chapter 6.8.

In the May 2008 Consent Order, UPC assumed responsibility for the UPC OU-SM. The May 2008 Consent Order establishes legal and administrative responsibilities and procedures for cleanup of hazardous substances releases at the Site and will guide UPC when conducting the remedial actions required by this FS/RAP.

1.4 Anticipated Brisbane Baylands Development

The Site is a portion of a larger mixed-use development project that will include housing, commercial businesses, civic uses, and public open space. UPC will be the Master Developer of the development. In summary, the development is anticipated to include the following activities: demolition of existing structures, scarifying the surface to remove all vegetation, surface grading to level the Site, import and placement of at least 5 feet of fill over a majority of the land surface, installation of new utilities, construction of a new network of roads, including the Geneva Avenue extension at the southern Boundary of the UPC OU-SM, construction of a Caltrain right-of-way flyover for Geneva Avenue, construction of residential and commercial buildings, and construction of public parks, open space, and greenbelts.

1.5 Project Schedule

The goal for the master developer is to have the Site ready for redevelopment by March 2023. The development will proceed in phases that will be completed over a time period of 10 years or more. It is the intent of UPC to integrate implementation of the components of the approved remedy in conjunction with land development activities. However, some components of Site remediation, as presented in this FS/RAP (e.g., demolition, vegetation removal, rough grading, clean soil import and placement) are anticipated to take place during the initial rough grading such that a majority of the Site will have a clean soil cover over it prior to the major vertical development construction activities. A specific implementation schedule, which may include phasing, will be included in the RDIP. The RDIP will be submitted to DTSC for review and approval following approval of this FS/RAP. Groundwater monitoring at UPC OU-SM will continue during and after development as part of the Schlage OU monitoring program until concentrations of COCs reach the Schlage OU-specific CULs.

2. SITE BACKGROUND

2.1 Site Description

The Site, approximately 35 acres, consists of the northern portion of the former Southern Pacific Transportation Company (SPTC) Brisbane Railyard within San Mateo County, between Bayshore Boulevard on the west, the Peninsula Corridor Joint Powers Board (Caltrain) railroad tracks on the east, and extending northward from Geneva Avenue to the San Francisco/San Mateo County line. The Schlage OU and UPC OU-SF are north of the San Mateo county line. The Site is located immediately south of the county line and OU-2, which is under San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) oversight, is located to the south of the Site. The Brisbane Landfill is located to the east of the Site, beyond the existing Caltrain railroad right-of-way (**Figure 1**).

The Site is nearly flat and ground surface elevations range from approximately 10 to 13 feet above mean sea level (msl) relative to the National Geodetic Vertical Datum of 1929 (NGVD29), or 12.7 to 15.7 feet relative to the North American Vertical Datum of 1988 (NAVD88).

2.2 Historical Use Summary

The Site was acquired by SPTC in 1896. Prior to SPTC acquiring the property, fill had been added to the San Francisco tidal flats to extend the buildable land surface [Hydrologic Consultants, Inc. (HCI), 1989]. Landfilling operations continued following SPTC acquisition. Fill added to the property during this time is thought to have consisted of general soil material, refuse, and rock blasted from a nearby roadcut through Visitacion Point [HCI, 1989; Burns & McDonnell (B&M) and Treadwell and Rollo (T&R), 2002]. The property was later used to dispose of rubble and wreckage generated from the 1906 San Francisco earthquake and fire [HCI, 1989]. By 1914, well-graded material was imported to the Site to lay the foundation for SPTC railroad operations which began that year [Levine-Fricke, 1993]. By 1935, fill was placed on most of the area between what is now Bayshore Boulevard and Tunnel Avenue [HCI, 1989].

SPTC operated the former Brisbane Railyard from approximately 1911 through 1982 [Lipps, 2013]. SPTC's major railroad operations resulted in the construction of numerous railroad facilities. The railyard was used as SPTC's railroad switching yard. Railcar maintenance and repair activities, railcar parking, and materials transfer operations were also conducted on the railyard. It is believed that pesticides containing lead and arsenic were sprayed at the railyard for weed control during that period [MACTEC, 2009]. In 1982, SPTC's railyard operations ceased. The Site was unused between 1982 and 1989. Tuntex USA, Inc. (Tuntex)[3] acquired most of the railyard from SPTC in December 1989, after most of the railyard facilities at the Site had been abandoned and removed. Tuntex has not performed any other manufacturing operation at the Site [DTSC, 2008a], which is presently vacant, though various foundations and building slabs remain. Aerial photographs of the Site taken between 1946 and 2018 are provided in the UPC OU-SM Data Gap Investigation Work Plan [Geosyntec, 2018b].

[3] Tuntex changed its name to UPC effective 1 January 1997.

Several historical facilities with operations that could have affected soil and groundwater quality were located within the UPC OU-SM (**Figure 2**):

- A passenger coach car repair shop in the southwest portion of the Site;
- A freight car repair shop plus nearby paint shop, forge, and blacksmith shop in the western portion of the Site;
- A paint storage house in the southern portion of the Site;
- A former lumber shed in the center of the Site;
- A wheel press;
- A planing mill;
- The former Unit #1 Oil Trap located on the western boundary of the Site; and
- The former Unit #2 Sludge Traps located in the northwest portion of the Site.

Chemicals that may have been used or generated as waste at these facilities include metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and petroleum hydrocarbons, including gasoline-range hydrocarbons (TPH-g), diesel-range hydrocarbons (TPH-d), and polynuclear aromatic hydrocarbons (PAHs). Site-wide, organochlorine pesticides (OCPs) may have been used. Radionuclides are not suspected of being present in Site soil at concentrations exceeding regional background based on the Site history detailed above.[4] Although soil samples have not been previously tested for radionuclides, this is not considered a data gap because elevated radiological concentrations are not associated with known Site uses and the Site ceased receiving fill material by 1935 whereas the widespread use of radionuclides began with nuclear weapons testing in 1945.

In 1985, the DTSC (formerly the California Department of Health Services, Toxic Substances Control Division), determined that *"There has been a release of hazardous substances on, or into the land on the Southern Pacific Bayshore Yard site located east of the intersection of Bayshore Boulevard and Geneva Road, Brisbane.*" Therefore, DTSC issued the "Order to Post and Fence" that required SPTC *"… to post the site with signs and enclose portions of the site with fences…"* [DTSC, 1985].

[4] Natural and anthropogenic sources may contribute to regional background radioactivity in soil; natural sources include primordial radionuclides originally present in bedrock, atmospheric deposition of cosmogenic radionuclides, and primordial radionuclides present in seawater which may accumulate in soils and sediments along ocean margins. Large-scale anthropogenic activities also contribute to regional background radioactivity in soil, including atmospheric deposition of radionuclides released during nuclear weapons testing (i.e., nuclear fallout) and nuclear disasters (e.g., Fukushima Daiichi) which can be transported large distances by atmospheric and oceanographic processes.

2.3 Site Characteristics

2.3.1 Topography

The Site lies at the base of the Visitacion Valley between Candlestick Point to the north and Visitacion Point to the south. The Site is situated on a low-lying flatland that was formed by filling a former embayment located along the western margin of San Francisco Bay. The current land surface has been largely formed by filling of the area in the early 1900s. The Site is nearly flat with a gentle slope to the east, toward San Francisco Bay. Ground surface elevations range from approximately 10 to 13 feet msl relative to the National Geodetic Vertical Datum of 1929 (NGVD29), or 12.7 to 15.7 feet relative to the North American Vertical Datum of 1988 (NAVD88).

2.3.2 Climate

The Site is located on the western margin of San Francisco Bay where winters (October through April) are wet and cool, and summers (April through October) are relatively warm and dry [ESA, 2013]. Temperatures in the Site vicinity average in the mid-50s annually and are moderated by the nearby San Francisco Bay. The mean annual rainfall in the vicinity of the Site is approximately 20 inches, but rainfall is highly variable; in the 67 years recorded by the San Francisco Airport weather station, eight years had over 30 inches of precipitation and two years had less than 10 inches of precipitation [ESA, 2013].

Winds at the Site are generally onshore winds from the Pacific Ocean traveling from the west toward the east [ESA, 2013]. The San Francisco Airport weather station, which is subject to wind conditions similar to those of the Site, has recorded an annual predominant wind speed of 13.4 miles per hour from the west northwest [ESA, 2013]. Site-specific wind data collected between 2008 and 2010 indicated an average wind speed of 10.5 miles per hour predominantly from the west [ESA, 2013].

2.3.3 Surface Water Hydrology

Surface water in the Site and vicinity primarily moves as overland flow that drains into catch basins and drop inlets to the local storm sewer system that drains to San Francisco Bay. A small drainage ditch is located approximately 2,100 feet southeast of the Site and the Brisbane Lagoon is located approximately 2.5 miles south of the Site. The eastern edge of the Site is located approximately 2,000 feet west of the San Francisco Bay shoreline. Based on multiple years of groundwater monitoring, surface water and groundwater conditions are not influenced by sea levels in San Francisco Bay.

In March 2018, the California Ocean Protection Council Science Advisory Team (OPC-SAT) issued *The State of California Sea Level Rise Guidance* report that provided an update to the sea level rise projections, based on current and best available science at that time (California Natural Resources Agency, 2018). Estimates of sea level rise reported in that document vary widely, with predicted values ranging from a rise of 1 to 10 feet between 2030 and 2100 based on the OPC-SAT study. The OPC-SAT recommends selecting a sea level rise metric for evaluating future potential impacts from sea level rise based on a project's risk tolerance. In March 2018, the County of San Mateo issued its Sea Level Rise Vulnerability Assessment [County of San Mateo, 2018].

The assessment did not identify the Site as being vulnerable to inundation from sea level rise projections. As new information becomes available, these documents will be updated and refined to provide guidance on the potential impacts of rising sea level in the future. As required in the Brisbane General Plan Amendment, Section 3J, "*Development shall be designed to protect uses from the 100-year flood, including 100 years of projected sea level rise as determined based on regulatory standards or guidelines in effect at the time of project construction, with the reference to guidelines and sea level rise projections approved by the Director of Public Works/City Engineer based on context-specific considerations of risk tolerance and adaptive capacity*." Future efforts to evaluate flood and sea level rise impacts on the development will be considered in the Remedial Design documents for the Site.

2.3.4 Regional Geology

The Site is located near San Francisco Bay, and in the recent past (c. 1906) was part of the Bay. The near surface geology has largely been controlled by the changing morphology of the Bay Area over geologic time.

The Site is located upon Quaternary-age (less than approximately 2 million years old) dune, alluvial (stream-deposited), and estuarine sediments, with some man-made fill.

Franciscan bedrock crops out at elevations above approximately 100 feet north of the Site, and at lower elevations on the east side of Tunnel Avenue, east of the Site. The Franciscan assemblage in the area is reportedly generally sheared and locally highly weathered, and consists of greenstone (a volcanic rock), interbedded chert and shale (sedimentary rocks formed in the deep ocean), and interbedded sandstone and shale (formed in medium to shallow-depth ocean). These rocks have subsequently been metamorphosed, sheared, and uplifted by tectonic activity. No Franciscan rocks are known to crop out on the Site, but occur at a depth of about 50 to 100 feet below ground surface (bgs) beneath the Site.

2.3.5 Site Geology

The Site is underlain by Quaternary-age alluvial deposits, dune sediments, estuarine sediments, and anthropogenic fill [MACTEC Engineering and Consulting, Inc. (MACTEC), 2009a; Burns & McDonnell and Treadwell & Rollo, 2002]. Site stratigraphy has been extensively investigated and characterized as part of the Schlage OU site investigation. A geologic cross-section through the Schlage OU, UPC OU-SF, and UPC OU-SM is provided in **Figures 3a and 3b**. The Site is underlain by five distinct geological units that are summarized in the Schlage OU reports as follows:

- **Fill**: a heterogeneous mixture of clay, silt, sand, gravel, and building debris that is exposed at ground surface and extends for a thickness of 10 to 15 feet below ground surface ("Fill" zone). At the time SPTC acquired the property in 1896, the northern half of the railyard consisted of fill from undocumented sources that had been placed into the tidal flats of San Francisco Bay. Between 1896 and 1935, fill was placed on most of the remaining area between Bayshore Boulevard and Tunnel Avenue. Sources of the fill reportedly include pulverized Franciscan bedrock derived from the surrounding hills, rubble from the 1906

San Francisco earthquake, and soil, debris, and rubble from other possible undocumented sources [DTSC, 1993].[5]

- **Young Bay Margin Deposits (YBMD)**: high-plasticity, low-permeability clay known as Young Bay Mud (YBM), and some interbedded silty sand layers and organic material that underlies the Fill and extends for a thickness of 5 to 20 feet below the Fill.
- **Colma Formation**: The upper portion of the Colma Formation consists of yellow to brown, fine- to medium-grained sand with some silt and clay which underlies the YBMD and extends for a thickness of approximately 30 feet. The lower portion consists of an approximately 10- to 20-feet thick layer of Old Bay Margin Deposits (OBMD), including yellow to brown, stiff, low-plasticity clay known as Old Bay Mud (OBM) that is considered to be an aquitard that separates the Colma Formation from the underlying Merced Formation. The Old Bay Margin Deposit Sand Unit (OBMD-SU) is a sand layer located within the OBM aquitard and has been documented as a laterally discontinuous layer beneath the Schlage OU. It is uncertain whether the OBMD-SU extends beneath the Site;
- **Merced Formation**: weakly consolidated sandstone with secondary siltstone and claystone. The thickness of the Merced Formation is unknown beneath the Site but reportedly extends to the Franciscan Bedrock [MACTEC, 2010].
- **Franciscan Assemblage[6] bedrock**: generally occurs at a depth of 50 to 60 feet below ground surface (bgs) beneath the Schlage OU site [MACTEC, 2010]. The Franciscan bedrock consists of metamorphosed, weathered, and sheared greenstone, interbedded chert and shale, and interbedded sandstone and shale.

2.4 Site Hydrogeology

The three water-bearing zones at the Site are the Fill, the Colma Formation, and the Merced Formation [MACTEC, 2010b]. The YBMD constitutes an aquitard that separates the Fill from the Colma Formation and confines the underlying Colma Formation. The OBMD constitutes an aquitard that contains groundwater in the OBMD-SU, separates the Colma Formation from the Merced Formation, and confines groundwater in the underlying Merced Formation.

The Site groundwater monitoring network was installed to monitor CVOCs released to the subsurface from the Schlage OU as well as potential metals impacts within the Schlage OU, UPC OU-SF, and UPC OU-SM. The network consists of monitoring wells screened within each of the water-bearing zones (**Figures 4a, 5, and 6**). Construction details for the wells are summarized in **Table 1**. The depth to groundwater at the Site was approximately 3 to 6 feet bgs in August 2018 [Geosyntec, 2018a]. Historical water level measurements for the Site are summarized in **Table 2**.

Many wells that are completed in the Colma and Merced Formations exhibit artesian conditions, indicating limited or no hydrological communication between the Fill and the deeper formations. The Colma and Merced Formations are recharged by groundwater flow from below and from

[5] The Fill is also commonly referred to as the A-Fill, A-Zone Fill, or the shallow water-bearing zone (SWBZ).
[6] Also known as Franciscan Complex, it is a geologic term for a late Mesozoic terrane of heterogeneous rocks found throughout the California Coast Ranges, and particularly on the San Francisco Peninsula.

Visitacion Valley sediments to the west. Groundwater potentiometric elevations increase with depth, and differences in hydraulic head between water-bearing zones consistently range from approximately 5 feet between the Fill and Colma Formation to approximately 13 feet between the Colma and Merced Formations [e.g., AMEC, 2014b]. The differences in hydraulic pressure (head) result in upward vertical gradients between each water-bearing zone. During the third quarter 2018 monitoring event, upward vertical gradients, consistent with historical measurements, were observed between the Fill, the Merced Formation, and the Colma Formation, with a magnitude of 0.19 foot/foot (ft/ft) between wells LF-2B (Colma Formation) and MW-7A (Fill) and 0.59 ft/ft between wells SW-09B (Merced Formation) and SW-09LA (Colma Formation) [Geosyntec, 2018a].

The direction and magnitude of lateral hydraulic gradients beneath the Site vary by location and water-bearing zone. **Figure 4a** illustrates the potentiometric surface in the Fill based on data from the time of the Data Gap Investigation (i.e., Third Quarter 2018). In the Fill, the hydraulic gradient of the water table is generally nearly flat, particularly in the eastern portion of the Site, with a historical magnitude of approximately 0.001 ft/ft. Horizontal groundwater flow in this zone appears to be toward the switching yard in the eastern portion of the Site. Groundwater flows southerly from the Schlage OU and UPC OU-SF located north of the Site, and easterly/northeasterly in the southwestern portion of the Site. This characterization is consistent with historical gradient directions and magnitudes as illustrated in **Figure 4b**, which shows groundwater elevation contours within the Fill during a GETS shutdown test in July 2000. The groundwater gradient appears to be influenced by higher topography and groundwater elevations to the north, south, and west. The Fill is likely recharged by surface water infiltration and discharge is likely through evapotranspiration. Due to the presence of topographic and hydraulic highs surrounding the Site, there is no hydraulic communication between the Site and the Bay.

Figures 5 and 6 illustrate the potentiometric surfaces in the Colma and Merced Formations, respectively, based on the Second Quarter 2018, [Geosyntec, 2018a].[7] In the Colma Formation, hydraulic gradients were approximately 0.004 ft/ft toward the Sunnydale Avenue sewer line to the north. The direction of the lateral hydraulic gradient in the Merced Formation is predominantly to the south with historical magnitudes that range from 0.007 ft/ft to 0.025 ft/ft.

2.5 Groundwater Quality and Use

Groundwater at the Site is not used for domestic or industrial purposes. In 2019, the Water Board issued a determination acknowledging that groundwater in the Fill, to a depth of approximately 15 feet below ground surface, meets exceptions (a) and (c) of State Water Resources Control Board Resolution No. 88-63 (i.e., total dissolved solids concentrations and well yield, respectively) and is not likely to be used as a source of drinking water [SFBRWQCB, 2019b]. Groundwater in the Colma and Merced Formations beneath the Site is presently considered a potential municipal supply under the San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) [SFBRWQCB, 2017]. The City of Brisbane provides the Site and surrounding residences and

[7] Monitoring of Fill groundwater was extensive during the Third Quarter 2018, coincident with the Data Gap Investigation. However, the second quarter is when the largest numbers of wells are sampled in the Colma and Merced formations, so groundwater potentiometric surfaces in these zones from the Second Quarter 2018 are presented.

businesses with public water from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains [B&M and T&R, 2005].

The groundwater quality of the Fill at UPC OU-SM is affected by already impacted groundwater flowing onto the Site from the Schlage OU and Zone A groundwater at the landfill (located east of UPC OU-SM). Fill zone groundwater is characterized as having high total dissolved solids (TDS) because the original land surface at the Site was submerged under the saline waters of San Francisco Bay. In the early to mid-1900s (ending in 1935), fill was placed in the Bay to create the current land surface. The placement of fill entrapped the saline bay water, which strongly influences the quality of the groundwater in the Fill zone. Specifically, the quality of groundwater considered for potential use as municipal or domestic water supply must not exceed a TDS concentration of 3,000 milligrams per liter (mg/L) or an electrical conductivity of 5,000 microSiemens per centimeter (µS/cm) per the Basin Plan [SFBRWQCB, 2017]. Historically, several monitoring wells screened in the Fill have exhibited electrical conductivity values exceeding 5,000 µS/cm **(Table 3)**. A statistical evaluation of the electrical conductivity values collected from these wells over the last two years, summarized in **Table 3**, indicates a 95% upper confidence limit (UCL) for the mean of over 5,400 µS/cm.

The poor water quality in this Fill groundwater is understandable given that this unit was originally under the saline waters of San Francisco Bay, is primarily recharged by local surface water infiltration and landfill groundwater, and is subject to evapotranspiration. For these reasons, SFBRWQCB concurred that the Fill zone groundwater at UPC OU-SM meets exceptions to State Water Resources Control Board Resolution No. 88-63 and is not likely to be used as a potential drinking water source [SFBRWQCB, 2019b].

Wells screened in the deeper water-bearing units, the Colma and Merced Formations, do not exhibit high electrical conductivity values and are likely capable of producing 200 gallons per day. These water-bearing units, which are recharged from below and from upgradient sediments to the west, are protected from the poor water quality in the Fill by the YBM aquitard and upward potentiometric gradients between the Colma Formation and the Fill.

2.6 Previous Site Environmental Investigations

Numerous environmental investigations have been conducted to date at the Site and at the neighboring UPC OU-SF and OU-2, previously referred to collectively as the Brisbane Railyard. Many of those investigations involved characterizing the distribution of CVOCs in groundwater that have migrated onsite from the Schlage OU. Investigations of the distribution of contaminants resulting from historical activities at the Site are provided below. Boring and well locations from these investigations are shown on **Figure 7**.

2.6.1 Soil and Groundwater Investigation – 1985

In 1984, Ecology and Environment, Inc. (E&E) conducted a two-phase environmental investigation at the Brisbane Railyard involving the installation of groundwater monitoring wells and analysis of groundwater and soil samples. Monitoring wells MW-2B, MW-3A, MW-4A, MW-5B, MW-6A, MW-6B, MW-7A, MW-8A, and MW-8B were installed and soil was sampled and analyzed from each location, excluding MW-2B, MW-5A, and MW-5B. In addition, shallow soil

(i.e., 1.5 to 3 feet bgs) was sampled at EE-2 through EE-7, EE-10 through EE-15, and EE-23, for a total of 21 sample locations. Soil samples were analyzed for metals and VOCs. Fill zone groundwater samples were also analyzed for VOCs, metals, and SVOCs [E&E, 1985].

2.6.2 Remedial Action Alternative Feasibility Study – 1986

In 1985 and 1986, The Mark Group performed the Remedial Action Alternative Feasibility Study for the Brisbane Railyard, which included drilling eight borings within the Site and collecting soil and groundwater samples; installing groundwater monitoring wells MK-2A, MK-3B, MK-4A/B through MK-6A/B, and MK-9A/B; and sampling previously installed monitoring wells. Fill zone and Colma formation groundwater samples were analyzed for metals and VOCs [The Mark Group, 1986].

2.6.3 Supplemental Remedial Investigation – 1990

In 1990, Levine-Fricke [1990] implemented a field sampling and laboratory analyses program at the Site that included soil sampling at boring NSB-5 and groundwater monitoring well sampling (i.e., LF-1A and LF-2B). Soil, Fill zone groundwater, and Colma formation samples were analyzed for metals and VOCs, and LF-1A was also analyzed for SVOCs. In addition, soil vapor and groundwater samples were collected at 35 locations and analyzed for VOCs and total petroleum hydrocarbons (TPH).

2.6.4 Field Investigation Report, Schlage/Tuntex Sites – 1998

T&R [1998] conducted an investigation consisting of depth-discrete groundwater sampling, soil sampling, and a passive soil vapor survey in September 1998 to further characterize the CVOC distribution in Fill zone groundwater near the boundary between the Schlage OU / UPC OU-SF and the Site (i.e., along the County line).

2.6.5 Remedial Investigation Report Joint Groundwater Operable Unit – 2002

B&M and T&R conducted a remedial investigation to evaluate the nature and extent of groundwater contamination beneath both the former Schlage and UPC OUs, including the Site [B&M and T&R, 2002]. The investigation: (1) evaluated the hydrogeology and geology of the Site as it relates to groundwater and contamination migration; (2) compiled all available groundwater chemical data into a single document along with a representative summary of hydrogeological data and information; (3) characterized the nature and extent of contamination in the groundwater at the Site; (4) evaluated transport routes of the chemical substances present in groundwater at the Site; and (5) developed a foundation of data necessary for the preparation of a Risk Assessment and subsequent RAP for the groundwater at the Site.

2.6.6 Soil Sampling Summary Report – 2006

Soil and Fill zone groundwater sampling were performed at the Schlage and UPC OUs in December 2005 and January 2006 [B&M, 2006a]. The objective of the investigation was to supplement the existing data from previous subsurface investigations, to reduce the spacing between soil and groundwater sampling locations, and to further characterize the soil and Fill zone groundwater at the OUs. Soil samples from 17 borings in the Site were analyzed for metals

(arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and soil samples from six borings were analyzed for CVOCs. Fill zone groundwater samples obtained from soil borings were also analyzed for CVOCs.

2.6.7 OU-1 Additional Investigation – 2006

An additional soil and groundwater investigation was performed at the Schlage and UPC OUs in August 2006 to further assess the quality of soil and groundwater [B&M, 2006b]. Nineteen borings within the Site were drilled to approximately 12 to 15 feet bgs and soil and Fill zone groundwater samples were obtained from each boring. The maximum soil sample depth was 11 feet bgs. Selected soil samples were analyzed for metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, and silver) and CVOCs, while groundwater samples were analyzed for CVOCs only.

2.6.8 Soil Vapor Sampling South of Visitacion Avenue – 2013

Soil vapor samples were collected in 2011 and 2012 [AMEC Environment and Infrastructure, Inc. (AMEC), 2013b] in association with the groundwater remedy at the Schlage OU. Fourteen soil vapor samples were collected in the Site at depths of 2.5 or 5 feet bgs. CVOCs associated with the Schlage OU groundwater plume were detected in soil vapor beneath the Site.

2.6.9 Groundwater Monitoring – Ongoing

Groundwater monitoring has been carried out at the Site since 1995, in accordance with the operation and maintenance (O&M) agreement between the DTSC and Sunquest. Since 2012, groundwater monitoring has been conducted on a quarterly basis. Construction details for groundwater monitoring wells located in the Site are provided in **Table 1**. Groundwater samples from all wells have been analyzed for CVOCs. In addition, groundwater from select wells has been analyzed for TPH, total chromium (i.e., trivalent plus hexavalent chromium), hexavalent chromium, benzene/toluene/ethylbenzene/xylenes (collectively, BTEX), and methyl tertiary butyl ether (MTBE).

2.7 Data Gap Investigation – 2018

In August and September 2018, Geosyntec conducted a data gap investigation in accordance with the DTSC-approved Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California [Geosyntec, 2018b]. The results of the data gap investigation were presented in the Data Gap Investigation Report for the Site (Data Gap Investigation Report), which was submitted to DTSC on 21 December 2018 [Geosyntec, 2018c] (provided herein as **Appendix A**).

Based on a review of the Site history and historical investigation data for the Site, four data gaps were identified in the Work Plan:

- Soil beneath the former lumber shed, the former paint storage house, the former wheel press and wheel lathe shop, the former coach repair shop, and the former blacksmith shop had not been characterized. Additional sampling was recommended to assess potential impacts to soil and groundwater resulting from these historical industrial activities at the

Site. Historical sample locations were concentrated in the north area of the Site and were comparatively sparse in the central and south areas.

- Soil and groundwater samples were not analyzed for chemicals that could reasonably be present in the subsurface based on the historical industrial activities at the Site, including SVOCs, PAHs, PCBs, and OCPs. Additionally, the potential presence of asbestos in Fill material placed at the Site had not been investigated previously.
- Further resolution of the spatial distribution of metals in soil, particularly arsenic and lead, was needed to develop appropriate remedial alternatives.
- The distribution of COCs in the Site Fill zone groundwater was outdated. Grab Fill zone groundwater samples had not been collected since 2006, and although select groundwater monitoring wells in the Site are monitored routinely as part of the O&M and the remedy performance monitoring program (PMP) for the Schlage OU CVOC plume, they are concentrated in the north area of the Site.

The results of the Data Gap Investigation indicated the presence of metals and PAHs in shallow soil at elevated concentrations across certain areas of the Site. Specifically, arsenic and lead were detected frequently at relatively elevated concentrations in shallow soil, likely resulting from the historical application of lead arsenate pesticide to the ground surface. Dissolved metals concentrations in groundwater were generally low with localized elevated concentrations that generally did not correlate with either elevated metals concentrations in soil nor with historical facilities.

OCPs and PCBs were detected in soil at only a few locations indicating that impacts to soil are localized at the Site. VOCs were detected at low concentrations in soil samples with the exception of one detection of naphthalene. The distribution of CVOCs in groundwater is indicative of impacts from the adjacent Schlage OU rather than point sources within the Site. In both soil and groundwater, TPH-g was detected only at low concentrations and TPH-d concentrations were elevated only at a few locations, again indicating that impacts to the subsurface are localized at the Site. Asbestos was not detected in any soil samples.

The results of this investigation supported the following conclusions and recommendations:

- The distribution of constituents in shallow soil and Fill zone groundwater potentially derived from historical Site activities has been adequately assessed across the Site;
- Due to elevated concentrations of some constituents in soil, a baseline health risk assessment for the Site was recommended; and
- The data are sufficient for developing and evaluating remedial alternatives for addressing COCs in Site soil in a Feasibility Study and Remedial Action Plan (FS/RAP).

2.8 Previous Remedial Activities

Remediation completed to date at the Site consists of excavation of petroleum-impacted soil from former sludge traps and groundwater extraction and treatment to address the Schlage OU CVOC plume. In addition, in situ treatment of CVOCs in groundwater is ongoing under the remedy approved by DTSC for the Schlage OU and the UPC OU-SF.

2.8.1 Soil Excavation

In November 1993, VOC- and petroleum hydrocarbon-impacted soils in the area of the sludge traps in the northwest corner of the Site were excavated **(Figure 2)**. Approximately 3,500 cubic yards of soil were removed to the depth of the water table and transported offsite for disposal. Confirmation soil samples (TPI-CONF-01, -02, and-09 in the UPC OU-SM) were analyzed for VOCs, TPH, and metals, and indicated that the remaining soil was not impacted by these analytes [International Technology Corporation (ITC), 1994]. DTSC certified completion of the TPH removal action in 1996 [DTSC, 1996].

2.8.2 Groundwater Extraction and Treatment

Groundwater extraction wells, shown in **Figure 7**, were installed within the Site and were operated as part of the groundwater extraction and treatment system (GETS) for the Schlage OU CVOC plume remediation. Operation of the GETS began in 1995 and continued until July 2008. Extracted groundwater was treated by adsorption using granular activated carbon and the treated water was discharged to a sanitary sewer under an industrial wastewater discharge permit. The GETS removed more than 5,800 pounds of PCE and TCE [AMEC, 2014a]. Shutdown of the GETS was approved by DTSC [2008b] and groundwater remediation transitioned to in situ enhanced reductive dechlorination (ERD) at the Schlage OU, UPC OU-SF, and the Site.

2.8.3 In Situ ERD Injections and Monitoring

Quarterly groundwater monitoring is performed onsite in conjunction with ongoing ERD for remediation of CVOCs in groundwater emanating from the Schlage OU, which began full-scale implementation in January 2010.

The ERD program involved the injection of emulsified oil substrate (EOS®), emulsified vegetable oil (EVO), and EHC® zero-valent iron into the Colma Formation, and to a lesser extent, the Fill zone, at the Schlage OU, UPC OU-SF, and the northern portion of the Site. In addition, the native bacterial population of the Colma Formation was supplemented by injection of BAC-9™ *Dehalococcoides* (Dhc) bioaugmentation culture. ERD activities were performed in accordance with the RDIP [MACTEC, 2010a], and are documented in the *Groundwater Remedial Action Implementation Completion Report* [AMEC, 2013a].

The goal of ERD is to encourage the sequential degradation of the residual CVOCs, ultimately to benign end products including ethane, ethene, and methane. Specifically, PCE will degrade to TCE, which will degrade to dichloroethene (predominantly cis-1,2-dichloroethene [cis-1,2-DCE]), which will degrade to vinyl chloride (VC), which will be converted to benign end products [USEPA, 1998]. The degradation process occurs naturally at some sites and is enhanced by the injection of microorganisms and carbon sources. The *Remedial Investigation Report, Joint Groundwater Operable Unit*, B&M and T&R [2002] noted that detections of cis-1,2-DCE and VC suggested that degradation was occurring naturally within the Schlage OU groundwater plume.

DTSC certified completion of groundwater remedial actions at the Schlage OU and UPC OU-SF on 26 June 2014 [DTSC, 2014]. Ongoing activities that will be conducted under the Schlage OU remedy, which extend to CVOC impacts on the Site, include ongoing monitoring of the ERD

remedy in groundwater and pre-development evaluation of CVOCs in soil vapors emanating from groundwater.

3. NATURE AND EXTENT OF CONTAMINATION

A summary of the nature and extent of contamination in soil and groundwater within the Site is presented below.

3.1 Soil

Soil samples have been collected at the UPC OU-SM since 1984. A detailed compilation of soil sampling results at the Site is presented in the Data Gap Investigation Report [Geosyntec, 2018c]. Soil samples were collected from approximately 237 locations, listed in **Table 4** and shown in **Figure 7** at depths ranging from 0.5 to 20 feet bgs. Concentrations were compared against screening criteria for residential soil in the following hierarchy: (1) DTSC Screening Levels, (2) USEPA Regional Screening Levels (RSLs), and (3) SFBRWQCB Environmental Screening Levels (ESLs). If DTSC screening levels were not available, USEPA RSLs were used, and if RSLs were not available, then SFBRWQCB ESLs were used. Exceptions included the metals arsenic and thallium, which considered background concentrations; and carcinogenic PAHs, which were used to compute benzo(a)pyrene toxicity equivalents for comparison against the 95th percentile ambient concentration in northern California [DTSC, 2009a]. The relevant exposure pathway for constituents in soil is direct contact; leaching to groundwater was not considered because the Fill zone groundwater meets exceptions to State Water Resources Control Board Resolution No. 88-63 and is not likely to be used as a potential drinking water source [SFBRWQCB, 2019b]. Potential vapor intrusion impacts from leaching of VOCs from soil to groundwater are addressed in the discussion of groundwater results in Section 3.3.1 below.

Soil constituents with concentrations exceeding screening levels in one or more samples were tentatively identified as COPCs and evaluated further in the health risk assessment discussed in Section 4 and provided as **Appendix B**. Based on the analysis in the health risk assessment, the list of risk-driving COCs was generated for the various receptor and exposure pathway combinations (see Section 4.1).

3.1.1 Metals

Soil data for metals are summarized in **Table 4**. Most soil samples were analyzed for Resource Conservation and Recovery Act (RCRA) metals (i.e., arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), and some were also analyzed for antimony, beryllium, cobalt, copper, nickel, thallium, vanadium, and zinc. Detection summaries are as follows:

- Arsenic was detected in 404 of 414 samples at concentrations up to 790 milligrams per kilogram (mg/kg) at boring location B13 (1 to 2 feet bgs) (**Figure 8**). The soil screening level for arsenic is 19 mg/kg and concentrations exceeded the screening level at 167 of 414 samples. Arsenic concentrations were generally highest in the 12 acres near the railroad tracks on the eastern side of the Site, though elevated concentrations were also observed along Bayshore Boulevard in the western portion of the Site and in the southern portion of the Site near the boundary with OU-2. Most elevated arsenic concentrations were observed in the top two feet of soil but were also encountered between 3 and 5 feet bgs and in saturated soil samples as deep as 10 feet bgs. Arsenic is considered a COPC for the Site.

- Barium was detected in 410 of 414 samples at concentrations up to 3,300 mg/kg. All barium concentrations were below the screening level of 15,000 mg/kg. Therefore, barium is not considered a COPC for the Site.
- Cadmium was detected in 256 of 385 samples with a maximum concentration of 80 mg/kg at boring location F4 in the sample from 0.5 to 1 feet bgs. The soil screening level for cadmium is 71 mg/kg. One of 385 samples exceeded the screening level for cadmium; therefore cadmium is considered a COPC for the Site.
- Chromium (total) was detected in 400 of 405 samples with a maximum concentration of 4,400 mg/kg (value estimated) from 7 to 7.5 feet bgs at C-22. An additional nine historical samples were analyzed for trivalent chromium, and concentrations in each sample were detected above the reporting limit (RL) with a maximum of 70 mg/kg in the sample from 2 feet bgs at MK-6B. Total chromium concentrations represent both trivalent and hexavalent chromium, and although a residential screening level for total chromium is not available, all concentrations were below the residential screening level of 120,000 mg/kg for the more prevalent trivalent chromium. Hexavalent chromium was detected in Fill groundwater samples in only two of 47 samples and both concentrations were below the reporting limit, indicating that hexavalent chromium is not present at elevated concentrations in Site soil. Therefore, chromium is not considered a COPC.
- Lead was detected in 407 of 414 samples with a maximum concentration of 13,000 mg/kg in a sample from 0.5 to 1 foot bgs at boring location B10, located approximately 80 feet east of the former lumber shed (**Figure 9)**. The soil screening level for lead is 80 mg/kg and concentrations exceeded the screening level in 225 of 414 samples. Lead concentrations were generally elevated across the Site. Whereas arsenic exceedances were commonly observed at multiple depths within the same boring, lead exceedances were more common only in the shallowest soil samples. Lead exceedances were observed in saturated soil samples as deep as 11 feet bgs and were commonly co-located with screening level exceedances for arsenic. Therefore, lead is considered a COPC for the Site.
- Mercury was detected in 374 of 387 samples with a historical maximum concentration of 100 mg/kg in the sample from 1.5 to 2 feet bgs at C-26, located near the railroad tracks (**Figure 10**). The soil screening level for mercury is 1 mg/kg and concentrations exceeded the screening level in 33 of 387 samples. Therefore, Mercury is considered a COPC for the Site. Mercury concentrations are generally highest along the railroad tracks on the eastern portion of the Site and along the north end of the Site bordering the Schlage OU. Most elevated mercury concentrations were observed between 3 and 4 feet bgs but were also encountered in the top two feet. There were no exceedances in the saturated soil samples deeper than 6 feet bgs.
- Selenium was detected in 107 of 385 samples at a maximum concentration of 2.6 mg/kg in the unsaturated zone in the sample from 0.5 to 1 foot bgs at location G4 and 3.4 mg/kg in saturated soil from 19.5 to 20 feet bgs at location B2. RLs for other samples were less than or equal to 0.5 mg/kg or 2 mg/kg. The soil screening level for selenium is 390 mg/kg. All selenium concentrations were below the screening level, and selenium is not considered a COPC for the Site.

- Silver was detected in 192 of 385 samples up to a maximum concentration of 9.5 mg/kg in the sample from 1 to 2.5 feet bgs at M5. The soil screening level for silver is 390 mg/kg. All silver concentrations were below the screening level and silver is not considered a COPC for the Site.

Detection summaries for the non-RCRA metals are as follows:

- Antimony was detected in 293 of 331 samples with a maximum concentration of 340 mg/kg at boring location J7 in the sample from 1 to 2.5 feet bgs. Eight samples exceeded the screening level of 31 mg/kg; therefore antimony is considered a COPC for the Site.
- Beryllium was detected in 182 of 335 samples with a maximum concentration of 0.94 mg/kg at boring location M3 in the sample from 2.5 to 4 feet bgs. All samples were below the screening level of 15 mg/kg. Therefore, beryllium is not considered a COPC for the Site.
- Cobalt was detected in 336 of 338 samples with a maximum concentration of 38 mg/kg at boring location K12 in the sample from 0.5 to 1 foot bgs. All samples were below the screening level of 49 mg/kg. Therefore, cobalt is not considered a COPC for the Site.
- Copper was detected in 385 of 387 samples up to a maximum concentration of 10,000 mg/kg at boring location C3 in the sample from 1 to 2.5 feet bgs. Three samples exceeded the screening level of 3,100 mg/kg; therefore copper is considered a COPC for the Site.
- Nickel was detected in 338 of 338 samples with a maximum concentration of 500 mg/kg at boring location I10 in the sample from 1 to 2.5 feet bgs. One sample exceeded the screening level of 490 mg/kg; therefore nickel is considered a COPC for the Site.
- Thallium was detected in 180 of 334 samples at a maximum estimated concentration of 4.8 mg/kg at boring location E9 in the sample from 1 to 2.5 feet bgs. The screening level of 0.78 mg/kg was exceeded by 144 samples. However, the screening level is the USEPA RSL for soluble salts containing thallium, and the speciation of thallium within the soil is unknown, thus the screening level is overly conservative. Furthermore, a study of background metals concentrations at the Lawrence Berkeley Laboratory suggests the regional background concentration may be greater than the screening level; a background concentration as high as 10 mg/kg was calculated for thallium at the Lawrence Berkeley Laboratory [LBNL, 2009]. Because thallium was not identified as a chemical that was used in historical railroad operations and the detected concentrations are below estimated background levels, thallium is not considered a COPC for the Site.
- Vanadium was detected in 336 of 337 samples with a maximum concentration of 250 mg/kg at boring location K12 in the sample from 0.5 to 1 foot bgs. No samples exceeded the screening level of 390 mg/kg, so vanadium is not considered a COPC for the Site.
- Zinc was detected in 367 of 367 samples with a maximum concentration of 26,000 mg/kg at boring location F4 in the sample from 0.5 to 1 foot bgs. One sample exceeded the screening level of 23,000 mg/kg, so zinc is considered a COPC for the Site.

Based on screening level exceedances, antimony, arsenic, cadmium, copper, lead, nickel, mercury, and zinc were considered COPCs. However, as a conservative measure, all available metals data were evaluated in the Site-specific health risk assessment described in Section 4.

3.1.2 Polynuclear Aromatic Hydrocarbons (PAHs)

SVOCs (PAHs) results are summarized in **Table 5**. Benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene, and naphthalene were detected at concentrations exceeding screening levels. Concentrations for these constituents were greatest at the following locations:

- Boring location H5, in the former switching yard near the former lumber shed, from 0.5-1 foot bgs: 6,900 micrograms per kilogram (µg/kg) for benzo(a)pyrene, 7,400 µg/kg for benzo(b)fluoranthene, 3,700 µg/kg for benzo(k)fluoranthene, and 2,500 µg/kg for indeno(1,2,3-c,d)pyrene;
- Boring location J1, in the former switching yard near the railroad tracks, from 0.5 to 1 foot bgs: 5,300 µg/kg benz(a)anthracene, 930 µg/kg dibenzo(a,h)anthracene; and
- Boring location I9, beneath the former coach repair shop, from 0.5 to 1 foot bgs: 57,000 µg/kg naphthalene.

Benzo(a)pyrene toxicity equivalents were calculated from the concentrations of carcinogenic PAHs [DTSC, 2015]; the distribution of benzo(a)pyrene toxicity equivalents in soil is presented in **Figure 11**. Five samples exceeded the 95th percentile benzo(a)pyrene equivalent for ambient concentrations in northern California of 0.9 mg/kg [DTSC, 2009a], so carcinogenic PAHs are considered COPCs for the Site. Although only one sample exceeded the screening level for naphthalene, the magnitude of that sample elevates the average concentration at the Site so naphthalene is also considered a COPC.

3.1.3 TPH

TPH-d concentrations are summarized in **Table 6** and **Figure 12**. TPH-d was detected at a maximum concentration of 7,000 mg/kg at boring location L13 in the sample from 1.0 to 2.5 feet bgs. At boring location I9 in the sample from 0.5 to 1 foot bgs, where several PAHs were detected at elevated concentrations, TPH-d was detected at 2,100 mg/kg. Otherwise, correlation between TPH-d and PAHs is not evident. The highest TPH-d concentrations were generally observed in the 0.5- to 1-foot bgs interval and decreased with depth. Screening level exceedances were mainly observed in the northwestern portion of the site near the former freight car repair shop, the former unit #1 oil trap, and the former unit #2 sludge trap; in the southwestern portion of the site near the former coach repair shop, former lye house, and former paint storage house, and at a couple of locations adjacent to the railroad tracks. Therefore, TPH-d is considered a COPC for the Site.

TPH-g results are summarized in **Table 6**. TPH-g was detected in only five vadose zone (i.e., above 5 feet bgs) samples with a maximum concentration of 0.88 mg/kg. The screening level for TPH-g is 100 mg/kg and therefore, TPH-g is not considered a COPC for the Site.

3.1.4 Organochlorine Pesticides (OCPs)

OCP concentrations are summarized in **Table 7**. OCPs were detected at only a few locations and generally at concentrations below reporting limits. Detected concentrations did not exceed soil screening levels except for chlordane, which was detected at a maximum concentration of 3,900 µg/kg at location F11 and depth 2.5 to 4 feet bgs. Chlordane is therefore considered a COPC for the Site. Alpha- and gamma-chlordane were also detected in some samples but all concentrations were below the residential USEPA RSL for chlordane of 1,700 µg/kg.

3.1.5 PCBs

PCB concentrations are summarized in **Table 7** and **Figure 13**. Only two of six Aroclors were detected above the method detection limit and PCB concentrations were elevated at only two locations:

- Aroclor-1254 and Aroclor-1260 were detected at concentrations of 590 µg/kg and 420 µg/kg, respectively, at J5, located near the western edge of the switching yard (0.5 to 1 foot bgs); and
- Aroclor-1260 was detected at concentrations of 13,000 µg/kg and 3,000 µg/kg in the parent and duplicate sample, respectively, at L5, also located near the western edge of the switching yard, (0.5 to 1 foot bgs).

Results indicate that PCB impacts at the Site were limited to only these two locations and the 0.5-1 ft bgs depth. Based on these results, Aroclor-1260 is considered a COPC for the Site.

3.1.6 VOCs

VOC results are summarized in **Table 8** and **Figure 14**. VOC concentrations in soil did not exceed their respective screening levels with the exception of naphthalene at boring location I9 beneath the former coach repair shop, which was detected at a concentration of 26,000 µg/kg by USEPA Method 8260B in the sample from 0.5 to 1 foot bgs. Other VOCs were detected in soils but at low concentrations. Non-chlorinated VOCs detected in vadose zone soil samples (i.e., above 5 feet bgs) are summarized as follows:

- 2-butanone was detected in three samples with a maximum concentration of 79 µg/kg;
- 2-hexanone was detected in one sample with a maximum concentration of 16 µg/kg;
- Acetone was detected in 30 samples with a maximum concentration of 490 µg/kg;
- Benzene was detected in two samples, both at location C3, with a maximum estimated concentration of 1.6 µg/kg;
- Isopropyl benzene was detected in one sample at an estimated concentration of 1.9 µg/kg;
- n-butylbenzene was detected in two samples with a maximum estimated concentration of 0.86 µg/kg;
- n-propylbenzene was detected in two samples with a maximum estimated concentration of 1.6 µg/kg;

- sec-butylbenzene was detected in two samples with a maximum estimated concentration of 1.1 µg/kg;
- tert-butylbenzene was detected in one sample with an estimated concentration of 0.67 µg/kg;
- Toluene was detected in seven samples with a maximum estimated concentration of 1.7 µg/kg; and
- Total xylenes were detected in one sample with an estimated concentration of 1.1 µg/kg.

Detections of CVOCs in vadose zone soil (i.e., above 5 feet bgs) are summarized as follows:

- 1,2,3-trichlorobenzene was detected in one sample with an estimated concentration of 0.68 µg/kg;
- cis-1,2-DCE was detected in four samples at a maximum concentration of 2.8 µg/kg;
- PCE was detected in two samples with a maximum concentration of 9.1 µg/kg;
- TCE was detected in seven samples with a maximum concentration of 76 µg/kg; and
- VC was detected in one sample with a maximum estimated concentration of 0.88 µg/kg.

VOCs were also detected in saturated soil samples. CVOCs in both saturated soil and vadose zone soil are likely from the Schlage OU to the north of the Site. Except for naphthalene, no VOCs were detected in vadose zone or saturated soil at concentrations exceeding DTSC screening levels [DTSC, 2019] or USEPA RSLs [USEPA, 2019] for residential land use by the direct contact exposure pathway. Therefore, naphthalene is the only VOC in soil considered a COPC for the Site.

3.1.7 Asbestos

Asbestos was not detected in any soil samples; there is no evidence of the presence of asbestos in soils at the Site and asbestos is not considered a COPC.

3.2 Soil Vapor

AMEC collected soil vapor samples at the Site in 2011 and 2012 [AMEC, 2013b] in association with the groundwater remedy at the Schlage OU. Fourteen soil vapor samples were collected in the Site at depths of 2.5 or 5 feet bgs. CVOCs associated with the Schlage OU groundwater plume were detected in soil vapor beneath the Site and will be addressed as part of the Schlage OU remedy and through vapor intrusion mitigation measures for the future development at the Site. **Figure 15** illustrates the soil vapor detections at the Site due to CVOCs in groundwater that have migrated beneath the Site from the Schlage OU.

Prior to redevelopment, current soil vapor samples will be collected as described in Section 7.

3.3 Groundwater

Groundwater at the Site is categorized into the following zones according to aquifer characteristics: Fill, Colma Formation, and Merced Formation. The following sections present the concentrations of VOCs, petroleum hydrocarbons, and metals in these three Zone/Formations groundwater based

on the results of May 2018 groundwater monitoring data and grab groundwater samples collected during the 2018 Data Gap Investigation.

3.3.1 Fill Zone Groundwater

In 2019, the Water Board issued a determination acknowledging that groundwater in the Fill zone meets exceptions (a) and (c) of State Water Resources Control Board Resolution No. 88-63 (i.e., total dissolved solids concentrations and well yield, respectively) and is not likely to be used as a source of drinking water [SFBRWQCB, 2019b]. Concentrations of dissolved metals and petroleum hydrocarbons in Fill zone groundwater were compared against ESLs for saltwater ecotoxicity [SFBRWQCB, 2019] with an attenuation factor of 100 (i.e., 100 x ESL) to account for sorption and dilution of constituents between the Site and San Francisco Bay.[8] VOCs in Fill groundwater at the UPC OU-SM, which are by DTSC Order [2008a] being addressed by the Schlage OU groundwater remedy, were screened against California Maximum Contaminant Levels (MCLs), consistent with the cleanup levels for the Schlage OU, and also screened against ESLs for the vapor intrusion pathway for residential land use.

3.3.1.1 CVOCs

CVOC results are presented in **Table 9** and the distribution of chlorinated ethenes is shown in **Figure 16A.** VOCs were not detected in Fill zone groundwater above reporting limits with the exception of CVOCs. The CVOCs are associated with the Schlage OU plume to the north of the Site and generally decrease in concentration beneath the Site from north to south. Maximum concentrations of PCE, TCE, and trans-1,2-dichloroethene (trans-1,2-DCE) were 5.7 micrograms per liter (µg/L), 200 µg/L, and 24 µg/L, respectively, at boring location A7, while maximum concentrations of cis-1,2-DCE and VC were 160 µg/L and 410 µg/L, respectively, at boring location B5; borings A7 and B5 are both near the north end of the Site.

As documented in the 2002 Remedial Investigation Report for the Joint Groundwater Operable Unit, the CVOC plume associated with the Schlage OU extended south into the Site at least as far south as former groundwater extraction well GWE-3 (**Figure 16B**) [B&M and T&R, 2002]. The groundwater table within the Fill is essentially flat with a small prevailing hydraulic gradient toward the south within the Schlage OU [B&M and T&R, 2002]. The apparent gradient direction within the Fill zone groundwater at the Site was reported toward the center of the Site (**Figure 4**).

The CVOC distribution was updated using data from the 2006 Additional Investigation and was generally similar to the distribution in 2002 with low-level detections in the southern portion of the Site, indicative of the diffuse leading edge of the Schlage OU plume (**Figure 16c**) [B&M, 2006b]. With this characterization, DTSC issued a consent order that defined all VOCs in the soil and groundwater in both the San Francisco County and San Mateo County portions of the UPC OU as part of the Schlage OU [DTSC, 2008a], indicating that no significant sources of CVOCs were identified within the Site. This conclusion is supported by shallow soil sample results, which show no evidence of surface releases of chlorinated solvents within the Site.

[8] The Site is approximately 0.5 miles from San Francisco Bay; an attenuation factor of 100 has been used at other bayfront sites including Mission Bay, San Francisco International Airport, and East Bay Regional Shoreline Park.

The conclusions from the Data Gap Investigation Report are consistent with previous characterization of the CVOC distribution in Fill zone groundwater and with DTSC's designation of CVOCs at the Site having originated from the Schlage OU. Low-level detections in the southern portion of the Site are indicative of a diffuse leading edge of the Schlage OU plume, which is consistent with a low groundwater velocity owed to a flat groundwater table [e.g., B&M and T&R, 2002]. The presence of cis-1,2-DCE and VC at the downgradient edge of the plume are indicative of natural degradation of parent compounds PCE and TCE, as observed in the RI Report [B&M and T&R, 2002].

The distribution of CVOCs provides another line of evidence that Fill zone groundwater is not migrating offsite. CVOCs were not detected along the western boundary of the Site (i.e., at wells MK-2A and MW-4A and grab sample locations E11, G11, and I11), nor have CVOCs ever been detected at either well MK-4A or MK-6A along the eastern edge of the Site. Low-level CVOC detections were observed in grab groundwater samples along the eastern boundary of the Site adjacent to the railroad tracks and along the southern Site boundary, but those are consistent with CVOC migration by diffusion from the plume rather than by advection, or transport by groundwater flow. Moreover, the magnitude of CVOC detections along the eastern and southern boundaries is effectively unchanged after 10 years of natural flow conditions at the Site, indicating that contaminant transport is minimal. In 2006, the maximum total CVOC concentrations along the eastern and southern boundaries of the Site were 3 µg/L at location C-21 and 8 µg/L at C-27, respectively [B&M, 2006b]. The maximum total CVOC concentration in the 2018 Data Gap Investigation was 1.25 µg/L at location D1 along the eastern boundary and 1.3 µg/L at location M3 along the southern boundary near C-27. After 10 years of natural flow conditions at the Site following termination of the GETS, there is no evidence of appreciable offsite migration of CVOCs. The CVOC distribution supports the characterization of nearly flat hydraulic gradients and approximately radial inward flow for Fill groundwater presented in Section 2.4.

The concentrations of CVOCs in Fill zone groundwater exceed the CULs for the Schlage OU (refer to Section 4.3) at multiple locations; therefore, CVOCs are considered COPCs in Fill zone groundwater at the Site and are being addressed by the groundwater remedy for the Schlage OU.

3.3.1.2 Petroleum Hydrocarbons

Concentrations of TPH-g and TPH-d in the Fill zone groundwater are summarized in **Table 10** and **Figure 17**. The maximum concentrations of TPH-g and TPH-d were 380 µg/L in a grab sample at boring location B5 and 1,100 µg/L at well MW-4A, respectively. Well MW-4A is located approximately 200 feet southwest of the former sludge traps; impacted soil in this area was previously remediated by excavation [ITC, 1994]. The screening levels for TPH-d and TPH-g based on aquatic (saltwater) habitat with a 100-fold attenuation factor are 64,000 µg/L and 370,000 µg/L , respectively [SFBRWQCB, 2019]. Sample concentrations did not exceed screening levels, so neither TPH-d nor TPH-g are considered COPCs for Fill zone groundwater.

3.3.1.3 Metals

Dissolved metals concentrations in grab groundwater and monitoring well samples are summarized in **Table 11**. Of the COPCs identified in Fill zone soil (i.e., antimony, arsenic, cadmium, copper, lead, mercury, nickel, and zinc), no samples exceeded screening levels for aquatic receptors, including an attenuation factor of 100, of 600 µg/L for antimony, 1,000 µg/L for arsenic, 500 µg/L for cadmium, 310 µg/L for copper, 810 µg/L for lead, and 94 µg/L for

mercury, 820 µg/L for nickel, and 8,100 µg/L for zinc. Dissolved concentrations of arsenic and lead in Fill groundwater are shown in **Figures 18** and **19, respectively**. The maximum dissolved arsenic concentration was 190 µg/L in the grab sample at boring location F3, and the maximum dissolved lead concentration was 21 µg/L in the grab samples at boring locations C3 and I11. Mercury was detected above the analytical detection limit in only one sample.

Concentrations of all other dissolved metals were also below their respective screening levels except for silver at location G7, where the detection of 20 µg/L barely exceeded the screening level of 19 µg/L. Given the relatively low concentrations and the inward lateral hydraulic gradients and the upward vertical hydraulic gradients between the Fill zone and the Colma Formation discussed in Section 2.4 and the CVOCs section above, dissolved metals are not migrating laterally offsite or vertically downward to deeper water-bearing units. Therefore, dissolved metals are not considered COPCs in Fill zone groundwater.

3.3.2 Colma Formation

3.3.2.1 CVOCs

The primary CVOCs detected above laboratory reporting limits in the Colma Formation are PCE, TCE, cis-1,2-DCE, and VC. For reasons discussed above, CVOC concentrations in the Colma Formation are a result of offsite, upgradient releases at the Schlage Lock site that have migrated beneath the Site in the Colma formation. In accordance with the Consent Order, CVOC Colma formation groundwater impacts are being addressed under the Schlage OU remedy. The distribution of chlorinated ethenes in Colma Formation groundwater is shown in **Figure 20.** During the May 2018 groundwater monitoring event (i.e., approximately contemporaneous with the data gap investigation)[9], the ranges in concentrations of the primary CVOCs were as follows:

- PCE concentrations ranged from less than reporting limits to 12 µg/L in monitoring well SW-18LA;
- TCE concentrations ranged from less than reporting limits to 160 µg/L in monitoring well SW-18LA;
- Cis-1,2-DCE concentrations ranged from less than reporting limits to 33 µg/L in monitoring well SW-12UAR; and
- VC was detected in only one well, SW-12UAR, at a concentration of 1.1 µg/L.

The concentrations of CVOCs in Colma Formation groundwater exceed the CULs for the Schlage OU (refer to Section 4.2.2) at multiple locations; therefore, CVOCs are considered COPCs in the Colma Formation at the Site and are being addressed by the groundwater remedy for the Schlage OU.

3.3.2.2 Petroleum Hydrocarbons

Petroleum hydrocarbons are not typically detected in Colma Formation groundwater at the Site and therefore are not considered COPCs.

[9] The second quarter is when the largest numbers of wells are sampled in the Colma and Merced formations, so analytical results in these zones from the Second Quarter 2018 are presented herein.

3.3.2.3 Metals

Colma Formation groundwater monitoring wells have been historically monitored for total and hexavalent chromium and nickel. Historical results are summarized as follows:

- Analytical results for total chromium during the most recent sampling event in October 2016 ranged from less than reporting limits to 20 µg/L in monitoring well SW-12LAR;
- Analytical results for hexavalent chromium in October 2016 ranged from less than reporting limits to 23.3 µg/L in monitoring well SW-12LAR; and
- Analytical results for nickel in October 2016 were less than reporting limits.

Dissolved metals are not considered COPCs in Colma Formation groundwater at the Site.

3.3.3 Merced Formation

3.3.3.1 CVOCs

During the May 2018 groundwater monitoring event (i.e., approximately contemporaneous with the data gap investigation), the ranges in concentrations of the primary CVOCs in Merced Formation groundwater were:

- PCE concentrations ranged from less than reporting limits to 0.5 µg/L in monitoring well SW-12BR; and
- TCE concentrations ranged from less than reporting limits to 7.3 µg/L in monitoring well SW-12BR.

The distribution of chlorinated ethenes in Merced Formation groundwater is shown in **Figure 20.** As with the Fill zone and Colma Formation, CVOCs in groundwater in the Merced Formation are associated with offsite releases at the Schlage OU that are being addressed under the Schlage OU remedy.

3.3.3.2 Petroleum Hydrocarbons

Petroleum hydrocarbons are not typically detected in Merced Formation groundwater at the Site and therefore are not considered COPCs.

3.3.3.3 Metals

Merced Formation groundwater monitoring wells have been historically monitored for total and hexavalent chromium and nickel. Results are summarized as follows:

- Analytical results for total chromium during the most recent sampling event in October 2016 were 12.2 and 12.5 µg/L at wells SW-11B and SW-12BR, respectively, below the California MCL of 50 µg/L;
- Analytical results for hexavalent chromium in October 2016 were below the reporting limit of 10 µg/L in monitoring wells SW-11B and SW-12BR; and
- Analytical results for nickel in October 2016 were less than the reporting limit of 40 µg/L in monitoring wells SW-11B and SW-12BR.

Dissolved metals are not considered COPCs in Colma Formation groundwater at the Site.

4. SITE-SPECIFIC HEALTH RISK ASSESSMENT

A Site-specific HRA and the development of risk-based CULs for remediation are described in this section. The objective of the HRA is to provide an analysis of potential health effects to future Site users (e.g., workers and residents), offsite residents, and aquatic receptors or marine organisms in San Francisco Bay, from exposure to chemicals detected at the Site. The HRA is provided as **Appendix B** and summarized below. The development of CULs and their application are presented in Sections 4.2 and 4.3, respectively.

4.1 Baseline HRA

A baseline HRA was conducted to provide risk managers a basis for evaluating whether action to mitigate potential health risks is warranted to support redevelopment of the Site. The assessment also identifies the media and chemicals detected at the Site that may require further evaluation, risk management, and/or remediation measures to protect future Site users and aquatic receptors during and following development of the Site. To establish a baseline, this HRA was conducted under a hypothetical scenario that assumed no further remedial actions or mitigation measures would be implemented prior to Site development. It also employed conservative assumptions and used age-adjusted risk factors (e.g., assumptions protective of fetuses and children).

Future redevelopment of the Site will likely include uses for high-density residents, commercial/industrial buildings, research and development (R&D) labs, retail, and recreational and open space. Based on these possible future uses and other Site considerations, potentially exposed receptors include:

- A future resident,
- A future commercial, industrial, and/or retail worker;
- A future construction worker;
- A future recreational user;
- An offsite receptor that could potentially be exposed to dust from the Site; and
- Marine organisms in San Francisco Bay, given the COPCs in groundwater and the Site's proximity to the Bay.

Since potential exposures to a recreational user are likely to be much less frequent and lower than the daily exposure assumed for a future resident or worker, the analysis of the resident or worker exposure scenario is more conservative than the recreational user scenario.

The potentially complete exposure pathways for these human receptors include:

- Incidental ingestion of soil, dermal contact with soil, and inhalation of particulates or volatiles in ambient air (future worker, resident and construction worker);
- Inhalation of chemicals in soil vapor migrating through the soil column and an at-grade building foundation into indoor air (future worker and resident);

- Inhalation of volatile COPCs migrating from soil vapor into ambient air within a trench (future construction worker);
- Inhalation of dust from the Site by an offsite receptor; and
- Potential leaching of chemicals in soil to groundwater and off-Site transport of COPCs in groundwater to the Bay.

The HRA evaluated both potential cancer risks and noncancer hazard indices for a future worker and a future resident in a manner consistent with current California Environmental Protection Agency (Cal-EPA) and USEPA guidance. The assessment evaluated potential noncarcinogenic hazards based on the comparison of the calculated noncarcinogenic hazard index (HI) to Cal-EPA and USEPA's point of departure level of an HI of 1. That is, if the calculated HI for a receptor to chemicals detected in soil, groundwater, or soil vapor are less than 1, no further evaluation is necessary and it can be concluded that no unacceptable risks are present. In other words, for a receptor with a calculated HI of less than 1, the Site in its current condition would be considered protective of their health. The USEPA explained the use of an HI as follows: "*Aggregate exposures equal to or below a hazard index (HI) of 1.0 derived using target organ-specific hazard quotients likely will not result in adverse noncancer health effects over a lifetime of exposure and would ordinarily be considered acceptable. However, an HI greater than 1.0 does not necessarily suggest a likelihood of adverse effects nor does it imply an unacceptable level of effect*" [USEPA, 2011].

For evaluating potential cancer risk associated with exposure to chemicals, USEPA has established an acceptable lifetime risk range of 1×10^{-6} to 1×10^{-4} (USEPA, 1990). These values correspond to one additional cancer case in 10,000 people (1×10^{-4}) and one additional case in one-million people (1×10^{-6}) above the baseline lifetime cancer risk. The 1×10^{-6} risk level is considered a *de minimis* risk and is generally used as a point of departure for making risk management decisions at a site. With a risk of 1×10^{-4} or greater, an evaluation of remedial measures is required. The risk range between 1×10^{-6} to 1×10^{-4} is commonly called the "discretionary risk range" to assess whether a response action is warranted depending upon Site-specific conditions. This risk range is in addition to the background risk of Americans in the general population developing cancer from causes unrelated to a Site-specific exposure. The background risk is one chance in three (0.3 or 3×10^{-1}) for an American female, and one chance in two (0.5 or 5×10^{-1}) for an American male of eventually developing cancer [American Cancer Society (ACS), 2017].

As a risk management policy, the Cal-EPA generally considers 1×10^{-6} to be a point of departure for purposes of making risk management decisions. For a future worker, an HI of 1 and excess cancer risk of 1×10^{-5} is commonly used for managing commercial/industrial land uses. For a future resident, an HI of 1 and excess cancer risk of 1×10^{-6} were used in the HRA as acceptable target levels (the 1×10^{-6} risk level is considered the accepted point of departure for unrestricted land use). These target thresholds are consistent with the federal and state criteria described above.

Since arsenic has been identified as a COPC and is naturally-occurring, typically at concentrations greater than risk-based screening levels, the HRA evaluated the significance of arsenic by estimating the incremental risk and hazard from potential exposures to arsenic concentrations above naturally-occurring background levels. The incremental excess lifetime cancer risk and noncancer hazard is the difference between exposure to arsenic in soil and arsenic as background.

In the FS/RAP for the adjacent Schlage OU and UPC OU-SF, a background arsenic concentration of 19 mg/kg was adopted based on the study conducted by the Lawrence Berkeley National Laboratory (LBNL) [2009].[10] For consistency across operable units at the Brisbane Baylands development, the same background concentration for arsenic is proposed for UPC OU-SM. Similarly, there are many natural sources of PAHs in the environment as PAHs are found in virtually all surface soils in both urban and rural areas. As such, the HRA evaluated the significance of PAHs, particularly carcinogenic PAHs, by estimating the incremental risk and hazard from potential exposures above naturally-occurring background levels. For this Site, an ambient background concentration of 0.9 mg/kg, equal to the 95th percentile benzo(a)pyrene equivalent value from the northern California ambient data set [DTSC, 2009a], was used.

The baseline risk assessment considered the vapor intrusion pathway using soil vapor data that were collected during and prior to 2013. After capping at the Site and prior to vertical construction, soil vapor samples will be collected and any potential risk related to vapor intrusion will be re-evaluated.

4.1.1 Future Commercial/Industrial/Retail Worker

Without site remediation or mitigation, for a future worker, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 27 and 3×10^{-4}, respectively. Arsenic, lead, TPHd, and Aroclor-1260 are the primary risk-driving COPCs. The hazard quotients (HQs) and cancer risks for all other COPCs are less than 1 and 1×10^{-6}, respectively.

For arsenic, the estimated baseline noncancer HQ and excess lifetime cancer risk are 24 and 3×10^{-4}, respectively. The estimated background noncancer hazard quotient and excess lifetime cancer risk to arsenic are 4.5 and 5×10^{-5}, respectively. Based on these estimates, the incremental noncancer hazard and excess lifetime cancer risk is the difference between baseline and background. The incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 20 and 2×10^{-4}, respectively. The results of the assessment indicate that the incremental increase in risk over background is 5.3 times higher than baseline. For carcinogenic PAHs, the incremental noncancer hazard and excess lifetime cancer risk are 0.003 and 3×10^{-7}, respectively. The incremental increase in risk for carcinogenic PAHs over background is 1.8 times higher than background.

In the absence of any remediation or mitigation efforts and using the default attenuation factor for future commercial buildings of 0.0005 [DTSC, 2011], the baseline cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air for site workers are 3 and 2×10^{-5}, respectively. TCE is the primary risk-driving COPC. The HQs and the estimated cancer risks for the other COPCs are less than 1 and 1×10^{-6}, respectively.

In the absence of any remediation or mitigation efforts, based on an attenuation factor of 0.03, the cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air for site workers are 180 and 1×10^{-3}, respectively. TCE and VC are the primary risk-driving COPCs. Similarly, TCE and VC are the primary risk-driving

[10] DTSC approved the Schlage OU FS/RAP in a letter dated 16 November 2009 [DTSC, 2009b].

COPCs in groundwater based on the potential for vapor intrusion. There are no COPCs in groundwater for exposure pathways other than vapor intrusion.

4.1.2 Future Resident

For a future resident, in the absence of any remediation or mitigation efforts, the baseline cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 270 and 9×10^{-4}, respectively. Arsenic; lead; mercury; benzo(a)pyrene, benzo(a)fluoranthene, and dibenzo(a,h)-anthracene (collectively referred to as carcinogenic PAHs); naphthalene; TPHd; and Aroclor-1260 are the primary risk-driving COPCs.

For arsenic, in the absence of any remediation or mitigation efforts, the estimated noncancer hazard quotient and excess lifetime cancer risk are 250 and 9×10^{-4}, respectively. The estimated background noncancer hazard quotient and excess lifetime cancer risk to arsenic are 48 and 2×10^{-4}, respectively. The incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 207 and 8×10^{-4}, respectively. The incremental increase in risk for arsenic over background is 5.3 times higher than baseline. For carcinogenic PAHs, the incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 0.04 and 6×10^{-6}, respectively. The incremental increase in risk for carcinogenic PAHs over background is 1.8 times higher than background.

In soil vapor, in the absence of any remediation or mitigation efforts and using the default attenuation factor for future residences of 0.001 [DTSC, 2011], the baseline cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 25 and 4×10^{-4}, respectively. PCE, TCE, cis-1,2-DCE, and VC are the primary risk-driving COPCs. The HQs and the estimated cancer risks for the other COPCs are less than 1 and 1×10^{-6}, respectively.

In the absence of any remediation or mitigation efforts, based on an attenuation factor of 0.03, the cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 760 and 1×10^{-2}, respectively. TCE and VC are the primary risk-driving COPCs. In groundwater and the potential for vapor intrusion, the risk-driving COPCs are cis-1,2-DCE, TCE, and VC.

4.1.3 Future Construction Worker

In the absence of any remediation or mitigation efforts, for a future construction worker, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 71 and 3×10^{-5}, respectively. However, without arsenic, where the 95% UCL is above naturally-occurring background, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 2.3 and 7×10^{-7}, respectively. The HQs and cancer risks for all COPCs are less than 1 and 1×10^{-6}, respectively. Except for arsenic and lead, there are no other risk-driving COPCs in soil.

In the absence of any remediation or mitigation efforts, for volatile COPCs potentially migrating from soil vapor into trench air, the cumulative HI and cumulative excess lifetime cancer risk are 1.1 and 3×10^{-7}, respectively. The HQs and the estimated cancer risks for all volatile COPCs are less than 1 and 1×10^{-6}, respectively.

4.1.4 Offsite Receptors

Chemicals detected in soil at the Site may become airborne due to wind conditions and leave the Site in the form of fugitive dust emissions. Non-volatile compounds (e.g., metals) and semi-volatile compounds (e.g., SVOCs) can adhere to soil particles then become airborne due to wind erosion, which could generate dust containing COPCs. Exposure to these chemicals may then occur via inhalation of airborne fugitive dust at offsite locations. A particulate emission factor (PEF) that relates the concentration of a soil constituent to the concentration of dust particles in air (USEPA, 2002) indicates that, in the absence of any remediation or mitigation efforts, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in air as fugitive dusts from soil are less than 1 and 1×10^{-6}, respectively, for both an offsite worker and offsite resident. Thus, potential exposure to COPCs in soil from the Site migrating as fugitive dust does not pose an unacceptable health risk to offsite receptors. Refer to **Appendix B** for additional details.

In addition, action levels were estimated assuming short-term exposures to airborne particles 10 microns or smaller in diameter (PM_{10}) or COPCs adhered to dust that may be present in air along the perimeter of the Site. The results of the analysis indicate that the project respirable action level for PM_{10} can be used to limit concentrations of non-volatile and semi-volatile risk-driving COPCs as well as PM_{10}. The results indicate that the action level for PM_{10} is sufficiently protective of COPC-adhered dust that may be generated during construction activities. Dust generated from on-site operations will be mitigated following Bay Area Air Quality Management District guidance.

4.1.5 Aquatic Receptors

Because Fill zone groundwater underlying the Site is not considered a potential drinking water resource, groundwater concentrations were compared to surface water screening levels for a marine habitat. Given the current hydraulic gradients within the Fill at the Site, groundwater does not reach the Bay. However, for the purposes of the HRA only, it was assumed as a conservative assumption that groundwater could migrate to the Bay, and that the Site groundwater to the Bay exposure pathway was complete. Under this conservative assumption, potential exposures to aquatic receptors from COPCs in groundwater at the Site would not be expected to pose a significant risk to aquatic organisms because the shoreline of the Bay is located approximately 0.5 mile east of the Site and attenuation (e.g., adsorption) and dilution of chemical constituents are expected to occur. The marine aquatic screening criteria used in the analysis do not take into account dilution and/or attenuation of groundwater upon discharge to surface water. The detected concentrations of dissolved constituents in groundwater at the Site prior to entering the Bay would likely be reduced 100-fold or greater due to factors such as adsorption of dissolved constituents to soil and dilution effects from tidal influence. Based on an attenuation factor of 100 that has been used at other bayfront sites (e.g., Mission Bay, San Francisco International Airport, and East Bay Regional Shoreline Park), the estimated 95% UCLs for chemicals in shallow groundwater are below applicable screening criteria. Because a single measurement of a chemical is not representative of the concentration to which an individual organism would be exposed across the entire site, the estimated 95% UCLs for COPCs in groundwater were compared to applicable screening criteria. Based on the information presented herein, the COPCs in groundwater are not expected to pose a significant risk to aquatic organisms under a scenario where shallow groundwater potentially was migrating from the Site to the San Francisco Bay. Action is not warranted for groundwater to be protective of aquatic receptors.

For the HRA, the soil leaching to groundwater pathway was evaluated by comparing exposure point concentrations (EPCs) for COPCs in soil to soil screening levels that are protective of surface water concentrations for aquatic habitats and a lateral attenuation factor of 100 as described above. The results of this analysis indicated that COPCs in soil that exceeded estimated soil screening levels protective of aquatic receptors are cobalt, copper, lead, mercury, selenium, silver, zinc, and TPH-d. However, as described above, the estimated 95% UCLs for these COPCs in groundwater (note selenium was not detected in groundwater) do not exceed screening criteria that are protective of aquatic receptors with an attenuation factor of 100. In fact, except for cobalt, the estimated 95% UCLs for the COPCs in groundwater do not exceed California drinking water MCLs or risk-based concentrations assuming ingestion. The estimated 95% UCL for cobalt in groundwater is 21.4 µg/L compared to a risk-based RSL of 6 µg/L [USEPA, 2019]; however, cobalt was not identified as a risk-driving COPC in soil. Because the concentrations of dissolved metals and TPH-d in groundwater from the data gap investigation were generally low and below surface water criteria for aquatic receptors with an additional factor of 100, the COPCs in soil are not considered to represent a significant threat to aquatic organisms in the Bay through leaching and lateral migration in groundwater.

4.1.6 HRA Summary

Under the assumptions and conditions presented in the HRA, the Site does not pose a health risk to offsite workers and residents from COPCs migrating with fugitive dust emissions or to aquatic receptors. COPCs in soil may pose a theoretical risk and noncancer hazard to a future worker and resident if the Site conditions were not remediated or mitigated. The primary risk driving COPCs in soil are arsenic, lead, and mercury, carcinogenic PAHs, naphthalene, TPH-d, and the single elevated concentration of Aroclor-1260. Arsenic and lead are the risk-driving COPCs in soil for a future construction worker. In soil vapor, the risk-driving COPCs are PCE, TCE, cis-1,2-DCE, and VC; however, these COPCs are related to the offsite Schlage OU CVOC groundwater plume, which has migrated under the UPC OU-SM site and are being addressed under the Schlage OU remedy.

4.2 Media-Specific Cleanup Levels

In the absence of any additional remediation or mitigation efforts, the primary risk-driving COCs identified in the HRA and summarized in Section 4.1 are as follows:

- Soil: arsenic, lead, mercury, carcinogenic PAHs, naphthalene, TPH-d, and Aroclor-1260;
- Soil vapor: CVOCs (1,1-dichloroethene; cis-1,2-dichloroethene; trans-1,2-dichloroethene; tetrachloroethene; trichloroethene, and vinyl chloride); and
- Groundwater: CVOCs (1,1-dichloroethene; cis-1,2-dichloroethene; trans-1,2-dichloroethene; tetrachloroethene; trichloroethene, and vinyl chloride).

The potential exposure pathways to these risk-driving COCs are direct exposures (incidental ingestion, dermal contact, and inhalation of particulates in ambient air) with COCs in soil, and potential inhalation of VOCs in indoor air migrating from soil and shallow groundwater. Due to the presence of VOCs in soil and shallow groundwater, it is appropriate that soil vapor CULs for

vapor intrusion be developed for implementation of the remedy and assessment of the need for vapor mitigation engineering controls during development.

The CULs described in the following sections are based on regional background concentrations for naturally-occurring COCs, a maximum hazard index of 1.0 for non-carcinogenic constituents, and an excess cancer risk of 1×10^{-6} for residential Site users and commercial/industrial Site users.

4.2.1 Soil CULs

The CULs for metals, Aroclor-1260, PAHs, and TPH-d in shallow soil (i.e., future ground surface to 5 feet below future ground surface) were developed based on background concentrations, residential, and commercial/industrial worker exposures. The CULs will also be protective of a future construction worker. As documented in the HRA, impacts to groundwater derived from Site soils do not present an unacceptable risk to aquatic receptors; therefore, soil CULs for groundwater protection are not necessary.

The following are CULs for the risk-driving metals, PCBs, PAHs, and TPH-d in shallow soil at the Site [DTSC, 2019; USEPA, 2019]:

COCs	Residential Shallow Soil Cleanup Levels (mg/kg)	Commercial/Industrial Shallow Soil Cleanup Levels (mg/kg)
Arsenic	19.1[1]	19.1[1]
Lead	80	320
Mercury	1.0	4.4
Aroclor-1260	0.24	0.6
PAHs B(a)P(eq)[2]	0.9	1.3
Naphthalene	2.0	6.5
TPH-d	96	440

Notes: 1 LBNL [2009]
2 Benzo(a)pyrene equivalents; residential soil cleanup level is the 95th percentile of ambient concentrations in northern California [DTSC, 2009a].

The arsenic CUL is a value developed by LBNL as a background concentration for arsenic, which was approved for the Schlage OU and UPC OU-SF, which are located immediately north of the Site [DTSC, 2009b]. The portion of the Bay comprising the Schlage OU and the former railyard (i.e., UPC OU-SF and UPC OU-SM) was in-filled around the same time and likely with similarly sourced fill materials [B&M and T&R, 2002]. Therefore, the background concentration at Schlage OU and UPC OU-SF is also appropriate for the Site.

The lead CULs (i.e., 80 and 320 mg/kg for residential and commercial/industrial use, respectively) are current screening levels for residential and commercial/industrial land use based on noncancer endpoints [DTSC, 2019]. The CULs for mercury (i.e., 1.0 and 4.4 mg/kg for residential and commercial/industrial use, respectively) are the screening levels for residential and commercial/industrial land use based on noncancer endpoints [DTSC, 2019]. The Aroclor-1260 CULs (i.e., 0.24 and 0.6 mg/kg for residential and commercial/industrial use, respectively) are the

residential RSL [USEPA, 2019] and the commercial/industrial DTSC screening level [2019a] for direct contact based on a target excess cancer risk level of 1×10^{-6}.

The CULs for PAHs (i.e., 0.9 and 1.3 mg/kg as benzo(a)pyrene equivalents for residential and commercial/industrial use, respectively) are the 95th percentile for ambient PAH concentrations in northern California [DTSC, 2009a] and the DTSC screening level [2019a] for benzo(a)pyrene at a 10^{-6} excess cancer risk under a commercial/industrial land use scenario, respectively. The CULs for naphthalene are the residential and commercial/industrial screening levels based on cancer endpoints [DTSC, 2019]. The TPH-d CULs are the RSLs based on noncancer endpoints for the "aliphatic medium" TPH fraction, corresponding to linear hydrocarbon chains ranging from 9 to 18 carbon atoms in length [USEPA, 2019]. The RSLs are lower for the aliphatic fraction than for the aromatic fraction of diesel-range hydrocarbons and are therefore the more protective CULs.

4.2.2 Groundwater CULs

Fill zone groundwater at the Site is not used for domestic or industrial purposes and as discussed in Section 2.5, Fill zone groundwater meets exceptions to State Water Resources Control Board Resolution No. 88-63 and is not likely to be used as a potential drinking water source. Therefore, the HRA evaluated exposure by saltwater aquatic receptors to metals. The results of the HRA indicated that chemicals in shallow groundwater are not expected to pose a risk to aquatic receptors, and therefore, CULs in this zone are not proposed.

CVOCs in groundwater beneath the Site have migrated from the Schlage OU and are being addressed by the groundwater remedy for the Schlage OU. Per the FS/RAP for the Schlage OU [MACTEC, 2009], the CULs for CVOCs in groundwater below the Fill zone are the California MCLs:

CVOC COCs	CULs (µg/L)
1,1-dichloroethene	6
cis-1,2-dichloroethene	6
trans-1,2-dichloroethene	10
Tetrachloroethene	5
Trichloroethene	5
Vinyl chloride	0.5

4.2.3 Soil Vapor

Soil vapor CULs for CVOCs associated with the Schlage OU plume were presented in the FS/RAP for the Schlage OU [MACTEC, 2009]. Since 2009, toxicity factors for Schlage OU COCs have been revised, and DTSC's Human and Ecological Risk Office currently advises that vapor intrusion potential be evaluated using generic attenuation factors (the ratio of indoor air concentration to soil vapor concentration) of 0.03 and 0.001 [DTSC, 2011, 2019].

DTSC's current screening levels for indoor air [DTSC, 2019] and screening levels computed using the default attenuation factor of 0.03 are as follows:

COC	Indoor Air		Soil Vapor	
	Residential	Commercial/ Industrial	Residential	Commercial/ Industrial
	µg/m^3		µg/m^3	
1,1-Dichloroethene	73	310	2,433	10,333
cis-1,2-Dichloroethene	8.3	35	277	1,167
trans-1,2-Dichloroethene	83	350	2,767	11,667
Tetrachloroethene	0.46	2.0	15	67
Trichloroethene	0.48	3.0	16	100
Vinyl Chloride	0.0095	0.16	0.32	5.3

Note: µg/m^3 = micrograms per cubic meter

Soil vapor samples will be collected following Site regrading and soil cap placement, and prior to the commencement of vertical building construction in applicable locations to re-evaluate the potential vapor intrusion risk under then-current Site conditions. The soil vapor screening levels will be revisited considering applicable guidance or Site-specific development plans at the time the vapor sampling occurs. An exceedance of one or more of then-applicable soil vapor screening levels will trigger the development of risk-based Site-specific CULs for the vapor intrusion pathway or design of a localized soil vapor mitigation system for the vapor intrusion pathway. The development of Site-specific CULs will consider localized building specifications, planned building uses, and localized attenuation rates for COCs in soil vapor within unsaturated Fill zone soil. The Site-specific CULs will represent an excess cancer risk that is equal to or below 1×10^{-6} for residential and commercial Site users in occupied spaces.

Because the proposed development includes construction of all new buildings, alternate default attenuation factors of 0.001 for residential buildings and 0.0005 for commercial/industrial buildings [DTSC, 2011] may be appropriate based on Site-specific conditions that may include, but are not limited to, the following:

- The source of CVOCs in soil vapor at the Site is groundwater that has been contaminated by historical activities in the Schlage OU. Groundwater in the Schlage OU has been actively remediated since a groundwater extraction system started operating in 1995 and continued through ERD injections that began in 2010. DTSC certified the Schlage OU remedial action as complete in 2014 [DTSC, 2014] and the groundwater cleanup is continuing through processes known as natural attenuation. Periodic groundwater monitoring data show that CVOC concentrations in Fill groundwater are gradually decreasing over time [e.g., Appendix C of Geosyntec, 2018a] and are reasonably expected to continue to decrease in the future. As CVOC concentrations in groundwater decrease, vapor intrusion potential becomes less of a threat to residential and commercial buildings. The effectiveness of the groundwater remedy will continue to be monitored through the Five Year Review process and contingency measures will be implemented as necessary until the groundwater remedial goals have been achieved.
- Newly constructed buildings will have robust floors. The slabs will be high-density concrete 8 to 10 inches in thickness, and utility penetrations will be sealed. The concrete

will be cured in a manner so as to eliminate joints and minimize the potential for vapor intrusion. In addition, buildings will be equipped with modern heating, ventilation, and air conditioning (HVAC) systems that will be programmed to maintain a positive interior pressure to prevent the intrusion of soil vapor into the pressurized building air space.

- In most areas of the Site, building slabs will be underlain with engineered fill that is five feet or more in thickness. The fill will be placed to adjust the existing ground surface elevation to the future base grade of the development. This engineered fill will act as a buffer zone that will create greater distance between the CVOC source (i.e., groundwater) and receptors in the overlying buildings.
- Some buildings will incorporate an "intrinsically safe" building design whereby the ground floor will consist of ventilated parking garages or commercial retail and amenity spaces. The ventilated garage space acts as a buffer to more rapidly attenuate vapors that could potentially migrate into garage air space before entering commercial and residential space. The ground floor commercial space provides a buffer for overlying residential space and provides greater attenuation of CVOCs migrating through the commercial space. Such intrinsically safe design provides for a more effective attenuation of infiltrating vapors.
- At locations where buildings will be constructed above CVOCs in groundwater, a location-specific evaluation will be conducted. The evaluation may include additional localized groundwater sampling, soil vapor sampling, and building condition assessment. The resulting data will inform a building-specific vapor intrusion evaluation and design of appropriate mitigation, if warranted. Details of the location-specific evaluation will be presented in the Remedial Design documents.

4.3 Application of Cleanup Levels

The typical concept of human exposure at a site or within a defined exposure area is an individual's contact with contaminated media on a periodic and random basis. Because of the repeated nature of such contact, human exposure does not occur at a fixed point but rather at a variety of points with equal likelihood that any given point within the exposure area will be the contact location on any given day.

USEPA recommends that the arithmetic average of chemical concentrations, or EPCs, within an exposure area be calculated for comparison to site cleanup levels [USEPA, 1989b]. To evaluate possible exposure to multiple chemicals, the effects of multiple chemicals are assumed to be additive. USEPA further recommends that an UCL be used to represent the EPC to account for variability in the data set and uncertainty in estimating an arithmetic mean. EPCs for the COCs in each medium of concern were calculated using USEPA's ProUCL Version 5.1. The comparison of EPC to CUL ratios were used to demonstrate that any remaining COC chemical or combination of chemicals are not likely to pose substantial health risks, and to help determine whether further action (i.e., mitigation or remediation) may be necessary.

CULs will be used to determine where at the Site a Site-specific risk assessment, mitigation, or remediation is necessary, or to identify areas for additional characterization. Where COC

concentrations in soil exceed CULs, Site-specific risk assessment, mitigation or remediation will be implemented to further evaluate or reduce exposure risks to acceptable levels. Similarly, areas where concentrations of groundwater COCs (i.e., CVOCs) exceed CULs will be targeted for remediation under the Schlage OU remedy. And where soil vapor concentrations exceed Site-specific CULs, vapor intrusion mitigation will be implemented.

5. REMEDIAL ACTION OBJECTIVES

5.1 Site Remedial Action Objectives

RAOs are site-specific, quantitative goals that define the extent of cleanup required to achieve the appropriate level of protectiveness for human health and the environment. The RAOs for the Site include:

- Soil – Prevent exposure to soil with COCs at concentrations exceeding CULs by eliminating the exposure pathway for future receptors, which include incidental ingestion, inhalation of windblown dust particles, and dermal contact.
- Soil Vapor – Prevent exposure to CVOCs in soil vapor at concentrations that exceed the CULs for soil vapor established in the risk assessment and Section 4.2.3 by either demonstrating through a Site-specific risk assessment that no significant risk is present, or by blocking or minimizing the vapor intrusion pathway from CVOCs in soil vapor that originate from the Schlage OU groundwater plume;
- Groundwater – Prevent exposure to CVOCs in groundwater associated with the Schlage OU CVOC plume by eliminating inhalation risks through the vapor intrusion pathway where significant risk exists, preventing ingestion and dermal contact through the use of groundwater for potable and agricultural purposes, and minimizing dermal exposure of CVOCs and metals in groundwater to construction workers. Treatment of CVOCs in groundwater that migrated beneath the Site from the Schlage OU will continue, as directed in the Schlage OU RAP, until the CULs established for the Schlage OU cleanup have been met (i.e., California MCLs) [MACTEC, 2009].

5.2 Applicable or Relevant and Appropriate Requirements

Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9621(d), requires remedial actions to attain or justify the waiver of applicable, or relevant and appropriate, federal and state environmental or state facility siting requirements. These applicable, or relevant and appropriate requirements are referred to as "ARARs." Federal ARARs may include requirements promulgated under any federal environmental laws. State ARARs may only include promulgated, enforceable environmental or facility-siting laws of general application that are more stringent or broader in scope than federal ARARs and that are identified by the state in a timely manner.

Applicable requirements are those cleanup standards, standards of control, criteria, or limitations that specifically address conditions, circumstances, or activities at a site. Relevant and appropriate requirements are those cleanup standards, standards of control, criteria, or limitations that, while not directly "applicable" to conditions, circumstances, or activities at the site, address problems or situations sufficiently similar to those encountered at the site so that their use is well suited to the site. A requirement that is not directly applicable must be both relevant and appropriate based on site-specific factors to be an ARAR. The criteria for determining relevance and appropriateness are listed in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR § 300.400(g)(2).

Non-promulgated advisories or guidance issued by federal or state government are not legally binding and do not have the status of potential ARARs. Such advisories or guidance, which are termed "to be considered" or TBC material, are used during the cleanup process to further the goal of protecting human health and the environment.

ARARs only include substantive, not administrative, requirements, and pertain only to onsite matters. Any offsite activities must comply with all applicable federal, state, and local laws, including both substantive and administrative requirements.

ARARs are identified on a site-specific basis from information about the chemicals at the site, the actions that may take place at the site, and the features of the site location. There are three general ARAR categories:

- Chemical-specific;
- Action-specific; and
- Location-specific.

Chemical-specific ARARs are numerical values or methodologies that, when applied to site-specific conditions, result in the establishment of numerical values for specific chemicals. They are used to determine acceptable concentrations of specific hazardous substances, pollutants, and contaminants in the environment. If a chemical is subject to more than one numerical value or methodology, the most stringent is generally selected.

Location-specific ARARs are restrictions placed on the concentration of hazardous substances, pollutants, or contaminants or the conduct of activities solely because they are in specific locations, such as wetlands or floodplains.

Action-specific ARARs are technology- or activity-based requirements or limitations on actions taken with respect to hazardous substances, pollutants, or contaminants.

The analysis and identification of chemical-specific, location-specific, and action-specific ARARs for the selected remedies for the Site follow USEPA guidance, including CERCLA Compliance with Other Laws Manual (Interim Final), USEPA Office of Solid Waste and Emergency Response (OSWER) Directive 9234.1-01, August 1988 [USEPA, 1988], and the CERCLA Compliance with Other Laws Manual: Part II, Clean Air Act and Other Environmental Statutes and State Requirements (Interim Final), OSWER Directive 9234.1-02, August 1989 [USEPA, 1989a].

Table 12 presents the following information: 1) a list of all ARARs and TBCs that have been identified for the Site; 2) the legal citation(s) for each ARAR and TBC; 3) a determination as to whether each citation is an ARAR or TBC; and 4) a brief description of each ARAR and TBC.

6. FEASIBILITY STUDY AND ALTERNATIVES ANALYSIS

This section presents: 1) the remedial technology screening matrix based on contaminated media, risk-based cleanup levels, and rough development grading requirements; 2) the criteria used to develop and evaluate remedial technologies; 3) the development of remedial action alternatives based on the screening and evaluation; and 4) assessment of remedial alternatives developed for UPC OU-SM, and rationale for selection of the preferred remedial approach.

6.1 Remedial Technology Screening

This section outlines the range of general response actions to address contamination at the Site, and corresponding remedial technologies that are potentially applicable for the contaminated soil, soil vapor, and groundwater at the Site.

6.1.1 General Response Actions

A range of general response actions (GRAs), for which corresponding remedial technologies may be applicable to Site conditions, were identified for the Site for initial baseline evaluation and comparison purposes under RAP Guidance in Section 6.1.2. The GRAs considered for the Site include: no action, institutional controls, containment, ex situ treatment, in situ treatment, and excavation/offsite disposal. One or more remedial technologies that correspond to the GRAs were then evaluated and compared based on three criteria: 1) effectiveness for achieving long-term protection; 2) implementability; and 3) relative costs.

To refine the range of remedial technologies that would potentially be developed into remedial alternatives for the Site that must undergo detailed analysis, the NCP at 40 CFR §300.430(e)(7) provides the opportunity to initially screen them against the short- and long-term aspects of the following three criteria:

- Effectiveness: Alternatives are judged on the degree to which an alternative reduces toxicity, mobility, or volume through treatment; minimizes residual risks and affords long-term protection; complies with ARARs; minimizes short-term impacts; and how quickly it achieves protection. Alternatives providing significantly less effectiveness than other, more promising alternatives may be eliminated. Alternatives that do not provide adequate effectiveness in protecting human health and the environment shall be eliminated from further consideration.
- Implementability: This criterion focuses on the technical feasibility and availability of the technologies each alternative would employ, and the administrative feasibility of implementing the alternative. Alternatives that are technically or administratively infeasible, or require equipment, specialists, or facilities that are not available within a reasonable period of time may be eliminated from further consideration.
- Cost: Costs of construction and any long-term costs to operate and maintain the alternatives shall be considered. Costs that are grossly excessive compared to the overall effectiveness of alternatives may be used as a factor to exclude alternatives from further consideration. Alternatives providing effectiveness and implementability comparable to that of another

alternative by employing a similar method of treatment or engineering control, but at greater cost, may also be eliminated.

6.1.2 Remedial Technology Screening

This section describes the screening and selection of the range of remedial technologies that are potentially applicable for the contaminated soil, soil vapor, and Fill zone groundwater at the Site.

The Remedial Technology Screening Matrix presented in **Table 13** was used to guide whether a technology should be retained for further consideration based on the nature and extent of the current levels of contamination at the Site, as summarized in Section 3.

Land Use Restrictions (administrative/institutional mechanisms) would be included as components of the remedial action alternatives developed based on the remedial technology screening. These controls may be applicable both within the short term (e.g., to prevent reuse of groundwater or select vapor intrusion mitigation measures where there is significant risk or other controls until CULs are achieved), and in the long term to: 1) maintain the reuses consistent with the risk exposures assumed in the development of CULs (or Site-specific CULs) for the preferred remedial actions, and 2) prevent unrestricted reuses of areas where residual contamination may remain.

The following technologies retained from the screening were then incorporated in the development of remedial action alternatives described in Section 6.2:

- Institutional Control (administrative/institutional mechanisms) for Soil, Soil Vapor, and Groundwater – Restrictions limiting Site uses, including adopting land use restrictions (e.g., administrative controls and/or engineering controls) to ensure that uses are protective of Site users for CVOCs in soil vapor and groundwater;
- Capping (containment) for Soils – Capping of existing Site soil using hardscape materials or a specified thickness of clean soil to ensure the protection of future Site users by eliminating direct contact exposure pathways to impacted soil; and
- Excavation for Soils – Where development requires excavation or existing soil cannot be capped, excavation of soil exceeding CULs and offsite disposal and/or excavation and relocation beneath a cap to eliminate direct contact exposure pathways and, in the case of offsite disposal, to reduce the amount of contaminant mass at the Site.

6.2 Remedial Alternatives Development and Evaluation

6.2.1 Description of Evaluation Criteria

The above technologies were assembled into five remedial alternatives. The five remedial alternatives were subjected to: 1) a detailed alternative analysis pursuant to the nine criteria of the NCP and the six criteria of Section 2535b.1 of the HSC; and 2) comparative analysis identifying the advantages and disadvantages of each alternative when compared to other alternatives considered for the Site.

The nine NCP criteria include two threshold, five balancing, and two modifying criteria. For a remedial alternative to be considered an appropriate remedial action, it must meet both threshold criteria.

Balancing criteria provide an opportunity to identify and evaluate strengths, weaknesses, and the cost-effectiveness of an alternative. Modifying criteria are evaluated after the public comment period.

This section introduces these criteria. Summaries of the comparative evaluations of alternatives for the remedial action areas included in this FS/RAP are presented in Section 6.4.

The HSC requires that the remedial alternatives be evaluated relative to the following six additional criteria:

1. Health and safety risks posed by the site conditions;
2. The effect of COCs present on probable present and future uses of contaminated or threatened resources;
3. The effect on available groundwater resources for present, future, and probable beneficial uses (treatment alternatives that reduce the volume, toxicity, and mobility of contaminants as opposed to alternatives that use offsite transport and disposal are preferred);
4. Site-specific conditions (potential for offsite migration) and existing contaminant background levels;
5. Cost-effectiveness, considering the short-term and long-term costs of the remedial action and whether deferral of a remedial action could result in a cost increase or hazard increase to human health or the environment; and
6. The potential environmental impacts of the remedial alternative such as land disposal of contaminated material versus treatment to remove or reduce its volume, toxicity, or mobility prior to disposal.

The six HSC criteria are similar to, and covered under, the nine NCP criteria in this FS/RAP, as described below.

6.2.1.1 Threshold Criteria

Overall Protection of Human Health and the Environment - Addresses whether a remedy provides adequate protection and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls, or land use restrictions.

Compliance with ARARs - Addresses whether a remedy will meet all applicable or relevant and appropriate Federal, State and local environmental laws and regulations.

6.2.1.2 Balancing Criteria

Long-term Effectiveness and Permanence - Considers the ability of a remedy to provide reliable protection of human health and the environment over time once cleanup goals have been achieved.

Reduction of Toxicity, Mobility, and Volume Through Treatment - Evaluates the anticipated performance of the alternative with respect to the reduction of toxicity, mobility, and volume of contaminants. This criterion reflects the preference for treatment of contaminated soil and groundwater as opposed to offsite transport and disposal.

Short-term Effectiveness - Evaluates the period of time needed to complete the remedy, and any adverse impact on human health and the environment that may be posed during the construction and implementation period, until cleanup standards are achieved. Potential impacts during construction include construction worker exposure to Site COCs, offsite dust migration, offsite storm water and sediment migration, air pollution, and noise.

Implementability - Refers to the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a remedial option.

Cost - Evaluates the capital and O&M costs for 10 years for each alternative. Cost estimates of this type are considered accurate to a range of minus 30% to plus 50%. The reasons for this range are the variability of construction materials, variability in construction costs over time, the complexity of developing site-specific cost factors, and the sensitivity of construction costs to economic factors such as interest rates and materials costs.

6.2.1.3 Modifying Criteria

These criteria were addressed during the public review and comment period on this FS/RAP and are summarized in the Responsiveness Summary provided as **Appendix G** to this FS/RAP.

Regulatory Agency Acceptance - Indicates whether, based on their review of the information, the applicable regulatory agencies agree with the preferred alternative.

Community Acceptance - This FS/RAP was subject to public review and comment prior to final selection of the remedial action alternative. This criterion assesses whether community concerns are addressed by the remedy and whether the community prefers a remedy.

6.3 Description of Remedial Action Alternatives

This section describes the remedial action alternatives that were developed based on assembly of the following applicable remedial technologies that passed the initial screening:

Land Use Restrictions -- Land Use Covenant documenting the following prohibitions: • No occupied buildings, including sensitive uses, where CVOC concentrations in soil vapor exceed CULs without DTSC approval based on either (1) a risk assessment demonstrating Site soil vapor conditions pose no significant risk to human health, or (2) engineering controls, such as building design or gas intrusion mitigation systems, that will reduce the risk of vapor intrusion to an acceptable level; • No growing produce or vegetables for human consumption in native soil. Plants for human consumption may be grown if they are planted in raised beds (above the approved cover) containing non-native soil. Trees producing edible fruit (including trees producing edible nuts) may also be planted provided they are grown in containers with a bottom that prevents the roots from penetrating the native soil; • No extraction or use of underlying groundwater is allowed without a Groundwater Management Plan pre-approved by DTSC; • No drilling for any water, oil, or gas, or extraction or removal of groundwater without a DTSC-approved Groundwater Management Plan and prior written approval by DTSC; • No interference with, or modification of, a vapor mitigation system shall be permitted without prior written approval by DTSC, and future tenants must provide reasonable access for O&M of vapor mitigation systems; • All excavation into the cap shall comply with the DTSC-approved Soil Management Plan (SMP); • Contaminated soils brought to the surface by grading, excavation, trenching or backfilling shall be managed in accordance with all applicable provisions of state and federal law and a pre-approved DTSC SMP; and • All uses and development of the Site shall preserve the integrity and effectiveness of the cap.
Engineering Controls -- Vapor intrusion mitigation systems or intrinsically safe building design for mitigating vapor intrusion into indoor air by VOCs in soil vapor; -- Sub-slab venting.
Capping -- Soil cover meeting unrestricted use screening criteria for the COCs identified at the Site with a minimum 5-foot thickness and an underlying demarcation layer. -- Hardscape consisting of concrete, asphalt, masonry, or other durable, impervious surface. -- Building foundations. -- O&M Plan to maintain capped surfaces and operate vapor intrusion mitigation systems, if applicable.
Excavation -- Onsite relocation of excavated soil exceeding CULs and capping with a soil cover, hardscape, or building foundation. -- Offsite disposal of excavated soil at a licensed and approved waste management facility.

The following Site-wide remedial action alternatives were developed based on the screening of remedial technologies presented in Section 6.1.2 and summarized in **Table 13**:

- Alternative 1: No Action;
- Alternative 2: Land Use Restrictions and Engineering Controls for Vapor Intrusion Mitigation;

- Alternative 3: Soil Capping and Localized Excavation with Some Onsite Relocation and Some Offsite Disposal, Land Use Restrictions, and Engineering Controls for Vapor Intrusion Mitigation;
- Alternative 4: Soil Capping and Excavation with Offsite Disposal, Land Use Restrictions, and Engineering Controls for Vapor Intrusion Mitigation; and
- Alternative 5: Soil Excavation with Offsite Disposal and Land Use Restrictions.

For the evaluation of remedial alternatives, it was assumed that regrading will be completed in anticipation of redevelopment under all remedial alternatives. Regrading for redevelopment assumes soil will be imported to the Site to raise the grade according to the development plan but without a remediation objective. So although remedial alternatives describe remedial activities, not development activities, the remedial alternatives were evaluated based on the anticipated final grade of the Site prior to the commencement of vertical construction.

The alternatives are described below and comparatively evaluated in Section 6.4 based on the criteria presented in Section 6.2.

6.3.1 Alternative 1 — No Action

No additional control or protection of human health and the environment would be implemented for the contamination present at the Site. This alternative is required as a baseline alternative for comparison to other alternatives under RAP Guidance. There is negligible cost associated with administrative activities for this alternative.

6.3.2 Alternative 2 — Land Use Restrictions and Engineering Controls for Vapor Intrusion Mitigation

This alternative assumes no active remediation would be implemented and there would be land use and activity restrictions to prevent an unacceptable risk due to environmental conditions.

Land Use Restrictions: A land use covenant would be recorded on the title to the property that would clearly define the land use and activity restrictions that would be necessary to prevent human exposures to contaminants left in place in soil and/or soil vapor above CULs.

Engineering Controls: Engineering controls would be implemented to control dust emissions and stormwater runoff during construction and to mitigate intrusion of VOC vapors from the groundwater and soil into occupied buildings where needed. For costing purposes, monitoring of engineering controls to verify the vapor intrusion risk has been mitigated would be conducted for 30 years following construction.

The total estimated cost of this alternative is approximately $4,430,000, which includes capital costs of $840,000 and O&M costs of $3,590,000 (**Appendix C**).

6.3.3 Alternative 3 — Soil Capping and Excavation with Partial Onsite Relocation and Partial Offsite Disposal, Land Use Restrictions, and Engineering Controls for Vapor Intrusion Mitigation

This alternative consists of soil capping in most areas of the Site, as dictated by the proposed development grading plan; excavation of some soil and relocation onsite to be placed under streets or building foundations, which would act as a hardscape cap; excavation of some soil and offsite disposal; land use restrictions where capping or excavation are not implemented; and engineering controls.

As noted in the Project Description (Section 1.4), the proposed development grading plan requires that a significant amount of soil be imported to the Site and placed as fill to raise the grade to a new elevation. The ground surface elevation at the Site will remain at the current elevation adjacent to Bayshore Boulevard, but will be raised substantially near the railroad tracks to accommodate the Geneva Avenue extension flyover. The thickness of fill that is specified in the grading plan ranges from a minimum of 5 feet to as much as 30 feet across most of the Site. To meet the remedial action objectives of this Alternative 3 (i.e., ensure the protection of future Site users by breaking the direct exposure pathway to impacted soil), impacted soil shall be capped with either hardscape material or at least 5 feet of clean, imported soil. The quality of this imported soil will satisfy the residential land use cleanup levels specified in Section 4.2.1 and **Appendix D**, as determined in accordance with the DTSC's Clean Fill Advisory [DTSC, 2001]. A demarcation layer consisting of a bright-colored geotextile fabric would be placed between the clean soil cap and the existing soil. A conceptual cross-section depicting the cover-fill configuration is provided as **Figure 21**.

Soil in the western portion of the Site adjacent to Bayshore Boulevard with COCs that exceed health risk criteria will either be capped by hardscape (i.e., building foundations or roadways) or excavated for onsite relocation or offsite disposal. The excavations would be backfilled so the thickness of clean soil is at least 5 feet over any residual soil or fill from onsite with COC concentrations exceeding CULs. Excavated soil that is relocated onsite and that contains COCs above CULs will be capped beneath 5 feet of imported clean fill or beneath hardscape elsewhere on the Site.

The property boundary along Bayshore Boulevard is approximately 1,400 feet long. Assuming an average 10% incline, the ground surface elevation will rise by 5 feet at a distance of 50 feet east of Bayshore Boulevard. Within this 1,400 feet by 50 feet area, any existing soil with COCs that exceed the CULs and that will not be covered by hardscape will need to be excavated and backfilled. Assuming that half the area will be covered by hardscape, the area subject to excavation is 35,000 square feet. Further assuming a linear incline from 0 feet to 5 feet, the average thickness of clean fill would be 2.5 feet. Thus, to create a 5-foot thick column of clean soil atop existing Site soil, the average excavation depth in this area would be 2.5 feet (i.e., the excavation depth is zero feet where the thickness of clean fill is 5 feet, and the excavation depth is 5 feet where the thickness of clean fill is 0 feet). An excavation with area 35,000 square feet and thickness 2.5 feet has a volume of 87,500 bank cubic feet, which is approximately 3,200 bank cubic yards or 3,840 bulk cubic yards assuming a bulking factor of 1.2. Providing an allowance for deeper excavations, the assumed volume of soil excavation under this alternative is 5,000 bulk cubic yards.

For costing purposes, 2,500 bulk cubic yards of excavated soil was assumed to be relocated onsite and appropriately capped with a clean soil cover, hardscape, or a building foundation. The other 2,500 bulk cubic yards would be transported offsite for disposal; it was assumed 80% (i.e., 2,000 cubic yards) would be disposed as non-hazardous waste at the Class II facility in Altamont, California, and 20% (i.e., 500 bulk cubic yards) would be disposed as non-RCRA hazardous waste at the Class I facility in Buttonwillow, California. Other permitted disposal facilities may be used if appropriate. The offhaul volume of 2,500 bulk cubic yards corresponds to 208 truckloads of 12 bulk cubic yards per load. Offhaul would occur over approximately 10 days. Excavation and relocation/offhaul details will be specified in the RDIP.

Soil vapor sampling will be conducted after regrading and prior to commencing vertical construction. If warranted by the soil vapor sample results and Site-specific risk assessment, vapor intrusion mitigation will be included in future building construction. For costing purposes, monitoring of engineering controls to verify the vapor intrusion risk has been mitigated would be conducted for 30 years following construction.

The total estimated cost of this alternative is approximately $12,600,000, which includes capital costs of $9,000,000 and O&M costs of $3,600,000 (**Appendix C**).

6.3.4 Alternative 4 — Soil Capping and Excavation with Offsite Disposal, Land Use Restrictions, and Engineering Controls for Vapor Intrusion Mitigation

This alternative is similar to Alternative 3 except that the entirety of an assumed 5,000 bulk cubic yards of soil would be transported offsite for disposal at a permitted waste management facility rather than half of it being relocated onsite. For the cost estimate, it was assumed that 80% of the soil would be transported to the Class II facility in Altamont, California, and 20% of the soil would be transported to the Class I facility in Buttonwillow, California. Other approved disposal facilities may be used if appropriate. The offhaul volume of 5,000 bulk cubic yards corresponds to 416 truckloads of 12 bulk cubic yards per load. Offhaul would occur over approximately 20 days. All other elements are as described in Alternative 3.

Soil vapor sampling will be conducted after regrading and prior to commencing vertical construction. If warranted by the soil vapor sample results and Site-specific risk assessment, vapor intrusion mitigation will be included in future building construction. For costing purposes, monitoring of engineering controls to verify the vapor intrusion risk has been mitigated would be conducted for 30 years following construction.

The total estimated cost associated with implementation of this alternative is approximately $13,000,000, which includes capital costs of $9,400,000, and O&M costs of $3,600,000 (**Appendix C**).

6.3.5 Alternative 5 — Excavation with Offsite Disposal, Land Use Restrictions, and Engineering Controls for Vapor Intrusion Mitigation

In this alternative, all soil with COC concentrations exceeding CULs would be excavated to the depth of: (1) the top of a sample with all COC concentrations below screening levels; or (2) a maximum of five feet below ground surface. The estimated excavation depths across the Site are shown in **Figure 22**. All excavated soil would be transported offsite for disposal at a permitted

waste management facility. For the cost estimate, it was assumed that 80% of the soil would be transported to the Class II facility in Altamont, California, and 20% of the soil would be transported to the Class I facility in Buttonwillow, California. Other approved disposal facilities may be used if appropriate. The offhaul volume of 242,500 bank cubic yards (291,000 bulk cubic yards) corresponds to 24,250 truckloads of 12 bulk cubic yards per load. Assuming the same haul rate as Alternatives 3 and 4, offhaul would occur over approximately 3 years. Following excavation, clean fill would be imported to the Site and placed in the excavations to bring the ground surface back to the existing grade. Imported soil would be placed and compacted to accommodate additional fill loads and building loads.

Soil vapor sampling will be conducted after regrading and prior to commencing vertical construction. If warranted by the soil vapor sample results and Site-specific risk assessment, vapor intrusion mitigation will be included in future building construction. For costing purposes, monitoring of engineering controls to verify the vapor intrusion risk has been mitigated would be conducted for 30 years following construction.

The total estimated cost associated with implementation of this alternative is approximately $61,500,000, which includes capital costs of $57,900,000, and O&M costs of $3,600,000 (**Appendix C**).

6.4 Summary Evaluation and Comparative Analysis of Remedial Action Alternatives

The five remedial alternatives identified in Section 6.3 were assessed using the nine NCP criteria for CERCLA sites established by USEPA [USEPA, 1989c] and additional California HSC criteria, as introduced in Section 6.2. A summary of the alternative evaluation and comparison is presented below.

6.4.1 Threshold Criteria

6.4.1.1 Overall Protection of Human Health and the Environment, and Compliance with ARARs

Under Alternatives 1 and 2, portions of the Site would be capped with imported fill and/or covered with hardscape as part of the development grading plan, irrespective of the presence of COCs in soil. However, future Site users may come into contact with COCs in existing soil in uncapped areas. Thus, Alternatives 1 and 2 would not completely prevent exposure to Site COCs above CULs and would therefore not provide overall protection of human health and the environment nor comply with ARARs. Furthermore, Alternatives 1 and 2 would not provide for mitigation against vapor intrusion, if warranted. For this reason, Alternatives 1 and 2 were not selected.

In contrast, Alternatives 3, 4, and 5 would provide for capping, excavation, land use restrictions, and vapor intrusion mitigation (if warranted) such that exposures to COCs above CULs in soil, soil vapor, and groundwater would be prevented. Therefore, these Alternatives would provide overall protection of human health and the environment as well as comply with ARARs including Measure JJ (**Table 12**).

6.4.2 Balancing Criteria

6.4.2.1 Reduction of Toxicity, Mobility, and Volume Through Treatment

Alternatives 1 and 2 would not reduce the toxicity, mobility, or volume of contaminants in soil through treatment and fail to meet this criterion. Although Site-specific treatment is not proposed under any alternative, development activities including the placement of clean fill in a portion of the Site and construction of building foundations and roadways would reduce the mobility of contaminants in existing soil. Continued treatment of CVOCs in groundwater migrating from the Schlage OU, as required in the Schlage OU RAP, would provide for reduction of toxicity, mobility, and volume of CVOCs in groundwater. For Alternatives 1 and 2; contaminant toxicity or mobility in soil or soil vapor would not be reduced in areas of the Site where neither raising the ground elevation nor construction are part of the redevelopment plan. In these areas, the risk levels identified in the HRA would be unmitigated during and following redevelopment.

In contrast, Alternatives 3, 4, and 5 would reduce the mobility (e.g., potential wind dispersal and stormwater run-off) of COCs in soil across the entire Site. Continued treatment of CVOCs in groundwater migrating from the Schlage OU, as required in the Schlage OU RAP, would provide for reduction of toxicity, mobility, and volume of CVOCs in groundwater. All existing Site soil would either be isolated beneath a cap of clean soil cover or hardscape, or would be excavated and transferred to a permitted landfill. Additionally, Alternatives 3, 4, and 5 would reduce the mobility and volume of contaminants in soil at the Site through excavation and offsite disposal. However, the toxicity of the off-hauled contaminated soil would not be reduced and would merely be transferred to a permitted landfill. The greater requirement for transport of impacted soil under Alternatives 4 and 5 relative to Alternative 3 increases the risk of release due to the potential for highway-related accidents, loading and unloading activities, and potential releases from the landfill facility, should its containment become compromised. The transport of the impacted soil would also contribute to the emission of criteria air pollutants, other toxic air pollutants, and greenhouse gas emissions.

6.4.2.2 Long-Term Effectiveness and Permanence

Alternatives 1 and 2 would not effectively prevent exposures across the entire Site in the long-term, given the reasonably anticipated use of the Site, because no action would be taken to mitigate Site risks in areas where neither raising the ground elevation nor construction are part of the redevelopment plan.

Alternatives 3, 4, and 5 would offer long-term effectiveness and permanence by addressing COCs in soil across the entire Site, implementing and maintaining land use restrictions, and preparing a soil management plan that would describe requirements for any potential contact with impacted soil or groundwater at the Site. Although Alternative 5 would offer long-term effectiveness for the Site, this Alternative would transfer a significant amount of contaminated soil to a landfill, where it would require management in perpetuity to prevent long-term impacts to the environment. It would also contribute to aggregate greenhouse gas loading.

6.4.2.3 Short-Term Effectiveness

Alternatives 1 and 2 would not be effective in the short term, given the reasonably anticipated use of the Site, because no action would be taken to mitigate Site risks in areas where neither raising the ground elevation nor construction are part of the redevelopment plan.

For Alternatives 3 and 4, the period of time needed to complete the remedy would be similar, though offhaul of excavated soil would be expected to take approximately 10 days for Alternative 3 and 20 days for Alternative 4. Assuming the same haul rate, the time required to complete offhaul of excavated soil for Alternative 5 would be approximately 970 days. For Alternatives 3, 4, and 5, short-term protectiveness would be provided by implementing measures to protect remedial construction workers, and through Occupational Safety and Health Administration (OSHA) work standards during excavation, relocation and capping (Alternative 3), and excavation and offsite disposal (Alternatives 4 and 5).

Controls identified in pre-construction plans and implemented during construction would manage offsite dust migration and offsite storm water and sediment migration. Best practices will be implemented to minimize air pollution, and all construction activities involving heavy machinery will be conducted during typical working hours. Air pollution and noise impacts will be far greater for Alternative 5 than for Alternatives 3 and 4 because of the more extensive earthwork in Alternative 5. Air pollution would be associated with heavy equipment excavating and handling soil, trucks to transport material offsite, trucks to transport soil back onsite to fill the excavation, and heavy equipment for placing and compacting fill soil back into the excavation.

The greenhouse gas emissions by excavators and loaders is roughly proportional to the quantity of soil being excavated and stockpiled. Thus, the greenhouse gases emitted during excavation and stockpiling of 242,500 cubic yards of soil would be approximately 48 times greater than excavating and stockpiling 5,000 cubic yards of soil.

The impacts of soil transportation for each alternative were estimated using assumptions for the UPC OU-SM in the Draft Environmental Impact Report for the Brisbane Baylands [ESA, 2013]. The following emissions were calculated for Alternatives 3, 4, and 5:

Alternative	Offhaul of Excavated Soil	Import of Backfill or Cap Soil	TOTAL
3 – Capping, limited excavation with partial onsite relocation and partial offsite disposal	62	104	166
4 – Capping, limited excavation with offsite disposal	124	104	224
5a – Site-wide excavation and offsite disposal, backfilling to current grade	6,038	89	6,127
5b - Site-wide excavation and offsite disposal, backfilling and regrading to 5 feet above current grade (same as Alternatives 3 and 4)	6,038	193	6,231

Notes: Units are metric tons of greenhouse gas emissions as carbon dioxide equivalents based on emission factors provided in Appendix G of the Draft Environmental Impact for the Brisbane Baylands [ESA, 2013]. Transport of excavated soil to Altamont Landfill (58 miles from the Site) and Buttonwillow Landfill (260 miles from the Site) were assumed for non-hazardous and hazardous soil, respectively; imported fill was assumed to be transported from the Baylands Soil Processing facility (1.25 miles from the Site).

Thus, the greenhouse gas emissions that would be generated transporting soil are approximately 37 times higher for Alternative 5 than for Alternative 3. The soil quantities for placement and compaction are slightly greater for Alternative 3 than for Alternative 5 (i.e., 339,600 bulk cubic yards and 291,000 bulk cubic yards, respectively), so greenhouse gas emissions would be roughly similar but slightly higher for Alternative 3 by a factor of approximately 1.2. The higher greenhouse gas emissions associated with excavation, stockpiling, and transportation make Alternative 5 approximately 35 to 50 times more impactful than Alternative 3.

However, the Site grade following implementation of Alternative 3 or 4 would be five feet higher than current grade across most of the Site, whereas the Site grade would be unchanged following implementation of Alternative 5. Currently, the development plan consists of raising the grade over most of the Site by at least 5 feet and up to 30 feet. Comparing emissions for Alternative 3 or 4 against Alternative 5 for the same post-remedial Site grading (i.e., approximately 5 feet higher than current grade across most of the Site), Alternative 5 would require backfilling the excavation and importing soil to raise the Site grade 5 feet, summarized as Alternative 5b above.

6.4.2.4 Implementability

All alternatives are readily implementable from a technical and administrative feasibility perspective. However, Alternative 2 would be easier to implement from a technical perspective than Alternatives 3, 4, and 5 because it only involves administrative action for implementing the land use restrictions, compared to excavation and/or capping of soils under Alternatives 3, 4, and 5. Alternative 5 is implementable but provides the highest overall risk and emissions to the environment due to waste hauling and offsite transfer of all excavated soil, and import and placement of fill soil. Significantly increased truck traffic would increase congestion on surface streets and highways and increase the likelihood of vehicular accidents.

6.4.2.5 Cost

Of the three remedial alternatives that are protective of human health and the environment, Alternative 3 ($12,600,000) has a lower estimated cost than Alternative 4 ($13,000,000) and Alternative 5 ($61,500,000) (**Appendix C**).

6.4.3 Modifying Criteria

6.4.3.1 Regulatory Agency and Community Acceptance

Formal assessment of regulatory agency and community acceptance was considered during the public comment period for this FS/RAP and documented in the Responsiveness Summary provided as **Appendix G**.

6.4.4 Additional HSC Criteria

Alternatives 1 and 2 do not meet several California HSC criteria for the entire Site, including the health and safety risks posed by contamination at the Site and the effect of contamination on future uses of the Site. Alternatives 3, 4, and 5 would likely meet all California HSC criteria. Alternative 5 would result in the greatest offsite environmental impacts due to hauling and transportation of all excavated soil to an offsite landfill facility.

6.5 Alternatives Screening Results

The comparative analysis of remedial alternatives discussed in the previous section is summarized in **Table 14**. Scores were assigned to each remedial alternative for each of the above criteria based on whether the alternative meets the criterion, mostly meets the criterion, partially meets the criterion, or does not meet the criterion.

Alternatives 1 and 2 are not adequately protective and scored low for threshold criteria and several balancing criteria. Alternatives 3, 4, and 5 are all similarly protective in that COCs in existing fill would be isolated beneath a cap and potential exposure pathways would be incomplete. Alternative 3 scored the highest based on comparable protectiveness as compared with Alternatives 4 and 5 and the lowest environmental impact by virtue of offhauling the least amount of soil of the three alternatives. Alternative 4 scored second highest and is nearly identical to Alternative 3 except for the higher environmental impact associated with the larger volume of soil offhaul. Alternative 5 had the third highest score on account of negligible improvement on protectiveness relative to Alternatives 3 and 4 but considerable environmental impact associated with soil offhaul. Based on the comparative analysis of remedial alternatives, Alternative 3 was selected as the preferred alternative.

7. PREFERRED REMEDIAL ALTERNATIVE

This section provides an overview of the implementation activities for the preferred remedial alternative. Based on the evaluation and comparison of the five alternatives, Alternative 3: *Land Use Restrictions, Soil Capping, and Excavation with Partial Onsite Relocation and Partial Offsite Disposal* is the preferred alternative. As discussed in earlier sections of this FS/RAP, remediation of CVOCs in soil vapor and groundwater are addressed under the Schlage OU remedy.

This section is organized by remedial activity as follows:

- Capping of soil in place that contains COCs at concentrations exceeding Soil CULs in areas of the future development where development conditions meet the prescriptive definition of a cap (i.e., a soil cap of imported clean fill with minimum thickness of five feet or hardscape);
- Excavation of localized areas of soil containing COCs at concentrations exceeding Soil CULs that cannot be capped in place and relocation and capping of impacted soil as required for development;
- Soil vapor and groundwater confirmation sampling and construction of vapor mitigation systems, if required; and
- Land use restrictions, including prohibition of the use of groundwater, soil management requirements, and the O&M of caps and vapor mitigation systems, where needed.

As discussed in Section 6.4, the combined remedial elements of the preferred alternative satisfy the ARARs and TBCs in **Table 12**, including Measure JJ. Specific information regarding the pre-construction activities, excavation of soils, stockpiling and staging of soils, haul roads, traffic control elements, dust control and air monitoring programs, erosion control measures, and other details regarding the preferred remedial approach will be set forth in the RDIP(s) and O&M plans. If additional impacted soils or subsurface structures are discovered during grading activities, appropriate management and characterization of impacted soils will be conducted under an unexpected conditions response plan, that will be a component of the RDIP, to be approved by DTSC in advance of site development. COCs identified onsite above CULs in areas where the development grading plan does not include a 5-foot thick clean cover will either be: (1) relocated under areas that are designed to have a clean soil cap of minimum 5-foot thickness; (2) placed under roadways, building foundations, or other hardscape; or (3) excavated and disposed offsite.

7.1 Placement of Soil Cap

Fill soil will be imported to the Site to raise the elevation to the final grade and cap the existing soil containing COCs at concentrations above CULs. Prior to constructing the clean soil cap, a demarcation layer consisting of a bright-colored geotextile fabric will be placed atop the existing soil to indicate the contact between the clean soil cap and the underlying material. Import fill material for the soil cap will satisfy the criteria in **Appendix D**. Details of the means and methods for importing soil and constructing the clean soil cap will be provided in the RDIP. Following clean soil cap placement, any planned utility trenches/corridors requiring excavation into the existing soil at the Site will be excavated, followed by installation of a demarcation geotextile

fabric along the bottom and sides of the utility trench to indicate the contact between the clean utility trench backfill and the existing soil. This will create trenches/corridors that can be re-excavated in the future for utility repair or additional utility installation without coming into contact with residual contamination in the existing soil.

All earthwork at the Site will be conducted in accordance with a Dust Control Plan, which will be provided in the RDIP. The Dust Control Plan will define the methods to be used for dust monitoring and procedures for minimizing dust emission. Perimeter air monitoring will be conducted to verify the effectiveness of dust control measures. The generation of airborne dust will be controlled by one or more of the following methods:

- Dampening active earthwork areas with clean water;
- Installing rumble strips or similar to prevent Site soils from being tracked out of the Site and onto public roads;
- Decontaminating haul trucks and equipment prior to their leaving the Site;
- Covering/stabilizing soil stockpiles;
- Restricting the height from which soil can be dropped from an excavator bucket into a haul truck; and
- Stopping work if wind speeds exceed a pre-determined threshold.

All earthwork will also be conducted in accordance with a Storm Water Pollution Prevention Plan (SWPPP) to minimize impacts to the local storm water conveyance system and receiving waters. The SWPPP will identify best management practices for controlling storm water and preventing sediment transport in run-off at the Site during construction. Best management practices will likely include placing sand or gravel bags or straw waddles at the property boundary adjacent to active earthwork or disturbed, uncompacted soil. Details of both the Dust Control Plan and the SWPPP will be provided in the RDIP.

7.2 Excavation with Partial Onsite Relocation and Partial Offsite Disposal of Soils

In areas where impacted soil cannot be capped in-place with hardscape or a minimum of 5 feet of clean fill, the impacted soil will be excavated and either relocated onsite beneath a cap (e.g., roadways, building foundations, concrete areas, asphalt parking lots, or 5 feet of clean soil) or transported offsite to an appropriate disposal facility. Details will be specified in the RDIP or SMP as appropriate. All soil excavation, stockpiling, relocation, and/or offhaul will be conducted in accordance with the Dust Control Plan and SWPPP to be provided in the RDIP.

7.3 Soil Vapor Mitigation

After the Site has been capped and regraded to the new baseline development elevation, and after soil vapor concentrations have reached steady state at the target sample depth(s) [Johnson et al., 1999], soil vapor sampling will be conducted to establish a vertical soil vapor profile between the top of the current existing fill and the future ground surface. Soil vapor confirmation samples will be collected at the proposed building locations to assess, at a screening level, the potential need

for vapor mitigation systems in buildings planned for construction. The soil vapor sampling plan will be prepared in accordance with applicable DTSC guidance documents on evaluating vapor intrusion and will be submitted to DTSC for approval in advance of performing field work. If CVOC concentrations in soil vapor in areas where buildings are planned exceed the screening levels provided in Section 4.2.3, or appropriately updated screening levels, either DTSC-approved vapor mitigation systems will be included in the design of those buildings, or a Site-specific risk assessment will be prepared. The design and installation of vapor intrusion mitigation systems or demonstration that Site conditions pose no significant risk to human health based on the Site-specific risk assessment, will be the responsibility of the developer or property owner and will require DTSC approval. In areas where CVOC concentrations in soil vapor exceed risk-based Site-specific CULs, two rounds of indoor air sampling will be conducted post-construction to verify attenuation factor assumptions and test for seasonality. Additional indoor air sampling may be required based on exceedance of health-based screening levels.

7.4 Land Use Restrictions

One or more Land Use Covenants will be recorded on the title to the property with restrictions to limit human exposures to contaminants left in place in soil, soil vapor, and groundwater above levels considered protective of unrestricted use of the Site. Applicable land use restrictions pertaining to Schlage OU CVOC contamination in groundwater are incorporated below and will be included in the Land Use Covenant(s) placed on the Site. The Land Use Covenant(s) will include the following restrictions:

- No occupied buildings, including sensitive uses, where CVOC concentrations in soil vapor exceed CULs without DTSC approval based on either (1) a risk assessment demonstrating Site conditions pose no significant risk to human health, or (2) engineering controls, such as building design or gas intrusion mitigation systems, that will reduce the risk to an acceptable level;
- No growing produce or vegetables for human consumption in native soil. Plants for human consumption may be grown if they are planted in raised beds (above the approved cover) containing non-native soil. Trees producing edible fruit (including trees producing edible nuts) may also be planted provided they are grown in containers with a bottom that prevents the roots from penetrating the native soil;
- No extraction or use of underlying groundwater is allowed without a Groundwater Management Plan pre-approved by DTSC;
- No drilling for any water, oil, or gas, or extraction or removal of groundwater without a DTSC-approved Groundwater Management Plan and prior written approval by DTSC;
- No interference with, or modification of, a vapor mitigation system shall be permitted without prior written approval by DTSC, and future tenants must provide reasonable access for O&M of vapor mitigation systems;
- All excavation into the cap shall comply with the DTSC-approved SMP;

- Contaminated soils brought to the surface by grading, excavation, trenching, or backfilling shall be managed in accordance with all applicable provisions of state and federal law and a DTSC-approved SMP; and
- All uses and development of the Site shall preserve the integrity and effectiveness of the cap.

7.5 Operation & Maintenance

Site inspections will be conducted on an annual basis to evaluate the effectiveness of the cap and ensure compliance with Land Use Covenant(s). The O&M program will be detailed in an O&M Plan but will generally consist of annual inspections to verify that the soil cap is not eroding, that engineered cap materials are in good condition, that unauthorized wells providing access to restricted groundwater or unauthorized excavations into impacted soil have not been constructed, and that vapor intrusion mitigation systems are operating as designed. A SMP will also be prepared that will specify the protocols to be followed for excavating into and beneath the cap. An inspection report will be submitted to DTSC for review and approval on an annual basis. All O&M activities will be the responsibility of the Site owner and will be governed by an O&M Agreement with the DTSC.

8. SCHEDULE

The schedule for project implementation will be presented in the RDIP for review and comment by DTSC. In general, the anticipated schedule following approval of this FS/RAP is as follows; however, implementation may be conducted in phases:

Tasks	Schedule
RDIP Submittal	First Quarter 2021
Permitting	Second Quarter 2021
Initiate Remedial Action Implementation	Third Quarter 2021
Complete Remedial Construction	First Quarter 2023

The RDIP will contain a detailed description of the remedial work to be performed as well as the plan for implementation. The RDIP will include design drawings, a health and safety plan, procedures for minimizing fugitive dust emission, the program for monitoring air and dust during remedial construction, procedures for managing storm water during remedial construction, a traffic plan for the import and offhaul of soil, and a plan for restricting Site access to authorized personnel only.

It is anticipated that the remedy will be implemented at one time and that a single Remedial Action Completion Report will be prepared after completion of the remedial action. However, if the remedial action activities for the Site occur in multiple phases, DTSC will be notified, and separate RDIPs and Remedial Action Completion Reports may be prepared for each phase. After each remedial action is completed, a location-specific O&M Plan will be prepared and a Land Use Covenant will be recorded. The Completion Reports will provide a description of work completed, a summary of any deviations from this FS/RAP, and verification that CULs were met or Site protectiveness was achieved. Each Completion Report will also include a request that DTSC certify the completion of the remedial actions once the O&M Plan and Land Use Covenants are in place.

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TABLES

Table 1: Groundwater Well and Piezometer Construction Details
UPC OU-SM
Brisbane, California

Well Name	Water-Bearing Zone Screened	Location	Well Installation Date	Well Status	Well Decommissioning Date	Easting[1]	Northing[1]	Top of Casing Elevation (ft MSL)[1,2]	Ground Surface Elevation (ft MSL)[1,2]	Casing Diameter (inches)	Total Well Depth (ft bgs)	Screened Interval (ft bgs)
BMW-1	Colma	Brisbane	1/6/2006	Active	--	6011422.01	2085618.60	17.25	--	2	55	45-55
BMW-2	Colma	Brisbane	1/6/2006	Active	--	6011343.04	2085368.96	15.62	--	2	59	49-59
GT-1	Merced	Brisbane	--	Active	--	6010959.38	2085707.68	11.97	9.39	--	143	118-143
GT-2A	Colma	Brisbane	--	Active	--	6011203.95	2084989.53	11.66	9.16	--	40	25-40
GWE-1	Fill	Brisbane	11/22/1993	Active	--	6010968.67	2085814.49	9.92	10.00	5	13	4-13
GWE-2	Fill	Brisbane	11/22/1993	Active	--	6011054.44	2085490.49	7.16	7.80	5	9	4-9
GWE-3	Fill	Brisbane	11/22/1993	Active	--	6010888.14	2085241.31	8.58	9.17	5	16	5-16
GWE-4	Fill	Brisbane	11/22/1993	Active	--	6010847.46	2085508.23	8.08	9.00	5	16	5-16
GWE-5	Fill	Brisbane	--	Decommissioned	--	6010721.00	2085963.57	9.58	9.70	--	16	5-16
GWE-6	Colma	Brisbane	11/30/1993	Decommissioned	11/15/2016	6010853.93	2086055.64	14.95	16.03	4	41	26-41
LF-1A	Fill	Brisbane	--	Decommissioned	2008	6010903.97	2085837.36	11.83	11.00	2	8.5	4-8.5
LF-1AR	Fill	Brisbane	--	Active	--	--	--	--	--	--	--	--
LF-2B[3]	Colma	Brisbane	--	Active	--	6010966.74	2085570.84	11.33	9.00	--	44	33-44
MK-2A	Fill	Brisbane	1/13/1986	Active	--	6010203.07	2084851.62	12.96	9.83	2	13	3-13
MK-3B[3]	Colma	Brisbane	--	Active	--	6010527.68	2085607.89	12.14	9.04	2	43	33-43
MK-4A	Fill	Brisbane	1/14/1986	Active	--	6011398.17	2085855.03	17.46	14.65	2	15	5-15
MK-4B	Colma	Brisbane	1/22/1986	Active	--	6011398.48	2085847.11	18.02	15.38	2	32	23-32
MK-5A	Fill	Brisbane	1/13/1986	Decommissioned	Prior to 2008	6010906.72	2084991.2	10.88	8.48	2	10	3-10
MK-5AR	Fill	Brisbane	3/7/2007	Active	--	6010909.46	2084990.26	10.74	8.42	2	--	--
MK-5B	Colma	Brisbane	1/20/1986	Active	--	6010861.61	2085011.17	11.77	8.68	2	27	17-27
MK-6A	Fill	Brisbane	1/14/1986	Active	--	6011472.96	2085084.86	17.28	14.05	2	18	8-18
MK-6B	Colma	Brisbane	1/21/1986	Active	--	6011480.78	2085088.08	17.00	14.29	2	47	37-47
MW-2B	Colma	Brisbane	3/13/1984	Active	--	6010197.64	2084838.52	13.88	9.00	2	40	35-40
MW-3A	Fill	Brisbane	3/15/1984	Active	--	6010452.95	2085434.08	11.18	9.00	2	15.3	2.5-12.5
MW-4A	Fill	Brisbane	3/15/1984	Active	--	6010533.45	2085775.00	12.82	9.50	2	12	2-12
MW-5AF	Fill	Brisbane	--	Active	--	--	--	12.19	--	--	--	--
MW-5B	Colma	Brisbane	3/22/1984	Active	--	6010788.57	2085020.02	11.83	13.00	2	38.6	30-35
MW-6A	Fill	Brisbane	3/15/1984	Decommissioned	Prior to 2008	6011063.68	2085800.96	13.06	11.00	2	13	3-13
MW-6AR	Fill	Brisbane	2/8/2005	Active	--	6011062.19	2085808.24	13.02	--	2	13	5-13
MW-6B	Colma	Brisbane	3/23/1984	Active	--	6011084.04	2085808.84	13.97	12.00	2	35	30-35
MW-7A	Fill	Brisbane	3/16/1984	Active	--	6010979.53	2085592.00	11.19	9.00	2	13	3-13
MW-8A	Fill	Brisbane	3/16/1984	Active	--	6010784.50	2085277.60	10.62	9.00	2	13	3-13
MW-8B	Colma	Brisbane	3/25/1984	Active	--	6010800.40	2085273.05	13.25	11.25	2	38	33-38
PZ-6LA	Colma	Brisbane	--	Active	--	6011464.65	2085961.87	16.69	16.92	--	30	25-30
PZ-6UA	Colma	Brisbane	--	Active	--	6011469.29	2085952.05	16.63	16.89	--	40	25-40
PZ-7LA	Colma	Brisbane	--	Active	--	6011468.67	2085932.86	16.69	16.94	--	34	29-34

Table 1: Groundwater Well and Piezometer Construction Details
UPC OU-SM
Brisbane, California

Well Name	Water-Bearing Zone Screened	Location	Well Installation Date	Well Status	Well Decommissioning Date	Easting[1]	Northing[1]	Top of Casing Elevation (ft MSL)[1,2]	Ground Surface Elevation (ft MSL)[1,2]	Casing Diameter (inches)	Total Well Depth (ft bgs)	Screened Interval (ft bgs)
PZ-7UA	Colma	Brisbane	--	Active	--	6011462.12	2085933.51	16.63	16.82	--	29	24-29
SW-14B	Merced	Brisbane	12/18/1999	Active	--	6010870.73	2085854.52	10.34	10.82	0.25	65	60-65
SW-14LA	Colma	Brisbane	12/18/1999	Active	--	6010870.73	2085854.52	10.34	10.82	0.25	42	37-42
SW-14UA	Colma	Brisbane	12/18/1999	Active	--	6010870.73	2085854.52	10.34	10.82	0.25	20	15-20
SW-15B	Merced	Brisbane	12/12/1999	Decommissioned	3/1/2001	6011193.91	2085776.00	11.99	9.91	0.25	69	64-69
SW-15LA	Colma	Brisbane	12/12/1999	Decommissioned	3/1/2001	6011193.91	2085776.00	11.99	9.91	0.25	43	38-43
SW-15UA	Colma	Brisbane	12/12/1999	Decommissioned	3/1/2001	6011193.91	2085776.00	11.99	9.91	0.25	25	20-25
SW-16LA	Colma	Brisbane	--	Decommissioned	6/6/2001	6011034.95	208433.04	11.27	8.63	--	45	40-45
SW-16UA	Fill	Brisbane	--	Decommissioned	6/6/2001	6011034.95	208433.04	11.27	8.63	--	11	6-11
SW-18B	Merced	Brisbane	--	Active	--	6011182.99	2085778.32	11.85	9.33	2	68.5	63.5-68.5
SW-18LA	Colma	Brisbane	--	Active	--	6011188.05	2085785.25	12.38	9.49	1	39	34-39
SW-18UA	Fill	Brisbane	--	Active	--	6011195.11	2085795.58	9.29	9.56	1	10	5-10

Notes:
1. Information is based on: AMEC, 2014. *Amended Operations and Maintenance Plan, Schlage Operable Unit, Former Schlage and Southern Pacific Transportation Company Properties, San Francisco and Brisbane, California. 10 January.*
2. Elevations were measured during well installation and may have changed since the time of measurement.
3. Wells LF-2B and MK-3B were surveyed by Luk and Associates from Hercules, CA on 30 March 2018, following repairs.
4. Northing and Easting values are based on Coordinate System NAD83, California Zone 3. Elevations are based on NGVD29 (mean sea level).

Abbreviations:
"--" = not available
ft MSL = feet above mean sea level
ft bgs = feet below ground surface

Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
Brisbane and San Francisco, California

Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
GWE-1	Fill	8/30/2018	9.92	4.90	5.02
GWE-1	Fill	9/8/2008	9.92	5.13	4.79
GWE-1	Fill	8/22/2006	9.92	5.87	4.05
GWE-2	Fill	8/30/2018	7.16	2.60	4.56
GWE-2	Fill	9/8/2008	7.16	2.42	4.74
GWE-2	Fill	8/22/2006	7.16	2.72	4.44
GWE-3	Fill	8/14/2018	8.58	3.46	5.12
GWE-3	Fill	9/8/2008	8.58	3.77	4.81
GWE-3	Fill	8/22/2006	8.58	7.25	1.33
GWE-4	Fill	8/14/2018	8.08	3.02	5.06
GWE-4	Fill	9/8/2008	8.08	3.32	4.76
GWE-4	Fill	8/22/2006	8.08	3.84	4.24
LF-1A	Fill	8/22/2006	11.83	6.79	5.04
LF-1AR	Fill	9/8/2008	11.83	8.88	2.95
MK-2A	Fill	5/11/2021	12.96	4.99	7.97
MK-2A	Fill	5/14/2019	12.96	4.67	8.29
MK-2A	Fill	8/14/2018	12.96	4.62	8.34
MK-2A	Fill	5/15/2018	12.96	4.68	8.28
MK-2A	Fill	5/15/2017	12.96	4.55	8.41
MK-2A	Fill	5/17/2016	12.96	4.90	8.06
MK-2A	Fill	6/9/2015	12.96	4.94	8.02
MK-2A	Fill	5/27/2014	12.96	4.95	8.01
MK-2A	Fill	5/16/2013	12.96	4.87	8.09
MK-2A	Fill	11/6/2012	12.96	4.82	8.14
MK-2A	Fill	5/1/2012	12.96	4.70	8.26
MK-2A	Fill	11/14/2011	12.96	4.83	8.13
MK-2A	Fill	5/10/2011	12.96	4.84	8.12
MK-2A	Fill	12/3/2010	12.96	4.66	8.30
MK-2A	Fill	5/19/2010	12.96	4.66	8.30
MK-2A	Fill	3/9/2010	12.96	4.48	8.48
MK-2A	Fill	11/2/2009	12.96	4.97	7.99
MK-2A	Fill	8/17/2009	12.93	5.12	7.81
MK-2A	Fill	5/5/2009	12.93	4.59	8.34
MK-2A	Fill	2/2/2009	12.93	5.04	7.89
MK-2A	Fill	11/3/2008	12.93	4.82	8.11
MK-2A	Fill	9/8/2008	12.93	5.01	7.92
MK-2A	Fill	8/22/2006	12.93	4.92	8.01
MK-4A	Fill	5/11/2021	17.46	12.12	5.34
MK-4A	Fill	5/14/2019	17.46	11.35	6.11
MK-4A	Fill	8/14/2018	17.46	12.32	5.14
MK-4A	Fill	5/15/2018	17.46	11.23	6.23
MK-4A	Fill	5/15/2017	17.46	11.25	6.21

Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
Brisbane and San Francisco, California

Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
MK-4A	Fill	5/17/2016	17.46	11.55	5.91
MK-4A	Fill	6/9/2015	17.46	12.07	5.39
MK-4A	Fill	5/27/2014	17.46	11.96	5.50
MK-4A	Fill	5/16/2013	17.46	12.12	5.34
MK-4A	Fill	5/10/2011	17.46	11.32	6.14
MK-4A	Fill	12/3/2010	17.46	11.55	5.91
MK-4A	Fill	5/19/2010	17.46	11.40	6.06
MK-4A	Fill	11/2/2009	17.46	12.13	5.33
MK-4A	Fill	5/5/2009	17.46	11.56	5.90
MK-4A	Fill	11/3/2008	17.46	12.61	4.85
MK-4A	Fill	9/8/2008	17.46	12.54	4.92
MK-5A	Fill	8/22/2006	10.88	6.02	4.86
MK-5AR	Fill	8/14/2018	10.74	5.84	4.90
MK-5AR	Fill	11/6/2012	10.74	6.17	4.57
MK-5AR	Fill	5/1/2012	10.74	4.50	6.24
MK-5AR	Fill	11/14/2011	10.74	6.15	4.59
MK-5AR	Fill	5/10/2011	10.74	4.79	5.95
MK-5AR	Fill	12/3/2010	10.74	5.46	5.28
MK-5AR	Fill	5/20/2010	10.74	4.87	5.87
MK-5AR	Fill	3/9/2010	10.74	3.81	6.93
MK-5AR	Fill	11/2/2009	10.74	5.73	5.01
MK-5AR	Fill	8/17/2009	10.74	6.19	4.55
MK-5AR	Fill	11/3/2008	10.74	6.22	4.52
MK-5AR	Fill	9/8/2008	10.74	6.30	4.44
MK-6A	Fill	5/11/2021	17.28	12.21	5.07
MK-6A	Fill	5/14/2019	17.28	11.22	6.06
MK-6A	Fill	8/14/2018	17.28	12.34	4.94
MK-6A	Fill	5/15/2018	17.28	11.11	6.17
MK-6A	Fill	5/15/2017	17.28	11.19	6.09
MK-6A	Fill	5/17/2016	17.28	11.61	5.67
MK-6A	Fill	6/9/2015	17.28	12.05	5.23
MK-6A	Fill	5/27/2014	17.28	11.93	5.35
MK-6A	Fill	5/16/2013	17.28	12.07	5.21
MK-6A	Fill	11/6/2012	17.28	12.68	4.60
MK-6A	Fill	5/1/2012	17.28	10.92	6.36
MK-6A	Fill	11/14/2011	17.28	12.62	4.66
MK-6A	Fill	5/10/2011	17.28	11.23	6.05
MK-6A	Fill	12/3/2010	17.28	12.01	5.27
MK-6A	Fill	5/20/2010	17.28	11.31	5.97
MK-6A	Fill	11/2/2009	17.28	12.22	5.06
MK-6A	Fill	5/5/2009	17.28	11.42	5.86
MK-6A	Fill	2/2/2009	17.28	12.15	5.13
MK-6A	Fill	11/3/2008	17.28	12.95	4.33

Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
Brisbane and San Francisco, California

Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
MK-6A	Fill	9/8/2008	17.28	12.76	4.52
MK-6A	Fill	8/22/2006	17.28	12.47	4.81
MW-3A	Fill	8/14/2018	11.95	NM	--
MW-3A	Fill	11/6/2012	--	NM	--
MW-3A	Fill	5/1/2012	--	5.18	--
MW-4A	Fill	8/14/2018	12.82	6.92	5.90
MW-4A	Fill	5/16/2013	12.82	6.67	6.15
MW-4A	Fill	11/6/2012	12.82	6.73	6.09
MW-4A	Fill	5/1/2012	12.82	5.57	7.25
MW-4A	Fill	11/14/2011	12.82	7.07	5.75
MW-4A	Fill	5/10/2011	12.82	6.08	6.74
MW-4A	Fill	12/3/2010	12.82	5.76	7.06
MW-4A	Fill	5/19/2010	12.82	6.00	6.82
MW-4A	Fill	11/2/2009	12.82	6.32	6.50
MW-4A	Fill	5/5/2009	12.82	6.10	6.72
MW-4A	Fill	11/3/2008	12.82	NM	--
MW-4A	Fill	9/8/2008	12.82	7.40	5.42
MW-4A	Fill	8/22/2006	12.82	7.25	5.57
MW-5AF	Fill	5/11/2021	12.19	NM	--
MW-5AF	Fill	5/14/2019	12.19	4.10	8.09
MW-5AF	Fill	5/15/2018	12.19	4.04	8.15
MW-5AF	Fill	5/15/2017	12.19	3.88	8.31
MW-5AF	Fill	5/17/2016	12.19	5.43	6.76
MW-5AF	Fill	6/9/2015	12.19	5.91	6.28
MW-5AF	Fill	5/27/2014	12.19	NM	--
MW-5AF	Fill	5/16/2013	12.19	4.75	7.44
MW-5AF	Fill	11/6/2012	12.19	4.76	7.43
MW-5AF	Fill	5/1/2012	12.19	4.23	7.96
MW-5AF	Fill	11/14/2011	12.19	7.03	5.16
MW-5AF	Fill	5/10/2011	12.19	5.61	6.58
MW-5AF	Fill	12/3/2010	12.19	3.96	8.23
MW-5AF	Fill	5/5/2009	12.19	4.98	7.21
MW-5AF	Fill	2/2/2009	12.19	4.56	7.63
MW-5AF	Fill	11/3/2008	12.19	4.36	7.83
MW-5AF	Fill	9/8/2008	12.19	4.63	7.56
MW-6AR	Fill	5/11/2021	13.02	5.01	8.01
MW-6AR	Fill	5/14/2019	13.02	7.19	5.83
MW-6AR	Fill	8/14/2018	13.02	8.17	4.85
MW-6AR	Fill	5/15/2018	13.02	7.12	5.90
MW-6AR	Fill	5/15/2017	13.02	7.22	5.80
MW-6AR	Fill	10/26/2016	13.02	8.61	4.41
MW-6AR	Fill	5/17/2016	13.02	7.51	5.51
MW-6AR	Fill	6/9/2015	13.02	8.03	4.99

Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
Brisbane and San Francisco, California

Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
MW-6AR	Fill	5/27/2014	13.02	7.91	5.11
MW-6AR	Fill	5/16/2013	13.02	8.12	4.90
MW-6AR	Fill	11/6/2012	13.02	8.40	4.62
MW-6AR	Fill	5/1/2012	13.02	7.04	5.98
MW-6AR	Fill	11/14/2011	13.02	8.50	4.52
MW-6AR	Fill	5/10/2011	13.02	7.31	5.71
MW-6AR	Fill	12/3/2010	13.02	7.75	5.27
MW-6AR	Fill	5/19/2010	13.02	7.35	5.67
MW-6AR	Fill	3/9/2010	13.02	6.93	6.09
MW-6AR	Fill	11/2/2009	13.02	8.04	4.98
MW-6AR	Fill	8/17/2009	13.30	8.56	4.74
MW-6AR	Fill	5/5/2009	13.30	7.47	5.83
MW-6AR	Fill	11/3/2008	13.30	8.45	4.85
MW-6AR	Fill	9/8/2008	13.30	8.53	4.77
MW-6AR	Fill	8/22/2006	13.30	8.49	4.81
MW-7A	Fill	5/11/2021	11.19	5.81	5.38
MW-7A	Fill	5/14/2019	11.19	4.86	6.33
MW-7A	Fill	8/14/2018	11.19	5.91	5.28
MW-7A	Fill	5/15/2018	11.19	4.82	6.37
MW-7A	Fill	5/15/2017	11.19	4.98	6.21
MW-7A	Fill	5/17/2016	11.19	5.02	6.17
MW-7A	Fill	6/9/2015	11.19	5.57	5.62
MW-7A	Fill	5/27/2014	11.19	5.68	5.51
MW-7A	Fill	5/16/2013	11.19	5.81	5.38
MW-7A	Fill	11/6/2012	11.19	6.25	4.94
MW-7A	Fill	5/1/2012	11.19	4.54	6.65
MW-7A	Fill	11/14/2011	11.19	6.36	4.83
MW-7A	Fill	5/10/2011	11.19	5.08	6.11
MW-7A	Fill	2/14/2011	11.19	4.86	6.33
MW-7A	Fill	12/3/2010	11.19	5.45	5.74
MW-7A	Fill	5/19/2010	11.19	5.14	6.05
MW-7A	Fill	3/9/2010	11.19	4.62	6.57
MW-7A	Fill	11/2/2009	11.19	5.81	5.38
MW-7A	Fill	8/17/2009	11.19	6.48	4.71
MW-7A	Fill	5/5/2009	11.19	5.23	5.96
MW-7A	Fill	2/2/2009	11.19	5.82	5.37
MW-7A	Fill	11/3/2008	11.19	6.28	4.91
MW-7A	Fill	9/8/2008	11.19	6.46	4.73
MW-7A	Fill	8/22/2006	11.19	6.34	4.85
MW-8A	Fill	5/11/2021	10.62	5.33	5.29
MW-8A	Fill	5/14/2019	10.62	4.47	6.15
MW-8A	Fill	8/14/2018	10.62	5.51	5.11
MW-8A	Fill	5/15/2018	10.62	4.35	6.27
MW-8A	Fill	5/15/2017	10.62	4.46	6.16

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Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
Brisbane and San Francisco, California

Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
MW-8A	Fill	5/17/2016	10.62	0.81	9.81
MW-8A	Fill	6/9/2015	10.62	0.88	9.74
MW-8A	Fill	5/27/2014	10.62	5.15	5.47
MW-8A	Fill	5/16/2013	10.62	5.27	5.35
MW-8A	Fill	11/6/2012	10.62	5.77	4.85
MW-8A	Fill	5/1/2012	10.62	4.24	6.38
MW-8A	Fill	11/14/2011	10.62	5.81	4.81
MW-8A	Fill	9/8/2008	10.62	5.87	4.75
MW-8A	Fill	8/22/2006	10.62	5.73	4.89
SW-18UA	Fill	8/14/2018	9.29	NM	--
SW-18UA	Fill	9/8/2008	9.29	4.68	4.61
SW-18UA	Fill	6/17/2008	9.29	4.40	4.89
SW-18UA	Fill	2/25/2008	9.29	2.24	7.05
SW-18UA	Fill	11/27/2007	9.29	4.48	4.81
SW-18UA	Fill	8/27/2007	9.29	4.54	4.75
SW-18UA	Fill	5/25/2007	9.29	3.78	5.51
SW-18UA	Fill	3/6/2007	9.29	2.41	6.88
SW-18UA	Fill	8/30/2006	9.29	4.49	4.80
SW-18UA	Fill	8/29/2006	9.29	4.37	4.92
SW-18UA	Fill	6/5/2006	9.29	3.57	5.72
SW-18UA	Fill	3/6/2006	9.29	1.65	7.64
SW-18UA	Fill	11/28/2005	9.29	4.66	4.63
SW-18UA	Fill	9/12/2005	9.29	4.55	4.74
SW-18UA	Fill	2/28/2005	9.29	2.14	7.15
SW-18UA	Fill	12/6/2004	9.29	4.19	5.10
SW-18UA	Fill	9/7/2004	9.29	4.81	4.48
SW-18UA	Fill	6/7/2004	9.29	4.26	5.03
SW-18UA	Fill	3/25/2004	9.29	3.23	6.06
SW-18UA	Fill	12/15/2003	9.29	3.16	6.13
SW-18UA	Fill	8/25/2003	9.29	4.76	4.53
SW-18UA	Fill	6/2/2003	9.29	3.97	5.32
SW-18UA	Fill	3/2/2003	9.29	3.10	6.19
SW-18UA	Fill	12/10/2002	9.29	4.42	4.87
SW-18UA	Fill	9/9/2002	9.29	4.65	4.64
SW-18UA	Fill	6/3/2002	9.29	4.16	5.13
SW-18UA	Fill	3/15/2002	9.29	3.16	6.13
SW-18UA	Fill	12/7/2001	9.29	2.68	6.61
SW-18UA	Fill	8/6/2001	9.29	4.65	4.64
SW-18UA	Fill	4/13/2001	9.29	0.11	9.18
BMW-1	Colma	8/17/2021	17.25	7.15	10.10
BMW-1	Colma	5/11/2021	17.25	6.99	10.26
BMW-1	Colma	2/16/2021	17.25	6.84	10.41
BMW-1	Colma	11/11/2020	17.25	7.30	9.95
BMW-1	Colma	8/11/2020	17.25	7.04	10.21

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Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
Brisbane and San Francisco, California

Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
BMW-1	Colma	2/11/2020	17.25	6.68	10.57
BMW-1	Colma	11/12/2019	17.25	7.00	10.25
BMW-1	Colma	8/13/2019	17.25	6.64	10.61
BMW-1	Colma	5/14/2019	17.25	6.33	10.92
BMW-1	Colma	2/12/2019	17.25	5.91	11.34
BMW-1	Colma	11/13/2018	17.25	7.22	10.03
BMW-1	Colma	8/14/2018	17.25	6.67	10.58
BMW-1	Colma	5/15/2018	17.25	6.74	10.51
BMW-1	Colma	2/13/2018	17.25	6.80	10.45
BMW-1	Colma	11/14/2017	17.25	7.04	10.21
BMW-1	Colma	8/15/2017	17.25	6.52	10.73
BMW-1	Colma	5/15/2017	17.25	5.65	11.60
BMW-1	Colma	2/14/2017	17.25	5.16	12.09
BMW-1	Colma	10/26/2016	17.25	8.81	8.44
BMW-1	Colma	8/16/2016	17.25	6.75	10.50
BMW-1	Colma	5/17/2016	17.25	6.29	10.96
BMW-1	Colma	2/16/2016	17.25	5.92	11.33
BMW-1	Colma	11/10/2015	17.25	7.06	10.19
BMW-1	Colma	8/11/2015	17.25	7.12	10.13
BMW-1	Colma	6/9/2015	17.25	6.83	10.42
BMW-1	Colma	3/24/2015	17.25	6.71	10.54
BMW-1	Colma	12/1/2014	17.25	6.71	10.54
BMW-1	Colma	8/18/2014	17.25	7.05	10.20
BMW-1	Colma	5/27/2014	17.25	6.87	10.38
BMW-1	Colma	2/24/2014	17.25	6.84	10.41
BMW-1	Colma	11/7/2013	17.25	7.19	10.06
BMW-1	Colma	8/13/2013	17.25	6.93	10.32
BMW-1	Colma	5/16/2013	17.25	6.70	10.55
BMW-1	Colma	9/8/2008	17.25	6.68	10.57
BMW-1	Colma	8/20/2006	17.25	6.91	10.34
BMW-2	Colma	8/17/2021	15.62	4.12	11.50
BMW-2	Colma	5/11/2021	15.62	4.13	11.49
BMW-2	Colma	2/16/2021	15.62	4.00	11.62
BMW-2	Colma	11/11/2020	15.62	4.30	11.32
BMW-2	Colma	8/11/2020	15.62	4.00	11.62
BMW-2	Colma	2/11/2020	15.62	3.61	12.01
BMW-2	Colma	11/12/2019	15.62	3.93	11.69
BMW-2	Colma	8/13/2019	15.62	3.64	11.98
BMW-2	Colma	5/14/2019	15.62	3.46	12.16
BMW-2	Colma	2/12/2019	15.62	3.30	12.32
BMW-2	Colma	11/13/2018	15.62	4.12	11.50
BMW-2	Colma	8/14/2018	15.62	3.55	12.07
BMW-2	Colma	5/15/2018	15.62	3.28	12.34
BMW-2	Colma	2/13/2018	15.62	3.56	12.06

Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
BMW-2	Colma	11/14/2017	15.62	3.84	11.78
BMW-2	Colma	8/15/2017	15.62	4.11	11.51
BMW-2	Colma	5/15/2017	15.62	2.99	12.63
BMW-2	Colma	2/14/2017	15.62	1.58	14.04
BMW-2	Colma	10/26/2016	15.62	3.90	11.72
BMW-2	Colma	8/16/2016	15.62	3.74	11.88
BMW-2	Colma	5/17/2016	15.62	3.33	12.29
BMW-2	Colma	2/16/2016	15.62	3.31	12.31
BMW-2	Colma	11/10/2015	15.62	4.20	11.42
BMW-2	Colma	8/11/2015	15.62	4.03	11.59
BMW-2	Colma	6/9/2015	15.62	3.72	11.90
BMW-2	Colma	3/24/2015	15.62	3.65	11.97
BMW-2	Colma	12/1/2014	15.62	3.65	11.97
BMW-2	Colma	8/18/2014	15.62	3.87	11.75
BMW-2	Colma	5/27/2014	15.62	3.70	11.92
BMW-2	Colma	2/24/2014	15.62	3.70	11.92
BMW-2	Colma	11/7/2013	15.62	3.77	11.85
BMW-2	Colma	8/13/2013	15.62	3.78	11.84
BMW-2	Colma	5/16/2013	15.62	3.62	12.00
BMW-2	Colma	2/18/2013	15.62	3.37	12.25
BMW-2	Colma	11/6/2012	15.62	3.92	11.70
BMW-2	Colma	8/7/2012	15.62	3.82	11.80
BMW-2	Colma	5/1/2012	15.62	3.45	12.17
BMW-2	Colma	2/20/2012	15.62	3.92	11.70
BMW-2	Colma	11/14/2011	15.62	4.22	11.40
BMW-2	Colma	8/30/2011	15.62	4.13	11.49
BMW-2	Colma	5/10/2011	15.62	4.63	10.99
BMW-2	Colma	12/3/2010	15.62	3.85	11.77
BMW-2	Colma	5/20/2010	15.62	3.24	12.38
BMW-2	Colma	3/9/2010	15.62	3.32	12.30
BMW-2	Colma	11/2/2009	15.62	3.79	11.83
BMW-2	Colma	8/17/2009	15.62	3.88	11.74
BMW-2	Colma	5/5/2009	15.62	3.40	12.22
BMW-2	Colma	2/2/2009	15.62	3.96	11.66
BMW-2	Colma	11/3/2008	15.62	NM	--
BMW-2	Colma	9/8/2008	15.62	3.64	11.98
BMW-2	Colma	8/20/2006	15.62	3.46	12.16
LF-2B	Colma	8/17/2021	11.33	0.51	10.82
LF-2B	Colma	5/11/2021	11.33	0.38	10.95
LF-2B	Colma	2/16/2021	11.33	0.47	10.86
LF-2B	Colma	11/11/2020	11.33	0.94	10.39
LF-2B	Colma	8/11/2020	11.33	0.90	10.43
LF-2B	Colma	2/11/2020	11.33	1.00	10.33
LF-2B	Colma	11/12/2019	11.33	0.56	10.77

Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
LF-2B	Colma	8/13/2019	11.33	0.93	10.40
LF-2B	Colma	5/14/2019	11.33	1.30	10.03
LF-2B	Colma	2/12/2019	11.33	0.00	11.33
LF-2B	Colma	11/13/2018	11.33	0.67	10.66
LF-2B	Colma	8/14/2018	11.33	0.52	10.81
LF-2B	Colma	5/15/2018	11.33	0.15	11.18
LF-2B	Colma	2/13/2018	11.58	0.09	11.49
LF-2B	Colma	11/14/2017	11.58	0.00	11.58
LF-2B	Colma	8/15/2017	11.58	0.00	11.58
LF-2B	Colma	5/15/2017	11.58	0.00	11.58
LF-2B	Colma	2/14/2017	11.58	0.10	11.48
LF-2B	Colma	10/26/2016	11.58	0.58	11.00
LF-2B	Colma	8/16/2016	11.58	0.24	11.34
LF-2B	Colma	5/17/2016	11.58	0.43	11.15
LF-2B	Colma	2/16/2016	11.58	NM	--
LF-2B	Colma	11/10/2015	11.58	0.64	10.94
LF-2B	Colma	8/11/2015	11.58	1.02	10.56
LF-2B	Colma	6/9/2015	11.58	0.50	11.08
LF-2B	Colma	3/24/2015	11.58	0.35	11.23
LF-2B	Colma	12/1/2014	11.58	0.39	11.19
LF-2B	Colma	8/18/2014	11.58	0.35	11.23
LF-2B	Colma	5/27/2014	11.58	0.21	11.37
LF-2B	Colma	2/24/2014	11.58	0.14	11.44
LF-2B	Colma	11/7/2013	11.58	0.25	11.33
LF-2B	Colma	8/13/2013	11.58	0.19	11.39
LF-2B	Colma	5/16/2013	11.58	0.18	11.40
MK-3B	Colma	8/17/2021	12.14	1.70	10.44
MK-3B	Colma	5/11/2021	12.14	-0.12	12.26
MK-3B	Colma	2/16/2021	12.14	1.98	10.16
MK-3B	Colma	11/11/2020	12.14	2.40	9.74
MK-3B	Colma	8/11/2020	12.14	1.21	10.93
MK-3B	Colma	2/11/2020	12.14	1.46	10.68
MK-3B	Colma	11/12/2019	12.14	1.95	10.19
MK-3B	Colma	8/13/2019	12.14	1.79	10.35
MK-3B	Colma	5/15/2019	12.14	-0.29	12.43
MK-3B	Colma	5/14/2019	12.14	NM	--
MK-3B	Colma	2/12/2019	12.14	0.00	12.14
MK-3B	Colma	11/13/2018	12.14	0.00	12.14
MK-3B	Colma	8/14/2018	12.14	2.11	10.03
MK-3B	Colma	5/15/2018	12.14	0.00	12.14
MK-3B	Colma	2/13/2018	8.75	NM	--
MK-3B	Colma	11/14/2017	8.75	NM	--
MK-3B	Colma	8/15/2017	8.75	0.00	8.75
MK-3B	Colma	5/15/2017	8.75	0.00	8.75

Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
Brisbane and San Francisco, California

Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
MK-3B	Colma	2/14/2017	8.75	0.00	8.75
MK-3B	Colma	10/31/2016	8.75	0.00	8.75
MK-3B	Colma	8/16/2016	--	NM	--
MK-3B	Colma	5/17/2016	--	NM	--
MK-3B	Colma	2/16/2016	--	NM	--
MK-3B	Colma	11/10/2015	--	NM	--
MK-3B	Colma	8/11/2015	--	NM	--
MK-3B	Colma	6/9/2015	--	NM	--
MK-3B	Colma	3/24/2015	--	NM	--
MK-3B	Colma	12/1/2014	--	NM	--
MK-3B	Colma	8/18/2014	--	NM	--
MK-3B	Colma	5/27/2014	--	NM	--
MK-3B	Colma	2/24/2014	--	NM	--
MK-3B	Colma	11/7/2013	--	NM	--
MK-3B	Colma	8/13/2013	--	NM	--
MK-3B	Colma	5/16/2013	--	NM	--
MK-4B	Colma	8/17/2021	18.02	8.10	9.92
MK-4B	Colma	5/11/2021	18.02	7.86	10.16
MK-4B	Colma	2/16/2021	18.02	7.70	10.32
MK-4B	Colma	11/11/2020	18.02	8.10	9.92
MK-4B	Colma	8/11/2020	18.02	7.95	10.07
MK-4B	Colma	2/11/2020	18.02	7.41	10.61
MK-4B	Colma	11/12/2019	18.02	7.87	10.15
MK-4B	Colma	8/13/2019	18.02	7.51	10.51
MK-4B	Colma	5/14/2019	18.02	7.26	10.76
MK-4B	Colma	2/12/2019	18.02	6.82	11.20
MK-4B	Colma	11/13/2018	18.02	7.91	10.11
MK-4B	Colma	8/14/2018	18.02	7.59	10.43
MK-4B	Colma	5/15/2018	18.02	7.34	10.68
MK-4B	Colma	2/13/2018	18.02	7.91	10.11
MK-4B	Colma	11/14/2017	18.02	7.82	10.20
MK-4B	Colma	8/15/2017	18.02	7.21	10.81
MK-4B	Colma	5/15/2017	18.02	6.49	11.53
MK-4B	Colma	2/14/2017	18.02	5.83	12.19
MK-4B	Colma	10/26/2016	18.02	7.69	10.33
MK-4B	Colma	8/16/2016	18.02	7.72	10.30
MK-4B	Colma	5/17/2016	18.02	7.20	10.82
MK-4B	Colma	2/16/2016	18.02	6.95	11.07
MK-4B	Colma	11/10/2015	18.02	8.03	9.99
MK-4B	Colma	8/11/2015	18.02	7.86	10.16
MK-4B	Colma	6/9/2015	18.02	7.72	10.30
MK-4B	Colma	3/24/2015	18.02	7.64	10.38
MK-4B	Colma	12/1/2014	18.02	7.66	10.36
MK-4B	Colma	8/18/2014	18.02	7.95	10.07

Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
MK-4B	Colma	5/27/2014	18.02	7.74	10.28
MK-4B	Colma	2/24/2014	18.02	7.71	10.31
MK-4B	Colma	11/7/2013	18.02	8.07	9.95
MK-4B	Colma	8/13/2013	18.02	7.78	10.24
MK-4B	Colma	5/16/2013	18.02	7.59	10.43
MK-4B	Colma	2/18/2013	18.02	7.27	10.75
MK-4B	Colma	11/6/2012	18.02	7.75	10.27
MK-4B	Colma	8/7/2012	18.02	7.62	10.40
MK-4B	Colma	5/1/2012	18.02	7.14	10.88
MK-4B	Colma	2/20/2012	18.02	7.92	10.10
MK-4B	Colma	11/14/2011	18.02	8.85	9.17
MK-4B	Colma	8/30/2011	18.02	8.64	9.38
MK-4B	Colma	5/10/2011	18.02	8.22	9.80
MK-4B	Colma	12/3/2010	18.02	6.82	11.20
MK-4B	Colma	5/19/2010	18.02	6.47	11.55
MK-4B	Colma	11/2/2009	18.02	7.35	10.67
MK-4B	Colma	5/5/2009	18.02	7.07	10.95
MK-4B	Colma	11/3/2008	18.02	7.39	10.63
MK-4B	Colma	9/8/2008	18.02	7.35	10.67
MK-4B	Colma	8/22/2006	18.02	7.73	10.29
MK-5B	Colma	8/17/2021	11.77	1.17	10.60
MK-5B	Colma	5/11/2021	11.77	1.04	10.73
MK-5B	Colma	2/16/2021	11.77	1.70	10.07
MK-5B	Colma	11/11/2020	11.77	1.41	10.36
MK-5B	Colma	8/11/2020	11.77	1.09	10.68
MK-5B	Colma	2/11/2020	11.77	0.65	11.12
MK-5B	Colma	11/12/2019	11.77	1.01	10.76
MK-5B	Colma	8/13/2019	11.77	0.81	10.96
MK-5B	Colma	5/14/2019	11.77	0.66	11.11
MK-5B	Colma	2/12/2019	11.77	0.30	11.47
MK-5B	Colma	11/13/2018	11.77	1.24	10.53
MK-5B	Colma	8/14/2018	11.77	0.65	11.12
MK-5B	Colma	5/15/2018	11.77	0.43	11.34
MK-5B	Colma	2/13/2018	11.77	0.68	11.09
MK-5B	Colma	11/14/2017	11.77	0.82	10.95
MK-5B	Colma	8/15/2017	11.77	0.00	11.77
MK-5B	Colma	5/15/2017	11.77	0.25	11.52
MK-5B	Colma	2/14/2017	11.77	0.76	11.01
MK-5B	Colma	10/26/2016	11.77	1.02	10.75
MK-5B	Colma	8/16/2016	11.77	1.16	10.61
MK-5B	Colma	5/17/2016	11.77	0.80	10.97
MK-5B	Colma	2/16/2016	11.77	0.45	11.32
MK-5B	Colma	11/10/2015	11.77	1.41	10.36
MK-5B	Colma	8/11/2015	11.77	0.91	10.86

Table 2: Summary of Historical Groundwater Elevation Data
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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
MK-5B	Colma	6/9/2015	11.77	0.73	11.04
MK-5B	Colma	3/24/2015	11.77	0.80	10.97
MK-5B	Colma	12/1/2014	11.77	1.11	10.66
MK-5B	Colma	8/18/2014	11.77	1.02	10.75
MK-5B	Colma	5/27/2014	11.77	0.84	10.93
MK-5B	Colma	2/24/2014	11.77	0.85	10.92
MK-5B	Colma	11/7/2013	11.77	1.16	10.61
MK-5B	Colma	8/13/2013	11.77	0.93	10.84
MK-5B	Colma	5/16/2013	11.77	0.82	10.95
MK-5B	Colma	2/18/2013	11.77	0.52	11.25
MK-5B	Colma	11/6/2012	11.77	1.04	10.73
MK-5B	Colma	8/7/2012	11.77	0.83	10.94
MK-5B	Colma	5/1/2012	11.77	0.50	11.27
MK-5B	Colma	2/20/2012	11.77	1.01	10.76
MK-5B	Colma	11/14/2011	11.77	1.16	10.61
MK-5B	Colma	8/30/2011	11.77	1.05	10.72
MK-5B	Colma	5/10/2011	11.77	1.47	10.30
MK-5B	Colma	12/3/2010	11.77	0.93	10.84
MK-5B	Colma	5/20/2010	11.77	0.57	11.20
MK-5B	Colma	11/2/2009	11.77	0.88	10.89
MK-5B	Colma	5/5/2009	11.77	0.74	11.03
MK-5B	Colma	11/3/2008	11.77	1.05	10.72
MK-5B	Colma	9/8/2008	11.77	0.94	10.83
MK-5B	Colma	8/22/2006	11.77	0.69	11.08
MK-6B	Colma	8/17/2021	17.00	5.34	11.66
MK-6B	Colma	5/11/2021	17.00	5.21	11.79
MK-6B	Colma	2/16/2021	17.00	4.30	12.70
MK-6B	Colma	11/11/2020	17.00	4.28	12.72
MK-6B	Colma	8/11/2020	17.00	5.20	11.80
MK-6B	Colma	2/11/2020	17.00	4.84	12.16
MK-6B	Colma	11/12/2019	17.00	5.16	11.84
MK-6B	Colma	8/13/2019	17.00	4.82	12.18
MK-6B	Colma	5/14/2019	17.00	4.66	12.34
MK-6B	Colma	2/12/2019	17.00	4.57	12.43
MK-6B	Colma	11/13/2018	17.00	5.27	11.73
MK-6B	Colma	8/14/2018	17.00	4.71	12.29
MK-6B	Colma	5/15/2018	17.00	4.48	12.52
MK-6B	Colma	2/13/2018	17.00	4.62	12.38
MK-6B	Colma	11/14/2017	17.00	5.02	11.98
MK-6B	Colma	8/15/2017	17.00	4.54	12.46
MK-6B	Colma	5/15/2017	17.00	4.24	12.76
MK-6B	Colma	2/14/2017	17.00	3.18	13.82
MK-6B	Colma	10/26/2016	17.00	3.88	13.12
MK-6B	Colma	8/16/2016	17.00	4.92	12.08

Table 2: Summary of Historical Groundwater Elevation Data
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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
MK-6B	Colma	5/17/2016	17.00	4.34	12.66
MK-6B	Colma	2/16/2016	17.00	4.53	12.47
MK-6B	Colma	11/10/2015	17.00	5.43	11.57
MK-6B	Colma	8/11/2015	17.00	5.13	11.87
MK-6B	Colma	6/9/2015	17.00	4.89	12.11
MK-6B	Colma	3/24/2015	17.00	4.80	12.20
MK-6B	Colma	12/1/2014	17.00	5.14	11.86
MK-6B	Colma	8/18/2014	17.00	4.35	12.65
MK-6B	Colma	5/27/2014	17.00	4.84	12.16
MK-6B	Colma	2/24/2014	17.00	4.91	12.09
MK-6B	Colma	11/7/2013	17.00	5.27	11.73
MK-6B	Colma	8/13/2013	17.00	4.00	13.00
MK-6B	Colma	5/16/2013	17.00	4.81	12.19
MK-6B	Colma	2/18/2013	17.00	4.58	12.42
MK-6B	Colma	11/6/2012	17.00	4.90	12.10
MK-6B	Colma	8/7/2012	17.00	4.98	12.02
MK-6B	Colma	5/1/2012	17.00	4.72	12.28
MK-6B	Colma	2/20/2012	17.00	5.15	11.85
MK-6B	Colma	11/14/2011	17.00	5.33	11.67
MK-6B	Colma	8/30/2011	17.00	8.66	8.34
MK-6B	Colma	5/19/2010	17.00	4.53	12.47
MK-6B	Colma	3/9/2010	17.00	4.60	12.40
MK-6B	Colma	11/2/2009	17.00	5.08	11.92
MK-6B	Colma	8/17/2009	17.00	5.07	11.93
MK-6B	Colma	5/5/2009	17.00	4.61	12.39
MK-6B	Colma	2/2/2009	17.00	5.21	11.79
MK-6B	Colma	11/3/2008	17.00	5.04	11.96
MK-6B	Colma	9/8/2008	17.00	4.86	12.14
MK-6B	Colma	8/22/2006	17.00	4.57	12.43
MW-2B	Colma	8/17/2021	13.88	1.32	12.56
MW-2B	Colma	5/11/2021	13.88	0.62	13.26
MW-2B	Colma	2/16/2021	13.88	0.58	13.30
MW-2B	Colma	11/11/2020	13.88	1.05	12.83
MW-2B	Colma	8/11/2020	13.88	0.50	13.38
MW-2B	Colma	2/11/2020	13.88	0.40	13.48
MW-2B	Colma	11/12/2019	13.88	0.70	13.18
MW-2B	Colma	8/13/2019	13.88	0.49	13.39
MW-2B	Colma	5/14/2019	13.88	0.29	13.59
MW-2B	Colma	2/12/2019	13.88	0.00	13.88
MW-2B	Colma	11/13/2018	13.88	0.89	12.99
MW-2B	Colma	8/14/2018	13.88	0.46	13.42
MW-2B	Colma	5/15/2018	13.88	0.18	13.70
MW-2B	Colma	2/13/2018	13.88	0.61	13.27
MW-2B	Colma	11/14/2017	13.88	0.52	13.36

Table 2: Summary of Historical Groundwater Elevation Data
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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
MW-2B	Colma	8/15/2017	13.88	0.00	13.88
MW-2B	Colma	5/15/2017	13.88	0.00	13.88
MW-2B	Colma	2/14/2017	13.88	0.26	13.62
MW-2B	Colma	10/26/2016	13.88	0.78	13.10
MW-2B	Colma	8/16/2016	13.88	0.87	13.01
MW-2B	Colma	5/17/2016	13.88	0.51	13.37
MW-2B	Colma	2/16/2016	13.88	1.19	12.69
MW-2B	Colma	11/10/2015	13.88	1.10	12.78
MW-2B	Colma	8/11/2015	13.88	0.79	13.09
MW-2B	Colma	6/9/2015	13.88	0.58	13.30
MW-2B	Colma	3/24/2015	13.88	0.52	13.36
MW-2B	Colma	12/1/2014	13.88	0.83	13.05
MW-2B	Colma	8/18/2014	13.88	0.50	13.38
MW-2B	Colma	5/27/2014	13.88	0.56	13.32
MW-2B	Colma	2/24/2014	13.88	0.49	13.39
MW-2B	Colma	11/7/2013	13.88	0.77	13.11
MW-2B	Colma	8/13/2013	13.88	0.55	13.33
MW-2B	Colma	5/16/2013	13.88	0.45	13.43
MW-2B	Colma	2/18/2013	13.88	0.20	13.68
MW-2B	Colma	11/6/2012	13.88	0.40	13.48
MW-2B	Colma	8/7/2012	13.88	0.55	13.33
MW-2B	Colma	5/1/2012	13.88	0.10	13.78
MW-2B	Colma	2/20/2012	13.88	0.60	13.28
MW-2B	Colma	11/14/2011	13.88	0.60	13.28
MW-2B	Colma	8/30/2011	13.88	0.43	13.45
MW-2B	Colma	5/10/2011	13.88	1.02	12.86
MW-2B	Colma	5/19/2010	13.88	0.17	13.71
MW-2B	Colma	11/2/2009	13.88	0.55	13.33
MW-2B	Colma	5/5/2009	13.88	0.36	13.52
MW-2B	Colma	11/3/2008	13.88	0.63	13.25
MW-2B	Colma	9/8/2008	13.88	0.55	13.33
MW-2B	Colma	8/22/2006	13.88	0.38	13.50
MW-6B	Colma	8/17/2021	13.97	4.26	9.71
MW-6B	Colma	5/11/2021	13.97	4.51	9.46
MW-6B	Colma	2/16/2021	13.97	4.08	9.89
MW-6B	Colma	11/11/2020	13.97	4.41	9.56
MW-6B	Colma	8/11/2020	13.97	4.21	9.76
MW-6B	Colma	2/11/2020	13.97	4.07	9.90
MW-6B	Colma	11/12/2019	13.97	4.18	9.79
MW-6B	Colma	8/13/2019	13.97	4.00	9.97
MW-6B	Colma	5/14/2019	13.97	3.65	10.32
MW-6B	Colma	2/12/2019	13.97	3.21	10.76
MW-6B	Colma	11/13/2018	13.97	4.19	9.78
MW-6B	Colma	8/14/2018	13.97	3.83	10.14

Table 2: Summary of Historical Groundwater Elevation Data
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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
MW-6B	Colma	5/15/2018	13.97	3.62	10.35
MW-6B	Colma	2/13/2018	13.97	4.28	9.69
MW-6B	Colma	11/14/2017	13.97	4.14	9.83
MW-6B	Colma	8/15/2017	13.97	3.59	10.38
MW-6B	Colma	5/15/2017	13.97	2.94	11.03
MW-6B	Colma	2/14/2017	13.97	2.02	11.95
MW-6B	Colma	10/26/2016	13.97	3.88	10.09
MW-6B	Colma	8/16/2016	13.97	4.03	9.94
MW-6B	Colma	5/17/2016	13.97	3.60	10.37
MW-6B	Colma	2/16/2016	13.97	3.39	10.58
MW-6B	Colma	11/10/2015	13.97	4.31	9.66
MW-6B	Colma	8/11/2015	13.97	4.18	9.79
MW-6B	Colma	6/9/2015	13.97	4.00	9.97
MW-6B	Colma	3/24/2015	13.97	3.92	10.05
MW-6B	Colma	12/1/2014	13.97	5.14	11.86
MW-6B	Colma	8/18/2014	13.97	4.19	9.78
MW-6B	Colma	5/27/2014	13.97	4.02	9.95
MW-6B	Colma	2/24/2014	13.97	3.95	10.02
MW-6B	Colma	11/7/2013	13.97	4.31	9.66
MW-6B	Colma	8/13/2013	13.97	5.00	8.97
MW-6B	Colma	5/16/2013	13.97	3.87	10.10
MW-6B	Colma	2/18/2013	13.97	3.60	10.37
MW-6B	Colma	11/6/2012	13.97	3.95	10.02
MW-6B	Colma	8/7/2012	13.97	3.88	10.09
MW-6B	Colma	5/1/2012	13.97	3.47	10.50
MW-6B	Colma	2/20/2012	13.97	4.19	9.78
MW-6B	Colma	11/14/2011	13.97	5.60	8.37
MW-6B	Colma	8/30/2011	13.97	5.34	8.63
MW-6B	Colma	5/10/2011	13.97	5.00	8.97
MW-6B	Colma	2/14/2011	13.97	2.95	11.02
MW-6B	Colma	12/3/2010	13.97	3.05	10.92
MW-6B	Colma	5/19/2010	13.97	2.68	11.29
MW-6B	Colma	11/2/2009	13.97	3.57	10.40
MW-6B	Colma	5/5/2009	13.97	3.30	10.67
MW-6B	Colma	11/3/2008	13.97	3.48	10.49
MW-6B	Colma	9/8/2008	13.97	3.47	10.50
MW-6B	Colma	8/22/2006	13.97	4.30	9.67
PZ-6UA	Colma	10/26/2016	16.63	NM	--
SW-14LA	Colma	8/17/2021	10.34	1.10	9.24
SW-14LA	Colma	5/11/2021	10.34	1.16	9.18
SW-14LA	Colma	2/16/2021	10.34	1.09	9.25
SW-14LA	Colma	11/11/2020	10.34	1.21	9.13
SW-14LA	Colma	8/11/2020	10.34	1.03	9.31
SW-14LA	Colma	2/11/2020	10.34	0.69	9.65

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Table 2: Summary of Historical Groundwater Elevation Data
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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
SW-14LA	Colma	11/12/2019	10.34	1.07	9.27
SW-14LA	Colma	8/13/2019	10.34	0.76	9.58
SW-14LA	Colma	5/14/2019	10.34	0.57	9.77
SW-14LA	Colma	2/12/2019	10.34	0.10	10.24
SW-14LA	Colma	11/13/2018	10.34	0.80	9.54
SW-14LA	Colma	8/14/2018	10.34	0.65	9.69
SW-14LA	Colma	5/15/2018	10.34	0.57	9.77
SW-14LA	Colma	2/13/2018	10.34	1.08	9.26
SW-14LA	Colma	11/14/2017	10.34	0.82	9.52
SW-14LA	Colma	8/15/2017	10.34	0.66	9.68
SW-14LA	Colma	5/15/2017	10.34	0.10	10.24
SW-14LA	Colma	2/14/2017	10.34	NM	--
SW-14LA	Colma	10/26/2016	10.34	0.81	9.53
SW-14LA	Colma	8/16/2016	10.34	1.02	9.32
SW-14LA	Colma	5/17/2016	10.34	0.63	9.71
SW-14LA	Colma	2/16/2016	10.34	0.70	9.64
SW-14LA	Colma	11/10/2015	10.34	1.22	9.12
SW-14LA	Colma	8/11/2015	10.34	0.92	9.42
SW-14LA	Colma	6/9/2015	10.34	0.83	9.51
SW-14LA	Colma	3/24/2015	10.34	0.79	9.55
SW-14LA	Colma	12/1/2014	10.34	1.08	9.26
SW-14LA	Colma	8/18/2014	10.34	1.10	9.24
SW-14LA	Colma	5/27/2014	10.34	0.85	9.49
SW-14LA	Colma	2/24/2014	10.34	0.92	9.42
SW-14LA	Colma	11/7/2013	10.34	1.17	9.17
SW-14LA	Colma	8/13/2013	10.34	0.82	9.52
SW-14LA	Colma	5/16/2013	10.34	0.35	9.99
SW-14LA	Colma	6/2/2011	10.34	3.29	7.05
SW-14LA	Colma	5/25/2011	10.34	2.97	7.37
SW-14LA	Colma	5/19/2011	10.34	2.60	7.74
SW-14LA	Colma	9/8/2008	10.34	NM	--
SW-14LA	Colma	6/17/2008	10.34	NM	--
SW-14LA	Colma	2/25/2008	10.34	NM	--
SW-14LA	Colma	11/27/2007	10.34	0.76	9.58
SW-14LA	Colma	8/27/2007	10.34	0.69	9.65
SW-14LA	Colma	5/25/2007	10.34	1.04	9.30
SW-14LA	Colma	3/6/2007	10.34	0.82	9.52
SW-14LA	Colma	11/29/2006	10.34	0.66	9.68
SW-14LA	Colma	8/30/2006	10.34	1.25	9.09
SW-14LA	Colma	6/5/2006	10.34	1.25	9.09
SW-14LA	Colma	11/28/2005	10.34	1.68	8.66
SW-14LA	Colma	9/12/2005	10.34	1.57	8.77
SW-14LA	Colma	2/28/2005	10.34	0.38	9.96
SW-14LA	Colma	12/6/2004	10.34	1.03	9.31

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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
SW-14LA	Colma	9/7/2004	10.34	1.87	8.47
SW-14LA	Colma	6/7/2004	10.34	1.51	8.83
SW-14LA	Colma	3/25/2004	10.34	0.54	9.80
SW-14LA	Colma	12/15/2003	10.34	0.48	9.86
SW-14LA	Colma	8/25/2003	10.34	1.13	9.21
SW-14LA	Colma	6/2/2003	10.34	0.64	9.70
SW-14LA	Colma	3/2/2003	10.34	1.17	9.17
SW-14LA	Colma	12/10/2002	10.34	1.53	8.81
SW-14LA	Colma	9/9/2002	10.34	0.89	9.45
SW-14LA	Colma	6/3/2002	10.34	0.74	9.60
SW-14LA	Colma	3/15/2002	10.34	0.58	9.76
SW-14LA	Colma	12/7/2001	10.34	0.66	9.68
SW-14LA	Colma	8/6/2001	10.34	1.46	8.88
SW-14LA	Colma	4/13/2001	10.34	0.96	9.38
SW-14LA	Colma	12/8/2000	10.34	0.81	9.53
SW-14LA	Colma	9/6/2000	10.34	0.58	9.76
SW-14LA	Colma	5/26/2000	10.34	1.29	9.05
SW-14UA	Colma	8/17/2021	10.34	1.15	9.19
SW-14UA	Colma	5/11/2021	10.34	1.09	9.25
SW-14UA	Colma	2/16/2021	10.34	0.80	9.54
SW-14UA	Colma	11/11/2020	10.34	1.25	9.09
SW-14UA	Colma	8/11/2020	10.34	1.06	9.28
SW-14UA	Colma	2/11/2020	10.34	0.75	9.59
SW-14UA	Colma	11/12/2019	10.34	1.15	9.19
SW-14UA	Colma	8/13/2019	10.34	0.86	9.48
SW-14UA	Colma	5/14/2019	10.34	0.55	9.79
SW-14UA	Colma	2/12/2019	10.34	0.50	9.84
SW-14UA	Colma	11/13/2018	10.34	1.25	9.09
SW-14UA	Colma	8/14/2018	10.34	1.10	9.24
SW-14UA	Colma	5/15/2018	10.34	1.00	9.34
SW-14UA	Colma	2/13/2018	10.34	1.34	9.00
SW-14UA	Colma	11/14/2017	10.34	1.14	9.20
SW-14UA	Colma	8/15/2017	10.34	1.17	9.17
SW-14UA	Colma	5/15/2017	10.34	0.08	10.26
SW-14UA	Colma	2/14/2017	10.34	NM	--
SW-14UA	Colma	10/26/2016	10.34	0.89	9.45
SW-14UA	Colma	8/16/2016	10.34	1.14	9.20
SW-14UA	Colma	5/17/2016	10.34	0.68	9.66
SW-14UA	Colma	2/16/2016	10.34	0.60	9.74
SW-14UA	Colma	11/10/2015	10.34	1.34	9.00
SW-14UA	Colma	8/11/2015	10.34	0.95	9.39
SW-14UA	Colma	6/9/2015	10.34	0.77	9.57
SW-14UA	Colma	3/24/2015	10.34	0.82	9.52
SW-14UA	Colma	12/1/2014	10.34	1.09	9.25

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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
SW-14UA	Colma	8/18/2014	10.34	1.60	8.74
SW-14UA	Colma	5/27/2014	10.34	0.88	9.46
SW-14UA	Colma	2/24/2014	10.34	0.84	9.50
SW-14UA	Colma	11/7/2013	10.34	1.17	9.17
SW-14UA	Colma	8/13/2013	10.34	0.91	9.43
SW-14UA	Colma	5/16/2013	10.34	0.20	10.14
SW-14UA	Colma	6/2/2011	10.34	3.29	7.05
SW-14UA	Colma	5/25/2011	10.34	3.02	7.32
SW-14UA	Colma	5/19/2011	10.34	2.59	7.75
SW-14UA	Colma	9/8/2008	10.34	NM	--
SW-14UA	Colma	6/17/2008	10.34	0.38	9.96
SW-14UA	Colma	2/25/2008	10.34	6.00	10.28
SW-14UA	Colma	11/27/2007	10.34	0.94	9.40
SW-14UA	Colma	8/27/2007	10.34	0.84	9.50
SW-14UA	Colma	5/25/2007	10.34	1.09	9.25
SW-14UA	Colma	3/6/2007	10.34	0.88	9.46
SW-14UA	Colma	11/29/2006	10.34	0.70	9.64
SW-14UA	Colma	8/30/2006	10.34	1.30	9.04
SW-14UA	Colma	6/5/2006	10.34	1.30	9.04
SW-14UA	Colma	11/28/2005	10.34	1.76	8.58
SW-14UA	Colma	2/28/2005	10.34	0.46	9.88
SW-14UA	Colma	12/6/2004	10.34	1.06	9.28
SW-14UA	Colma	9/7/2004	10.34	1.92	8.42
SW-14UA	Colma	6/7/2004	10.34	1.56	8.78
SW-14UA	Colma	3/25/2004	10.34	0.56	9.78
SW-14UA	Colma	12/15/2003	10.34	0.80	9.54
SW-14UA	Colma	8/25/2003	10.34	1.20	9.14
SW-14UA	Colma	6/2/2003	10.34	0.69	9.65
SW-14UA	Colma	3/2/2003	10.34	1.25	9.09
SW-14UA	Colma	12/10/2002	10.34	1.60	8.74
SW-14UA	Colma	9/9/2002	10.34	0.96	9.38
SW-14UA	Colma	6/3/2002	10.34	1.03	9.31
SW-14UA	Colma	3/15/2002	10.34	0.61	9.73
SW-14UA	Colma	12/7/2001	10.34	0.60	9.74
SW-14UA	Colma	8/6/2001	10.34	1.41	8.93
SW-14UA	Colma	4/13/2001	10.34	1.02	9.32
SW-14UA	Colma	12/8/2000	10.34	0.82	9.52
SW-14UA	Colma	9/6/2000	10.34	0.63	9.71
SW-14UA	Colma	5/26/2000	10.34	1.31	9.03
SW-18LA	Colma	8/17/2021	12.38	2.55	9.83
SW-18LA	Colma	5/11/2021	12.38	2.70	9.68
SW-18LA	Colma	2/16/2021	12.38	2.50	9.88
SW-18LA	Colma	11/11/2020	12.38	2.70	9.68
SW-18LA	Colma	8/11/2020	12.38	2.52	9.86

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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
SW-18LA	Colma	2/11/2020	12.38	3.91	8.47
SW-18LA	Colma	11/12/2019	12.38	2.41	9.97
SW-18LA	Colma	8/13/2019	12.38	3.62	8.76
SW-18LA	Colma	5/14/2019	12.38	2.56	9.82
SW-18LA	Colma	2/12/2019	12.38	2.70	9.68
SW-18LA	Colma	11/13/2018	12.38	3.66	8.72
SW-18LA	Colma	8/14/2018	12.38	3.13	9.25
SW-18LA	Colma	5/15/2018	12.38	1.83	10.55
SW-18LA	Colma	2/13/2018	12.38	3.07	9.31
SW-18LA	Colma	11/14/2017	12.38	3.98	8.40
SW-18LA	Colma	8/15/2017	12.38	1.78	10.60
SW-18LA	Colma	5/15/2017	12.38	1.63	10.75
SW-18LA	Colma	2/14/2017	12.38	0.86	11.52
SW-18LA	Colma	10/26/2016	12.38	2.12	10.26
SW-18LA	Colma	8/16/2016	12.38	2.81	9.57
SW-18LA	Colma	5/17/2016	12.38	1.81	10.57
SW-18LA	Colma	2/16/2016	12.38	3.44	8.94
SW-18LA	Colma	11/10/2015	12.38	2.66	9.72
SW-18LA	Colma	8/11/2015	12.38	2.43	9.95
SW-18LA	Colma	6/9/2015	12.38	2.28	10.10
SW-18LA	Colma	3/24/2015	12.38	2.20	10.18
SW-18LA	Colma	12/1/2014	12.38	2.50	9.88
SW-18LA	Colma	8/18/2014	12.38	2.61	9.77
SW-18LA	Colma	5/27/2014	12.38	2.29	10.09
SW-18LA	Colma	2/24/2014	12.38	2.25	10.13
SW-18LA	Colma	11/7/2013	12.38	2.61	9.77
SW-18LA	Colma	8/13/2013	12.38	2.26	10.12
SW-18LA	Colma	5/16/2013	12.38	2.15	10.23
SW-18LA	Colma	9/8/2008	12.38	1.88	10.50
SW-18LA	Colma	6/17/2008	12.38	2.43	9.95
SW-18LA	Colma	2/25/2008	12.38	1.70	10.68
SW-18LA	Colma	11/27/2007	12.38	2.57	9.81
SW-18LA	Colma	8/27/2007	12.38	2.34	10.04
SW-18LA	Colma	5/25/2007	12.38	2.23	10.15
SW-18LA	Colma	3/6/2007	12.38	1.94	10.44
SW-18LA	Colma	11/29/2006	12.38	2.06	10.32
SW-18LA	Colma	8/30/2006	12.38	2.46	9.92
SW-18LA	Colma	6/5/2006	12.38	0.82	11.56
SW-18LA	Colma	3/6/2006	12.38	1.37	11.01
SW-18LA	Colma	11/28/2005	12.38	2.89	9.49
SW-18LA	Colma	9/12/2005	12.38	2.73	9.65
SW-18LA	Colma	2/28/2005	12.38	1.95	10.43
SW-18LA	Colma	12/6/2004	12.38	2.53	9.85
SW-18LA	Colma	9/7/2004	12.38	2.80	9.58

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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
SW-18LA	Colma	6/7/2004	12.38	2.53	9.85
SW-18LA	Colma	3/25/2004	12.38	1.88	10.50
SW-18LA	Colma	12/15/2003	12.38	2.03	10.35
SW-18LA	Colma	8/25/2003	12.38	2.32	10.06
SW-18LA	Colma	6/2/2003	12.38	1.78	10.60
SW-18LA	Colma	3/2/2003	12.38	2.00	10.38
SW-18LA	Colma	12/10/2002	12.38	2.45	9.93
SW-18LA	Colma	9/9/2002	12.38	1.97	10.41
SW-18LA	Colma	6/3/2002	12.38	2.16	10.22
SW-18LA	Colma	3/15/2002	12.38	1.64	10.74
SW-18LA	Colma	12/7/2001	12.38	2.48	9.90
SW-18LA	Colma	8/6/2001	12.38	1.91	10.47
SW-18LA	Colma	4/13/2001	12.38	-1.52	13.90
SW-14B	Merced	8/17/2021	10.34	-8.48	18.82
SW-14B	Merced	5/11/2021	10.34	-8.68	19.02
SW-14B	Merced	2/16/2021	10.34	-8.78	19.12
SW-14B	Merced	11/11/2020	10.34	-8.75	19.09
SW-14B	Merced	8/11/2020	10.34	-9.20	19.54
SW-14B	Merced	2/11/2020	10.34	-9.93	20.27
SW-14B	Merced	11/12/2019	10.34	-9.38	19.72
SW-14B	Merced	8/13/2019	10.34	-9.82	20.16
SW-14B	Merced	5/14/2019	10.34	-10.21	20.55
SW-14B	Merced	2/12/2019	10.34	-9.66	20.00
SW-14B	Merced	11/13/2018	10.34	<-10	--
SW-14B	Merced	8/14/2018	10.34	<-10	--
SW-14B	Merced	5/15/2018	10.34	-10.02	20.36
SW-14B	Merced	2/13/2018	10.34	-9.21	19.55
SW-14B	Merced	11/14/2017	10.34	-9.10	19.44
SW-14B	Merced	8/15/2017	10.34	-10.00	20.34
SW-14B	Merced	5/15/2017	10.34	-10.00	20.34
SW-14B	Merced	2/14/2017	10.34	-9.72	20.06
SW-14B	Merced	10/26/2016	10.34	-8.67	19.01
SW-14B	Merced	8/16/2016	10.34	-9.23	19.57
SW-14B	Merced	5/17/2016	10.34	-9.23	19.57
SW-14B	Merced	2/16/2016	10.34	-9.21	19.55
SW-14B	Merced	11/10/2015	10.34	-8.11	18.45
SW-14B	Merced	8/11/2015	10.34	-8.1	18.44
SW-14B	Merced	6/9/2015	10.34	-8.80	19.14
SW-14B	Merced	3/24/2015	10.34	-8.90	19.24
SW-14B	Merced	12/1/2014	10.34	-8.35	18.69
SW-14B	Merced	8/18/2014	10.34	-8.75	19.09
SW-14B	Merced	5/27/2014	10.34	-11.98	22.32
SW-14B	Merced	2/24/2014	10.34	-9.05	19.39
SW-14B	Merced	11/7/2013	10.34	-8.89	19.23

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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
SW-14B	Merced	8/13/2013	10.34	-9.29	19.63
SW-14B	Merced	5/16/2013	10.34	-8.85	19.19
SW-14B	Merced	2/18/2013	10.34	-10.05	20.39
SW-14B	Merced	11/6/2012	10.34	-9.28	19.62
SW-14B	Merced	8/7/2012	10.34	-9.52	19.86
SW-14B	Merced	5/1/2012	10.34	-10.05	20.39
SW-14B	Merced	2/20/2012	10.34	-8.24	18.58
SW-14B	Merced	11/14/2011	10.34	-8.75	19.09
SW-14B	Merced	8/30/2011	10.34	-9.15	19.49
SW-14B*	Merced	6/2/2011	10.34	2.68	7.66
SW-14B*	Merced	5/25/2011	10.34	2.35	7.99
SW-14B*	Merced	5/19/2011	10.34	2.68	7.66
SW-14B	Merced	5/10/2011	10.34	2.70	7.64
SW-14B	Merced	2/14/2011	10.34	-11.15	21.49
SW-14B	Merced	12/3/2010	10.34	-8.45	18.79
SW-14B	Merced	7/20/2010	10.34	-9.42	19.76
SW-14B	Merced	5/19/2010	10.34	-9.80	20.14
SW-14B	Merced	3/9/2010	10.34	-10.08	20.42
SW-14B	Merced	11/2/2009	10.34	-9.23	19.57
SW-14B	Merced	8/17/2009	10.34	-11.30	21.64
SW-14B	Merced	5/5/2009	10.34	-9.60	19.94
SW-14B	Merced	2/2/2009	10.34	-9.25	19.59
SW-14B	Merced	11/3/2008	10.34	-9.33	19.67
SW-14B	Merced	9/8/2008	10.34	-9.10	19.44
SW-14B	Merced	6/17/2008	10.34	-9.30	19.64
SW-14B	Merced	2/25/2008	10.34	-9.983	20.323
SW-14B	Merced	11/27/2007	10.34	-9.403	19.743
SW-14B	Merced	8/27/2007	10.34	-11.733	22.073
SW-14B	Merced	5/25/2007	10.34	-9.58	19.92
SW-14B	Merced	6/5/2006	10.34	-10.50	20.84
SW-14B	Merced	11/28/2005	10.34	-8.763	19.103
SW-14B	Merced	2/28/2005	10.34	-9.764	20.104
SW-14B	Merced	12/6/2004	10.34	-6.723	17.063
SW-14B	Merced	9/7/2004	10.34	-9.273	19.613
SW-14B	Merced	6/7/2004	10.34	-9.273	19.613
SW-14B	Merced	3/25/2004	10.34	-10.043	20.383
SW-14B	Merced	12/15/2003	10.34	-9.103	19.443
SW-14B	Merced	8/25/2003	10.34	-9.293	19.633
SW-14B	Merced	6/2/2003	10.34	-9.343	19.683
SW-14B	Merced	3/2/2003	10.34	-9.42	19.76
SW-14B	Merced	12/10/2002	10.34	-8.89	19.23
SW-14B	Merced	9/9/2002	10.34	-9.06	19.40
SW-14B	Merced	6/3/2002	10.34	-9.68	20.02
SW-14B	Merced	3/15/2002	10.34	-9.68	20.02

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Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
SW-14B	Merced	12/7/2001	10.34	-8.45	18.79
SW-14B	Merced	8/6/2001	10.34	-8.38	18.72
SW-14B	Merced	4/13/2001	10.34	-8.50	18.84
SW-14B	Merced	12/8/2000	10.34	-9.66	20.00
SW-14B	Merced	9/6/2000	10.34	-9.52	19.86
SW-14B	Merced	5/26/2000	10.34	-9.94	20.28
SW-18B	Merced	8/17/2021	11.85	-6.26	18.11
SW-18B	Merced	5/11/2021	11.85	-6.13	17.98
SW-18B	Merced	2/16/2021	11.85	-6.90	18.75
SW-18B	Merced	11/11/2020	11.85	-5.98	17.83
SW-18B	Merced	8/11/2020	11.85	-6.50	18.35
SW-18B	Merced	2/11/2020	11.85	-6.91	18.76
SW-18B	Merced	11/12/2019	11.85	-9.10	20.95
SW-18B	Merced	8/13/2019	11.85	-7.10	18.95
SW-18B	Merced	5/14/2019	11.85	-6.46	18.31
SW-18B	Merced	2/12/2019	11.85	-7.07	18.92
SW-18B	Merced	11/13/2018	11.85	-5.40	17.25
SW-18B	Merced	8/14/2018	11.85	<-10	--
SW-18B	Merced	5/15/2018	11.85	-7.40	19.25
SW-18B	Merced	2/13/2018	11.85	-1.71	13.56
SW-18B	Merced	11/14/2017	11.85	-1.93	13.78
SW-18B	Merced	8/15/2017	11.85	-1.50	13.35
SW-18B	Merced	5/15/2017	11.85	-2.05	13.90
SW-18B	Merced	2/14/2017	11.85	-7.42	19.27
SW-18B	Merced	10/26/2016	11.85	-6.09	17.94
SW-18B	Merced	8/16/2016	11.85	-5.10	16.95
SW-18B	Merced	5/17/2016	11.85	-5.94	17.79
SW-18B	Merced	2/16/2016	11.85	-5.58	17.43
SW-18B	Merced	11/10/2015	11.85	-5.11	16.96
SW-18B	Merced	8/11/2015	11.85	-5.59	17.44
SW-18B	Merced	6/9/2015	11.85	-5.75	17.60
SW-18B	Merced	3/24/2015	11.85	-6.72	18.57
SW-18B	Merced	12/1/2014	11.85	-6.35	18.20
SW-18B	Merced	8/18/2014	11.85	-6.54	18.39
SW-18B	Merced	5/27/2014	11.85	-5.87	17.72
SW-18B	Merced	2/24/2014	11.85	-6.78	18.63
SW-18B	Merced	11/7/2013	11.85	-5.51	17.36
SW-18B	Merced	8/13/2013	11.85	-6.94	18.79
SW-18B	Merced	5/16/2013	11.85	-7.44	19.29
SW-18B	Merced	2/18/2013	11.85	-7.60	19.45
SW-18B	Merced	11/6/2012	11.85	-6.90	18.75
SW-18B	Merced	8/7/2012	11.85	-7.28	19.13
SW-18B	Merced	5/1/2012	11.85	-7.88	19.73
SW-18B	Merced	2/20/2012	11.85	-7.03	18.88

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Brisbane and San Francisco, California

Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
SW-18B	Merced	11/14/2011	11.85	-6.95	18.8
SW-18B	Merced	8/30/2011	11.85	-6.90	18.75
SW-18B*	Merced	5/18/2011	11.85	0.70	11.15
SW-18B*	Merced	5/13/2011	11.85	0.70	11.15
SW-18B	Merced	2/14/2011	11.85	-6.50	18.35
SW-18B	Merced	12/3/2010	11.85	-7.29	19.14
SW-18B	Merced	7/20/2010	11.85	-7.27	19.12
SW-18B	Merced	5/19/2010	11.85	-7.55	19.40
SW-18B	Merced	3/9/2010	11.85	-2.70	14.55
SW-18B	Merced	11/2/2009	11.85	-5.95	17.80
SW-18B	Merced	8/17/2009	11.85	-6.20	18.05
SW-18B	Merced	5/5/2009	11.85	-7.01	18.86
SW-18B	Merced	2/2/2009	11.85	-6.40	18.25
SW-18B	Merced	11/3/2008	11.85	-6.69	18.54
SW-18B	Merced	9/8/2008	11.85	-6.92	18.77
SW-18B	Merced	6/17/2008	11.85	-6.83	18.68
SW-18B	Merced	2/25/2008	11.85	-7.48	19.33
SW-18B	Merced	11/27/2007	11.85	-6.78	18.63
SW-18B	Merced	8/27/2007	11.85	-6.88	18.73
SW-18B	Merced	5/25/2007	11.85	-6.94	18.79
SW-18B	Merced	3/6/2007	11.85	-7.63	19.48
SW-18B	Merced	12/22/2006	11.85	-7.68	19.53
SW-18B	Merced	8/30/2006	11.85	-7.61	19.46
SW-18B	Merced	6/5/2006	11.85	-7.12	18.97
SW-18B	Merced	3/6/2006	11.85	-8.02	19.87
SW-18B	Merced	11/28/2005	11.85	-6.99	18.84
SW-18B	Merced	9/12/2005	11.85	-5.44	17.29
SW-18B	Merced	2/28/2005	11.85	-6.80	18.65
SW-18B	Merced	12/6/2004	11.85	-5.36	17.21
SW-18B	Merced	9/7/2004	11.85	-5.62	17.47
SW-18B	Merced	6/7/2004	11.85	-6.42	18.27
SW-18B	Merced	3/25/2004	11.85	-6.98	18.83
SW-18B	Merced	12/15/2003	11.85	-5.78	17.63
SW-18B	Merced	8/25/2003	11.85	-6.66	18.51
SW-18B	Merced	6/2/2003	11.85	-7.08	18.93
SW-18B	Merced	3/2/2003	11.85	-6.84	18.69
SW-18B	Merced	12/10/2002	11.85	-6.39	18.24
SW-18B	Merced	9/9/2002	11.85	-6.51	18.36
SW-18B	Merced	6/3/2002	11.85	-6.13	17.98
SW-18B	Merced	3/15/2002	11.85	-5.58	17.43
SW-18B	Merced	12/7/2001	11.85	-5.58	17.43
SW-18B	Merced	8/6/2001	11.85	-6.01	17.86
SW-18B	Merced	4/13/2001	11.85	-8.02	19.87
SW-18B	Merced	12/8/2000	11.85	-6.89	18.74

Table 2: Summary of Historical Groundwater Elevation Data
UPC OU-SM
Brisbane and San Francisco, California

Well	Water Bearing Zone	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
SW-18B	Merced	9/6/2000	11.85	-7.22	19.07
SW-18B	Merced	5/26/2000	11.85	-7.64	19.49

Notes:

Elevation is in feet above mean sea level (MSL).
-- = Historical data not available.
NM = Not Measured.

*Merced formation near Sunnydale Avenue dewatered for sewer line upgrade between 2 May 2011 and 13 July 2011. [1]
**Colma formation near Sunnydale Avenue dewatered for sewer line upgrade beginning 11 April 2011 and concluding prior to 20 February 2012 groundwater monitoring event. [2]

Table 3: Analysis of Electrical Conductivity Data in Fill Groundwater
UPC OU-SM
Brisbane, California

Well ID	Screen Interval (feet bgs)	2018 August	2018 May	2017 May	2016 May	2015 June
GWE-1	4 to 13	3,765	NM	NM	NM	NM
GWE-2	4 to 9	10,006	NM	NM	NM	NM
GWE-3	5 to 16	5,750	NM	NM	NM	NM
GWE-3	5 to 16	9,965	NM	NM	NM	NM
GWE-4	5 to 16	3,287	NM	NM	NM	NM
MK-2A	3 to 13	950	NM	NM	NM	NM
MK-4A	5 to 15	1,621	707	771	943	810
MK-5AR	-	3,457	NM	NM	NM	NM
MK-6A	8 to 18	3,082	4,404	2,292	1,287	2,237
MW-4A	2 to 12	1,948	NM	NM	NM	NM
MW-6AR	5 to 13	6,221	5,207	2,970	2,944	5,644
MW-7A	3 to 13	16,471	12,977	17,982	9,301	19
MW-8A	3 to 13	3,112	NM	NM	NM	NM
Count		13	4	4	4	4
Standard Deviation		4,405.63	5,155.78	8,038.26	3,887.58	2,486.59
Confidence Interval		76.62	161.65	252.03	121.89	77.96
Average		5,356.54	5,823.75	6,003.75	3,618.75	2,177.50
95% UCL		5,433.16	5,985.40	6,255.78	3,740.64	2,255.46

Notes:
1. All electrical conductivity data are presented in µS/cm.

Abbreviations:
bgs = below ground surface
NM = not measured
UCL = upper confidence limit
µS/cm = microsiemens per centimeter

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
A1	DG-A1S-0.5-1	8/21/18	0.5-1	**3.5**	**160**	**85**	**0.18 J**	**0.14 J**	**63**	**13**	**77**	**100**	**0.73**	<0.19	**71**	**0.59 J**	<0.15	<0.43	**57**	**110**
A1	DG-A1S-3.5-4	8/21/18	3.5-4	**0.85 J**	**7.8**	**58**	**0.60**	<0.043	**31**	**17**	**19**	**9.9**	**0.041**	<0.22	**28**	<0.52	<0.17	<0.50	**42**	**58**
A2	DG-A2S-0.5-1	8/22/18	0.5-1	**17**	**190**	**250**	**0.095 J**	**11**	**51**	**11**	**740**	**2,400**	**0.52 F1**	**4.9**	**47**	<0.41	**2.7**	**1.2 J**	**58**	**1,100**
A2	DG-A2S-3.5-4	8/22/18	2.5-4	**3.1**	**110**	**210**	**0.27 J**	**0.24 J**	**120**	**22**	**74**	**150**	**1.4**	**0.98 J**	**150**	<0.59	<0.20	**1.5 J**	**92**	**140**
A2	DG-A2S-19.5-20	8/21/18	19.5-20	**0.27 J B**	<0.22	**21**	**0.29**	<0.032	**59**	**3.7**	**2.5 J**	**2.0**	**0.0068 J**	<0.17	**15**	<0.39	<0.13	<0.38	**29**	**8.3**
A3	DG-A3S-0.5-1	8/21/18	0.5-1	**1.8 J**	**41**	**74**	**0.30 J**	**0.19 J**	**65**	**13**	**43**	**59**	**0.044**	**0.35 J**	**71**	<0.57	<0.19	<0.55	**58**	**120**
A3	DG-A3S-3.5-4	8/21/18	2.5-4	**0.72 J**	**3.2 J**	**110**	**0.28 J**	<0.044	**43**	**5.2**	**12**	**5.3**	**0.17**	<0.23	**30**	**0.56 J**	<0.18	<0.52	**50**	**32**
A3	DG-A3S-9.5-10	8/21/18	9.5-10	**1.4 J**	**1.9 J**	**50**	**0.14 J**	<0.044	**130**	**4.4**	**3.9 J**	**1.1 J**	**0.013 J**	<0.22	**20**	<0.53	<0.18	<0.51	**58**	**15**
A4	DG-A4S-0.5-1	8/22/18	0.5-1	**8.8**	**20 B**	**240**	**0.18 J**	**24**	**42**	**14**	**400**	**690**	**0.62**	**3.3**	**37**	<0.57	<0.19	**1.2 J**	**93**	**690**
A4	DG-A4S-3.5-4	8/22/18	2.5-4	**1.6**	**11 B**	**68**	**0.22 J**	**0.20 J**	**30**	**7.8**	**140**	**130**	**0.18**	**0.22 J**	**25**	<0.48	<0.16	**0.55 J**	**42**	**250**
A4	DG-A4S-19.5-20	8/22/18	19.5-20	**0.58 J**	**0.73 J**	**40**	<0.079	<0.030	**72**	**2.5**	**4.7**	**1.6**	<0.0023	<0.16	**18**	<0.37	<0.12	<0.35	**23**	**16**
A5	DG-A5S-0.5-1	8/23/18	0.5-1	**1.4**	**8.9**	**71 B**	**0.10 J**	**0.34 J**	**33**	**15**	**170**	**220**	**0.38**	**0.47 J**	**16**	<0.43	**0.16 J**	**1.2 J**	**100**	**160**
A5	DG-A5S-3.5-4	8/23/18	2.5-4	**0.80 R**	**2.1 J B**	**83 F1**	**0.12 J**	<0.038	**96**	**30**	**45 F1**	**2.7**	**0.13**	**0.22 J**	**68**	<0.46	<0.15	**1.6**	**100 F1**	**68**
A5	DG-A5S-19.5-20	8/23/18	19.5-20	**0.68 J**	**2.1 J B**	**39**	<0.097	<0.037	**89**	**4.8**	**6.4**	**1.4 J**	**0.0067 J**	<0.19	**18**	**0.50 J**	<0.15	**0.81 J**	**80**	**18**
A6	DG-A6S-0.5-1	8/22/18	0.5-1	**23**	**16**	**130**	<0.11	**2.1**	**16**	**9.5**	**6,000**	**1,200**	**0.27**	**0.95 J**	**20**	**1.4 J**	**2.4**	**1.4 J**	**110**	**450**
A6	DG-A6S-3.5-4	8/22/18	2.5-4	**0.99 J**	**4.8**	**86**	**0.16 J**	<0.046	**51**	**12**	**42**	**19**	**0.041**	**0.36 J**	**70**	<0.55	<0.19	**0.72 J**	**32**	**56**
A6	DG-A6S-3.5-4 (D)	8/22/18	2.5-4	**0.78 J**	**8.3**	**160**	**0.32 J**	<0.042	**42**	**13**	**37**	**12**	**0.037**	**0.40 J**	**61**	<0.51	**0.20 J**	**0.75 J**	**32**	**66**
A6	DG-A6S-19.5-20	8/22/18	19.5-20	**0.61 J**	**0.76 J**	**29**	**0.14 J**	<0.041	**48**	**4.6**	**3.6 J**	**1.8**	**0.0052 J**	<0.21	**19**	<0.50	<0.17	**0.50 J**	**30**	**13**
A7	DG-A7S-0.5-1	8/23/18	0.5-1	**0.72 J B**	**2.3 J**	**53 B**	<0.12	**0.24 J**	**12**	**9.6**	**79**	**48**	**0.078**	**0.65 J**	**15**	<0.56	<0.19	<0.54	**83**	**79**
A7	DG-A7S-3.5-4	8/23/18	2.5-4	**0.60 J**	**14**	**62**	**0.16 J**	<0.037	**67 B**	**9.8**	**20**	**22**	**0.076**	**0.57 J**	**80**	**1.1 J**	<0.15	<0.43	**41**	**37**
A7	DG-A7S-10-10.5	8/23/18	10-10.5	**0.13 J**	**0.43 J**	**24**	**0.10**	<0.011	**34 B**	**2.3**	**4.2**	**2.1**	**0.012 J**	**0.51**	**12**	**0.68 J**	<0.046	<0.13	**24**	**13**
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.29	**0.83 J**	**32**	<0.11	<0.043	**46**	**1.7**	<2.5	**2.0**	**0.0047 J**	<0.22	**6.5**	<0.52	<0.17	<0.50	**45**	**5.9**
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<0.28	**1.3 J**	**52**	<0.11	<0.042	**8.7**	**9.7**	**110**	**2.1**	**0.049**	**0.36 J**	**16**	<0.51	<0.17	**0.97 J**	**98**	**33**
A8	DG-A8S-3.5-4	8/27/18	2.5-4	**2.7**	**230**	**120**	**0.28 J**	**1.5**	**49**	**11**	**160**	**220**	**1.4**	**0.72 J**	**65**	**0.69 J**	<0.19	**0.85 J**	**36**	**190**
A8	DG-A8S-17-17.5	8/27/18	17-17.5	**0.48 J**	**2.8 J**	**41**	**0.16 J**	<0.044	**53**	**8.3**	**5.0 J**	**1.1 J**	**0.0040 J**	<0.22	**28**	<0.53	<0.18	<0.51	**47**	**18**
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	**0.39 J**	**2.3 J**	**25**	<0.087	<0.033	**44**	**4.7**	**4.1**	**0.87 J**	<0.0022	<0.17	**17**	<0.40	<0.13	<0.39	**37**	**14**
B1	DG-B1S-0.5-1	8/21/18	0.5-1	**0.89 J F1**	**110**	**48**	<0.11	**0.26 J**	**23**	**6.1**	**56**	**66**	**0.045**	**0.33 J**	**18**	<0.50	<0.17	<0.48	**36**	**73**
B1	DG-B1S-3.5-4	8/21/18	3.5-4	**1.3 J**	**94**	**100**	**0.12 J**	**0.077 J**	**85**	**18**	**33**	**3.5**	**0.48**	<0.24	**120**	<0.56	<0.19	<0.54	**71**	**53**
B2	DG-B2S-0.5-1	8/22/18	0.5-1	**5.9**	**130**	**240**	<0.10	**2.8**	**90**	**16**	**310**	**510**	**0.57**	**4.1**	**55**	<0.48	**0.74 J**	**1.3 J**	**78**	**580**
B2	DG-B2S-3.5-4	8/22/18	2.5-4	**2.6**	**280**	**250**	**0.20 J**	**0.21 J**	**34**	**6.0**	**49**	**250**	**0.063**	**0.51 J**	**37**	<0.54	**0.41 J**	<0.52	**26**	**170**
B2	DG-B2S-19.5-20	8/21/18	19.5-20	**0.31 J B**	**5.0**	**31**	**0.18 J**	<0.042	**14**	**6.3**	**4.8 J**	**0.83 J**	**0.011 J**	**0.43 J**	**15**	**3.4**	<0.17	<0.50	**72**	**3.0 J**
B3	DG-B3S-0.5-1	8/21/18	0.5-1	**24**	**67**	**630**	<0.098	**5.7**	**210**	**14**	**870**	**5,300**	**0.81**	**1.5**	**43**	<1.1	**4.4**	**1.9 J**	**56**	**1,900**
B3	DG-B3S-3.5-4	8/21/18	2.5-4	**10**	**9.7**	**640**	<0.088	**2.2**	**19 B**	**3.8**	**2,100**	**2,300**	**1.3**	<0.17	**16**	<0.41	**1.2**	**0.53 J**	**7.5**	**2,100**
B4	DG-B4S-0.5-1	8/23/18	0.5-1	**1.5 B**	**4.1**	**74 B**	<0.084	**1.4**	**17**	**11**	**200**	**130**	**0.19**	**1.3**	**10**	<0.39	**0.47 J**	**0.66 J**	**88**	**240**
B4	DG-B4S-0.5-1 (D)	8/23/18	0.5-1	**1.1 J**	**3.9**	**80**	<0.089	**1.3**	**21**	**12**	**200**	**130**	**0.21**	**1.4**	**11**	<0.41	**0.27 J**	**1.0 J**	**100**	**240**
B4	DG-B4S-3.5-4	8/23/18	1-2.5	**0.75 J B**	**1.6 J**	**47 B**	<0.069	**0.41**	**13**	**11**	**120**	**48**	**0.31**	**0.30 J**	**10**	<0.32	**0.19 J**	**0.84 J**	**78**	**130**
B5	DG-B5S-0.5-1	8/23/18	0.5-1	**1.5**	**16 B**	**82**	**0.18 J**	**0.71**	**34**	**13**	**190**	**95**	**0.41**	**2.4**	**39**	**1.1 J**	<0.10	<0.29	**88**	**190**
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.22	**4.1 B**	**160**	**0.24 J**	**0.27 J**	**210**	**28**	**230**	**170**	**0.12**	**0.81 J**	**230**	**1.2 J**	**0.25 J**	<0.38	**92**	**280**
B6	DG-B6S-0.5-1	8/22/18	0.5-1	**7.4**	**13**	**150**	**0.095 J**	**2.1**	**26**	**9.6**	**190**	**500**	**0.25**	**1.2**	**25**	**0.67 J**	**1.1**	**0.99 J**	**60**	**380**
B6	DG-B6S-3.5-4	8/22/18	2.5-4	**2.2**	**3.0 J**	**120**	<0.11	**0.043 J**	**150**	**32**	**59**	**27**	**0.063**	**0.52 J**	**130**	**0.53 J**	**0.94**	**3.1**	**140**	**84**
B7	DG-B7S-0.5-1	8/23/18	0.5-1	**0.42 J**	**4.4**	**68**	**0.24 J**	**0.22 J**	**32 B**	**8.9**	**99**	**62**	**0.11**	**2.1**	**23**	**0.51 J**	<0.16	<0.46	**69**	**77**
B7	DG-B7S-3.5-4	8/23/18	2.5-4	**1.4 J F1**	**4.3**	**90**	<0.12	**0.20 J**	**45 F1**	**9.1**	**31 F1**	**100 F1 F2**	**0.12**	**0.36 J**	**60 F1**	<0.57	<0.19	<0.55	**26 F1**	**86 F1**
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.32	**0.61 J**	**34**	<0.13	<0.048	**29**	**0.81**	<2.8	**1.5 J**	**0.018**	<0.25	**4.6**	<0.58	<0.20	<0.56	**23**	**3.2 J**

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B8	DG-B8S-0.5-1	8/23/18	0.5-1	**4.6**	**7.0**	**100**	**0.19 J**	**0.21 J**	**43**	**11**	**110**	**260**	**0.046**	**0.87 J**	**48**	<0.55	<0.18	**1.1 J**	**52**	**120**
B8	DG-B8S-3.5-4	8/23/18	2.5-4	**2.2**	**4.8**	**160**	**0.15 J**	<0.039	**180**	**18**	**22**	**2.0**	**0.024**	<0.20	**160**	<0.47	<0.16	**1.5 J**	**120**	**48**
B9	DG-B9S-0.5-1	8/24/18	0.5-1	**10 B**	**24**	**50 B**	<0.25	**3.0**	**21**	**17**	**590**	**2,600**	**0.76**	**5.8**	**21**	<1.2	**4.1**	<1.1	**62**	**640**
B9	DG-B9S-3.5-4	8/24/18	2.5-4	**1.6 J B**	**3.8**	**75 B**	<0.12	**0.12 J**	**83**	**11**	**34**	**36**	**0.54**	**0.39 J**	**73**	<0.53	<0.18	<0.51	**38**	**61**
B9	DG-B9S-9.5-10	8/24/18	9.5-10	**0.39 J**	**1.8 J**	**56**	**0.075 J**	<0.027	**34**	**5.5**	**7.4**	**5.5**	**0.072**	<0.14	**20**	<0.33	<0.11	<0.32	**26**	**23**
B10	DG-B10S-0.5-1	8/24/18	0.5-1	**7.4**	**28**	**150**	<0.13	**0.72**	**72**	**14**	**140**	**610**	**0.34**	**0.83 J**	**72**	<0.58	**0.50 J**	**1.2 J**	**60**	**250**
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	**9.1**	**39**	**370**	<0.12	**1.4**	**68**	**8.4**	**210**	**13,000**	**0.49**	**1.8 J**	**41**	<0.57	**0.58 J**	**1.2 J**	**45**	**450**
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.26	**1.3 J**	**36 B**	**0.13 J**	<0.038	**28**	**4.2**	**6.1**	**6.9**	**0.048**	<0.20	**16**	<0.46	<0.16	<0.45	**22**	**22**
C1	DG-C1S-0.5-1	8/21/18	0.5-1	**3.0**	**270**	**63**	**0.13 J**	**0.63**	**17**	**10**	**110**	**250**	**0.12**	**0.37 J**	**15**	<0.50	**0.17 J**	<0.48	**59**	**180**
C1	DG-C1S-3.5-4	8/21/18	3.5-4	**100**	**30**	**75**	**0.12 J**	**0.16 J**	**35**	**9.8**	**92**	**220**	**0.050**	**0.24 J**	**46**	<0.48	<0.16	<0.46	**43**	**83**
C2	DG-C2S-0.5-1	8/21/18	0.5-1	**2.7 B**	**15**	**110**	**0.15 J**	**1.9**	**52**	**9.2**	**100**	**420**	**0.45**	**2.4**	**49**	**0.64 J**	<0.18	<0.51	**32**	**310**
C2	DG-C2S-3.5-4	8/21/18	2.5-4	**1.6 B**	**16**	**180**	**0.32**	**0.33**	**29**	**6.0**	**58**	**300**	**0.13**	**0.68 J**	**29**	<0.38	**0.24 J**	<0.37	**28**	**320**
C3	DG-C3S-0.5-1	8/21/18	0.5-1	**16**	**5.2**	**110**	<0.10	**0.40**	**13 B**	**15**	**240**	**670**	**0.21**	**0.56 J**	**26**	<0.48	**0.36 J**	<0.46	**120**	**300**
C3	DG-C3S-3.5-4	8/21/18	2.5-4	**38**	**49**	**1,100**	**0.28 J**	**9.2**	**38 B**	**12**	**10,000**	**5,200**	**6.0**	**3.6**	**39**	<2.4	**3.9**	**2.5 J**	**28**	**5,700**
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.30	**4.4**	**21**	**0.34 J**	**0.10 J**	**51**	**9.0**	**23**	**8.0**	**0.037**	**1.0 J**	**48**	<0.54	<0.18	<0.52	**41**	**49**
C4	DG-C4S-0.5-1	8/23/18	0.5-1	**10 B**	**24**	**89 B**	<0.10	**1.1**	**17**	**11**	**310**	**1,000**	**0.20**	**0.34 J**	**13**	<0.48	**0.64 J**	**0.87 J**	**74**	**320**
C4	DG-C4S-3.5-4	8/23/18	2.5-4	**4.1 B**	**5.0**	**110 B**	**0.21 J**	**0.50**	**62**	**11**	**35**	**1,100**	**0.21**	**0.41 J**	**41**	<0.50	**0.19 J**	<0.48	**54**	**180**
C5	DG-C5S-0.5-1	8/23/18	0.5-1	<0.19 R	**3.1 B**	**53 F1**	**0.11 J**	**0.51 F1**	**15 F1**	**11 F1**	**140**	**130 F1**	**0.28**	**1.1**	**9.4 F1**	**0.72 J**	<0.12	<0.33	**94 F1**	**130 F1**
C5	DG-C5S-3.5-4	8/23/18	1-2.5	**3.1**	**9.3 B**	**210**	**0.32**	**0.68**	**44**	**10**	**260**	**410**	**0.47**	**1.2 J**	**41**	**0.72 J**	<0.16	<0.46	**46**	**530**
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.33	**10 B**	**370**	**0.58**	**0.12 J**	**48**	**18**	**39**	**15**	**0.28**	**0.85 J**	**51**	**2.5 J**	<0.20	<0.58	**70**	**85**
C6	DG-C6S-0.5-1	8/23/18	0.5-1	**1.9 F1**	**4.2**	**44 F1**	<0.13	**0.54**	**19**	**12**	**150 F1**	**140 F1**	**0.12**	**1.5 J**	**15**	<0.58	**0.66 J**	**1.4 J**	**88 F1**	**120 F1**
C6	DG-C6S-3.5-4	8/23/18	2.5-4	**4.2**	**6.0**	**98**	<0.098	**0.27 J**	**35**	**12**	**3,400**	**230**	**1.7**	**1.1 J**	**33**	**0.67 J**	**0.81**	**0.84 J**	**51**	**140**
C7	DG-C7S-0.5-1	8/24/18	0.5-1	**24**	**9.4**	**120**	<0.098	**0.56**	**17**	**12**	**220**	**910**	**0.20**	**1.7**	**10**	<0.45	**0.60 J**	**0.72 J**	**89**	**190**
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	**2.8**	**5.2**	**60**	<0.12	**0.98**	**16**	**11**	**210**	**310**	**0.17**	**2.5**	**9.4**	<0.57	**0.30 J**	**1.2 J**	**93**	**150**
C7	DG-C7S-3.5-4	8/24/18	3.5-4	**4.4**	**7.1**	**68**	<0.073	**0.41**	**32**	**7.1**	**82**	**170**	**0.042**	**0.40 J**	**34**	<0.34	**0.20 J**	**0.56 J**	**39**	**92**
C7	DG-C7S-9.5-10	8/24/18	9.5-10	**1.1 J**	**6.8**	**73**	**0.14 J**	<0.040	**66**	**14**	**25**	**8.6**	**0.049**	**0.42 J**	**83**	<0.49	<0.16	**0.82 J**	**43**	**59**
C8	DG-C8S-0.5-1	8/23/18	0.5-1	**1.4 J**	**5.1**	**55**	<0.11	**0.60**	**17**	**13**	**190**	**89**	**0.077**	**0.39 J**	**11**	<0.53	<0.18	**1.5 J**	**100**	**380**
C8	DG-C8S-3.5-4	8/23/18	2.5-4	**1.7**	**4.1 B**	**90**	**0.26 J**	**0.067 J**	**130**	**15**	**37**	**150**	**0.35**	**0.31 J**	**130**	<0.42	<0.14	**0.78 J**	**52**	**88**
C9	DG-C9S-0.5-1	8/27/18	0.5-1	**1.6**	**10**	**140**	**0.12 J**	**1.1**	**40**	**12**	**220**	**270**	**0.14**	**2.3**	**31**	**1.0 J**	**0.31 J**	**0.77 J**	**94**	**250**
C9	DG-C9S-3.5-4	8/27/18	1-2.5	**6.1 F1**	**19**	**110 F1**	<0.10	**4.0**	**13 F1**	**15 F1**	**420**	**1,400**	**0.029**	**0.70 J**	**9.5 F1**	**1.4 J**	**4.0**	**1.0 J**	**92 F1**	**780**
C10	DG-C10S-0.5-1	8/23/18	0.5-1	**1.1 J**	**11**	**34**	<0.13	**0.060 J**	**13**	**19**	**150**	**58**	**0.084**	**0.47 J**	**11**	<0.59	<0.20	**1.9 J**	**130**	**88**
C10	DG-C10S-3.5-4	8/23/18	2.5-4	**2.6**	**190**	**120**	**0.42**	<0.048	**180**	**24**	**45**	**16**	**2.3**	**0.56 J**	**200**	<0.58	<0.20	**1.1 J**	**89**	**81**
D1	DG-D1S-0.5-1	8/20/18	0.5-1	**2.3**	**92**	**95 B**	<0.094	**0.44**	**13 B**	**11**	**100**	**95**	**0.12**	**0.22 J**	**11**	<0.43	**0.24 J**	**0.86 J**	**75**	**130**
D1	DG-D1S-3.5-4	8/20/18	2.5-4	**1.3 J**	**75**	**100 B**	**0.16 J**	<0.036	**64 B**	**14**	**22**	**11**	**0.054**	<0.19	**110**	<0.44	**0.18 J**	**0.44 J**	**27**	**40**
D1	DG-D1S-9.5-10	8/20/18	9.5-10	**2.2**	**12**	**95 B**	**0.66**	<0.040	**120 B**	**28**	**44**	**7.9**	**2.7**	**0.40 J**	**250**	**0.83 J**	**0.29 J**	**0.74 J**	**55**	**78**
D2	DG-D2S-0.5-1	8/20/18	0.5-1	<0.31	**2.2 J**	**48 B**	<0.12	<0.046	**12 B**	**10**	**140**	**7.3**	**0.075**	<0.24	**4.5**	**0.83 J**	**0.20 J**	**1.2 J**	**120**	**41**
D2	DG-D2S-3.5-4	8/20/18	1-2.5	**2.1**	**62**	**230 B**	**0.35**	**0.24 J**	**56 B**	**14**	**58**	**180**	**0.12**	**0.37 J**	**80**	<0.41	**0.45 J**	**0.57 J**	**43**	**170**
D3	DG-D3S-0.5-1	8/21/18	0.5-1	**3.9**	**210**	**44**	<0.12	**0.74**	**15**	**13**	**180**	**190**	**0.11**	**0.34 J**	**33**	<0.55	**0.35 J**	<0.53	**56**	**160**
D3	DG-D3S-3.5-4	8/21/18	2.5-4	**3.5**	**300**	**86**	**0.080 J**	**0.38**	**40**	**10**	**440**	**230**	**0.10**	**0.29 J**	**40**	<0.32	**0.22 J**	<0.31	**44**	**350**
D3	DG-D3S-9.5-10	8/21/18	9.5-10	**0.86 J**	**29**	**67**	<0.10	**0.19 J**	**35**	**9.1**	**56**	**270**	**0.76**	**0.34 J**	**33**	<0.48	<0.16	<0.47	**32**	**160**
D4	DG-D4S-0.5-1	8/21/18	0.5-1	**6.8**	**6.2**	**43**	<0.11	**0.23 J**	**22**	**8.9**	**140**	**890**	**0.22**	**0.24 J**	**9.3**	<0.52	<0.18	<0.50	**64**	**110**
D4	DG-D4S-0.5-1 (D)	8/21/18	0.5-1	**1.4**	**3.2**	**44**	<0.069	**0.12 J**	**20**	**8.7**	**97**	**450**	**0.11**	**0.47 J**	**9.5**	<0.32	**0.14 J**	<0.31	**64**	**71**
D4	DG-D4S-3.5-4	8/21/18	2.5-4	**3.5**	**130**	**110**	<0.11	**0.33 J**	**16**	**12**	**150**	**340**	**0.17**	<0.22	**16**	<0.53	**0.27 J**	<0.51	**95**	**130**

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
D5	DG-D5S-0.5-1	8/22/18	0.5-1	**6.9**	**12 B**	**180**	<0.099	**5.2**	**78**	**18**	**330**	**620**	**0.19**	**3.9**	**45**	**1.1 J**	**0.24 J**	<0.44	**77**	**850**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.22	**2.9 B**	**48**	<0.087	**0.49**	**12**	**14**	**110**	**58**	**0.32**	**0.71 J**	**6.7**	**1.1 J**	<0.13	<0.39	**110**	**97**
D6	DG-D6S-0.5-1	8/22/18	0.5-1	**0.54 J**	**2.2 J**	**33**	<0.11	<0.044	**12**	**15**	**150**	**47**	**0.12**	**0.52 J**	**6.3**	<0.53	<0.18	**1.5 J**	**130**	**77**
D6	DG-D6S-3.5-4	8/22/18	2.5-4	**1.2 J**	**4.4**	**53**	**0.094 J**	**0.098 J**	**13**	**11**	**99**	**78**	**0.10**	**0.40 J**	**6.9**	<0.41	<0.14	**1.1 J**	**79**	**77**
D7	DG-D7S-1.5-2	8/27/18	1.5-2	<0.21	**3.0**	**53**	<0.084	**0.12 J**	**10**	**8.6**	**110**	**98**	**0.052**	<0.17	**5.3**	**0.47 J**	<0.13	**0.63 J**	**83**	**78**
D7	DG-D7S-3.5-4	8/27/18	2.5-4	**1.6 J**	**2.4 J**	**66**	<0.12	**0.21 J**	**21**	**8.8**	**78**	**87**	**0.15**	<0.23	**16**	**1.2 J**	<0.18	<0.51	**73**	**77**
D8	DG-D8S-0.5-1	8/23/18	0.5-1	<0.28	**0.41 J**	**35**	<0.11	<0.042	**10**	**12**	**140**	**9.9**	**0.036**	**0.34 J**	**5.3**	<0.51	<0.17	**0.94 J**	**100**	**42**
D8	DG-D8S-3.5-4	8/23/18	2.5-4	**1.2 J**	**2.5 J**	**58**	<0.11	<0.042	**5.7**	**6.0**	**15**	**32**	**0.18**	<0.22	**3.4**	<0.51	<0.17	<0.49	**36**	**59**
D8	DG-D8S-3.5-4 (D)	8/23/18	2.5-4	**1.8**	**2.3 J**	**48**	<0.11	**0.053 J**	**4.6**	**6.6**	**25**	**36**	**0.14**	<0.21	**3.0**	<0.50	<0.17	<0.48	**42**	**59**
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.25	**0.74 J**	**36**	<0.098	<0.037	**11**	**11**	**130**	**23**	**0.099**	**0.33 J**	**3.6**	<0.45	<0.15	**0.78 J**	**110**	**49**
D9	DG-D9S-3.5-4	8/24/18	1-2.5	**3.3**	**5.8**	**60**	<0.11	**0.14 J**	**16**	**12**	**150**	**150**	**0.061**	**0.38 J**	**13**	<0.50	**0.37 J**	**0.78 J**	**86**	**81**
D9	DG-D9S-9.5-10	8/24/18	9.5-10	**0.37 J**	**1.7 J**	**28**	<0.069	<0.026	**30**	**5.3**	**5.4**	**3.2**	<0.0024	**0.17 J**	**34**	<0.32	<0.11	<0.31	**19**	**16**
D10	DG-D10S-0.5-1	8/23/18	0.5-1	**8.9**	**64**	**110**	<0.10	**0.36 J**	**32**	**16**	**640**	**1,200**	**0.29**	**3.4**	**29**	<1.2	**1.0 J**	<1.1	**96**	**460**
D10	DG-D10S-3.5-4	8/23/18	2.5-4	**8.1**	**7.2**	**68**	<0.10	**0.41**	**28**	**14**	**140**	**270**	**0.064**	**0.42 J**	**27**	<0.48	**0.50 J**	**1.3 J**	**93**	**140**
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	**0.57 J B**	**0.25 J**	**8.2 B**	<0.083	**0.070 J**	**8.3**	**15**	**120**	**13**	**0.047**	**0.41 J**	**4.5**	<0.38	**0.36 J**	**0.70 J**	**110**	**71**
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	**21 B**	**34**	**430 B**	<0.23	**5.9**	**61**	**12**	**750**	**6,100**	**0.15**	**0.54 J**	**30**	<1.1	**2.9**	<1.0	**51**	**2,100**
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	**1.9 B**	**6.8**	**160 B**	**0.42**	**0.059 J**	**180**	**20**	**44**	**8.2**	**0.096**	**0.35 J**	**230**	<0.37	**0.31 J**	<0.35	**63**	**78**
E1	DG-E1S-0.5-1	8/20/18	0.5-1	<0.29	**22**	**62 B**	<0.11	<0.043	**16 B**	**11**	**160**	**40**	**0.085**	<0.22	**4.9**	<0.52	**0.27 J**	**0.90 J**	**130**	**67**
E1	DG-E1S-3.5-4	8/20/18	2.5-4	**1.3 J**	**160**	**90 B**	**0.11 J**	**0.11 J**	**32 B**	**5.8**	**29**	**68**	**0.054**	<0.20	**29**	<0.48	**0.20 J**	<0.46	**25**	**83**
E2	DG-E2S-0.5-1	8/20/18	0.5-1	**3.2**	**11**	**94 B**	<0.12	**1.5**	**22 B**	**12**	**180**	**430**	**0.36**	**1.1 J**	**18**	**0.58 J**	**0.53 J**	**0.78 J**	**98**	**490**
E2	DG-E2S-3.5-4	8/20/18	2.5-4	**2.7**	**120**	**470 B**	**0.12 J**	**0.45**	**21 B**	**10**	**330**	**620**	**0.074**	**0.39 J**	**19**	<0.35	**1.4**	**1.0 J**	**87**	**400**
E3	DG-E3S-0.5-1	8/21/18	0.5-1	**4.7**	**14**	**120**	<0.13	**6.8**	**340**	**15**	**190**	**200**	**0.28**	**2.5**	**130**	<0.60	**0.22 J**	<0.58	**56**	**260**
E3	DG-E3S-3.5-4	8/21/18	2.5-4	**9.7**	**44**	**240**	<0.12	**2.1**	**33**	**11**	**530**	**1,800**	**1.0**	**0.71 J**	**49**	<0.53	**1.1**	<0.51	**48**	**730**
E3	DG-E3S-9.5-10	8/21/18	9.5-10	**20**	**50**	**700**	**0.17 J**	<0.11	**110**	**24**	**330**	**160**	**0.060**	**2.0**	**76**	<1.4	<0.47	**2.3 J**	**80**	**230**
E4	DG-E4S-0.5-1	8/21/18	0.5-1	**0.60 J F1**	**2.9 J**	**36 F1**	<0.12	**0.063 J**	**8.2 F1**	**13**	**110 F1**	**45 F1**	**0.068**	<0.23	**4.2**	<0.53	<0.18	<0.51	**98 F1**	**63 F1**
E4	DG-E4S-3.5-4	8/21/18	1-2.5	<0.22	**0.85 J**	**39**	<0.085	<0.032	**8.9**	**11**	**110**	**13**	**0.032**	**0.17 J**	**2.9**	<0.39	**0.26 J**	<0.38	**120**	**41**
E5	DG-E5S-0.5-1	8/22/18	0.5-1	<0.29	**2.4 J B**	**80**	<0.12	**0.14 J**	**10**	**10**	**130**	**76**	**0.14**	**0.48 J**	**5.3**	<0.53	<0.18	**1.0 J**	**97**	**100**
E5	DG-E5S-3.5-4	8/22/18	2.5-4	**71**	**22 B**	**150**	<0.10	**0.44**	**18**	**9.8**	**300**	**3,300**	**0.070**	**0.42 J**	**13**	<0.47	**0.72 J**	**1.1 J**	**71**	**350**
E5	DG-E5S-9-9.5	8/22/18	9-9.5	**1.8**	**3.2**	**73**	**0.34**	<0.027	**60**	**9.1**	**20**	**30**	**0.057**	<0.14	**40**	**0.84 J**	**0.16 J**	**0.43 J**	**60**	**41**
E6	DG-E6S-0.5-1	8/22/18	0.5-1	**2.2**	**4.0**	**84**	<0.11	**0.52**	**19**	**13**	**190**	**140**	**0.15**	**1.1 J**	**14**	<0.50	<0.17	**1.3 J**	**94**	**170**
E6	DG-E6S-3.5-4	8/22/18	1-2.5	**1.4 J**	**4.6**	**67**	**0.12 J**	**1.1**	**11**	**13**	**170**	**170**	**0.089**	**0.34 J**	**7.4**	<0.45	**0.62 J**	**1.8**	**110**	**230**
E6	DG-E6S-3.5-4 (D)	8/22/18	1-2.5	**0.29 J**	**1.8 J**	**51**	<0.078	**0.34**	**11**	**12**	**130**	**58**	**0.061**	**0.28 J**	**5.7**	<0.36	**0.14 J**	**1.2**	**110**	**96**
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.27	**3.5**	**58**	<0.11	**0.36 J**	**14**	**11**	**170**	**110**	**0.070**	<0.21	**8.5**	<0.50	**0.35 J**	**0.98 J**	**110**	**150**
E7	DG-E7S-3.5-4	8/24/18	2.5-4	**0.98 J**	**2.8 J**	**110**	**0.13 J**	**0.17 J**	**52**	**9.1**	**20**	**28**	**0.042**	**0.29 J**	**44**	<0.45	<0.15	<0.44	**42**	**57**
E7	DG-E7S-9.5-10	8/24/18	9.5-10	**1.3 J**	**1.2 J**	**97**	**0.20 J**	<0.038	**60**	**29**	**47**	**0.75 J**	**0.19**	**0.36 J**	**53**	<0.45	**0.46 J**	**1.6**	**140**	**65**
E8	DG-E8S-0.5-1	8/23/18	0.5-1	<0.26	**0.87 J**	**63**	<0.10	<0.038	**11**	**10**	**130**	**15**	**0.085**	**0.21 J**	**4.1**	**0.54 J**	**0.20 J**	**1.1 J**	**110**	**45**
E8	DG-E8S-3.5-4	8/23/18	2.5-4	**60**	**7.3**	**84**	<0.12	**0.073 J**	**17**	**10**	**380**	**170**	**0.13**	**0.64 J**	**16**	<0.57	<0.19	**1.1 J**	**79**	**95**
E9	DG-E9S-0.5-1	8/24/18	0.5-1	<0.31	**0.40 J**	**47**	<0.12	<0.046	**14**	**13**	**260**	**6.7**	**0.32**	<0.24	**4.6**	<0.56	**0.72 J**	**0.63 J**	**130**	**43**
E9	DG-E9S-3.5-4	8/24/18	1-2.5	**14**	**45**	**62**	<0.12	<0.23	**110**	**26**	**470**	**400**	**0.11**	**3.5**	**120**	<2.8	<0.94	**4.8 J**	**57**	**280**
E10	DG-E10S-0.5-1	8/23/18	0.5-1	**3.6**	**13**	**68**	<0.085	**0.68**	**28**	**13**	**220**	**400**	**0.12**	**1.0 J**	**24**	**0.86 J**	**0.42 J**	**1.6**	**94**	**190**
E10	DG-E10S-0.5-1 (D)	8/23/18	0.5-1	**2.5**	**9.8**	**68**	<0.067	**0.72**	**25**	**13**	**200**	**310**	**0.18**	**0.83 J**	**21**	**1.2 J**	**0.42 J**	**1.4**	**90**	**160**
E10	DG-E10S-3.5-4	8/23/18	2.5-4	**1.0 J**	**2.1 J**	**68**	<0.087	**0.054 J**	**19**	**13**	**120**	**76**	**0.039**	<0.17	**13**	**0.62 J**	**0.24 J**	**1.0 J**	**120**	**91**
E11	DG-E11S-0.5-1	8/27/18	0.5-1	**0.33 J F1**	**2.6 J**	**36 F1**	<0.090	**0.077 J**	**12 F1**	**12 F1**	**130 F1 F2**	**32 F1**	**0.073**	<0.18	**6.2**	<0.42	**0.20 J F1**	**1.0 J**	**110 F1**	**55 F1**

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.22	**2.5 J**	**40**	<0.086	<0.033	**16**	**13**	**120**	**26**	**0.15**	<0.17	**10**	<0.40	**0.17 J**	**1.2 J**	**130**	**57**
E11	DG-E11S-3.5-4	8/27/18	2.5-4	**8.0**	**19**	**110**	<0.10	**0.32 J**	**34**	**13**	**110**	**140**	**0.32**	**0.31 J**	**34**	<0.48	**0.36 J**	**1.0 J**	**73**	**160**
E11	DG-E11S-9.5-10	8/27/18	9.5-10	**0.37 J**	**1.9 J**	**55**	**0.24 J**	<0.049	**28**	**6.0**	**5.7 J**	**4.3**	**0.030**	<0.25	**22**	<0.59	<0.20	<0.57	**23**	**15**
F1	DG-F1S-0.5-1	8/20/18	0.5-1	**16**	**47**	**80 B**	<0.12	**0.75**	**21 B**	**11**	**180**	**460**	**0.18**	**0.37 J**	**12**	**1.2 J**	**0.42 J**	**1.0 J**	**97**	**240**
F1	DG-F1S-3.5-4	8/20/18	2.5-4	**2.0**	**110**	**81 B**	<0.10	**0.19 J**	**24 B**	**10**	**72**	**180**	**0.065**	<0.20	**21**	<0.47	**0.38 J**	<0.46	**63**	**110**
F1	DG-F1S-9.5-10	8/20/18	9.5-10	**6.4**	**180**	**85 B**	**0.40**	<0.039	**66 B**	**21**	**100**	**36**	**0.49**	**0.62 J**	**94**	**2.0 J**	**1.0**	**0.85 J**	**51**	**73**
F2	DG-F2S-0.5-1	8/20/18	0.5-1	**2.0**	**18**	**66 B**	<0.11	**0.82**	**15 B**	**13**	**170**	**130**	**0.27**	**0.84 J**	**13**	**0.85 J**	**0.43 J**	**0.92 J**	**110**	**170**
F2	DG-F2S-3.5-4	8/20/18	2.5-4	**0.44 J**	**82**	**79 B**	<0.12	<0.046	**14 B**	**13**	**98**	**20**	**0.060**	**0.30 J**	**11**	<0.55	**0.21 J**	**0.98 J**	**93**	**58**
F3	DG-F3S-0.5-1	8/21/18	0.5-1	**2.4**	**170**	**290**	<0.11	**1.0**	**25**	**11**	**150**	**370**	**0.24**	**0.84 J**	**25**	<0.50	**0.53 J**	<0.48	**72**	**260**
F3	DG-F3S-3.5-4	8/21/18	1-2.5	**2.1**	**140**	**140**	**0.11 J**	**0.27 J**	**33**	**5.5**	**48**	**320**	**0.050**	**0.34 J**	**26**	<0.49	**0.63 J**	<0.48	**26**	**260**
F3	DG-F3S-9.5-10	8/21/18	9.5-10	**3.1**	**140**	**130**	**0.12 J**	**0.31 J**	**33**	**6.0**	**59**	**300**	**0.070**	**0.46 J**	**28**	<0.38	**0.26 J**	<0.37	**27**	**210**
F4	DG-F4S-0.5-1	8/21/18	0-0.5	<0.24	**27**	**200**	**0.16 J**	**3.8**	**11**	**7.9**	**130**	**86**	**0.88**	**0.50 J**	**8.5**	<2.1	**1.9**	<2.1	**65**	**4,400**
F4	DG-F4S-3.5-4	8/21/18	0.5-1	<7.4	**280**	**820**	**0.64 J**	**80**	**32**	**11**	**220**	**1,600**	**36**	**4.8 J**	**22**	<13	**1.8 J**	<13	**85**	**26,000**
F5	DG-F5S-0.5-1	8/22/18	0.5-1	**8.8**	**1.7 J B**	**33**	**0.11 J**	<0.042	**8.1**	**11**	**150**	**270**	**0.049**	<0.22	**6.9**	<0.51	<0.17	**1.3 J**	**73**	**46**
F5	DG-F5S-3.5-4	8/22/18	2.5-4	**13**	**18 B**	**1,400**	**0.57**	**2.8**	**43**	**7.4**	**800**	**2,600**	**0.31**	**0.67 J**	**29**	**1.4 J**	**6.0**	**1.3 J**	**45**	**2,300**
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	**1.8**	**22**	**85 B**	**0.12 J**	**0.43**	**10**	**11**	**130**	**300**	**0.095**	**0.26 J**	**7.1**	<0.44	<0.15	**1.2 J**	**78**	**240**
F6	DG-F6S-0.5-1	8/23/18	0.5-1	**3.0**	**6.6**	**100**	<0.11	**1.2**	**42**	**16**	**620**	**370**	**0.29**	**3.1**	**29**	**0.86 J**	**1.4**	**1.3 J**	**98**	**400**
F6	DG-F6S-3.5-4	8/23/18	2.5-4	**0.54 J**	**5.9**	**21**	<0.11	<0.044	**14**	**15**	**130**	**37**	**0.026**	**1.4 J**	**6.5**	**0.88 J**	**0.46 J**	**1.1 J**	**100**	**74**
F7	DG-F7S-0.5-1	8/27/18	0.5-1	**2.1**	**9.8**	**73**	<0.092	**0.66**	**18**	**12**	**140**	**290**	**0.97**	**0.52 J**	**16**	**0.99 J**	**0.27 J**	**0.87 J**	**82**	**220**
F7	DG-F7S-3.5-4	8/27/18	2.5-4	**2.3**	**7.0**	**180**	**0.27 J**	**0.63**	**120**	**18**	**260**	**220**	**0.52**	<0.25	**82**	**0.92 J**	**0.38 J**	**0.71 J**	**77**	**500**
F8	DG-F8S-0.5-1	8/23/18	0.5-1	**3.2**	**14**	**69**	<0.070	**0.94**	**12**	**8.4**	**110**	**290**	**0.10**	**0.98 J**	**13**	**0.69 J**	**0.31 J**	**0.31 J**	**45**	**210**
F8	DG-F8S-3.5-4	8/23/18	2.5-4	**2.1**	**7.0**	**78**	**0.15 J**	**0.21 J**	**48**	**8.0**	**32**	**42**	**0.039**	**0.44 J**	**39**	**0.70 J**	<0.13	**0.55 J**	**39**	**57**
F9	DG-F9S-0.5-1	8/24/18	0.5-1	**0.35 J**	**1.4 J**	**47**	<0.11	**0.045 J**	**10**	**11**	**120**	**48**	**0.083**	<0.21	**9.6**	<0.49	<0.17	<0.48	**81**	**59**
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.31	**2.4 J**	**61**	<0.12	**0.26 J**	**35**	**5.1**	**13**	**23**	**0.025**	<0.24	**27**	<0.56	<0.19	<0.54	**24**	**81**
F9	DG-F9S-9.5-10	8/24/18	9.5-10	**0.94 J**	**6.2**	**210**	**0.46**	**0.074 J**	**110**	**15**	**29**	**18**	**0.14**	**0.54 J**	**78**	<0.54	**0.22 J**	<0.52	**71**	**84**
F10	DG-F10S-0.5-1	8/23/18	0.5-1	**1.3 J**	**2.6 J B**	**52**	<0.11	**0.073 J**	**14**	**15**	**120**	**85**	**0.070**	**0.51 J**	**12**	<0.52	<0.18	**1.3 J**	**110**	**80**
F10	DG-F10S-3.5-4	8/23/18	2.5-4	**0.63 J**	**6.2 B**	**160**	**0.47**	<0.046	**72**	**23**	**49**	**14**	**0.13**	**0.33 J**	**87**	<0.55	<0.19	**1.5 J**	**67**	**93**
F11	DG-F11S-0.5-1	8/24/18	0.5-1	**8.6**	**130**	**110**	<0.11	**2.6**	**240**	**11**	**250**	**650**	**0.38**	**2.5**	**42**	**0.62 J**	**1.8**	**1.4 J**	**44**	**390**
F11	DG-F11S-3.5-4	8/24/18	2.5-4	**2.5**	**120**	**100**	**0.35 J**	**0.22 J**	**68**	**10**	**63**	**140**	**0.28 B**	**2.0**	**38**	**0.73 J**	**0.29 J**	**0.91 J**	**39**	**200**
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	**1.1 J**	**8.9**	**71**	**0.79**	**0.063 J**	**47**	**26**	**56**	**22**	**0.27**	<0.25	**52**	**0.62 J**	**0.93 J**	**0.58 J**	**49**	**99**
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	**1.7**	**3.6**	**250**	<0.10	**0.43**	**40**	**11**	**360**	**160**	**0.070**	**0.88 J**	**69**	<0.47	**0.98**	**0.60 J**	**90**	**190**
G1	DG-G1S-0.5-1	8/20/18	0.5-1	**3.2 F1**	**270**	**120 F1 B**	<0.13	**0.58**	**19 F1 B**	**8.0**	**110 F1**	**250**	**0.19**	**0.32 J**	**16**	<0.58	**0.30 J**	<0.56	**52 F1**	**150**
G1	DG-G1S-3.5-4	8/20/18	2.5-4	**2.1**	**44**	**120 B**	<0.13	<0.049	**130 B**	**18**	**30**	**3.8**	**4.3**	<0.25	**160**	<0.59	**0.39 J**	**1.2 J**	**81**	**57**
G2	DG-G2S-0.5-1	8/20/18	0.5-1	**4.8**	**320**	**130 B**	<0.13	**1.6**	**22 B**	**12**	**210**	**440**	**0.42**	**0.67 J**	**23**	**0.60 J**	**0.90 J**	**1.6 J**	**68**	**360**
G2	DG-G2S-3.5-4	8/20/18	2.5-4	**110**	**39**	**1,700 B**	**0.82**	**1.7**	**52 B**	**9.0**	**620**	**8,800**	**0.69**	**2.8**	**45**	**2.3 J**	**5.2**	**1.8 J**	**38**	**2,600**
G3	DG-G3S-0.5-1	8/21/18	0.5-1	**1.4 J**	**230**	**76**	<0.13	**0.16 J**	**35**	**4.9**	**21**	**73**	**0.069**	<0.25	**25**	<0.59	<0.20	<0.57	**27**	**84**
G3	DG-G3S-3.5-4	8/21/18	2.5-4	**2.0**	**340**	**110**	**0.26 J**	**0.13 J**	**45**	**7.9**	**11**	**14**	**0.036**	<0.23	**37**	<0.54	<0.18	<0.52	**32**	**43**
G3	DG-G3S-9.5-10	8/21/18	9.5-10	**1.5**	**67**	**52**	**0.73**	<0.035	**39**	**16**	**51**	**10**	**0.053**	**0.36 J**	**42**	<0.42	**0.14 J**	<0.41	**46**	**96**
G4	DG-G4S-0.5-1	8/21/18	0.5-1	**22 B**	**20**	**460**	**0.20 J**	**16**	**160**	**21**	**1,200**	**1,500**	**10**	**22**	**170**	**2.6 J**	**1.0**	**2.3**	**34**	**3,800**
G4	DG-G4S-3.5-4	8/21/18	1-2.5	**4.4 B**	**18**	**300**	**0.18 J**	**6.0**	**50**	**6.2**	**300**	**590**	**0.71**	**2.3**	**37**	**0.48 J**	**0.31 J**	<0.33	**25**	**630**
G5	DG-G5S-0.5-1	8/22/18	0.5-1	<0.27	**17 B**	**50**	<0.11	**0.13 J**	**25**	**14**	**110**	**48**	**0.095**	**2.3**	**12**	<0.49	<0.16	**1.3 J**	**110**	**100**
G5	DG-G5S-3.5-4	8/22/18	1-2.5	**2.2**	**5.3 B**	**110**	**0.24**	**0.76**	**72**	**9.7**	**74**	**200**	**0.33**	<0.13	**51**	<0.31	<0.10	**0.61 J**	**55**	**260**
G6	DG-G6S-0.5-1	8/22/18	0.5-1	**0.58 J**	**2.2 J**	**38**	<0.11	**0.15 J**	**17**	**15**	**130**	**55**	**0.063**	**1.1 J**	**13**	<0.53	<0.18	**1.5 J**	**99**	**84**

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
G6	DG-G6S-0.5-1 (D)	8/22/18	0.5-1	**0.68 J**	**1.8 J**	**33**	<0.095	**0.12 J**	**20**	**15**	**130**	**37**	**0.067**	**0.93 J**	**12**	<0.44	<0.15	**1.0 J**	**97**	**82**
G6	DG-G6S-1-2	8/22/18	1-2	<0.30 R	**1.2 J**	**42 F1**	<0.12	<0.045	**11**	**8.2**	**120 F1**	**6.9**	**0.029**	<0.23	**5.0**	<0.54	<0.18	**0.83 J**	**81 F1**	**32**
G6	DG-G6S-3.5-4	8/22/18	2.5-4	**3.0**	**64**	**71**	<0.12	**0.079 J**	**190**	**22**	**32**	**83**	**0.20**	**0.26 J**	**320**	<0.53	<0.18	**0.57 J**	**40**	**83**
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.26	**2.8 J**	**85**	<0.10	**0.11 J**	**26**	**11**	**110**	**510**	**0.078**	**0.24 J**	**18**	<0.47	**0.20 J**	**0.88 J**	**85**	**110**
G7	DG-G7S-3.5-4	8/24/18	2.5-4	**3.0**	**5.8**	**200**	<0.098	<0.037	**390**	**28**	**81**	**61**	**0.89**	<0.19	**400**	<0.45	**0.41 J**	**1.4 J**	**86**	**170**
G8	DG-G8S-0.5-1	8/23/18	0.5-1	**0.39 J**	**6.3**	**51**	<0.10	**0.14 J**	**12**	**12**	**110**	**95**	**0.090**	**0.81 J**	**6.6**	<0.47	**0.47 J**	**1.3 J**	**100**	**80**
G8	DG-G8S-0.5-1 (D)	8/23/18	0.5-1	**1.2 J**	**2.9 J**	**50**	<0.12	**0.25 J**	**16**	**13**	**120**	**120**	**0.090**	**0.56 J**	**7.6**	<0.55	**0.23 J**	**0.81 J**	**98**	**99**
G8	DG-G8S-3.5-4	8/23/18	2.5-4	**1.8**	**11**	**130**	<0.097	**0.28 J**	**28**	**9.1**	**66**	**150**	**0.062**	**0.35 J**	**82**	<0.45	**0.62 J**	**0.78 J**	**41**	**190**
G9	DG-G9S-0.5-1	8/27/18	0.5-1	**1.0 J**	**2.2 J**	**49**	**0.21 J**	<0.041	**15**	**14**	**150**	**91**	**0.078**	**0.75 J**	**8.2**	<0.50	<0.17	<0.48	**110**	**130**
G9	DG-G9S-3.5-4	8/27/18	2.5-4	**4.6**	**0.97 J**	**45**	**0.14 J**	**0.22 J**	**30**	**4.7**	**14**	**22**	**0.024**	<0.20	**23**	<0.46	<0.16	<0.45	**23**	**97**
G10	DG-G10S-0.5-1	9/26/18	0.5-1	**2.0 F1**	**6.2**	**72 F1**	**0.34 F1**	**0.60**	**51 F1**	**13 F1**	**86 F1**	**260 F2**	**0.84**	**0.92 J**	**47 F1**	**0.79 J**	**0.33 J F1**	**0.81 J**	**67 F1**	**190 F2**
G10	DG-G10S-3.5-4	9/26/18	3.5-4	**1.7 J**	**8.1**	**96**	**0.54**	**0.22 J**	**87**	**18**	**85**	**110**	**0.73**	**1.6 J**	**99**	**1.3 J**	**0.27 J**	**1.2 J**	**69**	**130**
G11	DG-G11S-0.5-1	8/27/18	0.5-1	**0.91 J**	**2.9 J**	**49**	<0.098	**0.16 J**	**31**	**14**	**130**	**83**	**0.057**	<0.19	**15**	<0.45	**0.30 J**	**0.94 J**	**110**	**130**
G11	DG-G11S-3.5-4	8/27/18	2.5-4	**0.39 J**	**2.6 J**	**51**	**0.17 J**	<0.042	**52**	**6.5**	**9.4**	**5.7**	**0.015**	<0.22	**27**	<0.51	**0.19 J**	<0.49	**44**	**25**
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.28	**2.4 J**	**75**	<0.11	**0.047 J**	**43**	**7.9**	**12**	**7.5**	**0.044**	<0.21	**33**	**0.50 J**	**0.23 J**	<0.48	**33**	**32**
H1	DG-H1S-0.5-1	8/20/18	0.5-1	**1.5 J**	**81**	**73 B**	<0.12	**0.17 J**	**54 B**	**12**	**67**	**47**	**1.6**	<0.23	**64**	<0.53	**0.23 J**	**1.2 J**	**59**	**73**
H1	DG-H1S-3.5-4	8/20/18	2.5-4	**3.3**	**96**	**130 B**	**0.14 J**	<0.044	**150 B**	**23**	**38**	**14**	**5.6**	**0.25 J**	**230**	**0.56 J**	**0.23 J**	**1.2 J**	**77**	**65**
H2	DG-H2S-0.5-1	8/20/18	0.5-1	**1.3 J B**	**180**	**140**	**0.39**	**0.11 J**	**41**	**9.5**	**120**	**140**	**0.10**	**0.51 J**	**33**	**0.66 J**	<0.16	<0.47	**37**	**110**
H2	DG-H2S-3.5-4	8/20/18	2.5-4	**9.4**	**49**	**590**	**0.24 J**	**1.8**	**170**	**17**	**270**	**1,300**	**2.9**	**1.5 J**	**110**	<0.51	**4.6**	<0.50	**59**	**1,100**
H3	DG-H3S-0.5-1	8/21/18	0.5-1	**0.99 J**	**200**	**66**	<0.11	**0.15 J**	**31**	**5.0**	**24**	**69**	**0.066**	<0.22	**23**	<0.50	<0.17	<0.49	**24**	**78**
H3	DG-H3S-3.5-4	8/21/18	2.5-4	**1.3 J**	**220**	**110**	<0.11	**0.18 J**	**33**	**5.2**	**36**	**130**	**0.039**	**0.25 J**	**26**	<0.51	<0.17	<0.50	**24**	**150**
H3	DG-H3S-9.5-10	8/21/18	9.5-10	**0.44 J**	**8.2**	**24**	**0.24 J**	**0.23 J**	**51**	**10**	**21**	**4.1**	**0.058**	**1.1 J**	**49**	**0.60 J**	<0.15	<0.42	**40**	**50**
H4	DG-H4S-0.5-1	8/21/18	0.5-1	**9.7**	**11**	**120**	<0.12	**4.2**	**49**	**11**	**1,000**	**700**	**1.3**	**5.6**	**43**	<0.57	**0.97**	<0.55	**48**	**870**
H4	DG-H4S-3.5-4	8/21/18	2.5-4	**20**	**86**	**1,100**	**0.22 J**	**3.5**	**46**	**11**	**490**	**1,600**	**1.6**	**1.1 J**	**59**	<0.51	**2.1**	**1.3 J**	**46**	**1,300**
H5	DG-H5S-0.5-1	8/22/18	0.5-1	**8.6**	**67 B**	**300**	**0.26 J**	**2.9**	**40**	**15**	**310**	**990**	**0.27**	**1.8 J**	**31**	<0.58	**0.44 J**	**1.4 J**	**110**	**850**
H5	DG-H5S-3.5-4	8/22/18	2.5-4	**4.4**	**160 B**	**200**	**0.47**	**0.097 J**	**74**	**15**	**100**	**400**	**0.27**	**0.41 J**	**50**	<0.37	**0.42 J**	**1.0 J**	**61**	**310**
H6	DG-H6S-0.5-1	8/23/18	0.5-1	**1.6**	**8.5**	**100**	**0.15 J**	**0.16 J**	**88**	**13**	**48**	**110**	**0.34**	**0.22 J**	**51**	**0.66 J**	**0.39 J**	**0.89 J**	**64**	**120**
H6	DG-H6S-3.5-4	8/23/18	1-2.5	**1.1 J**	**4.5**	**87**	**0.11 J**	**0.17 J**	**74**	**8.7**	**43**	**820**	**0.15**	<0.19	**44**	<0.45	**0.37 J**	**0.95 J**	**62**	**130**
H7	DG-H7S-0.5-1	8/27/18	0.5-1	**2.8**	**12**	**210**	**0.35**	<0.044	**140**	**22**	**230**	**720**	**0.56**	**2.0**	**87**	**1.1 J**	<0.18	<0.51	**100**	**450**
H7	DG-H7S-3.5-4	8/27/18	1-2.5	**2.0**	**27**	**130**	**0.55**	<0.043	**130**	**27**	**310**	**120**	**0.39**	**2.1**	**200**	**1.8 J**	<0.17	<0.50	**67**	**220**
H8	DG-H8S-0.5-1	8/23/18	0.5-1	**0.48 J**	**7.8**	**56**	<0.12	<0.044	**17 B**	**11**	**140**	**180**	**0.15**	**1.1 J**	**11**	**1.4 J**	<0.18	<0.52	**83**	**140**
H8	DG-H8S-3.5-4	8/23/18	1-2.5	**0.69 J**	**2.2**	**29**	<0.067	**0.027 J**	**19**	**5.7**	**29**	**29**	**0.024**	<0.13	**12**	<0.31	<0.10	**0.34 J**	**37**	**31**
H9	DG-H9S-0.5-1	8/27/18	0.5-1	**0.83 J**	**4.2**	**58**	<0.11	**0.24 J**	**11**	**8.5**	**100**	**110**	**0.18**	**0.33 J**	**7.6**	<0.53	**0.38 J**	<0.51	**63**	**120**
H9	DG-H9S-3.5-4	8/27/18	2.5-4	**1.7 J**	**3.6 J**	**61**	<0.12	**0.12 J**	**30**	**5.8**	**24**	**120**	**0.036**	**0.36 J**	**25**	**0.63 J**	**0.44 J**	<0.55	**29**	**49**
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	**0.34 J**	**1.3 J**	**42**	**0.19 J**	<0.048	**23**	**4.1**	**4.6 J**	**4.4**	**0.037**	<0.25	**18**	<0.58	<0.19	<0.56	**17**	**17**
H9	DG-H9S-9.5-10	8/27/18	9.5-10	**1.7**	**1.5 J**	**95**	<0.075	<0.029	**120**	**24**	**43**	**5.4**	**0.14**	**0.42 J**	**69**	<0.35	**0.50 J**	**1.8**	**120**	**51**
H10	DG-H10S-0.5-1	8/23/18	0.5-1	<0.19	**0.50 J**	**40**	<0.073	<0.028	**12**	**9.2**	**120**	**23**	**0.056**	**0.16 J**	**4.3**	**0.67 J**	**0.12 J**	**0.73 J**	**100**	**40**
H10	DG-H10S-0.5-1 (D)	8/23/18	0.5-1	<0.28	**0.34 J**	**36**	<0.11	<0.042	**11**	**8.3**	**110**	**23**	**0.068**	<0.22	**3.7**	<0.51	<0.17	**0.79 J**	**88**	**38**
H10	DG-H10S-3.5-4	8/23/18	1-2.5	**0.51 J**	**1.8 J**	**33**	<0.087	<0.033	**8.2**	**11**	**68**	**45**	**0.030**	**0.32 J**	**3.9**	**0.80 J**	**0.26 J**	**0.69 J**	**82**	**62**
H11	DG-H11S-0.5-1	8/24/18	0.5-1	**1.2 J F1**	**1.6 J**	**27 F1**	<0.13	**0.19 J**	**9.9**	**17**	**120 F1**	**120 F1**	**0.15 B**	<0.25	**5.8**	<0.59	**0.24 J F1**	**1.1 J**	**120 F1**	**100 F1**
H11	DG-H11S-3.5-4	8/24/18	2.5-4	**0.46 J**	**2.4 J**	**40**	<0.13	<0.048	**53**	**6.0**	**6.8**	**5.9**	**0.023 B**	<0.25	**22**	<0.58	<0.20	<0.56	**44**	**22**
H12	DG-H12S-0.5-1	8/24/18	0.5-1	**2.3**	**340**	**27**	**0.17 J**	**5.5**	**15 B**	**12**	**84**	**190**	**0.42**	**0.96 J**	**14**	**1.5 J**	<0.18	<0.50	**92**	**100**
H12	DG-H12S-3.5-4	8/24/18	2.5-4	**2.1**	**72**	**30**	**0.26 J**	<0.041	**500 B**	**32**	**44**	**6.5**	**0.087**	**0.79 J**	**360**	**1.4 J**	<0.17	<0.48	**79**	**65**

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
I1	DG-I1S-0.5-1	8/20/18	0.5-1	**5.1**	**130**	**79**	**0.12 J**	**0.34 J**	**34**	**11**	**78**	**140**	**0.092**	**0.44 J**	**34**	<0.49	<0.16	<0.47	**53**	**110**
I1	DG-I1S-3.5-4	8/20/18	1-2.5	**2.5**	**43**	**130**	**0.38**	<0.036	**140**	**23**	**39**	**10**	**2.9**	**1.2 J**	**170**	<0.43	<0.15	<0.42	**86**	**66**
I2	DG-I2S-0.5-1	8/21/18	0.5-1	**2.6 F1**	**230**	**210**	<0.13	**0.79**	**20**	**9.5**	**120 F1**	**2,300**	**0.19**	**0.35 J**	**19**	<0.59	**0.95 J**	<0.57	**46 F1**	**490 F2**
I2	DG-I2S-3.5-4	8/21/18	2.5-4	**1.4 J**	**3.7**	**82**	<0.12	**0.053 J**	**120**	**19**	**24**	**3.3**	**1.7**	<0.23	**160**	<0.55	<0.19	<0.53	**66**	**48**
I3	DG-I3S-0.5-1	8/22/18	0.5-1	**1.3 J**	**55**	**68**	**0.14 J**	**0.40**	**22**	**13**	**98**	**170**	**0.088**	**0.85 J**	**18**	**0.99 J**	**0.18 J B**	<0.44	**73**	**150**
I3	DG-I3S-3.5-4	8/22/18	1-2.5	**2.9**	**180**	**140**	**0.18 J**	**0.39**	**27**	**7.1**	**64**	**290**	**0.077**	**1.2 J**	**24**	**0.59 J**	<0.13	<0.37	**30**	**280**
I4	DG-I4S-0.5-1	8/21/18	0.5-1	**3.7**	**15**	**130**	<0.099	**2.8**	**37**	**11**	**170**	**250**	**0.23**	**3.3**	**33**	**0.64 J**	<0.15	<0.44	**55**	**420**
I4	DG-I4S-3.5-4	8/21/18	2.5-4	**1.1 J**	**110**	**100**	**0.15 J**	**0.24 J**	**22**	**3.6**	**33**	**140**	**0.15**	**0.26 J**	**20**	<0.37	**0.25 J B**	<0.36	**14**	**140**
I5	DG-I5S-0.5-1	8/22/18	0.5-1	**3.3**	**14 B**	**170**	**0.097 J**	**2.5**	**42**	**17**	**240**	**380**	**0.57**	**3.6**	**25**	<0.43	**0.55 J**	**1.3 J**	**110**	**580**
I5	DG-I5S-3.5-4	8/22/18	2.5-4	**35**	**740 B**	**1,200**	**0.82**	**2.3**	**35**	**5.6**	**380**	**2,600**	**0.31**	**0.74 J**	**30**	<0.34	**6.7**	**0.79 J**	**36**	**1,400**
I5	DG-I5S-3.5-4 (D)	8/22/18	2.5-4	**2.6**	**120**	**88 B**	**0.22 J**	**0.13 J**	**41**	**5.2**	**25**	**79**	**0.085**	<0.17	**29**	<0.39	<0.13	**0.39 J**	**28**	**160**
I6	DG-I6S-0.5-1	8/22/18	0.5-1	**1.2 J**	**3.1 J**	**61**	<0.13	<0.049	**68**	**9.6**	**22**	**37**	**0.099**	<0.25	**48**	<0.59	<0.20	<0.57	**57**	**56**
I6	DG-I6S-0.5-1 (D)	8/22/18	0.5-1	**0.60 J**	**3.5**	**70 B**	**0.25 J**	<0.039	**72**	**9.5**	**13**	**15**	**0.13**	<0.20	**52**	<0.48	<0.16	**0.52 J**	**53**	**46**
I6	DG-I6S-3.5-4	8/22/18	1-2.5	**1.3**	**4.3**	**100**	**0.26**	**0.039 J**	**80**	**11**	**24**	**28**	**0.23**	**0.22 J**	**48**	<0.34	<0.11	**0.61 J**	**63**	**79**
I7	DG-I7S-0.5-1	8/24/18	0.5-1	**0.44 J B**	**2.5**	**35 B**	**0.10 J**	**0.15 J**	**11**	**8.0**	**130**	**49**	**0.14**	**0.30 J**	**4.8**	<0.35	**0.19 J**	**0.48 J**	**69**	**65**
I7	DG-I7S-3.5-4	8/24/18	2.5-4	**1.3 B**	**21**	**30 B**	<0.078	**0.20 J**	**11**	**11**	**140**	**170**	**0.050**	<0.15	**8.8**	<0.36	**0.35 J**	**0.95 J**	**86**	**120**
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	**1.6**	**71**	**33**	<0.084	**0.34**	**10**	**11**	**210**	**230**	**0.21**	**0.27 J**	**7.6**	<0.39	**0.23 J**	**0.58 J**	**79**	**140**
I8	DG-I8S-0.5-1	8/23/18	0.5-1	**0.55 J**	**3.4**	**39**	<0.096	**0.047 J**	**13**	**14**	**99**	**96**	**0.068**	**0.27 J**	**6.6**	**0.88 J**	**0.40 J**	**1.6**	**120**	**88**
I8	DG-I8S-3.5-4	8/23/18	2.5-4	**0.36 J**	**1.6 J**	**49**	<0.11	<0.041	**14**	**8.3**	**67**	**18**	**0.049**	<0.21	**8.2**	<0.50	**0.27 J**	**0.85 J**	**71**	**51**
I8	DG-I8S-3.5-4 (D)	8/23/18	2.5-4	**0.71 J**	**1.5 J**	**25**	<0.084	**0.12 J**	**10**	**15**	**120**	**49**	**0.042**	<0.17	**5.5**	**0.69 J**	**0.45 J**	**1.4**	**120**	**72**
I9	DG-I9S-0.5-1	8/24/18	0.5-1	**0.90 J**	**5.4**	**130**	<0.10	**0.48**	**24**	**9.5**	**51**	**190**	**0.057**	**0.70 J**	**36**	<0.47	<0.16	<0.46	**32**	**120**
I9	DG-I9S-3.5-4	8/24/18	1-2.5	<0.30	**0.44 J**	**21**	<0.12	**0.081 J**	**13**	**16**	**120**	**22**	**0.056**	**0.24 J**	**6.0**	<0.55	**0.68 J**	**0.98 J**	**120**	**55**
I10	DG-I10S-0.5-1	8/23/18	0.5-1	<0.28	**3.7**	**500 F2**	<0.11	**2.2**	**22 F1**	**3.9**	**43 F1**	**500 F2**	**0.092**	**0.40 J**	**19 F1**	<0.51	**0.18 J**	**0.58 J**	**20 F1**	**520 F2**
I10	DG-I10S-3.5-4	8/23/18	1-2.5	**2.9**	**5.1**	**82**	**0.23 J**	<0.037	**350**	**36**	**34**	**8.1**	**0.087**	**0.20 J**	**500**	**0.49 J**	**0.24 J**	**0.82 J**	**61**	**67**
I11	DG-I11S-0.5-1	8/27/18	0.5-1	**4.5**	**4.2**	**71**	<0.10	**0.45**	**35**	**13**	**120**	**160**	**0.094**	**0.34 J**	**18**	<0.46	**0.29 J**	**0.61 J**	**90**	**140**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	**0.76 J**	**2.9 J**	**48**	<0.11	<0.043	**51**	**8.2**	**8.6**	**6.1**	**0.010 J**	**1.8**	**38**	<0.52	<0.17	<0.50	**45**	**23**
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	**0.48 J**	**2.1 J**	**50**	<0.11	<0.043	**56**	**6.8**	**8.6**	**5.4**	**0.016**	<0.22	**32**	<0.52	<0.17	**0.55 J**	**44**	**23**
I11	DG-I11S-9.5-10	8/27/18	9.5-10	**1.1 J**	**3.9**	**95**	**0.24 J**	<0.039	**130**	**12**	**18**	**6.7**	**0.025**	**1.3 J**	**160**	<0.48	**0.18 J**	<0.46	**40**	**38**
I12	DG-I12S-0.5-1	8/24/18	0.5-1	**0.58 J**	**33**	**32**	<0.093	**0.41**	**29 B**	**15**	**260**	**160**	**0.099**	**1.6**	**25**	**1.4 J**	<0.14	<0.41	**100**	**230**
I12	DG-I12S-3.5-4	8/24/18	2.5-4	<0.20	**44**	**63**	**0.18 J**	<0.030	**50 B**	**6.8**	**14**	**19**	**0.072**	**0.56 J**	**34**	**0.38 J**	<0.12	<0.35	**46**	**35**
I12	DG-I12S-3.5-4 (D)	8/24/18	2.5-4	**1.4**	**230**	**120**	<0.085	**0.096 J**	**110**	**15**	**24**	**43**	**0.12**	**0.18 J**	**120**	<0.39	**0.23 J**	**0.88 J**	**79**	**49**
J1	DG-J1S-0.5-1	8/20/18	0.5-1	**1.0 J**	**150**	**110**	**0.12 J**	**0.17 J**	**30**	**13**	**110**	**120**	**0.17**	**0.61 J**	**27**	<0.47	**0.26 J**	<0.46	**92**	**110**
J1	DG-J1S-3.5-4	8/20/18	2.5-4	**1.8**	**20**	**120**	**0.51**	<0.045	**110**	**22**	**57**	**51**	**3.8**	**0.37 J**	**140**	<0.55	<0.18	<0.53	**76**	**80**
J2	DG-J2S-0.5-1	8/21/18	0.5-1	**0.80 J**	**57**	**820**	**0.087 J**	**0.17 J**	**14**	**20**	**95**	**49**	**0.14**	**1.7**	**64**	<1.6	**0.33 J**	<1.6	**52**	**63**
J2	DG-J2S-3.5-4	8/21/18	2.5-4	**1.5 J**	**65**	**99**	**0.13 J**	**0.060 J**	**90**	**16**	**28**	**12**	**1.9**	**0.34 J**	**110**	<0.54	<0.18	<0.52	**59**	**52**
J3	DG-J3S-0.5-1	8/22/18	0.5-1	**1.7**	**58**	**150**	**0.26**	**0.68**	**16**	**10**	**110**	**380**	**0.10**	**0.91 J**	**15**	**0.48 J**	**0.21 J B**	<0.36	**67**	**200**
J3	DG-J3S-3.5-4	8/22/18	2.5-4	**2.6**	**46**	**61**	**0.17 J**	**0.27 J**	**27**	**4.8**	**49**	**790**	**0.031**	**0.21 J**	**24**	<0.48	**0.23 J B**	<0.46	**19**	**84**
J4	DG-J4S-0.5-1	8/21/18	0.5-1	**2.7**	**19**	**110**	<0.13	**1.0**	**46**	**9.3**	**120**	**170**	**0.14**	**3.6**	**50**	<0.58	<0.19	<0.56	**39**	**180**
J4	DG-J4S-3.5-4	8/21/18	2.5-4	**0.68 J**	**83**	**26**	<0.11	**0.061 J**	**20**	**3.5**	**3.6 J**	**8.4**	**0.015 J**	<0.21	**16**	<0.49	<0.16	<0.47	**15**	**14**
J5	DG-J5S-0.5-1	8/22/18	0.5-1	**8.1**	**7.4 B**	**640**	<0.090	**4.8**	**45**	**15**	**470**	**2,000**	**0.23**	**13**	**33**	<0.41	**0.67 J**	**1.5**	**97**	**1,500**
J5	DG-J5S-3.5-4	8/22/18	2.5-4	**15**	**65 B**	**390**	**0.24 J**	**2.3**	**57**	**12**	**360**	**1,100**	**0.36**	**1.4 J**	**54**	<0.46	**1.1**	**1.0 J**	**48**	**770**
J5	DG-J5S-7-7.5	8/22/18	7-7.5	**1.9**	**12 B**	**150**	**0.89**	**0.12 J**	**32**	**13**	**65**	**210**	**0.081**	**0.30 J**	**34**	<0.38	**0.60 J**	**0.82 J**	**40**	**240**
J6	DG-J6S-0.5-1	8/22/18	0.5-1	**1.9**	**8.2**	**180 B**	**0.17 J**	**1.6**	**52**	**10**	**160**	**270**	**0.24**	**12**	**88**	<0.39	<0.13	**1.1 J**	**58**	**350**

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
J6	DG-J6S-3.5-4	8/22/18	2.5-4	<0.29	**3.0 J**	**53 B**	**0.13 J**	<0.044	**7.0**	**2.3**	**7.6**	**22**	**0.052**	<0.22	**4.1**	<0.53	<0.18	<0.51	**14**	**39**
J7	DG-J7S-0.5-1	8/27/18	0.5-1	<0.31	**1.2 J**	**45**	**0.12 J**	<0.047	**7.9**	**8.7**	**110**	**66**	**0.077**	**0.37 J**	**6.7**	**0.88 J**	<0.19	<0.55	**87**	**44**
J7	DG-J7S-3.5-4	8/27/18	1-2.5	**340**	**81**	**67**	**0.16 J**	<0.038	**36**	**17**	**110**	**7,900**	**0.13**	**1.0 J**	**20**	**0.78 J**	**0.61 J**	<0.45	**110**	**83**
J8	DG-J8S-0.5-1	8/22/18	0.5-1	<0.23	**4.4**	**110 B**	**0.43**	**1.3**	**24**	**12**	**51**	**27**	**0.033**	**0.54 J**	**35**	<0.41	<0.14	**0.62 J**	**50**	**81**
J8	DG-J8S-3.5-4	8/22/18	2.5-4	**0.37 J**	**0.50 J**	**17 B**	<0.093	<0.035	**25**	**17**	**100**	**2.8**	**0.040**	<0.18	**14**	<0.43	<0.14	**0.50 J**	**110**	**53**
J9	DG-J9S-0.5-1	9/26/18	0.5-1	**0.89 J**	**3.7 J**	**97**	**0.21 J**	**0.12 J**	**41**	**8.3**	**38**	**150**	**0.034**	**0.67 J**	**34**	**0.63 J**	<0.20	<0.57	**51**	**55**
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	**1.1 J**	**3.2 J**	**72**	**0.14 J**	**0.068 J**	**29**	**8.6**	**49**	**220**	**0.043**	**0.51 J**	**29**	**0.97 J**	<0.19	<0.54	**60**	**58**
J9	DG-J9S-3.5-4	9/26/18	3.5-4	**1.7**	**5.7**	**87**	**0.37**	<0.041	**110**	**14**	**26**	**30**	**0.037**	**0.54 J**	**120**	**0.99 J**	<0.17	<0.48	**45**	**52**
J10	DG-J10S-0.5-1	8/23/18	0.5-1	**1.0 J B**	**3.1**	**78 B**	<0.081	**0.23 J**	**110**	**10**	**100**	**130**	**0.042**	**15**	**30**	<0.37	<0.13	**0.65 J**	**81**	**65**
J10	DG-J10S-0.5-1 (D)	8/23/18	0.5-1	<0.26	**3.5**	**190**	<0.10	**0.44**	**40**	**9.2**	**69**	**250**	**0.037**	**0.70 J**	**35**	<0.46	**0.25 J**	**1.6**	**93**	**130**
J10	DG-J10S-3.5-4	8/23/18	1-2.5	**0.98 J B**	**5.0**	**120 B**	**0.41**	**0.042 J**	**95**	**21**	**32**	**7.2**	**0.088**	**0.31 J**	**110**	<0.44	**0.22 J**	**0.70 J**	**63**	**54**
J11	DG-J11S-0.5-1	8/24/18	0.5-1	**2.1**	**2.7 J**	**53**	<0.10	<0.039	**33**	**11**	**63**	**52**	**0.055**	<0.20	**26**	<0.47	**0.42 J**	**0.46 J**	**70**	**45**
J11	DG-J11S-3.5-4	8/24/18	2.5-4	**1.4 J**	**4.6**	**60**	<0.12	**0.045 J**	**65**	**9.8**	**26**	**49**	**0.023**	<0.23	**41**	<0.55	**0.42 J**	**0.67 J**	**70**	**39**
J12	DG-J12S-0.5-1	8/24/18	0.5-1	**21**	**11**	**140**	**0.20 J**	**0.36 J**	**39 B**	**16**	**270**	**1,500**	**0.16**	**1.6**	**33**	**2.3 J**	<0.17	<0.48	**90**	**330**
J12	DG-J12S-3.5-4	8/24/18	1-2.5	**1.5**	**2.3 J**	**52**	**0.15 J**	<0.032	**57 B**	**6.9**	**24**	**52**	**0.053**	**0.58 J**	**33**	**0.74 J**	<0.13	<0.37	**50**	**36**
K1	DG-K1S-0.5-1	8/20/18	0.5-1	**1.6 F1**	**380**	**130 F1 F2**	**0.15 J F1**	**0.35 J**	**25 F1**	**9.3 F1**	**71 F1**	**310**	**3.6**	<0.20	**26 F1**	<0.47	<0.16	<0.45	**40 F1**	**220**
K1	DG-K1S-3.5-4	8/20/18	3.5-4	**1.1 J**	**29**	**65**	**0.20 J**	**0.061 J**	**66**	**7.3**	**12**	**8.0**	**0.055**	<0.22	**47**	<0.50	<0.17	<0.49	**49**	**33**
K2	DG-K2S-0.5-1	8/21/18	0.5-1	**2.5**	**150**	**72**	<0.12	**1.3**	**25**	**14**	**140**	**200**	**0.18**	**1.1 J**	**22**	<0.55	**0.26 J**	<0.53	**77**	**230**
K2	DG-K2S-3.5-4	8/21/18	2.5-4	**0.73 J**	**37**	**73**	<0.097	<0.037	**26**	**7.9**	**17**	**5.2**	**0.14**	<0.19	**42**	<0.45	<0.15	<0.43	**19**	**35**
K3	DG-K3S-0.5-1	8/22/18	0.5-1	**3.5**	**28**	**46**	**0.11 J**	**0.40 J**	**13**	**13**	**88**	**110**	**0.059**	**0.59 J**	**12**	<0.50	<0.17	<0.49	**74**	**130**
K3	DG-K3S-3.5-4	8/22/18	2.5-4	**54**	**90**	**140**	**0.20 J**	**0.43**	**33**	**4.9**	**64**	**12,000**	**0.030**	**0.24 J**	**26**	<0.49	**0.72 J**	**0.61 J**	**25**	**140**
K4	DG-K4S-0.5-1	8/21/18	0.5-1	**1.4 J B F1**	**120 F1**	**140 F1 F2**	**0.21 J**	**0.50**	**15**	**8.5**	**92 F1**	**160 F1 F2**	**0.32**	**0.78 J**	**13**	**0.87 J**	<0.18	<0.50	**59**	**170 F1 F2**
K4	DG-K4S-3.5-4	8/21/18	1.0-2.5	<0.29	**95**	**22**	**0.18 J**	**0.091 J**	**18**	**3.1**	**15**	**6.8**	**0.023**	**0.22 J**	**14**	**0.64 J**	<0.17	<0.50	**14**	**76**
K5	DG-K5S-0.5-1	8/22/18	0.5-1	<0.32	**2.7 J**	**63**	<0.12	**0.43 J**	**14**	**12**	**180**	**90**	**0.099**	**1.1 J**	**11**	<0.57	<0.19	**1.0 J**	**99**	**120**
K5	DG-K5S-3.5-4	8/22/18	2.5-4	<0.29	**0.49 J**	**33**	<0.11	<0.044	**21**	**12**	**130**	**5.8**	**0.057**	<0.22	**5.4**	<0.53	<0.18	**1.4 J**	**110**	**36**
K6	DG-K6S-0.5-1	8/23/18	0.5-1	**3.2**	**19**	**51**	<0.12	**0.38 J**	**23**	**15**	**160**	**170**	**0.21**	**0.79 J**	**35**	**0.74 J**	**0.49 J**	**1.5 J**	**85**	**110**
K6	DG-K6S-3.5-4	8/23/18	1.0-2.5	**2.7**	**440**	**69**	<0.11	**0.37 J**	**41**	**11**	**84**	**130**	**0.38**	**0.95 J**	**38**	**0.73 J**	**0.35 J**	**1.6 J**	**54**	**92**
K7	DG-K7S-0.5-1	8/24/18	0.5-1	**12**	**6.0**	**630**	<0.13	**8.4**	**130 B**	**16**	**590**	**3,100**	**0.11**	**1.1 J**	**18**	**1.6 J**	<0.20	<0.57	**120**	**830**
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.21	<0.21	**130**	**0.26**	<0.031	**80 B**	**25**	**24**	**11**	**0.27**	**1.3**	**41**	**0.86 J**	<0.13	<0.36	**130**	**54**
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.21	**3.2**	**120**	<0.084	<0.032	**86**	**22**	**32**	**12**	**0.37**	<0.17	**38**	<0.39	**0.45 J**	**2.2**	**150**	**53**
K8	DG-K8S-0.5-1	8/22/18	0.5-1	**1.5 J**	**8.3**	**270 B**	**0.17 J**	**1.9**	**48**	**9.9**	**100**	**690**	**0.16**	**0.56 J**	**28**	<0.57	<0.19	**0.86 J**	**72**	**410**
K8	DG-K8S-1-2	8/22/18	1-2	**1.1 J**	**2.5 J**	**83 B**	<0.094	<0.036	**88**	**17**	**37**	**19**	**0.061**	<0.19	**42**	<0.43	<0.15	**1.7**	**100**	**48**
K8	DG-K8S-3.5-4	8/22/18	3.5-4	**1.2 J**	**6.9**	**70 B**	**0.72**	<0.043	**39**	**13**	**39**	**29**	**0.081**	**0.28 J**	**36**	<0.52	<0.18	**0.80 J**	**52**	**120**
K9	DG-K9S-0.5-1	8/24/18	0.5-1	<0.27	**0.31 J**	**43**	<0.11	<0.041	**12**	**12**	**130**	**35**	**0.084**	<0.21	**4.0**	<0.50	**0.48 J**	**0.54 J**	**110**	**56**
K9	DG-K9S-3.5-4	8/24/18	2.5-4	**0.69 J**	**4.3**	**97**	<0.12	**0.10 J**	**26**	**9.1**	**61**	**38**	**0.053**	**0.89 J**	**28**	<0.54	**0.48 J**	**0.67 J**	**58**	**75**
K10	DG-K10S-0.5-1	8/23/18	0.5-1	**5.5**	**12**	**490**	**0.098 J**	**2.0**	**62**	**11**	**240**	**440**	**1.0**	**4.7**	**41**	<0.38	**0.29 J**	**0.75 J**	**67**	**510**
K10	DG-K10S-3.5-4	8/23/18	1.0-2.5	**1.9**	**4.4**	**120**	<0.12	**0.29 J**	**88**	**17**	**98**	**330**	**0.28**	<0.23	**150**	**0.74 J**	**0.67 J**	**1.3 J**	**88**	**160**
K11	DG-K11S-0.5-1	8/27/18	0.5-1	**3.2**	**5.7**	**120**	<0.095	**0.32 J**	**25**	**16**	**150**	**420**	**0.073**	**0.56 J**	**15**	<0.44	**0.25 J**	**1.4 J**	**120**	**160**
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	**2.1**	**2.1 J**	**110**	<0.12	<0.047	**110**	**34**	**46**	**7.0**	**0.16**	<0.24	**52**	<0.57	**0.70 J**	**2.8**	**190**	**77**
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	**2.1**	**5.0**	**140**	**0.22 J**	<0.046	**150**	**24**	**42**	**45**	**0.16**	**0.28 J**	**160**	<0.55	**0.53 J**	**1.7 J**	**100**	**87**
K11	DG-K11S-9.5-10	8/27/18	9.5-10	**1.2 J**	**11**	**130**	**0.49**	**0.057 J**	**48**	**14**	**41**	**15**	**0.24**	**0.29 J**	**70**	<0.41	**0.27 J**	**0.92 J**	**52**	**78**
K12	DG-K12S-0.5-1	8/24/18	0.5-1	**0.36 J**	**170**	**170**	**0.34 J**	<0.046	**130 B**	**37**	**97**	**74**	**0.064**	**1.4 J**	**57**	**2.0 J**	<0.19	<0.54	**240**	**160**
K12	DG-K12S-0.5-1 (D)	8/24/18	0.5-1	**4.4**	**210**	**170**	<0.11	**0.54**	**130**	**38**	**120**	**86**	**0.042**	**0.31 J**	**58**	<0.50	**1.4**	**3.9**	**250**	**190**

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
K12	DG-K12S-3.5-4	8/24/18	1.0-2.5	<0.24	**40**	**430**	**0.51**	<0.035	**68 B**	**24**	**43**	**21**	**0.10**	**1.8**	**170**	**1.8 J**	<0.14	<0.41	**70**	**82**
K13	DG-K13S-0.5-1	8/24/18	0.5-1	<0.32	**6.4**	**140**	**0.31 J**	<0.048	**100 B**	**19**	**68**	**100**	**0.35**	**0.97 J**	**120**	**2.0 J**	<0.19	<0.56	**94**	**140**
K13	DG-K13S-3.5-4	8/24/18	2.5-4	**1.0 J**	**2.1 J**	**78**	**0.27**	**0.50**	**280 B**	**24**	**26**	**11**	**0.073**	**0.63 J**	**310**	**0.97 J**	<0.12	<0.36	**65**	**710**
L1	DG-L1S-0.5-1	8/20/18	0.5-1	**5.0**	**220**	**130**	**0.21 J**	**1.0**	**35**	**11**	**150**	**270**	**0.48**	**1.0 J**	**27**	<0.54	**0.47 J**	<0.52	**53**	**350**
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	**1.6 J**	**59**	**74**	**0.25 J**	**0.075 J**	**41**	**8.8**	**24**	**21**	**2.6**	**0.58 J**	**39**	<0.51	**0.18 J**	<0.50	**44**	**46**
L1	DG-L1S-10-10.5	8/20/18	10-10.5	**2.4**	**29**	**69**	**0.52**	<0.040	**35**	**11**	**51**	**29**	**0.040**	**0.69 J**	**31**	<0.49	**0.19 J**	<0.47	**50**	**65**
L2	DG-L2S-0.5-1	8/21/18	0.5-1	**2.0**	**190**	**71**	<0.12	**0.34 J**	**25**	**11**	**86**	**97**	**0.074**	**0.23 J**	**26**	<0.54	<0.18	<0.52	**61**	**95**
L2	DG-L2S-3.5-4	8/21/18	2.5-4	**1.3 J**	**37**	**97**	**0.22 J**	**0.047 J**	**89**	**18**	**27**	**3.3**	**17**	<0.22	**170**	<0.52	<0.17	<0.50	**62**	**52**
L3	DG-L3S-0.5-1	8/22/18	0.5-1	**2.3 F1**	**12**	**75 F1**	**0.14 J F1**	**1.0**	**26 F1**	**11**	**140 F1**	**170 F1**	**0.096**	**1.4 J**	**20 F1**	<0.49	<0.17	**0.95 J**	**76 F1**	**290**
L3	DG-L3S-3.5-4	8/22/18	2.5-4	**17**	**150**	**720**	**0.76**	**1.9**	**23**	**9.9**	**450**	**1,800**	**1.2**	**1.1 J**	**21**	<0.50	**3.1**	**1.2 J**	**68**	**1,300**
L3	DG-L3S-3.5-4 (D)	8/22/18	2.5-4	**0.91 J**	**39**	**100**	**0.11 J**	**0.39**	**13**	**9.0**	**97**	**130**	**0.10**	**0.23 J**	**11**	<0.34	**0.19 J**	**0.87 J**	**78**	**180**
L4	DG-L4S-0.5-1	8/21/18	0.5-1	**0.45 J**	**100**	**33**	<0.10	**0.32 J**	**18**	**7.7**	**73**	**30**	**0.062**	<0.20	**11**	**0.55 J**	<0.16	<0.45	**60**	**95**
L4	DG-L4S-3.5-4	8/21/18	2.5-4	**1.7**	**5.0**	**68**	**0.11 J**	**0.19 J**	**33**	**5.4**	**16**	**310**	**0.023**	**0.70 J**	**28**	<0.42	<0.14	<0.41	**23**	**94**
L5	DG-L5S-0.5-1	8/22/18	0.5-1	**4.7**	**14**	**150**	**0.19 J**	**1.6**	**49**	**9.4**	**170**	**250**	**0.19**	**3.5**	**51**	**0.64 J**	**0.50 J**	**0.99 J**	**37**	**350**
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	**4.1**	**9.5**	**140**	**0.12 J**	**1.7**	**37**	**12**	**190**	**260**	**0.37**	**3.5**	**39**	<0.46	**0.22 J**	**1.2 J**	**61**	**350**
L5	DG-L5S-3.5-4	8/22/18	2.5-4	**13**	**55**	**850**	**0.48**	**5.4**	**38**	**11**	**500**	**1,900**	**0.67**	**1.9**	**35**	**2.1 J**	**3.7**	**2.6 J**	**59**	**2,300**
L6	DG-L6S-0.5-1	8/22/18	0.5-1	**0.38 J**	**0.84 J**	**34 B**	<0.10	<0.038	**9.4**	**14**	**85**	**0.74 J**	**0.040**	**0.28 J**	**5.4**	<0.46	<0.16	**1.4 J**	**140**	**51**
L6	DG-L6S-0.5-1 (D)	8/22/18	0.5-1	<0.27	**0.97 J**	**33 B**	<0.10	<0.040	**9.9**	**13**	**86**	**2.2**	**0.044**	**0.31 J**	**5.8**	<0.48	<0.16	**1.1 J**	**110**	**53**
L6	DG-L6S-3.5-4	8/22/18	2.5-4	**2.2**	**61**	**72 B**	**0.16 J**	**0.17 J**	**24**	**7.6**	**120**	**300**	**0.14**	**0.36 J**	**15**	<0.44	<0.15	**0.62 J**	**61**	**170**
L7	DG-L7S-0.5-1	8/27/18	0.5-1	**1.0 J**	**2.0 J**	**39**	**0.16 J**	<0.047	**12**	**11**	**120**	**64**	**0.095**	**0.56 J**	**6.2**	**0.66 J**	<0.19	<0.55	**93**	**60**
L7	DG-L7S-3.5-4	8/27/18	1.0-2.5	**2.5**	**94**	**50**	<0.12	<0.045	**26**	**14**	**140**	**230**	**0.12**	**0.80 J**	**30**	**0.73 J**	**0.21 J**	<0.53	**85**	**170**
L8	DG-L8S-0.5-1	8/22/18	0.5-1	**1.7**	**97**	**150**	**0.26 J**	**0.090 J**	**97**	**21**	**130**	**680**	**1.2**	**0.99 J**	**110**	**0.96 J**	**0.74 J**	<0.47	**94**	**230**
L8	DG-L8S-3.5-4	8/22/18	2.5-4	**1.0 J**	**59**	**45**	<0.12	<0.046	**70**	**9.4**	**15**	**8.1**	**0.049**	<0.24	**33**	<0.56	<0.19	<0.54	**44**	**36**
L8	DG-L8S-3.5-4 (D)	8/22/18	2.5-4	**1.0 J**	**84**	**59 B**	**0.28 J**	<0.038	**86**	**8.5**	**12**	**24**	**0.036**	<0.20	**37**	<0.46	<0.15	**0.80 J**	**56**	**29**
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.31	**4.9**	**88**	<0.12	**0.064 J**	**19**	**10**	**67**	**170**	**0.11**	**0.25 J**	**12**	<0.56	**0.27 J**	<0.54	**65**	**81**
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	**2.2**	**7.0**	**100**	**0.30 J**	**0.15 J**	**21**	**8.7**	**41**	**640**	**0.099**	<0.24	**8.1**	<0.57	<0.19	**0.64 J**	**55**	**120**
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	**0.91 J**	**10**	**120**	**0.53**	**0.10 J**	**45**	**13**	**26**	**15**	**0.056**	**0.49 J**	**26**	<0.38	**0.45 J**	<0.37	**42**	**71**
L10	DG-L10S-0.5-1	8/23/18	0.5-1	**1.8 B**	**4.2**	**83 B**	<0.082	**0.47**	**27**	**8.7**	**95**	**400**	**1.1**	**0.20 J**	**5.9**	<0.38	**0.21 J**	**0.62 J**	**68**	**120**
L10	DG-L10S-3.5-4	8/23/18	2.5-4	**1.4 J B**	**11**	**97 B**	**0.61**	**0.050 J**	**31**	**17**	**62**	**14**	**0.065**	**0.47 J**	**45**	<0.47	**0.32 J**	<0.46	**35**	**95**
L11	DG-L11S-0.5-1	8/24/18	0.5-1	**0.63 J**	**2.5 J**	**42**	<0.12	**0.16 J**	**13**	**17**	**120**	**31**	**0.051**	<0.24	**9.8**	<0.56	**0.63 J**	**1.0 J**	**110**	**130**
L11	DG-L11S-3.5-4	8/24/18	2.5-4	**1.2 J**	**7.3**	**140**	**0.54**	**0.18 J**	**36**	**16**	**54**	**76**	**0.077**	**0.88 J**	**38**	<0.54	**0.55 J**	<0.52	**54**	**100**
L12	DG-L12S-0.5-1	8/27/18	0.5-1	<0.33	**1.6 J**	**130**	**0.39 J**	<0.049	**83**	**35**	**52**	**25**	**0.027**	**1.4 J**	**54**	**1.2 J**	<0.20	<0.57	**200**	**78**
L12	DG-L12S-3.5-4	8/27/18	1.0-2.5	<0.24	**6.8**	**110**	**0.49**	<0.035	**95**	**21**	**49**	**14**	**0.23**	**1.1 J**	**110**	**0.82 J**	<0.14	<0.41	**85**	**75**
L13	DG-L13S-0.5-1	8/24/18	0.5-1	**1.4 J F1**	**38 F2 F1**	**90 F2 F1**	<0.12	**0.12 J**	**51 F1 B**	**9.5**	**55 F1**	**120 F1**	**0.066**	**0.90 J**	**52 F1**	**1.6 J**	<0.19	<0.55	**43 F1**	**130 F2 F1**
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	**0.59 J**	**33**	**210**	**0.52**	<0.044	**180 B**	**23**	**37**	**11**	**0.085**	**1.1 J**	**140**	**1.5 J**	<0.18	<0.51	**99**	**71**
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	**5.2**	**61**	**110**	<0.090	**0.052 J**	**600**	**40**	**50**	**2.2**	**0.055**	**0.21 J**	**360**	<0.42	**0.59 J**	**1.8**	**130**	**92**
M1	DG-M1S-0.5-1	8/20/18	0.5-1	**2.2**	**350**	**110**	<0.12	**3.4**	**39**	**12**	**130**	**280**	**0.14**	**1.7 J**	**28**	<0.54	**0.40 J**	<0.52	**79**	**1,900**
M1	DG-M1S-3.5-4	8/20/18	2.5-4	**1.3 J**	**16**	**39**	**0.48**	**0.055 J**	**35**	**12**	**26**	**8.0**	**0.10**	**0.48 J**	**36**	<0.51	<0.17	<0.50	**48**	**80**
M2	DG-M2S-0.5-1	8/21/18	0.5-1	**0.94 J**	**120**	**61**	<0.098	**0.37 J**	**16**	**12**	**80**	**82**	**0.065**	<0.19	**18**	<0.45	**0.18 J**	<0.44	**82**	**140**
M2	DG-M2S-3.5-4	8/21/18	2.5-4	**0.78 J**	**50**	**78**	**0.23**	**0.11 J**	**71**	**15**	**27**	**3.9**	**0.53**	<0.14	**100**	<0.34	**0.17 J**	<0.33	**61**	**49**
M3	DG-M3S-0.5-1	8/22/18	0.5-1	**0.33 J**	**21**	**76**	**0.19 J**	<0.040	**15**	**12**	**110**	**33**	**0.035**	<0.20	**7.5**	<0.48	<0.16	**1.2 J**	**120**	**71**
M3	DG-M3S-3.5-4	8/22/18	2.5-4	**15**	**140**	**1,200**	**0.94**	**1.3**	**46**	**7.2**	**590**	**2,300**	**1.2**	**1.8**	**33**	**1.7 J**	**4.9**	**1.2 J**	**41**	**1,300**
M3	DG-M3S-7.5-8	8/22/18	7.5-8	**0.98 J**	**37**	**82**	**0.70**	**0.086 J**	**32**	**17**	**25**	**9.8**	**0.020**	**0.65 J**	**33**	<0.46	<0.15	<0.44	**48**	**68**

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
M4	DG-M4S-0.5-1	8/21/18	0.5-1	**4.3**	**310**	**170**	<0.088	**3.4**	**21**	**7.1**	**120**	**700**	**0.24**	<0.17	**25**	<0.41	**0.29 J**	<0.39	**42**	**2,800**
M4	DG-M4S-3.5-4	8/21/18	2.5-4	**1.1**	**58**	**190**	**0.092 J**	**0.34**	**40**	**5.5**	**310**	**340**	**0.043**	<0.14	**29**	<0.34	**1.9**	<0.33	**22**	**220**
M5	DG-M5S-0.5-1	8/22/18	0.5-1	**1.2 J**	**28**	**100**	**0.11 J**	**0.86**	**23**	**13**	**170**	**150**	**0.15**	**1.5 J**	**18**	<0.51	**0.27 J**	**1.3 J**	**100**	**230**
M5	DG-M5S-3.5-4	8/22/18	1-2.5	**16**	**330**	**1,700**	**0.70**	**10**	**57**	**7.8**	**1,100**	**8,300**	**0.69**	**0.49 J**	**38**	<0.37	**9.5**	**0.84 J**	**35**	**5,600**
M6	DG-M6S-0.5-1	8/22/18	0.5-1	**3.3**	**16**	**160 B**	**0.12 J**	**3.1**	**53**	**10**	**200**	**360**	**0.29**	**9.8**	**49**	<0.38	**0.19 J**	**0.98 J**	**53**	**400**
M6	DG-M6S-3.5-4	8/22/18	2.5-4	**4.7**	**83**	**100 B**	<0.096	**0.89**	**18**	**12**	**300**	**340**	**0.18**	**0.35 J**	**15**	<0.44	**3.3**	**1.5**	**90**	**460**
M7	DG-M7S-0.5-1	8/24/18	0.5-1	**0.82 J B**	**270**	**55 B**	<0.12	**0.18 J**	**66**	**4.8**	**8.2**	**7.4**	**0.020**	<0.23	**32**	<0.53	<0.18	<0.51	**55**	**650**
M7	DG-M7S-3.5-4	8/24/18	3.5-4	**1.0 J B**	**1.8 J**	**44 B**	<0.11	<0.041	**51**	**5.7**	**6.7**	**1.3 J**	**0.030**	<0.21	**30**	<0.50	<0.17	<0.48	**37**	**17**
M8	DG-M8S-0.5-1	8/22/18	0.5-1	**0.56 J**	**1.4 J**	**19 B**	<0.079	<0.030	**12**	**12**	**98**	**17**	**0.055**	**0.29 J**	**13**	<0.36	<0.12	**1.1 J**	**88**	**48**
M8	DG-M8S-3.5-4	8/22/18	1.0-2.5	**6.3**	**32**	**130 B**	**0.89**	<0.048	**67**	**19**	**42**	**100**	**0.023**	**0.58 J**	**36**	<0.58	<0.19	**0.93 J**	**77**	**53**
M9	DG-M9S-0.5-1	8/24/18	0.5-1	**4.8 F1**	**25**	**77 F1**	**0.24 J F1**	**0.28 J**	**34 F1**	**21**	**240**	**120 F1 F2**	**0.10**	**1.5 J**	**58**	**0.66 J**	**0.57 J F1**	**0.89 J**	**44 F1 F2**	**83 F1**
M9	DG-M9S-3.5-4	8/24/18	2.5-4	**2.2**	**16**	**67**	**0.55**	**0.16 J**	**36**	**18**	**52**	**26**	**0.042**	**0.48 J**	**44**	<0.58	**0.64 J**	<0.56	**46**	**120**
M9	DG-M9S-3.5-4 (D)	8/24/18	2.5-4	**1.9**	**9.8**	**56**	**0.51**	**0.084 J**	**35**	**16**	**48**	**19**	**0.044 B**	**0.26 J**	**37**	<0.52	**0.54 J**	<0.50	**43**	**100**
M10	DG-M10S-0.5-1	8/24/18	0.5-1	**1.8**	**39**	**110**	<0.11	**0.50**	**26**	**12**	**110**	**320**	**0.24**	**0.31 J**	**21**	<0.50	**0.51 J**	**0.86 J**	**72**	**150**
M10	DG-M10S-0.5-1 (D)	8/24/18	0.5-1	**4.5**	**44**	**120**	<0.12	**0.76**	**45**	**13**	**130**	**510**	**0.19 B**	**0.71 J**	**38**	<0.57	**0.79 J**	**0.62 J**	**67**	**200**
M10	DG-M10S-3.5-4	8/24/18	1.0-2.5	**0.81 J**	**16**	**46**	**0.56**	**0.13 J**	**33**	**17**	**47**	**20**	**0.063**	**0.26 J**	**35**	<0.56	<0.19	<0.54	**53**	**88**
M11	DG-M11S-0.5-1	8/27/18	0.5-1	**0.90 J**	**2.3 J**	**42**	<0.078	**0.077 J**	**13**	**15**	**110**	**85**	**0.099**	**0.15 J**	**7.8**	<0.36	**0.33 J**	**1.0 J**	**110**	**80**
M11	DG-M11S-3.5-4	8/27/18	2.5-4	**1.1 J**	**12**	**63**	**0.78**	**0.078 J**	**44**	**20**	**76**	**47**	**0.072**	**0.27 J**	**46**	<0.52	**0.24 J**	<0.50	**68**	**110**
M12	DG-M12S-0.5-1	8/27/18	0.5-1	**0.84 J**	**7.1**	**170**	**0.65**	<0.033	**49**	**17**	**43**	**65**	**0.19**	**0.85 J**	**58**	**0.87 J**	<0.13	<0.38	**47**	**89**
M12	DG-M12S-3.5-4	8/27/18	2.5-4	<0.24	**4.7**	**76**	**0.60**	<0.036	**150**	**33**	**52**	**12**	**0.14**	**1.7**	**160**	**1.1 J**	<0.15	<0.43	**130**	**93**
M12	DG-M12S-3.5-4 (D)	8/27/18	2.5-4	**1.2 J**	**8.9**	**140**	**0.28 J**	<0.035	**140**	**30**	**53**	**8.2**	**0.17**	**0.39 J**	**160**	**0.77 J**	**0.48 J**	**1.8**	**130**	**94**
M13	DG-M13S-0.5-1	8/27/18	0.5-1	**2.6 J**	**1.7 J**	**230**	**0.53**	**0.097 J**	**64**	**34**	**38**	**43**	**0.034**	**1.7**	**54**	**1.4 J**	**0.70 J**	**2.9 J**	**150**	**77**
M13	DG-M13S-3.5-4	8/27/18	1.0-2.5	**2.2 F1**	**110 B F1**	**140 B F1 F2**	**0.13 J**	**0.079 J**	**230**	**29 F1**	**55 F1 F2**	**6.9**	**0.14**	<0.19	**300**	<0.44	**0.41 J**	**1.1 J**	**68**	**68 B**
M14	DG-M14S-0.5-1	8/24/18	0.5-1	**4.2**	**94**	**200**	**0.24 J**	**1.5**	**590 B**	**28**	**120**	**1,200**	**0.56**	**1.8 J**	**96**	**2.0 J**	<0.20	<0.58	**74**	**1,100**
M14	DG-M14S-3.5-4	8/24/18	1.0-2.5	**1.2**	**25**	**100**	**0.25**	**0.37**	**220 B**	**21**	**56**	**270**	**0.22**	**0.70 J**	**230**	**1.4 J**	<0.12	<0.34	**61**	**190**
Historical Sample Results																				
B-10	B-10	12/13/05	1-2	--	**8.4**	**73**	--	**1.2**	**17**	--	--	**460**	**0.36**	--	--	<2	<1	--	--	--
B-10	B-10	1/5/06	1-2	--	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	--
B-11	B-11	12/12/05	1-2	--	**590**	**1,200**	--	**14**	**45**	--	--	**2,000**	**0.25**	--	--	<2	**4.1**	--	--	--
B-12	B-12	12/12/05	1-2	--	**21**	**60**	--	<1	**9.1**	--	--	**15**	<0.05	--	--	<2	<1	--	--	--
B-12	B-12	1/5/06	1-2	--	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	--
B-13	B-13	12/12/05	1-2	--	**790**	**70**	--	**21**	**9.7**	--	--	**1,200**	**0.22**	--	--	<2	**1.9**	--	--	--
B-14	B-14	12/12/05	1-2	--	**28**	**1,500**	--	**3.2**	**34**	--	--	**3,500**	**0.35**	--	--	<2	**1.5**	--	--	--
B-15	B-15	12/12/05	1-2	--	**23**	**150**	--	**1.3**	**30**	--	--	**170**	**0.11**	--	--	<2	<1	--	--	--
B-16	B-16	12/13/05	1-2	--	<1.0	**26**	--	<1	**9.3**	--	--	<1	**0.12**	--	--	<2	<1	--	--	--
B-17	B-17	12/13/05	1-2	--	<1.0	**19**	--	<1	**5.2**	--	--	**13**	**0.21**	--	--	<2	<1	--	--	--
B-17	B-17 (D)	12/13/05	1-2	--	<1.0	**40**	--	<1	**12**	--	--	**90**	**0.14**	--	--	<2	<1	--	--	--
B-18	B-18	12/13/05	1-2	--	<1.0	**23**	--	<1	**4.2**	--	--	**6.5**	**0.054**	--	--	<2	<1	--	--	--
B-20	B-20	12/25/05	1-2	--	**40**	**69**	--	<1	**50**	--	--	**5.3**	**5**	--	--	<2	<1	--	--	--
C-1	C-1	9/1/06	2-3	--	**1.4**	**61**	--	<1.0	**37**	--	**20**	**27**	**0.86**	--	--	<2.0 J	<1.0	--	--	--
C-8	C-8	8/31/06	1.5-2	--	**7.1**	**55 J**	--	<1.0	**14**	--	**180**	**170**	**0.13**	--	--	<2.0 J	<1.0	--	--	--
C-13	C-13	8/31/06	1-2	--	**41**	**62 J**	--	<1.0	**15**	--	**120**	**450**	**0.48**	--	--	<2.0 J	<1.0	--	--	--
C-15	C-15	8/29/06	1-2.5	--	**5.7**	**63**	--	**1.2**	**30**	--	**170**	**220**	**0.11 J**	--	--	<2.0	<1.0	--	--	--

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
C-21	C-21	8/28/06	1.5-2	--	**61**	**34**	--	<1.0	**3.4 J**	--	**6.9 J**	**6.9**	**0.12**	--	--	<2.0 J	<1.0	--	--	--
C-26	C-26	8/28/06	1.5-2	--	**350**	**200**	--	**1.4**	**39 J**	--	**160 J**	**1,100**	**100**	--	--	<2.0 J	<1.0	--	--	--
EE-2	EE-2	3/1/84	1.5-3	--	**19.1**	**48.3**	--	--	**189**	--	**39.7**	**18**	--	--	--	--	--	--	--	**61.3**
EE-3	EE-3	3/1/84	1.5-3	--	**13.7**	**93**	--	--	**47.8**	--	**42.8**	**73.1**	--	--	--	--	--	--	--	**109**
EE-4	EE-4	3/1/84	1.5-3	--	**15**	**113**	--	--	**30.6**	--	**578**	**1,100**	--	--	--	--	--	--	--	**276**
EE-5	EE-5	3/1/84	1.5-3	--	<5	**50.8**	--	--	**23.1**	--	**1270**	**456**	--	--	--	--	--	--	--	**204**
EE-6	EE-6	3/1/84	1.5-3	--	**17.8**	**32.7**	--	--	<10	--	**111**	**1.31**	--	--	--	--	--	--	--	**61.9**
EE-7	EE-7	3/1/84	1.5-3	--	**23.8**	**154**	--	--	**14.6**	--	**1,930**	**3,910**	--	--	--	--	--	--	--	**2,680**
EE-10	EE-10	3/1/84	1.5-3	--	**14.2**	**87.5**	--	--	**21.3**	--	**139**	**319**	--	--	--	--	--	--	--	**200**
EE-11	EE-11	3/1/84	1.5-3	--	**4.75**	**37.8**	--	--	**11.4**	--	**123**	**0.48**	--	--	--	--	--	--	--	**44.8**
EE-12	EE-12	3/1/84	1.5-3	--	**8.19**	**181**	--	--	**16.8**	--	**143**	**133**	--	--	--	--	--	--	--	**154**
EE-13	EE-13	3/1/84	1.5-3	--	**7.94**	**50.5**	--	--	<10	--	**289**	**79.2**	--	--	--	--	--	--	--	**212**
EE-14	EE-14	3/1/84	1.5-3	--	**17.5**	<20	--	--	<5	--	**87.9**	**1.53**	--	--	--	--	--	--	--	**39.5**
EE-15	EE-15	3/1/84	1.5-3	--	**23.1**	**568**	--	--	**201**	--	**1,350**	**1,240**	--	--	--	--	--	--	--	**5,260**
EE-23	EE-23	3/1/84	1.5-3	--	**14**	**2,530**	--	--	**37.6**	--	**1,860**	**6,265**	--	--	--	--	--	--	--	**1,040**
MB-10	MB-10	1/1/86	2	--	<0.1	**50**	--	--	--	--	**100**	**340**	--	--	--	--	--	--	--	**1,500**
MB-11	MB-11	1/1/86	2	--	**3.1**	**170**	--	--	--	--	**92**	**85**	--	--	--	--	--	--	--	**75**
MB-12	MB-12	1/1/86	2	--	**0.37**	**38**	--	--	--	--	**5.8**	**3.4**	--	--	--	--	--	--	--	**9.1**
MK-2A	MK-2A	1/1/86	0.5-2	--	<0.1	**46**	--	--	--	--	**15**	**6**	--	--	--	--	--	--	--	**70**
MK-3B	MK-3B	1/1/86	0.5	--	**24**	<1	--	--	--	--	**85**	**3.8**	--	--	--	--	--	--	--	**40**
MK-4B	MK-4B	1/1/86	2	--	**120**	**220**	--	--	--	--	**220**	**900**	--	--	--	--	--	--	--	**480**
MK-5B	MK-5B	1/1/86	0.5	--	**2.1**	<1	--	--	--	--	**45**	**75**	--	--	--	--	--	--	--	**120**
MK-6B	MK-6B	1/1/86	2	--	**20**	**35**	--	--	--	--	**25**	**6.9**	--	--	--	--	--	--	--	**50**
MW-3A	MW-3A	3/1/84	0.5	--	<1.0	**45.8**	--	--	**21.1**	--	**122**	<10	--	--	--	--	--	--	--	**64**
MW-4A	MW-4A	3/1/84	0.5	--	**19.8**	**27.5**	--	--	**26.4**	--	**47.2**	**405**	--	--	--	--	--	--	--	**57.2**
MW-6A	MW-6A	3/1/84	1.5	--	**11**	**96.4**	--	--	**23.5**	--	**126**	**331**	--	--	--	--	--	--	--	**87.7**
MW-6B	MW-6B	3/1/84	0.5	--	**1.6**	<20	--	--	**14**	--	**102**	**173**	--	--	--	--	--	--	--	**56**
MW-7A	MW-7A	3/1/84	0.5	--	**1.82**	**53.6**	--	--	<5	--	**224**	**249**	--	--	--	--	--	--	--	**139**
MW-8A	MW-8A	3/1/84	0.5	--	**25.1**	**46.5**	--	--	**13**	--	**114**	**24.7**	--	--	--	--	--	--	--	**62.8**
MW-8B	MW-8B	3/1/84	0.5	--	**3.2**	**21.1**	--	--	<5	--	**295**	**14.7**	--	--	--	--	--	--	--	**179**
NSB-5	NSB-5	4/1/90	2	--	**1**	**34**	<0.1	<0.1	**11**	**8**	**86**	**49**	<0.1	--	**16**	**0.3**	<0.5	--	--	**42**
B-10	B-10	12/13/05	4-5	--	**2.3**	**170**	--	**1**	**130**	--	--	**32**	**0.12**	--	--	<2	<1	--	--	--
B-11	B-11	1/5/06	4.5-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-13	B-13	1/5/06	4-4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-14	B-14	1/5/06	4-4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-15	B-15	1/5/06	4.5-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-15	B-15 (D)	1/5/06	4.5-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-16	B-16	12/13/05	4-5	--	**3.2**	**100**	--	<1	**33**	--	--	**14**	**0.9**	--	--	<2	<1	--	--	--
B-19	B-19	12/13/05	4-5	--	**8**	**78**	--	<1	**33**	--	--	**110**	**0.064**	--	--	<2	<1	--	--	--
B-19-A	B-19-A	12/25/05	4-5	--	**6.3**	**50**	--	<1	**36**	--	--	**41**	**0.11**	--	--	<2	<1	--	--	--
B-19-A	B-19-A (D)	12/25/05	4-5	--	**7.5**	**71**	--	<1	**36**	--	--	**24**	**0.11**	--	--	<2	<1	--	--	--
B-23	B-23	12/13/05	4-5	--	**24**	**37**	--	<1	**9.3**	--	--	<1	**0.083**	--	--	<2	<1	--	--	--
B-24	B-24	12/14/05	4-5	--	**9.4**	**39**	--	<1	**96**	--	--	**34**	**0.89**	--	--	<2	<1	--	--	--

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
C-5	C-5	9/1/06	2.5-3.5	--	**7.8**	**77**	--	<1.0	**56**	--	**39**	**70**	**0.28**	--	--	<2.0 J	<1.0	--	--	--
C-14	C-14	8/29/06	3-4	--	**39**	**110**	--	<1.0	**41**	--	**130**	**360**	**0.09 J**	--	--	<2.0	<1.0	--	--	--
C-19	C-19	8/28/06	2.5-3	--	**180**	**180**	--	<1.0	**41 J**	--	**88 J**	**990**	**1.3**	--	--	<2.0 J	<1.0	--	--	--
C-24	C-24	8/29/06	2.5-3	--	**17**	**51**	--	<1.0	**12**	--	**100**	**670**	**0.13 J**	--	--	<2.0	<1.0	--	--	--
C-24	C-24	8/29/06	3.5-4	--	**57**	**3,300**	--	**4**	**49**	--	**360**	**8,000**	**0.47 J**	--	--	<2.0	**4.3**	--	--	--
C-29	C-29	8/29/06	3-3.5	--	**7.6**	**25**	--	<1.0	**6.3**	--	**87**	**29**	<0.050	--	--	<2.0	<1.0	--	--	--
C-31	C-31	8/29/06	3.5-4	--	<1.0	**340**	--	<1.0	**15**	--	**120**	**77**	**0.22 J**	--	--	<2.0	<1.0	--	--	--
C-33	C-33	8/29/06	4-4.5	--	**180**	**68**	--	<1.0	**37**	--	**52**	**23**	**0.08 J**	--	--	<2.0	<1.0	--	--	--
B-11	B-11	12/12/05	5-6	--	**29**	**39**	--	<1	**30**	--	--	**12**	<0.05	--	--	<2	<1	--	--	--
B-12	B-12	12/12/05	5-6	--	**4**	**19**	--	<1	**23**	--	--	**10**	<0.05	--	--	<2	<1	--	--	--
B-13	B-13	12/12/05	5-6	--	**120**	**120**	--	**2.8**	**170**	--	--	**2.4**	**37**	--	--	<2	<1	--	--	--
B-14	B-14	12/12/05	5-6	--	**37**	**37**	--	<1	**28**	--	--	**2.8**	**0.063**	--	--	<2	<1	--	--	--
B-15	B-15	12/12/05	5-6	--	**13**	**180**	--	<1	**60**	--	--	**38**	**0.25**	--	--	<2	<1	--	--	--
B-17	B-17	12/13/05	5-6	--	**4.8**	**100**	--	<1	**74**	--	--	**660**	**1.8**	--	--	<2	<1	--	--	--
B-18	B-18	12/13/05	5-6	--	**4.7**	**29**	--	<1	**30**	--	--	**91**	**0.12**	--	--	<2	<1	--	--	--
B-19-B	B-19-B	12/25/05	9-10	--	**6.9**	**74**	--	<1	**38**	--	--	**54**	**0.11**	--	--	<2	<1	--	--	--
B-19-B	B-19-B (D)	12/25/05	9-10	--	**7.5**	**71**	--	<1	**36**	--	--	**24**	**0.11**	--	--	<2	<1	--	--	--
B-20	B-20	12/25/05	5-6	--	**17**	**41**	--	<1	**34**	--	--	**19**	**0.053**	--	--	<2	<1	--	--	--
B-21	B-21	12/13/05	5-6	--	<1.0	**62**	--	<1	**84**	--	--	<1	**1.1**	--	--	<2	<1	--	--	--
B-22	B-22	12/14/05	5-6	--	**27**	**86**	--	<1	**110**	--	--	**41**	**15**	--	--	<2	<1	--	--	--
C-3	C-3	9/1/06	9-10	--	**1.1**	**72**	--	<1.0	**6.3**	--	**9.7**	**54**	**0.055**	--	--	<2.0 J	<1.0	--	--	--
C-10	C-10	8/31/06	6-7	--	**1.8**	**78 J**	--	<1.0	**60**	--	**13**	**2.6**	<0.050	--	--	<2.0 J	<1.0	--	--	--
C-16	C-16	8/30/06	6-6.5	--	**2.4**	**34**	--	<1.0	**26**	--	**7.6**	**3**	<0.050 J	--	--	<2.0	<1.0	--	--	--
C-20	C-20	8/28/06	10.5-11	--	**160**	**220**	--	**1.7**	**42 J**	--	**220 J**	**730**	**0.64**	--	--	<2.0 J	<1.0	--	--	--
C-22	C-22	8/28/06	7-7.5	--	**20**	**760**	--	**2.6**	**4,400 J**	--	**1,100 J**	**2,700**	**0.29**	--	--	<2.0 J	**6.8**	--	--	--
C-25	C-25	8/28/06	10.5-11	--	**61**	**73**	--	<1.0	**37 J**	--	**69 J**	**71**	**0.78**	--	--	<2.0 J	<1.0	--	--	--
MK-2A	MK-2A	1/1/86	5-6.5	--	**17**	**31**	--	--	--	--	**1.4**	**1**	--	--	--	--	--	--	--	**13**
TPI-CONF-01	TPI-CONF-01	12/1/93	Sidewall	--	**2**	**140**	--	<0.3	**62**	<2	**20**	<10	**0.5**	--	**47**	<0.5	<0.5	--	**51**	**36**
TPI-CONF-02	TPI-CONF-02	12/1/93	Sidewall	--	**1**	**22**	--	<0.3	**48**	**4**	<2	<10	<0.2	--	**8**	<0.5	<0.5	--	**28**	**9**
TPI-CONF-09A	TPI-CONF-09A	12/1/93	Sidewall	--	**4**	**61**	--	<0.3	**13**	<3	**16**	<10	<0.2	--	**10**	<0.5	<0.5	--	<30	**32**

Table 4: Summary of Metals in Soil
UPC OU-SM
Brisbane, California

Notes:
a. Sample DG-G6S-1-2 was named DG-G6S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
b. Sample DG-K8S-1-2 was named DG-K8S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
1. Metals were analyzed by USEPA Methods 6010B and 7471A.
2. SSLs are from, in order of hierarchy, DTSC (April 2019), USEPA (April 2019), or San Francisco Regional Water Quality Control Board (January 2019), except the SSL for arsenic which is a regional background concentration (LBNL, 2009).
3. Non-detect results are presented with "<" followed by the MDL.
4. Results in **bold** font indicate a detection above the MDL.
5. Results shaded with gray indicate the MDL exceeded the SSL.
6. Results highlighted with yellow indicate the result exceeds the SSL.

Abbreviations:
"--" = not available
"<" = non-detect result
B = compound was found in the blank and sample.
(D) = duplicate sample
F1 = MS and/or MSD Recovery is outside acceptance limits.
F2 = MS/MSD RPD exceeds control limits.
ft bgs = feet below ground surface
J = estimated value
MDL = method detection limit
mg/kg = milligram per kilogram
MS = matrix spike
MSD = matrix spike duplicate
R = rejected in validation
RL = reporting limit
RPD = relative percent difference
Sidewall = indicates sample was collected from the sidewall of an excavation.
SSL = soil screening level
USEPA = United States Environmental Protection Agency

Table 5: Summary of Semi-Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene Equivalent Total PAHs [2]	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
Soil Screening Levels (SSL)				1.6E+02	1.6E+01	1.6E+02	1.6E+03	1.6E+04	2.8E+01	1.6E+02	9.0E+02	1.9E+05	3.3E+06	5.9E+04	1.7E+07	2.5E+03	2.4E+06	2.3E+06	2.0E+03	6.9E+04	1.8E+06
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<1.4	<1.8	**2.3 J**	<2.0	<1.3	<3.3	<4.0	3.1	<4.7	<2.6	<2.3	<1.9	<4.1	<1.3	<2.1	<3.3	<1.7	<1.6
A3	DG-A3S-0.5-1	8/21/18	0.5-1	**26**	**32**	**51**	**16 J**	**40**	<14	<16	47.7	**28 J**	<11	**9.4 J**	**14 J**	**20**	**47**	<8.6	**15 J**	**60**	**63**
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<1.4	**2.8 J**	**6.6**	**2.1 J**	**4.4 J**	<3.4	<4.0	5.5	<4.8	<2.7	<2.3	<1.9	<4.1	**4.5 J**	<2.1	**3.5 J**	**13**	**4.7 J**
A3	DG-A3S-9.5-10	8/21/18	9.5-10	**15**	**16**	**28**	**9.6**	**21**	<6.7	<8.1	24.2	**19**	<5.4	**5.7 J**	**6.3 J**	**13**	**27**	<4.2	**13**	**26**	**33**
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<1.5	<1.9	<2.0	<2.0	<1.4	<3.4	<4.1	3.0	<4.9	<2.7	<2.3	<1.9	<4.2	<1.4	<2.1	<3.4	<1.8	<1.7
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<1.4	<1.8	<2.0	<2.0	<1.3	<3.3	<4.0	2.9	<4.8	<2.7	<2.3	<1.9	<4.1	<1.3	<2.1	<3.3	<1.7	<1.6
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<1.4	<1.8	<2.0	<2.0	<1.3	<3.4	<4.0	3.0	<4.8	<2.7	<2.3	<1.9	<4.1	<1.3	<2.1	<3.4	<1.7	<1.6
A7	DG-A7S-0.5-1	8/23/18	0.5-1	**110**	**220**	**400**	**120**	**140**	<67	**100**	315.8	<95	<53	<46	<38	**150**	**140**	<42	<67	**66 J**	**190**
A7	DG-A7S-3.5-4	8/23/18	2.5-4	**8.8**	**5.9**	**9.1**	**2.4 J**	**13**	**3.4 J**	<4.1	11.3	**34**	<2.7	<2.3	**3.6 J**	**6.9**	**4.6 J**	**15**	**15**	**54**	**12**
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<1.5	**2.2 J**	**15**	**4.1 J**	**8.0**	<3.4	<4.1	5.7	<4.9	<2.7	<2.4	<2.0	<4.2	**11**	<2.2	<3.4	**2.9 J**	**6.1**
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<1.5	**2.0 J**	**7.2**	**2.1 J**	**4.2 J**	<3.4	<4.1	4.7	<4.9	<2.7	<2.3	<1.9	<4.2	**6.0**	<2.1	**4.3 J**	**3.4 J**	**5.4**
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<150	**440 J**	**430 J**	**210 J**	**330 J**	<340	<410	683.4	<480	<270	<230	<190	<420	**330 J**	<210	<340	**210 J**	**460 J**
A8	DG-A8S-3.5-4	8/27/18	2.5-4	**80**	**100**	**140**	**46**	**120**	**23**	**57**	151.3	**200**	<11	**35**	**48**	**77**	**160**	**11 J**	**250**	**200**	**200**
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<1.4	<1.8	<2.0	<2.0	<1.3	<3.3	<4.0	2.9	**24**	<2.6	<2.3	<1.9	<4.1	<1.3	<2.1	**46**	**2.6 J**	<1.6
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<1.4	<1.8	<2.0	<2.0	<1.3	<3.3	<4.0	2.9	<4.7	<2.6	<2.3	<1.9	<4.0	<1.3	<2.1	<3.3	**2.1 J**	<1.6
B1	DG-B1S-0.5-1	8/21/18	0.5-1	**30 J**	**32 J**	**36 J**	**20 J**	**21 J**	<27	<33	54.0	<39	<22	<19	**19 J**	<33	**40**	<17	<27	**29 J**	**49**
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<1.5	**2.2 J**	**4.6 J**	<2.1	**2.3 J**	<3.5	<4.2	4.7	<5.0	<2.8	<2.4	<2.0	<4.3	**2.2 J**	<2.2	<3.5	**6.7**	**3.2 J**
B2	DG-B2S-19.5-20	8/21/18	19.5-20	**15**	**9.8**	**27**	**8.0**	**19**	<3.4	**5.2**	16.3	<4.9	<2.7	<2.4	**3.7 J**	**8.1**	**23**	<2.2	<3.4	**6.5**	**55**
B5	DG-B5S-0.5-1	8/23/18	0.5-1	**35**	**51**	**98**	<4.0	**50**	**9.2 J**	**22**	75.8	**13 J**	<5.4	**14**	**17**	**31**	**53 B**	<4.2	**13**	**41**	**94 B**
B5	DG-B5S-3.5-4	8/23/18	1-2.5	**690**	**770**	**960**	**410**	**770**	**91**	**200**	1,050.9	**70**	**66**	**230**	**220**	**210**	**850**	**88**	**69**	**1,000**	**1,500**
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<1.4	**1.9 J**	**12**	**2.8 J**	**5.6**	<3.3	<4.0	5.1	<4.7	<2.6	<2.3	**2.1 J**	<4.1	**20**	**3.0 J**	<3.3	**9.9**	**24**
B9	DG-B9S-0.5-1	8/24/18	0.5-1	**220**	**270**	**360**	**140**	**220**	<66	**82 J**	370.8	**150 J**	<53	<45	**89 J**	**100**	**370**	<41	**99**	**340**	**350**
B9	DG-B9S-3.5-4	8/24/18	2.5-4	**10**	**14**	**19**	**9.3**	**12**	<3.4	**5.0**	19.2	**5.9 J**	<2.7	**2.9 J**	**2.8 J**	**5.0**	**14**	<2.1	**4.5 J**	**12**	**17**
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<1.4	**4.5 J**	**7.9**	**3.3 J**	**3.9 J**	<3.3	<4.0	7.2	<4.8	<2.7	<2.3	<1.9	<4.1	**6.8**	<2.1	<3.3	**4.2 J**	**7.3**
B10	DG-B10S-0.5-1	8/24/18	0.5-1	**45**	**45**	**66**	**32**	**53**	**7.1 J**	**19**	65.5	**27**	<5.4	**29**	**44**	**28**	**59**	**5.6 J**	**22**	**67**	**81**
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	**110**	**220**	**210**	**91**	**82**	<34	**170**	287.0	**59 J**	<27	**89**	**430**	**280**	**120**	<22	**62**	**130**	**220**
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<1.4	**5.9**	**4.1 J**	**2.0 J**	**2.8 J**	<3.3	**14**	9.5	<4.7	**4.8**	**4.0 J**	**9.2**	**21**	**3.5 J**	<2.1	**5.9**	**4.3 J**	**4.9**
C3	DG-C3S-0.5-1	8/21/18	0.5-1	**43**	**51**	**71**	**26**	**59**	**9.3**	**26**	74.6	**7.1 J**	<2.7	**12**	**7.7**	**35**	**71**	<2.1	**18**	**57**	**120**
C3	DG-C3S-3.5-4	8/21/18	2.5-4	**100**	**100**	**170**	**50**	**110**	**17**	**32**	147.8	**12 J**	<5.5	**39**	**21**	**41**	**120**	<4.3	**23**	**58**	**170**
C3	DG-C3S-9.5-10	8/21/18	9.5-10	**20**	**19**	**25**	**8.9 J**	**35**	<13	<16	30.9	<19	<11	<9.2	**16 J**	<16	**49**	**13 J**	<13	**29**	**75**
C5	DG-C5S-9-9.5	8/23/18	9-9.5	**14**	**8.9**	**18**	<2.0	**17 B**	<3.4	**4.7 J**	14.3	**35**	<2.7	<2.3	**7.3**	**6.2**	**12**	**19**	**20**	**70**	**20**
C7	DG-C7S-0.5-1	8/24/18	0.5-1	**12**	**15**	**29**	**7.3**	**20**	<3.4	**7.8**	21.7	**12**	<2.7	**5.6**	**12**	**13**	**22**	<2.1	**8.0**	**20**	**31**
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.4	**2.1 J**	**2.5 J**	<2.0	**1.8 J**	<3.3	<4.0	4.3	<4.7	<2.7	<2.3	**2.2 J**	<4.1	**2.9 J**	<2.1	<3.3	**3.1 J**	**2.7 J**
C7	DG-C7S-3.5-4	8/24/18	3.5-4	**25**	**27**	**38**	**13**	**29**	**3.9 J**	**9.7**	38.3	**12**	<2.6	**4.7**	**9.8**	**10**	**54**	**2.9 J**	**8.4**	**47**	**67**
C7	DG-C7S-9.5-10	8/24/18	9.5-10	**9.5**	**10**	**14**	**3.7 J**	**25**	**3.7 J**	<4.0	16.3	**130**	**5.6**	<2.3	**8.5**	**5.6**	**13**	**52**	**49**	**120**	**30**
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<1.4	**3.3 J**	**4.5 J**	**2.3 J**	**2.0 J**	<3.3	<4.0	5.7	<4.7	<2.6	<2.3	<1.9	<4.1	**4.0 J**	<2.1	<3.3	**3.3 J**	**4.5 J**
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<1.4	**2.8 J**	**4.3 J**	<2.0	**1.7 J**	<3.3	<4.0	5.2	<4.7	<2.6	<2.3	<1.9	<4.1	**2.3 J**	<2.1	<3.3	**1.8 J**	**3.0 J**
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<1.5	**2.8 J**	**39**	**3.0 J**	**27**	**4.8 J**	<4.1	11.8	<4.9	<2.8	<2.4	<2.0	**6.8**	**11**	<2.2	**8.3**	**70**	**8.1**
D3	DG-D3S-9.5-10	8/21/18	9.5-10	**260**	**270**	**350**	**140**	**270**	**35**	**87**	376.4	**22 J**	**26**	**45**	**190**	**100**	**440**	**25**	**24 B**	**300**	**560**

Table 5: Summary of Semi-Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene Equivalent Total PAHs [2]	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
Soil Screening Levels (SSL)				1.6E+02	1.6E+01	1.6E+02	1.6E+03	1.6E+04	2.8E+01	1.6E+02	9.0E+02	1.9E+05	3.3E+06	5.9E+04	1.7E+07	2.5E+03	2.4E+06	2.3E+06	2.0E+03	6.9E+04	1.8E+06
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
D5	DG-D5S-0.5-1	8/22/18	0.5-1	**38**	**60**	**60**	**33**	**58 B**	<17	<21	79.7	<25	<14	**13 J**	**14 J**	**29**	**55**	<11	<17	**33**	**98**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	**35**	**35**	**54**	<2.0	**41 B**	**4.2 J**	**13**	49.5	<4.8	<2.7	**3.5 J**	**6.2**	**14**	**44**	<2.1	**3.6 J**	**37**	**74**
D9	DG-D9S-0.5-1	8/24/18	0.5-1	**8.5**	**8.5**	**11**	**5.3**	**7.2**	<3.4	**4.4 J**	12.7	<4.8	<2.7	<2.3	**3.2 J**	**4.3 J**	**12 B**	<2.1	<3.4	**6.3 B**	**11**
D9	DG-D9S-3.5-4	8/24/18	1-2.5	**150**	**160**	**210**	**77**	**170**	**19**	**50**	220.9	**15**	**8.5**	**6.8**	**49**	**54**	**280**	**9.2**	**12**	**220**	**350**
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<1.4	<1.8	<2.0	<2.0	**1.3 J**	<3.4	<4.0	3.0	<4.8	<2.7	<2.3	<1.9	<4.1	**1.5 J B**	<2.1	<3.4	**3.0 J B**	**1.7 J**
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<1.4	**2.1 J**	**2.6 J**	<2.0	**1.7 J**	<3.4	<4.0	4.3	<4.8	<2.7	<2.3	<1.9	<4.1	**2.8 J**	<2.1	<3.4	**2.2 J**	**2.6 J**
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	**120**	**140**	**240**	**66**	**240**	**26**	**39**	206.8	**320**	**23 J**	**23 J**	**93**	**51**	**190**	**68**	**240**	**440**	**240**
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	**14**	**11**	**19**	**3.7 J**	**38**	**6.1**	**4.6 J**	20.9	**190**	**5.7**	<2.3	**6.0**	**10**	**13**	**92**	**51**	**150**	**37**
E3	DG-E3S-9.5-10	8/21/18	9.5-10	**21**	**16**	**33**	**7.2**	**54**	**5.3**	**7.5**	27.6	**6.4 J**	<2.7	**2.5 J**	**3.3 J**	**12**	**22**	<2.1	**13 B**	**44**	**36**
E5	DG-E5S-9-9.5	8/22/18	9-9.5	**17**	**26**	**35**	**6.8**	**20**	<3.5	**8.4**	33.9	<5.0	<2.8	**6.2**	**3.5 J**	**8.8**	**25**	<2.2	**4.6 J**	**15**	**46**
E7	DG-E7S-0.5-1	8/24/18	0.5-1	**6.7**	**8.3**	**12**	**5.3**	**8.2**	<3.4	**6.1**	12.5	<4.9	<2.7	<2.3	**2.8 J**	**22**	**9.9**	<2.1	<3.4	**7.9**	**14**
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<1.5	**2.0 J**	**2.9 J**	<2.1	**2.3 J**	<3.5	<4.2	4.3	<5.0	<2.8	<2.4	<2.0	<4.3	**3.7 J**	<2.2	**4.0 J**	**3.8 J**	**3.6 J**
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<1.4	<1.8	<2.0	<2.0	<1.4	<3.4	<4.1	3.0	<4.8	<2.7	<2.3	<1.9	<4.2	**1.4 J**	<2.1	<3.4	**2.7 J**	<1.6
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<15	**37 J**	**57**	**29 J**	**33 J**	<34	<41	62.8	<49	<27	<23	**140**	**51**	**27 J**	<21	<34	**57**	**36 J**
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<15	**48 J**	**66**	**33 J**	**38 J**	<34	<41	74.8	<49	<27	**27 J**	**450**	**76**	**38 J**	<22	**41 J**	**64**	**57**
E11	DG-E11S-3.5-4	8/27/18	2.5-4	**37 J**	**72 J**	**110**	**41 J**	**82 J**	<66	<79	124.1	**180 J**	<53	**63 J**	**82 J**	**120**	**56 J**	<41	**120**	**120**	**89 J**
E11	DG-E11S-9.5-10	8/27/18	9.5-10	**21**	**23**	**27**	**9.3**	**25**	<3.4	**8.3**	30.4	<4.8	**13**	<2.3	**12**	**9.1**	**57**	**2.8 J**	<3.4	**27**	**98**
F1	DG-F1S-0.5-1	8/20/18	0.5-1	**37**	**34**	**78**	**21**	**52**	**7.6 J**	**17**	55.1	**100**	<5.5	**20**	**42**	**26**	**81**	**4.5 J**	**92**	**100**	**78**
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<58	**95 J**	**90 J**	<82	<54	<140	<160	185.3	<190	<110	<93	<78	<170	**63 J**	<86	<140	<70	**87 J**
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<1.4	**2.2 J**	**26**	**2.5 J**	**17**	**3.4 J**	<4.0	8.5	<4.7	<2.7	**2.3 J**	**2.1 J**	<4.1	**9.0**	<2.1	**5.3**	**47**	**6.5**
F3	DG-F3S-0.5-1	8/21/18	0.5-1	**140**	**270**	**320**	**110**	**160**	**44**	**140**	375.3	**28 J**	<11	**75**	**45**	**190**	**210**	<8.6	**38 B**	**120**	**270**
F3	DG-F3S-3.5-4	8/21/18	1-2.5	**4.7**	**6.1**	**7.5**	**3.4 J**	**3.4 J**	<3.3	**4.2 J**	9.4	<4.7	<2.6	**2.5 J**	**2.0 J**	**6.3**	**5.0**	<2.1	<3.3	**3.6 J**	**6.6**
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<1.5	**3.0 J**	**4.0 J**	**2.3 J**	**1.7 J**	<3.4	<4.1	5.4	<4.8	<2.7	<2.3	<1.9	<4.2	**2.9 J**	<2.1	**4.4 J B**	**2.7 J**	**3.5 J**
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<30	**39 J**	<42	<42	<28	<69	<83	81.5	<99	<56	<48	<40	<85	<28	<44	<69	<36	<34
F5	DG-F5S-3.5-4	8/22/18	2.5-4	**41**	**50**	**81**	<2.0	**64 B**	**5.4**	**21**	69.8	**30**	<2.7	**9.3**	**17**	**24**	**110**	**7.9**	**39**	**110**	**150**
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	**260**	**320**	**520**	<4.0	**330 B**	**44**	**120**	454.4	**53**	**6.0 J**	**59**	**61**	**150**	**370**	**17**	**59**	**260**	**560**
F9	DG-F9S-0.5-1	8/24/18	0.5-1	**24**	**25**	**49**	**10**	**75**	**9.1**	**13**	42.9	**38**	<2.7	**4.5 J**	**10**	**21**	**28**	**3.2 J**	**16**	**63**	**57**
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<1.4	**1.8 J**	**2.3 J**	<2.0	**1.9 J**	<3.4	<4.0	4.0	<4.8	<2.7	<2.3	<1.9	<4.1	**2.2 J B**	<2.1	<3.4	<1.7	**2.4 J**
F9	DG-F9S-9.5-10	8/24/18	9.5-10	**12**	**11**	**17**	**6.0**	**28**	**3.8 J**	**4.2 J**	18.2	**97**	**4.5 J**	**2.7 J**	**5.3**	**9.3**	**23**	**50**	**28**	**99**	**38**
F11	DG-F11S-3.5-4	8/24/18	2.5-4	**1,200**	**900**	**1,500**	**460**	**2,400**	**190**	**360**	1,403.0	**960**	**270**	**130**	**1,200**	**380**	**1,200**	**330**	**570**	**2,100**	**1,600**
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	<1.5	**2.9 J**	**20**	**3.5 J**	**16**	<3.4	<4.1	6.9	**6.6 J**	<2.7	<2.4	**2.8 J**	<4.2	**12**	**3.2 J**	**12**	**54**	**11**
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	**4.8**	**6.2**	**7.6**	**4.2 J**	**10**	<3.3	**5.3**	9.7	<4.7	<2.7	<2.3	**4.2 J**	**28**	**12**	<2.1	<3.3	**15**	**17**
G3	DG-G3S-9.5-10	8/21/18	9.5-10	**3.3 J**	**4.5 J**	**35**	**3.3 J**	**32**	**3.8 J**	<4.2	12.4	<5.0	<2.8	<2.4	**2.0 J**	**5.9**	**15**	<2.2	**16 B**	**85**	**12**
G6	DG-G6S-1-2[a]	8/22/18	1-2	**50**	**75**	**100**	**42**	**72 B**	**16 J**	**51**	111.6	**28 J**	<11	**11 J**	**20**	**96**	**96**	<8.6	**29**	**71**	**110**
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<1.5	**4.0 J**	**4.1 J**	**2.8 J**	**2.8 J**	<3.5	<4.2	6.5	<4.9	<2.8	<2.4	<2.0	<4.2	**3.9 J**	<2.2	<3.5	**2.4 J**	**4.3 J**
G7	DG-G7S-3.5-4	8/24/18	2.5-4	**300**	**340**	**410**	**190**	**360**	**42**	**98**	465.1	**26**	**48**	**57**	**86**	**100**	**440**	**95**	**24**	**590**	**610**
G11	DG-G11S-0.5-1	8/27/18	0.5-1	**29**	**41**	**62**	**20**	**40**	**5.5**	**15**	57.3	**6.5 J**	<2.7	**5.6**	**6.6**	**17**	**47**	<2.2	**4.5 J**	**29**	**84**
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<1.5	<1.9	**2.8 J**	<2.1	**1.4 J**	<3.5	<4.2	3.3	<5.0	<2.8	<2.4	<2.0	<4.3	**1.7 J**	<2.2	<3.5	<1.8	**2.3 J**
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<7.2	**9.9 J**	**19 J**	<10	**11 J**	<17	<20	21.7	<24	<13	<12	<9.6	<21	**21 J**	<11	<17	**21 J**	**17 J**

Table 5: Summary of Semi-Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene Equivalent Total PAHs [2]	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
Soil Screening Levels (SSL)				1.6E+02	1.6E+01	1.6E+02	1.6E+03	1.6E+04	2.8E+01	1.6E+02	9.0E+02	1.9E+05	3.3E+06	5.9E+04	1.7E+07	2.5E+03	2.4E+06	2.3E+06	2.0E+03	6.9E+04	1.8E+06
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
H1	DG-H1S-0.5-1	8/20/18	0.5-1	**27**	**31**	**47**	**17**	**33**	**6.1**	**18**	46.5	**9.8**	<2.7	**4.9**	**9.3**	**24**	**46**	<2.1	**10**	**28**	**54**
H1	DG-H1S-3.5-4	8/20/18	2.5-4	**2.8 J**	**3.9 J**	**11**	**2.6 J**	**7.0**	<3.4	<4.1	7.2	<4.9	<2.8	<2.4	**2.7 J**	**4.6 J**	**6.5**	<2.2	**5.0**	**19**	**8.0**
H3	DG-H3S-0.5-1	8/21/18	0.5-1	**18**	**27**	**44**	**14**	**27**	**5.8**	**17**	40.9	**22**	<2.8	**10**	**9.6**	**20**	**27**	**3.8 J**	**23 B**	**24**	**31**
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<1.5	**2.3 J**	**3.0 J**	<2.1	<1.4	<3.4	<4.1	4.6	<4.9	<2.7	<2.4	<2.0	<4.2	**1.9 J**	<2.2	<3.4	**1.8 J**	**2.3 J**
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<2.9	**6.0 J**	**9.2 J**	**4.2 J**	**3.3 J**	<6.9	<8.3	11.0	<9.8	<5.5	<4.7	<3.9	<8.5	**6.6 J**	<4.3	<6.9	**6.8 J**	**9.9**
H5	DG-H5S-0.5-1	8/22/18	0.5-1	**3,800**	**6,900**	**7,400**	**3,700**	**4,500 B**	**910**	**2,500**	9,221.5	**94 J**	**33 J**	**2,000**	**500**	**2,800**	**2,600**	**39 J**	**310**	**1,100**	**6,600**
H5	DG-H5S-3.5-4	8/22/18	2.5-4	**290**	**280**	**400**	<2.0	**260 B**	**39**	**100**	398.3	**8.2 J**	**11**	**16**	**61**	**100**	**360**	**13**	**29**	**260**	**590**
H6	DG-H6S-0.5-1	8/23/18	0.5-1	**29**	**51**	**69**	<4.0	**39**	**9.1 J**	**20**	72.0	<9.4	<5.3	**5.6 J**	**8.1 J**	**24**	**30 B**	<4.2	**8.6 J**	**24**	**49 B**
H6	DG-H6S-3.5-4	8/23/18	1-2.5	**14**	**16**	**27**	<2.0	**17**	**3.5 J**	**7.2**	24.3	**11**	<2.7	**2.6 J**	**4.4 J**	**7.6**	**20 B**	<2.1	**9.8**	**19**	**24 B**
H9	DG-H9S-0.5-1	8/27/18	0.5-1	**16**	**16**	**31**	**14**	**17**	<7.0	<8.3	24.8	**10 J**	<5.6	**7.2 J**	**10**	**9.0 J**	**20**	<4.4	<7.0	**22**	**25**
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<1.4	**2.7 J**	**3.2 J**	**2.0 J**	**2.7 J**	<3.3	<4.0	5.0	<4.8	<2.7	<2.3	<1.9	<4.1	**4.0 J**	<2.1	<3.3	**3.6 J**	**4.4 J**
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<1.4	<1.8	**2.2 J**	<2.0	**1.3 J**	<3.3	<4.0	3.1	<4.8	<2.7	<2.3	<1.9	<4.1	**2.1 J**	<2.1	<3.3	**2.8 J**	**1.7 J**
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<1.4	**2.6 J**	**3.4 J**	**2.0 J**	**3.2 J**	<3.4	<4.0	4.9	<4.8	<2.7	<2.3	**2.4 J**	<4.1	**5.1**	<2.1	<3.4	**9.5**	**6.6**
I3	DG-I3S-0.5-1	8/22/18	0.5-1	**21**	**26**	**45**	**16**	**26**	<6.8	**13**	37.5	**13 J**	<5.4	**9.3 J**	**7.1 J**	**16**	**33**	<4.3	**78 B**	**22**	**33**
I3	DG-I3S-3.5-4	8/22/18	1-2.5	**25**	**26**	**43**	**17 J**	**21**	<14	<16	40.8	<20	<11	**13 J**	**10 J**	**18 J**	**32**	<8.6	<14	**20**	**34**
I7	DG-I7S-0.5-1	8/24/18	0.5-1	**49**	**77**	**110**	**39**	**85**	**16 J**	**48**	114.2	<20	<11	**33**	**75**	**58**	**86**	<8.7	**14 J**	**55**	**110**
I7	DG-I7S-3.5-4	8/24/18	2.5-4	**6.1**	**9.3**	**11**	**5.0**	**6.7**	<3.4	**4.6 J**	13.2	<4.8	<2.7	**3.3 J**	**3.3 J**	**5.2**	**7.9**	<2.1	<3.4	**5.4**	**11**
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	**150**	**260**	**340**	**160**	**220**	**24**	**90**	343.8	**29**	<5.4	**76**	**31**	**97**	**270**	**9.1 J**	**59**	**210**	**510**
I9	DG-I9S-0.5-1	8/24/18	0.5-1	**2,800**	**950**	**1,500**	**720**	**2,200**	<330	<400	1,574.4	**18,000**	**18,000**	**620**	**7,000**	<410	**17,000**	**13,000**	**57,000**	**37,000**	**11,000**
I11	DG-I11S-0.5-1	8/27/18	0.5-1	**17**	**24**	**39**	**16**	**33**	**8.5 J**	**18**	40.1	<9.6	<5.4	**6.0 J**	**24**	**25**	**26**	<4.2	**7.0 J**	**20**	**42**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<12	<15	<16	<16	<11	<27	<32	24.1	<38	<21	<18	<15	<33	<11	<17	<27	<14	<13
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<37	<47	<51	<51	<34	<86	<100	76.2	<120	<69	<59	<49	<110	<34	<54	<86	<44	<42
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<15	<19	**22 J**	<21	<14	<35	<41	32.1	<49	<28	<24	<20	<42	**19 J**	<22	<35	<18	<17
J1	DG-J1S-0.5-1	8/20/18	0.5-1	**5,300**	**5,000**	**5,800**	**1,900**	**4,900**	**930**	**2,300**	7,293.9	**810**	**1,000**	**1,600**	**3,200**	**2,900**	**9,000**	**1,700**	**1,000**	**10,000**	**11,000**
J1	DG-J1S-3.5-4	8/20/18	2.5-4	**28**	**29**	**64**	**13**	**50**	**7.8**	**16**	47.8	**5.0 J**	<2.7	**8.0**	**11**	**21**	**47**	**4.8**	**12**	**82**	**50**
J5	DG-J5S-0.5-1	8/22/18	0.5-1	**350**	**570**	**930**	<10	**450 B**	**66**	**310**	795.5	**38 J**	**16 J**	**29**	**64**	**1,600**	**590**	**15 J**	**26**	**280**	**990**
J5	DG-J5S-3.5-4	8/22/18	2.5-4	**220**	**330**	**410**	**170**	**310 B**	**42**	**150**	452.0	**31 J**	<14	**57**	**73**	**190**	**420**	**11 J**	**46**	**260**	**580**
J5	DG-J5S-7-7.5	8/22/18	7-7.5	**4.4 J**	**5.7**	**39**	<2.0	**31 B**	**3.6 J**	**5.3**	14.2	**7.0 J**	<2.7	<2.3	**2.6 J**	**6.5**	**13**	**4.1 J**	**16**	**47**	**16**
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<110	**200 J**	**210 J**	<160	<110	<270	<320	378.4	<380	<210	<180	<150	<330	**120 J**	<170	<270	<140	**180 J**
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<120	**170 J**	**170 J**	<160	<110	<270	<330	345.4	<390	<220	<190	<150	<330	<110	<170	<270	<140	<130
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<5.8	**12 J**	**20**	<8.1	**13 J**	<13	<16	21.6	<19	<11	<9.2	<7.7	<17	**11 J**	<8.5	<13	**31**	**17 J**
K3	DG-K3S-0.5-1	8/22/18	0.5-1	**43**	**60**	**96**	**36**	**68**	**9.5**	**25**	86.3	**14**	**5.1**	**8.0**	**15**	**30**	**100**	**4.9**	**16 B**	**110**	**110**
K3	DG-K3S-3.5-4	8/22/18	2.5-4	**21**	**16**	**21**	**9.7**	**19**	**4.5 J**	**8.2**	25.6	**4.9 J**	<2.7	**4.3 J**	**5.9**	**11**	**28**	**2.2 J**	**53 B**	**17**	**31**
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<58	**89 J**	**170 J**	<81	<54	<140	<160	187.3	<190	<110	<93	<78	<170	**57 J B**	<85	<140	**71 J B**	**110 J**
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<1.5	**2.4 J**	**3.6 J**	<2.1	**2.4 J**	<3.4	<4.1	4.8	<4.9	<2.7	<2.4	<2.0	<4.2	**3.1 J B**	<2.2	<3.4	**3.5 J B**	**3.8 J**
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	**5.0**	**6.1**	**6.6**	**3.3 J**	**4.9**	<3.4	<4.1	9.2	<4.8	<2.7	**2.7 J**	**1.9 J**	<4.2	**7.0 B**	<2.1	<3.4	**6.6 B**	**9.6**
K8	DG-K8S-1-2[b]	8/22/18	1-2	<1.5	**4.2 J**	**4.6 J**	**2.6 J**	**3.4 J**	<3.5	<4.1	6.7	<4.9	<2.8	<2.4	**2.3 J**	**7.4**	**4.6 J B**	<2.2	<3.5	**5.9**	**6.3 B**
K11	DG-K11S-0.5-1	8/27/18	0.5-1	**16**	**21**	**33 F1**	**14 F1**	**25**	<3.4	**8.7 F1**	28.6	**6.4 J**	<2.7	**3.2 J**	**5.8**	**9.4 F1**	**24**	<2.2	**4.5 J**	**19**	**29**
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	**15**	**14**	**23**	**6.3**	**32**	**3.7 J**	**4.3 J**	22.0	**110**	**3.9 J**	**2.7 J**	**12**	**6.6**	**15**	**30**	**46**	**130**	**32**

Table 5: Summary of Semi-Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene Equivalent Total PAHs [2]	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
Soil Screening Levels (SSL)				1.6E+02	1.6E+01	1.6E+02	1.6E+03	1.6E+04	2.8E+01	1.6E+02	9.0E+02	1.9E+05	3.3E+06	5.9E+04	1.7E+07	2.5E+03	2.4E+06	2.3E+06	2.0E+03	6.9E+04	1.8E+06
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	**21**	**23**	**42**	**9.6**	**43**	**5.4**	**9.3**	35.8	**120**	**4.4 J**	<2.3	**5.0**	**13**	**25**	**34**	**40**	**120**	**50**
K11	DG-K11S-9.5-10	8/27/18	9.5-10	**22**	**21**	**33**	**5.6**	**61**	**6.6**	**4.8 J**	33.7	**410**	**12**	**2.3 J**	**8.8**	**9.3**	**24**	**120**	**140**	**300**	**62**
L1	DG-L1S-0.5-1	8/20/18	0.5-1	**47**	**49**	**91**	**29**	**52**	<17	<20	72.6	**40 J**	<13	**14 J**	**26**	**24**	**80**	<11	**26**	**69**	**90**
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	**17**	**20**	**35**	**7.5**	**26**	**5.1**	**11**	31.5	**32**	<2.7	**6.4**	**6.5**	**17**	**23**	**2.1 J**	**30**	**41**	**37**
L5	DG-L5S-0.5-1	8/22/18	0.5-1	**81**	**120**	**200**	**74**	**130**	**31**	**95**	189.5	**72**	<11	**40**	**76**	**150**	**140**	<8.5	**65 B**	**96**	**150**
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	**88**	**120**	**210**	<4.0	**120 B**	**31**	**86**	189.5	**24**	**6.3 J**	**18**	**34**	**110**	**140**	**6.4 J**	**21**	**81**	**180**
L5	DG-L5S-3.5-4	8/22/18	2.5-4	**33**	**37**	**84**	<2.0	**59 B**	**9.7**	**21**	60.6	**14**	<2.7	**12**	**13**	**22**	**63**	**3.0 J**	**38**	**55**	**81**
L9	DG-L9S-0.5-1	8/27/18	0.5-1	**8.0**	**9.1**	**13**	**6.4**	**11**	<3.4	**4.5 J**	13.4	<4.9	<2.7	<2.3	**3.5 J**	**5.3**	**13**	<2.1	**3.5 J**	**13**	**16**
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	**13**	**18**	**29**	**12**	**17**	<7.0	**9.7 J**	26.8	<10	<5.6	<4.8	<4.0	**11**	**22**	<4.4	<7.0	**19**	**27**
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	**3.4 J**	**7.5**	**27**	**5.8**	**21**	<3.3	**4.7 J**	12.7	**4.8 J**	<2.7	**2.9 J**	**2.8 J**	**5.3**	**12**	**2.2 J**	**19**	**38**	**16**
L13	DG-L13S-0.5-1	8/24/18	0.5-1	<15	**37 J**	**49 J**	**28 J F1**	**29 J**	<35	<42	62.6	<50	<28	**34 J**	**20 J**	**50 F1**	**32 J B**	<22	<35	**19 J B**	**45 J**
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	**300**	**280**	**250**	**100**	**460**	<70	<84	375.7	**140 J**	**150**	**90 J**	**310**	<86	**390**	**160**	**100**	**140**	**990**
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	<58	**150 J**	**120 J**	<81	**96 J**	<130	<160	238.4	<190	<110	**100 J**	**82 J**	<170	**100 J**	<85	<130	<69	**300**
M3	DG-M3S-0.5-1	8/22/18	0.5-1	**3.6 J**	**3.5 J**	**5.5**	**2.8 J**	**3.1 J**	<3.3	<4.0	6.3	**11**	<2.6	**2.4 J**	**4.0 J**	**5.0**	**3.8 J**	<2.1	**10 B**	**5.6**	**4.3 J**
M3	DG-M3S-3.5-4	8/22/18	2.5-4	**1.8 J**	**2.6 J**	**8.3**	**2.8 J**	**7.0**	<3.4	<4.1	5.6	**15**	<2.8	**2.7 J**	**3.1 J**	<4.2	**8.5**	<2.2	**60 B**	**35**	**5.9**
M3	DG-M3S-7.5-8	8/22/18	7.5-8	**2.7 J**	**4.0 J**	**48**	**3.5 J**	**47**	**5.3**	**4.5 J**	14.9	**11**	<2.7	**3.0 J**	**2.7 J**	**7.1**	**19**	**3.5 J**	**77 B**	**130**	**12**
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<56	<72	<79	<79	<53	<130	<160	116.2	<190	<110	<90	<75	<160	<53	<83	<130	<68	<64
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<1.5	<1.9	<2.0	<2.0	<1.4	<3.4	<4.1	3.0	<4.9	<2.7	<2.3	<1.9	<4.2	**1.7 J**	<2.1	<3.4	<1.8	**2.0 J**
M11	DG-M11S-0.5-1	8/27/18	0.5-1	**5.5**	**7.5**	**13**	**4.5 J**	**8.0**	<3.5	**4.6 J**	11.6	<5.0	<2.8	<2.4	<2.0	**5.5**	**13**	<2.2	<3.5	**9.6**	**16**
M11	DG-M11S-3.5-4	8/27/18	2.5-4	**3.7 J**	**5.5**	**57**	**7.6**	**48**	**3.9 J**	**4.6 J**	16.1	<4.8	<2.7	**2.3 J**	**3.7 J**	**5.4**	**21**	<2.1	**14**	**110**	**17**

Table 5: Summary of Semi-Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Notes:

a. Sample DG-G6S-1-2 was named DG-G6S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
b. Sample DG-K8S-1-2 was named DG-K8S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
1. PAHs analyzed by USEPA Method 8270C SIM
2. Total PAHs calculated based on the PEA Guidance Manual, Potency Equivalecy Factors for PAHs (DTSC, 2015) - Table 2-4.
3. SSLs are from, in order of hierarchy, DTSC (April 2019), USEPA (April 2019), or San Francisco Regional Water Quality Control Board (January 2019).
The SSL for benzo(a)pyrene toxicity equivalents is the 95th percentile ambient concentration in northern California (DTSC, 2009a).
4. Non-detect results are presented with "<" followed by the MDL.
5. Results in bold font indicate a detection above the MDL.
6. Results shaded with gray indicate the MDL exceeded the SSL.
7. Results highlighted with yellow indicate the result exceeds the SSL.

Abbreviations and Symbols:

"--" = not available
"<" = non-detect result
µg/kg = microgram per kilogram
B = compound was found in the blank and sample
(D) = duplicate sample
DTSC = California Department of Toxic Substances Control
ft bgs = feet below ground surface
J = estimated value
MDL = method detection limit
PAHs = polynuclear aromatic hydrocarbons
SIM = selective ion monitoring
RL = reporting Limit
SSL = soil screening level
TPH = total petroleum hydrocarbon
USEPA = United States Environmental Protection Agency

Table 6: Summary of Petroleum Hydrocarbons in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Sampling Date	Depth Range (ft bgs)	TPH-g (C4-C12)	TPH-d (C10-C28)
			Soil Screening Levels (SSL)	8.2E+01	9.60E+01
			Units	mg/kg	mg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5 - 20	<0.075	**3.5**
A3	DG-A3S-0.5-1	8/21/18	0.5 - 1	<0.089	**620**
A3	DG-A3S-3.5-4	8/21/18	2.5 - 4	<0.068	**6.9**
A3	DG-A3S-9.5-10	8/21/18	9.5 - 10	<0.072	**6.3**
A4	DG-A4S-19.5-20	8/22/18	19.5 - 20	<0.068	**0.89 J**
A5	DG-A5S-19.5-20	8/23/18	19.5 - 20	**0.14 J**	**7.9 B**
A6	DG-A6S-19.5-20	8/22/18	19.5 - 20	<0.069	**2.0**
A7	DG-A7S-0.5-1	8/23/18	0.5 - 1	<0.082	**280**
A7	DG-A7S-3.5-4	8/23/18	2.5 - 4	<0.073	**5.6**
A7	DG-A7S-10-10.5	8/23/18	10 - 10.5	<0.079	**33**
A7	DG-A7S-10-10.5 (D)	8/23/18	10 - 10.5	<0.074	**24**
A8	DG-A8S-0.5-1	8/27/18	0.5 - 1	<0.10	**700**
A8	DG-A8S-3.5-4	8/27/18	2.5 - 4	<0.085	**460**
A8	DG-A8S-17-17.5	8/27/18	17 - 17.5	<0.064	**1.2 J**
A8	DG-A8S-17-17.5 (D)	8/27/18	17 - 17.5	<0.068	**2.8**
B1	DG-B1S-0.5-1	8/21/18	0.5 - 1	<0.077	**160**
B1	DG-B1S-3.5-4	8/21/18	3.5 - 4	<0.094	**9.1**
B2	DG-B2S-19.5-20	8/21/18	19.5 - 20	<0.077	**44**
B5	DG-B5S-0.5-1	8/23/18	0.5 - 1	<0.08	**130**
B5	DG-B5S-3.5-4	8/23/18	1 - 2.5	**0.076 J**	**180**
B7	DG-B7S-14.5-15	8/23/18	14.5 - 15	<0.07	**20**
B9	DG-B9S-0.5-1	8/24/18	0.5 - 1	<0.095	**440**
B9	DG-B9S-3.5-4	8/24/18	2.5 - 4	<0.098	**14**
B9	DG-B9S-9.5-10	8/24/18	9.5 - 10	<0.08	**5.6**
B10	DG-B10S-0.5-1	8/24/18	0.5 - 1	<0.094	**100**
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5 - 1	<0.10	**570**
B10	DG-B10S-3.5-4	8/24/18	2.5 - 4	**0.88**	**16**
C3	DG-C3S-0.5-1	8/21/18	0.5 - 1	<0.11	**41**
C3	DG-C3S-3.5-4	8/21/18	2.5 - 4	<0.11	**64**
C3	DG-C3S-9.5-10	8/21/18	9.5 - 10	<0.074	**31**
C5	DG-C5S-9-9.5	8/23/18	9 - 9.5	**0.15 J**	**14**
C7	DG-C7S-0.5-1	8/24/18	0.5 - 1	<0.088	**130**
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5 - 1	<0.16	**13**
C7	DG-C7S-3.5-4	8/24/18	3.5 - 4	<0.071	**12**
C7	DG-C7S-9.5-10	8/24/18	9.5 - 10	<0.094	**8.2**
D1	DG-D1S-0.5-1	8/20/18	0.5 - 1	<0.081	**260**
D1	DG-D1S-3.5-4	8/20/18	2.5 - 4	<0.088	**3.5**
D1	DG-D1S-9.5-10	8/20/18	9.5 - 10	<0.084	**11**
D3	DG-D3S-9.5-10	8/21/18	9.5 - 10	<0.095	**64**
D5	DG-D5S-0.5-1	8/22/18	0.5 - 1	<0.089	**370 B**
D5	DG-D5S-3.5-4	8/22/18	2.5 - 4	<0.095	**11**
D9	DG-D9S-0.5-1	8/24/18	0.5 - 1	<0.076	**14**
D9	DG-D9S-3.5-4	8/24/18	1 - 2.5	**0.19 J**	**53**

Table 6: Summary of Petroleum Hydrocarbons in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Sampling Date	Depth Range (ft bgs)	TPH-g (C4-C12)	TPH-d (C10-C28)
			Soil Screening Levels (SSL)	8.2E+01	9.60E+01
			Units	mg/kg	mg/kg
D9	DG-D9S-9.5-10	8/24/18	9.5 - 10	<0.082	**0.84 J**
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5 - 1	<0.069	**12**
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5 - 4	<0.093	**910**
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5 - 10	<0.073	**17**
E3	DG-E3S-9.5-10	8/21/18	9.5 - 10	<0.08	**58**
E5	DG-E5S-9-9.5	8/22/18	9 - 9.5	<0.074	**1.8 J**
E7	DG-E7S-0.5-1	8/24/18	0.5 - 1	<0.11	**28**
E7	DG-E7S-3.5-4	8/24/18	2.5 - 4	<0.095	**6.1**
E7	DG-E7S-9.5-10	8/24/18	9.5 - 10	<0.091	**1.7 J**
E11	DG-E11S-0.5-1	8/27/18	0.5 - 1	<0.081	**130**
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5 - 1	**0.12 J**	**850 J**
E11	DG-E11S-3.5-4	8/27/18	2.5 - 4	<0.12	**270**
E11	DG-E11S-9.5-10	8/27/18	9.5 - 10	<0.094	**18**
F1	DG-F1S-0.5-1	8/20/18	0.5 - 1	<0.076	**120 B**
F1	DG-F1S-3.5-4	8/20/18	2.5 - 4	<0.077	**4.6**
F1	DG-F1S-9.5-10	8/20/18	9.5 - 10	<0.077	**100**
F3	DG-F3S-0.5-1	8/21/18	0.5 - 1	<0.073	**79**
F3	DG-F3S-3.5-4	8/21/18	1 - 2.5	<0.082	**5.7**
F3	DG-F3S-9.5-10	8/21/18	9.5 - 10	<0.10	**8.7**
F5	DG-F5S-0.5-1	8/22/18	0.5 - 1	<0.11	**68 B**
F5	DG-F5S-3.5-4	8/22/18	2.5 - 4	<0.12	**72 B**
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5 - 4	<0.068	**110 B**
F9	DG-F9S-0.5-1	8/24/18	0.5 - 1	<0.08	**39**
F9	DG-F9S-3.5-4	8/24/18	2.5 - 4	<0.09	**3.5**
F9	DG-F9S-9.5-10	8/24/18	9.5 - 10	<0.10	**36**
F11	DG-F11S-3.5-4	8/24/18	2.5 - 4	**NA**	**1,300**
FG910	DG-FG910S-3.5-4	8/27/18	1 - 2.5	<0.078	**17**
FG910	DG-FG910S-0.5-1	8/27/18	0.5 - 1	<0.088	**66**
G3	DG-G3S-9.5-10	8/21/18	9.5 - 10	<0.089	**3.9**
G6	DG-G6S-1-2[a,c]	8/22/18	2-Jan	<0.093	**83**
G7	DG-G7S-0.5-1	8/24/18	0.5 - 1	<0.084	**11**
G7	DG-G7S-3.5-4	8/24/18	2.5 - 4	<0.07	**47**
G11	DG-G11S-0.5-1	8/27/18	0.5 - 1	<0.095	**19**
G11	DG-G11S-3.5-4	8/27/18	2.5 - 4	<0.091	**2.1**
G11	DG-G11S-9.5-10	8/27/18	9.5 - 10	<0.08	**100**
H1	DG-H1S-0.5-1	8/20/18	0.5 - 1	<0.079	**33 B**
H1	DG-H1S-3.5-4	8/20/18	2.5 - 4	<0.084	**5.5 B**
H3	DG-H3S-0.5-1	8/21/18	0.5 - 1	<0.086	**31**
H3	DG-H3S-3.5-4	8/21/18	2.5 - 4	<0.08	**31**
H3	DG-H3S-9.5-10	8/21/18	9.5 - 10	<0.071	**24**
H5	DG-H5S-0.5-1	8/22/18	0.5 - 1	<0.081	**240 B**
H5	DG-H5S-3.5-4	8/22/18	2.5 - 4	<0.063	**18 B**
H6	DG-H6S-0.5-1	8/23/18	0.5 - 1	<0.088	**540**

Table 6: Summary of Petroleum Hydrocarbons in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Sampling Date	Depth Range (ft bgs)	TPH-g (C4-C12)	TPH-d (C10-C28)
			Soil Screening Levels (SSL)	8.2E+01	9.60E+01
			Units	mg/kg	mg/kg
H6	DG-H6S-3.5-4	8/23/18	1 - 2.5	<0.077	**110**
H9	DG-H9S-0.5-1	8/27/18	0.5 - 1	<0.084	**68**
H9	DG-H9S-3.5-4	8/27/18	2.5 - 4	<0.078	**5.0**
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5 - 4	<0.079	**4.6**
H9	DG-H9S-9.5-10	8/27/18	9.5 - 10	<0.078	**8.5**
I3	DG-I3S-0.5-1	8/22/18	0.5 - 1	<0.093	**13**
I3	DG-I3S-3.5-4	8/22/18	1 - 2.5	<0.083	**21**
I7	DG-I7S-0.5-1	8/24/18	0.5 - 1	<0.089	**47**
I7	DG-I7S-3.5-4	8/24/18	2.5 - 4	<0.081	**10**
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5 - 4	<0.091	**39**
I9	DG-I9S-0.5-1	8/24/18	0.5 - 1	<110	**2,100**
I11	DG-I11S-0.5-1	8/27/18	0.5 - 1	<0.086	**59**
I11	DG-I11S-3.5-4	8/27/18	2.5 - 4	<0.088	**340**
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5 - 4	<0.077	**1,200**
I11	DG-I11S-9.5-10	8/27/18	9.5 - 10	<0.12	**110**
J1	DG-J1S-0.5-1	8/20/18	0.5 - 1	<0.096	**680 B**
J1	DG-J1S-3.5-4	8/20/18	2.5 - 4	<0.086	**6.9 B**
J5	DG-J5S-0.5-1	8/22/18	0.5 - 1	<0.071	**200 B**
J5	DG-J5S-3.5-4	8/22/18	2.5 - 4	<0.078	**190 B**
J5	DG-J5S-7-7.5	8/22/18	7 - 7.5	<0.069	**5.5 B**
J9	DG-J9S-0.5-1	9/26/18	0.5 - 1	<0.11	**810**
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5 - 1	<0.096	**620**
J9	DG-J9S-3.5-4	9/26/18	3.5 - 4	<0.093	**46**
K3	DG-K3S-0.5-1	8/22/18	0.5 - 1	<0.08	**49**
K3	DG-K3S-3.5-4	8/22/18	2.5 - 4	<0.076	**3.7**
K7	DG-K7S-0.5-1	8/24/18	0.5 - 1	<0.087	**1,700**
K7	DG-K7S-3.5-4	8/24/18	2.5 - 4	<0.071	**15**
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5 - 4	<0.072	**50**
K8	DG-K8S-1-2[b,c]	8/22/18	2-Jan	<0.097	**6.6 B**
K11	DG-K11S-0.5-1	8/27/18	0.5 - 1	<0.086	**59**
K11	DG-K11S-3.5-4	8/27/18	1.0 - 2.5	<0.087	**13**
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0 - 2.5	<0.098	**34**
K11	DG-K11S-9.5-10	8/27/18	9.5 - 10	<0.084	**23**
L1	DG-L1S-0.5-1	8/20/18	0.5 - 1	<0.042	**84 B**
L1	DG-L1S-3.5-4	8/20/18	1.0 - 2.5	<0.045	**38 B**
L5	DG-L5S-0.5-1	8/22/18	0.5 - 1	<0.082	**210**
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5 - 1	<0.079	**120**
L5	DG-L5S-3.5-4	8/22/18	2.5 - 4	<0.085	**26**
L9	DG-L9S-0.5-1	8/27/18	0.5 - 1	<0.12	**760**
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5 - 1	<0.09	**760**
L9	DG-L9S-3.5-4	8/27/18	1.0 - 2.5	<0.10	**3.2**
L13	DG-L13S-0.5-1[c]	8/24/18	0.5 - 1	<0.099	**430**
L13	DG-L13S-3.5-4	8/24/18	1.0 - 2.5	<0.083	**7,000**

Table 6: Summary of Petroleum Hydrocarbons in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Sampling Date	Depth Range (ft bgs)	TPH-g (C4-C12)	TPH-d (C10-C28)
			Soil Screening Levels (SSL)	8.2E+01	9.60E+01
			Units	mg/kg	mg/kg
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0 - 2.5	**0.18 J**	**2,200**
M3	DG-M3S-0.5-1	8/22/18	0.5 - 1	<0.086	**21**
M3	DG-M3S-3.5-4	8/22/18	2.5 - 4	<0.12	**40**
M3	DG-M3S-7.5-8	8/22/18	7.5 - 8	<0.089	**5.2**
M7	DG-M7S-0.5-1	8/24/18	0.5 - 1	<0.083	**1,600**
M7	DG-M7S-3.5-4	8/24/18	3.5 - 4	<0.075	**8.3**
M11	DG-M11S-0.5-1	8/27/18	0.5 - 1	<0.084	**36**
M11	DG-M11S-3.5-4	8/27/18	2.5 - 4	<0.098	**8.9**

Notes:
a. Sample DG-G6S-1-2 was named DG-G6S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
b. Sample DG-K8S-1-2 was named DG-K8S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
c. Sample analyzed by 5030B/8260B.
1. TPH-g analyzed by USEPA Method 8260B.
2. TPH-d analyzed by USEPA Method 8015B
3. SSLs are from, in order of hierarchy, DTSC (April 2019), USEPA (April 2019), or San Francisco Regional Water Quality Control Board (January 2019).
4. Non-detect results are presented with "<" followed by the MDL.
5. Results in **bold** font indicate a detection above the MDL.
6. Results highlighted with yellow indicate the result exceeds the SSL.

Abbreviations:
"--" = not available
"<" = non-detect result
B = compound was found in the method blank and sample.
(D) = duplicate sample
ft bgs = feet below ground surface
H = sample was prepared or analyzed beyond the specified holding time
J = estimated value
MDL = method detection limit
mg/kg = milligram per kilogram
SSL = soil screening level
TPH-g/-d = total petroleum hydrocarbons as gasoline/diesel
USEPA = United States Environmental Protection Agency

Table 7: Summary of Organochlorine Pesticides and Polychlorinated Biphenyls in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				1.9E+03	2.0E+03	1.9E+03	3.9E+01	8.6E+01	1.7E+03	3.0E+02	1.7E+03	--	3.4E+01	--	--	3.8E+05	1.9E+04	--	--	1.7E+03	1.7E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<2.9	<2.0	<2.0	<2.4	<2.7	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.4	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.59	<0.40	<0.39	<0.48	<0.53	<0.39	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<12	<8.4	<8.2	<9.9	<11	<8.0	<7.2	<64	<8.8	<12	<6.4	<9.7	<7.6	<9.2	<13	<6.6	<13	<9.2
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	**0.52 J p**	<0.35	**14 J**	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<1.2	<0.83	<0.81	<0.99	<1.1	<0.79	<0.71	<6.3	<0.87	<1.2	<0.63	<0.97	<0.75	<0.91	<1.2	<0.65	<1.2	<0.91
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<1.2	<0.81	<0.79	<0.97	<1.1	**12**	<0.70	**82**	<0.85	<1.1	<0.62	<0.95	<0.74	<0.89	<1.2	<0.64	<1.2	**8.4 p**
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<0.60	<0.42	<0.41	<0.49	<0.54	<0.40	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45

Table 7: Summary of Organochlorine Pesticides and Polychlorinated Biphenyls in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				1.9E+03	2.0E+03	1.9E+03	3.9E+01	8.6E+01	1.7E+03	3.0E+02	1.7E+03	--	3.4E+01	--	--	3.8E+05	1.9E+04	--	--	1.7E+03	1.7E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<1.2	**1.5 J**	**2.1 J p**	<0.97	<1.1	<0.78	<0.70	<6.2	<0.85	<1.1	<0.62	<0.95	<0.74	<0.89	<1.2	<0.64	<1.2	**0.93 J**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.61	<0.42	<0.41	<0.50	<0.55	**0.59 J p**	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.60	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<1.2	<0.80	<0.78	<0.96	<1.1	<0.77	<0.69	<6.1	<0.84	<1.1	<0.61	<0.94	<0.73	<0.88	<1.2	<0.63	<1.2	<0.88
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<1.2	<0.82	<0.80	<0.98	<1.1	<0.78	<0.70	<6.3	<0.86	<1.2	<0.63	<0.96	<0.74	<0.90	<1.2	<0.65	<1.2	<0.90
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<1.2	<0.81	<0.79	<0.97	<1.1	<0.77	<0.70	<6.2	<0.85	**1.4 J**	<0.62	<0.95	<0.74	<0.89	<1.2	<0.64	<1.2	<0.89
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<1.2	<0.83	<0.81	<0.99	<1.1	<0.79	<0.71	<6.3	<0.87	<1.2	<0.63	<0.97	<0.75	<0.91	<1.2	<0.65	<1.2	<0.91
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.59	**0.72 J**	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<3.0	<2.1	<2.0	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.57	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.41	<0.56	<0.30	<0.46	<0.36	<0.43	<0.59	<0.31	<0.59	<0.43
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
F11	DG-F11S-3.5-4	8/24/18	2.5-4	**38**	<4.1	<4.0	<4.9	<5.4	**780 p**	<3.5	**3,900**	<4.3	<5.8	<3.1	<4.8	<3.7	<4.5	<6.2	<3.2	<6.2	**940**
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
G6	DG-G6S-1-2[a]	8/22/18	1-2	**0.90 J p**	**0.76 J**	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	**0.41 J p**	<0.35	**6.5 J**	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.43	<0.59	<0.31	<0.59	<0.43
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44

Table 7: Summary of Organochlorine Pesticides and Polychlorinated Biphenyls in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				1.9E+03	2.0E+03	1.9E+03	3.9E+01	8.6E+01	1.7E+03	3.0E+02	1.7E+03	--	3.4E+01	--	--	3.8E+05	1.9E+04	--	--	1.7E+03	1.7E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.43	<0.60	<0.31	<0.60	<0.43
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.59	**24**	**73**	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.58	<0.40	**1.2 J**	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
H6	DG-H6S-0.5-1	8/23/18	0.5-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H6	DG-H6S-3.5-4	8/23/18	1-2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.58	<0.40	<0.39	<0.47	<0.52	**0.77 J p**	<0.34	**14 J**	<0.41	<0.56	<0.30	<0.46	<0.36	<0.43	<0.59	<0.31	<0.59	**1.9 p**
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.43	<0.60	<0.31	<0.60	<0.43
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.59	<0.41	<0.40	<0.49	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
I7	DG-I7S-0.5-1	8/24/18	0.5-1	**0.65 J p**	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<5.9	<4.1	<4.0	<4.8	<5.3	<3.9	<3.5	<31	<4.3	<5.7	<3.1	<4.7	<3.7	<4.5	<6.1	<3.2	<6.1	<4.5
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	**1.8 J p**	<0.35	**16 J**	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	**1.8 J**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<1.2	<0.83	<0.81	<0.98	<1.1	<0.79	<0.71	<6.3	<0.87	<1.2	<0.63	<0.96	<0.75	<0.91	<1.2	<0.65	<1.2	**1.3 J**
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<2.9	<2.0	<2.0	<2.4	<2.6	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.3	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<5.8	<4.0	<3.9	<4.7	<5.2	<3.8	<3.4	<30	<4.2	<5.6	<3.0	<4.6	<3.6	<4.4	<6.0	<3.1	<6.0	<4.4
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.59	<0.41	<0.40	<0.49	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<1.2	<0.82	<0.80	<0.97	<1.1	<0.78	<0.70	<6.2	<0.86	<1.2	<0.62	<0.96	<0.74	<0.90	<1.2	<0.64	<1.2	<0.90
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<3.0	**2.8 J**	**3.0 J**	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<3.0	<2.0	<2.0	<2.4	<2.7	<1.9	<1.7	<16	<2.1	<2.9	<1.6	<2.4	<1.8	<2.2	<3.1	<1.6	<3.1	<2.2
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<3.0	<2.1	**5.1 J**	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
K8	DG-K8S-1-2	8/22/18	1-2	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.60	<0.42	**2.2 p**	<0.49	<0.54	**0.94 J**	<0.36	<3.2	<0.44	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	**1.0 J p**
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45

Table 7: Summary of Organochlorine Pesticides and Polychlorinated Biphenyls in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				1.9E+03	2.0E+03	1.9E+03	3.9E+01	8.6E+01	1.7E+03	3.0E+02	1.7E+03	--	3.4E+01	--	--	3.8E+05	1.9E+04	--	--	1.7E+03	1.7E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	**0.96 J**	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.59	<0.41	<0.40	<0.48	<0.53	**0.57 J p**	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<5.9	<4.0	<3.9	<4.8	<5.3	<3.8	<3.5	<31	<4.2	<5.7	<3.1	<4.7	<3.6	<4.4	<6.0	<3.2	<6.0	<4.4
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.59	<0.40	**0.41 J**	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L13	DG-L13S-0.5-1	8/24/18	0.5-1	<1.2	<0.80	<0.78	<0.96	<1.1	**3.5 J p**	<0.69	<6.1	<0.84	<1.1	<0.61	<0.94	<0.73	<0.88	<1.2	<0.63	<1.2	**3.6 J**
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<3.0	<2.1	<2.0	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	<2.9	<2.0	<1.9	<2.4	<2.6	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.3	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<2.9	<2.0	<1.9	<2.4	<2.6	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.3	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.59	<0.40	**0.41 J p**	<0.48	<0.53	<0.39	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.59	<0.41	<0.40	<0.49	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45

Table 7: Summary of Organochlorine Pesticides and Polychlorinated Biphenyls in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<23	<25	<24	<19	<25	<24	**87 p**
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.44	<0.33	<0.64	<6.5	<21	<23	<22	<19	<23	<22	<21
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.44	<0.33	<0.64	<6.4	<21	<23	<22	<18	<23	<22	<21
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.44	<0.34	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<2.2	<1.7	<3.3	<33	<22	<24	<23	<19	<24	**32 J**	**42 J**
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.44	<0.33	<0.64	<6.5	<21	<23	<22	<19	<23	<22	<21
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<9.2	<7.0	<14	<140	<21	<23	<22	<18	<23	<22	<21
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.46	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	<22
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	<22
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<0.91	<0.69	<1.3	<14	<21	<23	<22	<18	<23	<22	<21
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<19	<23	<22	<21
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.46	<0.35	<0.68	<6.8	<23	<25	<24	<20	<25	<24	<23
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.89	<0.68	<1.3	<13	<21	<23	<22	<19	<23	<22	<21
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.44	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.44	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.45	<0.35	<0.67	<6.7	<23	<25	<24	<20	<25	<24	<23
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<19	<23	<22	<21
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<25	<23	<19	<25	<23	<22
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<19	<23	<22	<21

Table 7: Summary of Organochlorine Pesticides and Polychlorinated Biphenyls in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<0.89	<0.68	<1.3	<13	<22	<24	<23	<19	<24	**60**	**37 J**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.46	<0.35	<0.68	<6.8	<220	<240	<230	<190	<240	<230	<220
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	<22
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<19	<23	<22	<21
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	--	--	--	--	<23	<25	<24	<20	<25	<24	<23
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.45	<0.34	<0.67	<6.7	<21	<23	<22	<19	<23	<22	<21
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.44	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.46	<0.35	<0.67	<6.8	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<0.88	<0.67	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.90	<0.68	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<0.89	<0.68	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.46	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<0.91	<0.69	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.45	<0.34	<0.67	<6.7	<22	<23	<23	<19	<23	<23	<22
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<2.3	<1.7	<3.4	<34	<23	<25	<24	<20	<25	<24	<23
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.46	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.46	<0.35	<0.67	<6.7	<330	<360	<340	<280	<360	<340	<330
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.45	<0.34	<0.67	<6.7	<23	<25	<24	<20	<25	<24	<23
F11	DG-F11S-3.5-4	8/24/18	2.5-4	<4.5	<3.4	<6.6	<66	<110	<120	<120	<97	<120	<120	<110
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.46	<0.35	<0.68	<6.8	<22	<24	<23	<19	<24	<23	<22
G6	DG-G6S-1-2[a]	8/22/18	1-2	<0.44	<0.34	<0.65	<6.5	<22	<25	<23	<19	<25	<23	<22
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.44	<0.34	<0.65	<6.5	<450	<490	<470	<390	<490	<470	<450
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<110	<120	<120	<97	<120	<120	<110
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<21	<23	<22	<19	<23	<22	<21
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22

Table 7: Summary of Organochlorine Pesticides and Polychlorinated Biphenyls in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.43	<0.33	<0.64	<6.4	<21	<23	<22	<18	<23	<22	<21
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	**24 J**
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
H6	DG-H6S-0.5-1	8/23/18	0.5-1	--	--	--	--	<23	<25	<24	<20	<25	<24	<23
H6	DG-H6S-3.5-4	8/23/18	1-2.5	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<0.46	<0.35	<0.68	<6.8	<21	<23	<22	<18	<23	<22	<21
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.44	<0.33	<0.64	<6.4	<21	<23	<22	<18	<23	<22	<21
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<4.5	<3.4	<6.6	<66	<22	<24	<23	<19	<24	<23	<22
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	**42 J p**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.91	<0.69	<1.3	<13	<23	<25	<24	<20	<25	<24	<23
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<2.2	<1.7	<3.3	<33	<22	<24	<23	<19	<24	<23	<22
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<4.4	**11 J**	<6.4	<64	<23	<25	<24	<20	<25	<24	<23
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<0.90	<0.68	<1.3	<13	<22	<24	<23	<19	<24	**590**	**420**
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<23	<25	<24	<20	<25	<24	**38 J**
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<2.3	<1.7	<3.4	<34	<21	<23	<22	<18	<23	<22	<21
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<2.2	<1.7	<3.3	<33	<22	<24	<23	<19	<24	<23	<22
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<2.3	<1.7	<3.4	<34	<22	<24	<23	<19	<24	<23	**38 J**
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.46	<0.35	<0.68	<6.8	<21	<23	<22	<19	<23	<22	<21
K8	DG-K8S-1-2	8/22/18	1-2	<0.46	<0.35	<0.68	<6.8	<22	<24	<23	<19	<24	<23	<22
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.45	<0.34	<0.66	<6.6	<23	<25	<24	<20	<25	<24	<23

Table 7: Summary of Organochlorine Pesticides and Polychlorinated Biphenyls in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.45	<0.35	<0.67	<6.7	<23	<25	<24	<20	<25	<24	<23
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<4.4	<3.4	<6.5	<65	<420	<460	<440	<370	<460	<440	**13,000**
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.44	<0.34	<0.65	<6.6	<110	<120	<110	<93	<120	<110	**3,000**
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	**44 J**
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L13	DG-L13S-0.5-1	8/24/18	0.5-1	<0.88	<0.67	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<2.3	<1.7	<3.3	<34	<22	<24	<23	<19	<24	<23	<22
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	<2.2	<1.7	<3.2	<32	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<2.2	<1.7	<3.2	<32	<22	<24	<23	<19	<24	<23	<22
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.44	<0.34	**0.75 J**	<6.6	<23	<25	<24	<20	<25	<24	<23
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22

Table 7: Summary of Organochlorine Pesticides and Polychlorinated Biphenyls in Soil
UPC OU-SM
Brisbane, California

Notes:
a. Sample DG-G6S-1-2 was named DG-G6S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
b. Sample DG-K8S-1-2 was named DG-K8S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
1. Organochlorine pesticides were analyzed by USEPA Method 8081A.
2. PCBs were analyzed by USEPA Method 8082.
3. SSLs are from, in order of hierarchy, DTSC (April 2019), USEPA (April 2019), or San Francisco Regional Water Quality Control Board (January 2019).
4. Non-detect results are presented with "<" followed by the MDL.
5. Results in bold font indicate a detection above the MDL.
6. Results shaded with gray indicate the MDL exceeded the SSL.
7. Results highlighted with yellow indicate the result exceeds the SSL.

Abbreviations:
"--" = not available
"<" = non-detect result
(D) = duplicate sample
ft bgs = feet below ground surface
J = estimated value
MDL = method detection limit
p = The relative percent difference between the primary and confirmation column/detector is >40%. The lower value has been reported.
PCB = polychlorinated biphenyl
RL = reporting limit
SSL = soil screening level
µg/kg = microgram per kilogram
USEPA = United States Environmental Protection Agency

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.1E+02	4.0E+07	1.1E+03	3.6E+03	1.0E+03	--	6.3E+04	1.5E+00	2.4E+04	5.8E+04	5.3E+00	3.7E+01	1.8E+06	4.6E+02	1.0E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5 - 20	<0.57	<0.46	<0.56	<1.6	<0.52	<0.51	<0.46	<0.52	<0.55	<0.57	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47
A3	DG-A3S-0.5-1	8/21/18	0.5 - 1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.66	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.67	<0.56
A3	DG-A3S-3.5-4	8/21/18	2.5 - 4	<0.52	<0.41	<0.51	<1.4	<0.48	<0.46	<0.42	<0.47	<0.50	<0.52	<0.48	<1.1	<1.2	<0.97	<0.46	<0.52	<0.43
A3	DG-A3S-9.5-10	8/21/18	9.5 - 10	<0.55	<0.44	<0.54	<1.5	<0.51	<0.49	<0.45	<0.50	<0.54	<0.56	<0.51	<1.2	<1.2	<1.0	<0.49	<0.55	<0.46
A4	DG-A4S-19.5-20	8/22/18	19.5 - 20	<0.52	<0.41	<0.51	<1.4	<0.47	<0.46	<0.42	<0.47	<0.50	<0.52	<0.48	<1.1	<1.2	<0.97	<0.46	<0.52	<0.43
A5	DG-A5S-19.5-20	8/23/18	19.5 - 20	<0.60	<0.49	<0.60	<1.7	<0.56	<0.54	**1.8 J ***	<0.55	<0.59	<0.61	<0.57	<1.3	<1.4	<1.1	<0.54	<0.60	<0.50
A6	DG-A6S-19.5-20	8/22/18	19.5 - 20	<0.52	<0.42	<0.52	<1.4	<0.48	<0.47	<0.43	<0.48	<0.51	<0.53	<0.49	<1.1	<1.2	<0.98	<0.47	<0.52	<0.43
A7	DG-A7S-0.5-1	8/23/18	0.5 - 1	<0.62	<0.50	<0.61	<1.7	<0.57	<0.56	<0.51	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.62	<0.51
A7	DG-A7S-3.5-4	8/23/18	2.5 - 4	<0.56	<0.45	<0.55	<1.5	<0.51	<0.50	<0.45	<0.50	<0.54	<0.56	<0.52	<1.2	<1.2	<1.0	<0.50	<0.56	<0.46
A7	DG-A7S-10-10.5	8/23/18	10 - 10.5	<0.60	<0.48	<0.60	<1.7	<0.56	<0.54	<0.49	<0.55	<0.59	<0.61	<0.56	<1.3	<1.4	<1.1	<0.54	<0.60	<0.50
A7	DG-A7S-10-10.5 (D)	8/23/18	10 - 10.5	<0.56	<0.45	<0.56	<1.5	<0.52	<0.50	<0.46	<0.51	<0.55	<0.57	<0.53	<1.2	<1.3	<1.1	<0.50	<0.56	<0.47
A8	DG-A8S-0.5-1	8/27/18	0.5 - 1	<0.78	<0.62	<0.77	<2.1	<0.72	<0.70	<0.63	<0.71	<0.76	<0.79	<0.73	<1.7	<1.7	<1.5	<0.70	<0.78	<0.64
A8	DG-A8S-3.5-4	8/27/18	2.5 - 4	<0.65	<0.52	<0.64	<1.8	<0.59	<0.58	<0.53	<0.59	<0.63	<0.65	<0.60	<1.4	<1.4	<1.2	<0.58	<0.65	<0.53
A8	DG-A8S-17-17.5	8/27/18	17 - 17.5	<0.49	<0.39	<0.48	<1.3	<0.45	<0.43	<0.40	<0.44	<0.47	<0.49	<0.45	<1.0	<1.1	<0.91	<0.43	<0.49	<0.40
A8	DG-A8S-17-17.5 (D)	8/27/18	17 - 17.5	<0.52	<0.41	<0.51	<1.4	<0.48	<0.46	<0.42	<0.47	<0.50	<0.52	<0.48	<1.1	<1.2	<0.97	<0.46	<0.52	<0.43
B1	DG-B1S-0.5-1	8/21/18	0.5 - 1	<0.59	<0.47	<0.58	<1.6	<0.54	<0.53	<0.48	<0.53	<0.57	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
B1	DG-B1S-3.5-4	8/21/18	3.5 - 4	<0.71	<0.57	<0.70	<2.0	<0.66	<0.64	<0.58	<0.65	<0.69	<0.72	<0.67	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59
B2	DG-B2S-19.5-20	8/21/18	19.5 - 20	<0.58 J	<0.47	<0.58	<1.6	<0.54	<0.52	<0.48	<0.53	<0.57 J	<0.59 J	<0.55 J	<1.3 J	<1.3 J	<1.1	<0.52 J	<0.58	<0.48
B5	DG-B5S-0.5-1	8/23/18	0.5 - 1	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.55	**0.68 J**	<0.62	<0.57	<1.3	<1.4	<1.1	<0.55	<0.61	<0.51
B5	DG-B5S-3.5-4	8/23/18	1 - 2.5	<0.57	<0.46	<0.57	<1.6	<0.53	<0.51	<0.47	<0.52	<0.56	<0.58	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47
B7	DG-B7S-14.5-15	8/23/18	14.5 - 15	<0.53	<0.43	<0.53	<1.5	<0.49	<0.48	<0.44	<0.48	<0.52	<0.54	<0.50	<1.2	<1.2	<1.0	<0.48	<0.53	<0.44
B9	DG-B9S-0.5-1	8/24/18	0.5 - 1	<0.72	<0.58	<0.71	<2.0	<0.67	<0.65	<0.59	<0.66	<0.70	<0.73	<0.68	<1.6	<1.6	<1.4	<0.65	<0.72	<0.60
B9	DG-B9S-3.5-4	8/24/18	2.5 - 4	<0.75	<0.60	<0.74	<2.0	<0.69	<0.67	<0.61	<0.68	<0.73	<0.75	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62
B9	DG-B9S-9.5-10	8/24/18	9.5 - 10	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.61	<0.51
B10	DG-B10S-0.5-1	8/24/18	0.5 - 1	<0.71	<0.57	<0.70	<1.9	<0.66	<0.64	<0.58	<0.65	<0.69	<0.72	<0.66	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5 - 1	<0.76	<0.61	<0.75	<2.1	<0.70	<0.68	<0.62	<0.69	<0.74	<0.77	<0.71	<1.6	<1.7	<1.4	<0.68	<0.76	<0.63
B10	DG-B10S-3.5-4	8/24/18	2.5 - 4	<0.61	<0.49	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.61	<0.51
C3	DG-C3S-0.5-1	8/21/18	0.5 - 1	<0.81 R	<0.65 R	<0.80 R	<2.2 R	<0.74 R	<0.72 R	<0.66 R	<0.73 R	<0.79 R	<0.82 R	<0.75 R	<1.7 R	<1.8 R	<1.5	<0.72 R	<0.81 R	<0.67 R
C3	DG-C3S-3.5-4	8/21/18	2.5 - 4	<0.83	<0.66	<0.82 R	<2.3	<0.76	<0.74	<0.67	<0.75	<0.80 R	<0.84 R	<0.77 R	<1.8 R	<1.8 R	<1.6	<0.74 R	<0.83	<0.68
C3	DG-C3S-9.5-10	8/21/18	9.5 - 10	<0.57	<0.45	<0.56	<1.5	<0.52	<0.51	<0.46	<0.51	<0.55	<0.57	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47
C5	DG-C5S-9-9.5	8/23/18	9 - 9.5	<0.53	<0.42	<0.52	<1.4	<0.49	<0.47	<0.46	<0.48	<0.52	<0.54	<0.49	<1.1	<1.2	<1.0	<0.47	<0.53	<0.44
C7	DG-C7S-0.5-1	8/24/18	0.5 - 1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.65	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.67	<0.56
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5 - 1	<1.2	<0.99	<1.2	<3.4	<1.1	<1.1	<1.0	<1.1	<1.2	<1.3	<1.2	<2.7	<2.8	<2.3	<1.1	<1.2	<1.0
C7	DG-C7S-3.5-4	8/24/18	3.5 - 4	<0.54	<0.43	<0.53	<1.5	<0.50	<0.48	<0.44	<0.49	<0.53	<0.55	<0.50	<1.2	<1.2	<1.0	<0.48	<0.54	<0.45

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.1E+02	4.0E+07	1.1E+03	3.6E+03	1.0E+03	--	6.3E+04	1.5E+00	2.4E+04	5.8E+04	5.3E+00	3.7E+01	1.8E+06	4.6E+02	1.0E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
C7	DG-C7S-9.5-10	8/24/18	9.5 - 10	<0.72	<0.58	<0.71	<2.0	<0.66	<0.64	<0.58	<0.65	<0.70	<0.73	<0.67	<1.5	<1.6	<1.3	<0.64	<0.72	<0.59
D1	DG-D1S-0.5-1	8/20/18	0.5 - 1	<0.61	<0.49	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.61	<0.51
D1	DG-D1S-3.5-4	8/20/18	2.5 - 4	<0.67	<0.53	<0.66	<1.8	<0.61	<0.60	<0.54	<0.60	<0.65	<0.67	<0.62	<1.4	<1.5	<1.3	<0.60	<0.67	<0.55
D1	DG-D1S-9.5-10	8/20/18	9.5 - 10	<0.64	<0.52	<0.63	<1.8	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
D3	DG-D3S-9.5-10	8/21/18	9.5 - 10	<0.73	<0.58	<0.72	<2.0	<0.67	<0.65	<0.59	<0.66	<0.71	<0.73	<0.68	<1.6	<1.6	<1.4	<0.65	<0.73	<0.60
D5	DG-D5S-0.5-1	8/22/18	0.5 - 1	<0.68	<0.55	<0.67	<1.9	<0.63	<0.61	<0.55	<0.62	<0.66	<0.69	<0.63	<1.5	<1.5	<1.3	<0.61	<0.68	<0.56
D5	DG-D5S-3.5-4	8/22/18	2.5 - 4	<0.72	<0.58	<0.71	<2.0	<0.66	<0.64	<0.59	<0.65	<0.70	<0.73	<0.67	<1.6	<1.6	<1.4	<0.64	<0.72	<0.60
D9	DG-D9S-0.5-1	8/24/18	0.5 - 1	<0.58	<0.46	<0.57	<1.6	<0.53	<0.52	<0.47	<0.52	<0.56	<0.58	<0.54	<1.2	<1.3	<1.1	<0.52	<0.58	<0.48
D9	DG-D9S-3.5-4	8/24/18	1 - 2.5	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
D9	DG-D9S-9.5-10	8/24/18	9.5 - 10	<0.62	<0.50	<0.61	<1.7	<0.57	<0.56	<0.51	<0.56	<0.61	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.62	<0.52
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5 - 1	<0.52	<0.42	<0.52	<1.4	<0.48	<0.47	<0.43	<0.48	<0.51	<0.53	<0.49	<1.1	<1.2	<0.99	<0.47	<0.52	<0.43
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5 - 4	<0.71	<0.57	<0.70	<1.9	<0.65	<0.63	<0.58	<0.64	<0.69	<0.71	<0.66	<1.5	<1.6	<1.3	<0.63	<0.71	<0.58
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5 - 10	<0.55 R	<0.45	<0.55 R	<1.5	<0.51	<0.50	<0.45	<0.50	<0.54 R	<0.56 R	<0.52 R	<1.2 R	<1.2 R	<1.0	<0.50 R	<0.55	<0.46
E3	DG-E3S-9.5-10	8/21/18	9.5 - 10	<0.61	<0.49	<0.60	<1.7	<0.56	<0.54	<0.50	<0.55	<0.59	<0.62	<0.57	<1.3	<1.4	<1.1	<0.54	<0.61	<0.50
E5	DG-E5S-9-9.5	8/22/18	9 - 9.5	<0.56	<0.45	<0.55	<1.5	<0.52	<0.50	<0.46	<0.51	<0.54	<0.57	<0.52	<1.2	<1.3	<1.1	<0.50	<0.56	<0.46
E7	DG-E7S-0.5-1	8/24/18	0.5 - 1	<0.81	<0.65	<0.80	<2.2	<0.75	<0.73	<0.66	<0.74	<0.79	<0.82	<0.76	<1.8	<1.8	<1.5	<0.73	<0.81	<0.67
E7	DG-E7S-3.5-4	8/24/18	2.5 - 4	<0.72	<0.58	<0.71	<2.0	<0.66	<0.65	<0.59	<0.65	<0.70	<0.73	<0.67	<1.6	<1.6	<1.4	<0.65	<0.72	<0.60
E7	DG-E7S-9.5-10	8/24/18	9.5 - 10	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.57	<0.63	<0.67	<0.70	<0.65	<1.5	<1.6	<1.3	<0.62	<0.69	<0.57
E11	DG-E11S-0.5-1	8/27/18	0.5 - 1	<0.62	<0.50	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5 - 1	<0.62	<0.49	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51
E11	DG-E11S-3.5-4	8/27/18	2.5 - 4	<0.91	<0.73	<0.90	<2.5	<0.84	<0.82	<0.74	<0.83	<0.89	<0.92	<0.85	<2.0	<2.0	<1.7	<0.82	<0.91	<0.76
E11	DG-E11S-9.5-10	8/27/18	9.5 - 10	<0.71	<0.57	<0.70	<2.0	<0.66	<0.64	<0.58	<0.65	<0.70	<0.72	<0.67	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59
F1	DG-F1S-0.5-1	8/20/18	0.5 - 1	<0.58	<0.46	<0.57	<1.6	<0.53	<0.52	<0.47	<0.53	<0.56	<0.59	<0.54	<1.2	<1.3	<1.1	<0.52	<0.58	<0.48
F1	DG-F1S-3.5-4	8/20/18	2.5 - 4	<0.59	<0.47	<0.58	<1.6	<0.54	<0.53	<0.48	<0.53	<0.57	<0.59	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
F1	DG-F1S-9.5-10	8/20/18	9.5 - 10	<0.59	<0.47	<0.58 R	<1.6	<0.54	<0.53	<0.48	<0.53	<0.57 R	<0.59 R	<0.55 R	<1.3 R	<1.3 R	<1.1	<0.53 R	<0.59	<0.49
F3	DG-F3S-0.5-1	8/21/18	0.5 - 1	<0.56	<0.45	<0.55	<1.5	<0.51	<0.50	<0.45	<0.51	<0.54	<0.56	<0.52	<1.2	<1.2	<1.0	<0.50	<0.56	<0.46
F3	DG-F3S-3.5-4	8/21/18	1 - 2.5	<0.62	<0.50	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.62	<0.52
F3	DG-F3S-9.5-10	8/21/18	9.5 - 10	<0.76	<0.61	<0.75	<2.1	<0.70	<0.68	<0.62	<0.69	<0.74	<0.77	<0.71	<1.6	<1.7	<1.4	<0.68	<0.76	<0.63
F5	DG-F5S-0.5-1	8/22/18	0.5 - 1	<0.81	<0.65	<0.80	<2.2	<0.75	<0.73	<0.66	<0.74	<0.79	<0.83	<0.76	<1.8	<1.8	<1.5	<0.73	<0.81	<0.68
F5	DG-F5S-3.5-4	8/22/18	2.5 - 4	<0.88	<0.71	<0.87	<2.4	<0.81	<0.79	<0.72	<0.80	<0.86	<0.90	<0.83	<1.9	<2.0	<1.7	<0.79	<0.88	<0.73
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5 - 4	<0.52	<0.42	<0.51	<1.4	<0.48	<0.47	<0.42	<0.47	<0.51	<0.53	<0.49	<1.1	<1.2	<0.98	<0.47	<0.52	<0.43
F9	DG-F9S-0.5-1	8/24/18	0.5 - 1	<0.61	<0.49	<0.60	<1.7	<0.56	<0.54	<0.49	<0.55	<0.59	<0.61	<0.57	<1.3	<1.4	<1.1	<0.54	<0.61	<0.50
F9	DG-F9S-3.5-4	8/24/18	2.5 - 4	<0.68	<0.55	<0.67	<1.9	<0.63	<0.61	<0.56	<0.62	<0.66	<0.69	<0.64	<1.5	<1.5	<1.3	<0.61	<0.68	<0.57
F9	DG-F9S-9.5-10	8/24/18	9.5 - 10	<0.78	<0.63	<0.77	<2.1	<0.72	<0.70	<0.64	<0.71	<0.76	<0.79	<0.73	<1.7	<1.8	<1.5	<0.70	<0.78	<0.65

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.1E+02	4.0E+07	1.1E+03	3.6E+03	1.0E+03	--	6.3E+04	1.5E+00	2.4E+04	5.8E+04	5.3E+00	3.7E+01	1.8E+06	4.6E+02	1.0E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
FG910	DG-FG910S-3.5-4	8/27/18	1 - 2.5	<0.59	<0.48	<0.59	<1.6	<0.55	<0.53	<0.48	<0.54	<0.58	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
FG910	DG-FG910S-0.5-1	8/27/18	0.5 - 1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.54	<0.61	<0.65	<0.68	<0.62	<1.4	<1.5	<1.3	<0.60	<0.67	<0.55
G3	DG-G3S-9.5-10	8/21/18	9.5 - 10	<0.68	<0.54	<0.67	<1.8	<0.62	<0.60	<0.55	<0.61	<0.66	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.68	<0.56
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<0.70	<0.56	<0.69	<1.9	<0.65	<0.63	<0.57	<0.64	<0.69	<0.71	<0.66	<1.5	<1.6	<1.3	<0.63	<0.70	<0.58
G7	DG-G7S-0.5-1	8/24/18	0.5 - 1	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.64	<0.59	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
G7	DG-G7S-3.5-4	8/24/18	2.5 - 4	<0.53	<0.43	<0.52	<1.5	<0.49	<0.48	<0.43	<0.48	<0.52	<0.54	<0.50	<1.1	<1.2	<1.0	<0.48	<0.53	<0.44
G11	DG-G11S-0.5-1	8/27/18	0.5 - 1	<0.72	<0.58	<0.71	<2.0	<0.66	<0.64	<0.59	<0.65	<0.70	<0.73	<0.67	<1.5	<1.6	<1.4	<0.64	<0.72	<0.60
G11	DG-G11S-3.5-4	8/27/18	2.5 - 4	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.56	<0.63	<0.67	<0.70	<0.65	<1.5	<1.5	<1.3	<0.62	<0.69	<0.57
G11	DG-G11S-9.5-10	8/27/18	9.5 - 10	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.55	<0.59	<0.62	<0.57	<1.3	<1.4	<1.1	<0.55	<0.61	<0.50
H1	DG-H1S-0.5-1	8/20/18	0.5 - 1	<0.60	<0.48	<0.59	<1.6	<0.55	<0.54	<0.49	<0.55	<0.58	<0.61	<0.56	<1.3	<1.3	<1.1	<0.54	<0.60	<0.50
H1	DG-H1S-3.5-4	8/20/18	2.5 - 4	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
H3	DG-H3S-0.5-1	8/21/18	0.5 - 1	<0.65	<0.52	<0.64	<1.8	<0.60	<0.58	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.58	<0.65	<0.54
H3	DG-H3S-3.5-4	8/21/18	2.5 - 4	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.55	<0.59	<0.62	<0.57	<1.3	<1.4	<1.1	<0.55	<0.61	<0.51
H3	DG-H3S-9.5-10	8/21/18	9.5 - 10	<0.54	<0.43	<0.53	<1.5	<0.49	<0.48	<0.44	<0.49	<0.52	<0.54	<0.50	<1.2	<1.2	<1.0	<0.48	<0.54	<0.44
H5	DG-H5S-0.5-1	8/22/18	0.5 - 1	<0.62	<0.50	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51
H5	DG-H5S-3.5-4	8/22/18	2.5 - 4	<0.48	<0.38	<0.47	<1.3	<0.44	<0.43	<0.39	<0.43	<0.46	<0.48	<0.44	<1.0	<1.1	<0.89	<0.43	<0.48	<0.39
H6	DG-H6S-0.5-1	8/23/18	0.5 - 1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.65	<0.68	<0.63	<1.4	<1.5	<1.3	<0.60	<0.67	<0.56
H6	DG-H6S-3.5-4	8/23/18	1 - 2.5	<0.58	<0.47	<0.57	<1.6	<0.54	<0.52	<0.47	<0.53	<0.57	<0.59	<0.54	<1.3	<1.3	<1.1	<0.52	<0.58	<0.48
H9	DG-H9S-0.5-1	8/27/18	0.5 - 1	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
H9	DG-H9S-3.5-4	8/27/18	2.5 - 4	<0.59	<0.47	<0.58	<1.6	<0.54	<0.53	<0.48	<0.54	<0.57	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5 - 4	<0.60	<0.48	<0.59	<1.6	<0.55	<0.54	<0.49	<0.54	<0.58	<0.61	<0.56	<1.3	<1.3	<1.1	<0.54	<0.60	<0.50
H9	DG-H9S-9.5-10	8/27/18	9.5 - 10	<0.59	<0.48	<0.59	<1.6	<0.55	<0.53	<0.48	<0.54	<0.58	<0.60	<0.56	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
I3	DG-I3S-0.5-1	8/22/18	0.5 - 1	<0.71	<0.57	<0.70	<1.9	<0.65	<0.64	<0.58	<0.64	<0.69	<0.72	<0.66	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59
I3	DG-I3S-3.5-4	8/22/18	1 - 2.5	<0.63	<0.51	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.64	<0.59	<1.4	<1.4	<1.2	<0.56	<0.63	<0.52
I7	DG-I7S-0.5-1	8/24/18	0.5 - 1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.66	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.67	<0.56
I7	DG-I7S-3.5-4	8/24/18	2.5 - 4	<0.62	<0.50	<0.61	<1.7	<0.57	<0.55	<0.51	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5 - 4	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.57	<0.63	<0.68	<0.70	<0.65	<1.5	<1.6	<1.3	<0.62	<0.69	<0.57
I9	DG-I9S-0.5-1	8/24/18	0.5 - 1	<390	<620	<560	<2,400	<420	<390	<410	<390	<850	<590	<630	<1,800	<690	<1,600	<690	<390	<390
I11	DG-I11S-0.5-1	8/27/18	0.5 - 1	<0.65	<0.52	<0.64	<1.8	<0.60	<0.58	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.58	<0.65	<0.54
I11	DG-I11S-3.5-4	8/27/18	2.5 - 4	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.65	<0.68	<0.62	<1.4	<1.5	<1.3	<0.60	<0.67	<0.55
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5 - 4	<0.58	<0.47	<0.58	<1.6	<0.54	<0.52	<0.48	<0.53	<0.57	<0.59	<0.55	<1.3	<1.3	<1.1	<0.52	<0.58	<0.48
I11	DG-I11S-9.5-10	8/27/18	9.5 - 10	<0.95	<0.76	<0.94	<2.6	<0.87	<0.85	<0.77	<0.86	<0.92	<0.96	<0.89	<2.0	<2.1	<1.8	<0.85	<0.95	<0.79
J1	DG-J1S-0.5-1	8/20/18	0.5 - 1	<0.73	<0.59	<0.72	<2.0	<0.67	<0.65	<0.60	<0.66	<0.71	<0.74	<0.68	<1.6	<1.6	<1.4	<0.65	<0.73	<0.60
J1	DG-J1S-3.5-4	8/20/18	2.5 - 4	<0.66	<0.53	<0.65	<1.8	<0.60	<0.59	<0.54	<0.60	<0.64	<0.67	<0.61	<1.4	<1.5	<1.2	<0.59	<0.66	<0.54

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.1E+02	4.0E+07	1.1E+03	3.6E+03	1.0E+03	--	6.3E+04	1.5E+00	2.4E+04	5.8E+04	5.3E+00	3.7E+01	1.8E+06	4.6E+02	1.0E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
J5	DG-J5S-0.5-1	8/22/18	0.5 - 1	<0.54	<0.43	<0.53	<1.5	<0.49	<0.48	<0.44	<0.49	<0.52	<0.54	<0.50	<1.2	<1.2	<1.0	<0.48	<0.54	<0.44
J5	DG-J5S-3.5-4	8/22/18	2.5 - 4	<0.59	<0.48	<0.58	<1.6	<0.55	<0.53	<0.48	<0.54	<0.58	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
J5	DG-J5S-7-7.5	8/22/18	7 - 7.5	<0.52	<0.42	<0.51	<1.4	<0.48	<0.47	<0.43	<0.47	<0.51	<0.53	<0.49	<1.1	<1.2	<0.98	<0.47	<0.52	<0.43
J9	DG-J9S-0.5-1	9/26/18	0.5 - 1	<0.85	<0.68	<0.84	<2.3	<0.78	<0.76	<0.69	<0.77	<0.83	<0.86	<0.79	<1.8	<1.9	<1.6	<0.76	<0.85	<0.71
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5 - 1	<0.73	<0.59	<0.72	<2.0	<0.68	<0.66	<0.60	<0.67	<0.71	<0.74	<0.68	<1.6	<1.6	<1.4	<0.66	<0.73	<0.61
J9	DG-J9S-3.5-4	9/26/18	3.5 - 4	<0.71	<0.57	<0.70	<1.9	<0.65	<0.63	<0.58	<0.64	<0.69	<0.72	<0.66	<1.5	<1.6	<1.3	<0.63	<0.71	<0.59
K3	DG-K3S-0.5-1	8/22/18	0.5 - 1	<0.61	<0.49	<0.60	<1.7	<0.56	<0.54	<0.49	<0.55	<0.59	<0.61	<0.57	<1.3	<1.4	<1.1	<0.54	<0.61	<0.50
K3	DG-K3S-3.5-4	8/22/18	2.5 - 4	<0.58	<0.46	<0.57	<1.6	<0.53	<0.52	<0.47	<0.52	<0.56	<0.58	<0.54	<1.2	<1.3	<1.1	<0.52	<0.58	<0.48
K7	DG-K7S-0.5-1	8/24/18	0.5 - 1	<0.66	<0.53	<0.65	<1.8	<0.61	<0.59	<0.54	<0.60	<0.64	<0.67	<0.62	<1.4	<1.5	<1.2	<0.59	<0.66	<0.55
K7	DG-K7S-3.5-4	8/24/18	2.5 - 4	<0.54	<0.44	<0.54	<1.5	<0.50	<0.49	<0.44	<0.49	<0.53	<0.55	<0.51	<1.2	<1.2	<1.0	<0.49	<0.54	<0.45
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5 - 4	<0.55	<0.44	<0.54	<1.5	<0.50	<0.49	<0.45	<0.50	<0.53	<0.55	<0.51	<1.2	<1.2	<1.0	<0.49	<0.55	<0.45
K8	DG-K8S-1-2[b,c]	8/22/18	2-Jan	<0.74	<0.59	<0.73	<2.0	<0.68	<0.66	<0.60	<0.67	<0.72	<0.75	<0.69	<1.6	<1.7	<1.4	<0.66	<0.74	<0.61
K11	DG-K11S-0.5-1	8/27/18	0.5 - 1	<0.65	<0.52	<0.65	<1.8	<0.60	<0.58	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.58	<0.65	<0.54
K11	DG-K11S-3.5-4	8/27/18	1.0 - 2.5	<0.66	<0.53	<0.65	<1.8	<0.61	<0.59	<0.54	<0.60	<0.64	<0.67	<0.62	<1.4	<1.5	<1.2	<0.59	<0.66	<0.55
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0 - 2.5	<0.75	<0.60	<0.74	<2.0	<0.69	<0.67	<0.61	<0.68	<0.73	<0.76	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62
K11	DG-K11S-9.5-10	8/27/18	9.5 - 10	<0.64	<0.51	<0.63	<1.8	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
L1	DG-L1S-0.5-1	8/20/18	0.5 - 1	<0.32	<0.26	<0.31	<0.87	<0.29	<0.29	<0.26	<0.29	<0.31	<0.32	<0.30	<0.69	<0.71	<0.60	<0.29	<0.32	<0.26
L1	DG-L1S-3.5-4	8/20/18	1.0 - 2.5	<0.34	<0.28	<0.34	<0.94	<0.32	<0.31	<0.28	<0.31	<0.33	<0.35	<0.32	<0.74	<0.77	<0.65	<0.31	<0.34	<0.28
L5	DG-L5S-0.5-1	8/22/18	0.5 - 1	<0.63	<0.50	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.63	<0.52
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5 - 1	<0.60	<0.48	<0.59	<1.6	<0.55	<0.53	<0.49	<0.54	<0.58	<0.61	<0.56	<1.3	<1.3	<1.1	<0.53	<0.60	<0.50
L5	DG-L5S-3.5-4	8/22/18	2.5 - 4	<0.64	<0.52	<0.64	<1.8	<0.59	<0.58	<0.53	<0.59	<0.63	<0.65	<0.60	<1.4	<1.4	<1.2	<0.58	<0.64	<0.53
L9	DG-L9S-0.5-1	8/27/18	0.5 - 1	<0.91	<0.73	<0.89	<2.5	<0.83	<0.81	<0.74	<0.82	<0.88	<0.92	<0.85	<2.0	<2.0	<1.7	<0.81	<0.91	<0.75
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5 - 1	<0.68	<0.55	<0.67	<1.9	<0.63	<0.61	<0.56	<0.62	<0.67	<0.69	<0.64	<1.5	<1.5	<1.3	<0.61	<0.68	<0.57
L9	DG-L9S-3.5-4	8/27/18	1.0 - 2.5	<0.73	<0.59	<0.72	<2.0	<0.67	<0.66	<0.60	<0.66	<0.71	<0.74	<0.68	<1.6	<1.6	<1.4	<0.66	<0.73	<0.61
L13	DG-L13S-0.5-1[c]	8/24/18	0.5 - 1	<0.75	<0.61	<0.74	<2.1	<0.69	<0.67	<0.62	<0.68	<0.73	<0.76	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62
L13	DG-L13S-3.5-4	8/24/18	1.0 - 2.5	<0.63	<0.51	<0.62	<1.7	<0.58	<0.57	<0.52	<0.57	<0.62	<0.64	<0.59	<1.4	<1.4	<1.2	<0.57	<0.63	<0.52
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0 - 2.5	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.56	<0.63	<0.67	<0.70	<0.65	<1.5	<1.5	<1.3	<0.62	<0.69	<0.57
M3	DG-M3S-0.5-1	8/22/18	0.5 - 1	<0.65	<0.53	<0.65	<1.8	<0.60	<0.59	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.59	<0.65	<0.54
M3	DG-M3S-3.5-4	8/22/18	2.5 - 4	<0.89	<0.71	<0.88	<2.4	<0.82	<0.80	<0.73	<0.81	<0.87	<0.90	<0.83	<1.9	<2.0	<1.7	<0.80	<0.89	<0.74
M3	DG-M3S-7.5-8	8/22/18	7.5 - 8	<0.68	<0.54	<0.67	<1.9	<0.62	<0.61	<0.55	<0.61	<0.66	<0.69	<0.63	<1.5	<1.5	<1.3	<0.61	<0.68	<0.56
M7	DG-M7S-0.5-1	8/24/18	0.5 - 1	<0.63	<0.51	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.64	<0.59	<1.4	<1.4	<1.2	<0.56	<0.63	<0.52
M7	DG-M7S-3.5-4	8/24/18	3.5 - 4	<0.57	<0.46	<0.56	<1.6	<0.52	<0.51	<0.46	<0.52	<0.55	<0.58	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47
M11	DG-M11S-0.5-1	8/27/18	0.5 - 1	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
M11	DG-M11S-3.5-4	8/27/18	2.5 - 4	<0.75	<0.60	<0.74	<2.0	<0.69	<0.67	<0.61	<0.68	<0.73	<0.76	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Soil Screening Levels (SSL)				2.1E+05	2.4E+05	4.2E+05	2.6E+03	--	2.7E+07	4.8E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	3.0E+02	2.0E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5 - 20	<0.49	<0.54	<0.54	<0.53	<1.5	<16	<0.49	<7.5	<0.51	<1.9	<7.5	**42**	<0.49	<0.59	<0.54	<0.54	<1.5
A3	DG-A3S-0.5-1	8/21/18	0.5 - 1	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.60	<2.2	<8.9	<34	<0.58	<0.70	<0.64	<0.64	<1.8
A3	DG-A3S-3.5-4	8/21/18	2.5 - 4	<0.44	<0.49	<0.50	<0.48	<1.4	<14	<0.44	<6.8	<0.46	<1.7	<6.8	<26	<0.44	<0.54	<0.49	<0.49	<1.4
A3	DG-A3S-9.5-10	8/21/18	9.5 - 10	<0.47	<0.52	<0.53	<0.51	<1.4	<15	<0.47	<7.2	<0.49	<1.8	<7.2	**39**	<0.47	<0.57	<0.52	<0.52	<1.4
A4	DG-A4S-19.5-20	8/22/18	19.5 - 20	<0.44	<0.49	<0.50	<0.48	<1.4	<14	<0.44	<6.8	<0.46	<1.7	<6.8	<26	<0.44	<0.54	<0.49	<0.49	<1.4
A5	DG-A5S-19.5-20	8/23/18	19.5 - 20	<0.52	<0.57	<0.58	<0.57	<1.6	<17	<0.52	<8.0	<0.54	<2.0	<8.0	**55 ***	<0.52	<0.63	<0.57	<0.57	<1.6
A6	DG-A6S-19.5-20	8/22/18	19.5 - 20	<0.45	<0.50	<0.50	<0.49	<1.4	<14	<0.45	<6.9	<0.47	<1.7	<6.9	**31 J**	<0.45	<0.54	<0.50	<0.50	<1.4
A7	DG-A7S-0.5-1	8/23/18	0.5 - 1	<0.53	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.0	<8.2	<31	<0.53	<0.65	<0.59	<0.59	<1.6
A7	DG-A7S-3.5-4	8/23/18	2.5 - 4	<0.47	<0.53	<0.53	<0.52	<1.5	<15	<0.47	<7.3	<0.50	<1.8	<7.3	**28 J**	<0.47	<0.58	<0.53	<0.53	<1.5
A7	DG-A7S-10-10.5	8/23/18	10 - 10.5	<0.52	<0.57	<0.58	<0.56	<1.6	<17	<0.52	<7.9	<0.54	<2.0	<7.9	**33 J**	<0.52	<0.63	<0.57	<0.57	<1.6
A7	DG-A7S-10-10.5 (D)	8/23/18	10 - 10.5	<0.48	<0.53	<0.54	<0.53	<1.5	<16	<0.48	<7.4	<0.50	<1.9	<7.4	**52**	<0.48	<0.59	<0.53	<0.53	<1.5
A8	DG-A8S-0.5-1	8/27/18	0.5 - 1	<0.66	<0.74	<0.75	<0.73	<2.0	<21	<0.66	<10	<0.70	<2.6	<10	**80**	<0.66	<0.81	<0.74	<0.74	<2.0
A8	DG-A8S-3.5-4	8/27/18	2.5 - 4	<0.55	<0.61	<0.62	<0.60	<1.7	<18	<0.55	<8.5	<0.58	<2.1	<8.5	**43**	<0.55	<0.67	<0.61	<0.61	<1.7
A8	DG-A8S-17-17.5	8/27/18	17 - 17.5	<0.42	<0.46	<0.47	<0.45	<1.3	<13	<0.42	<6.4	<0.43	<1.6	<6.4	**46**	<0.42	<0.50	<0.46	<0.46	<1.3
A8	DG-A8S-17-17.5 (D)	8/27/18	17 - 17.5	<0.44	<0.49	<0.50	<0.48	<1.4	<14	<0.44	<6.8	<0.46	<1.7	<6.8	**35**	<0.44	<0.54	<0.49	<0.49	<1.4
B1	DG-B1S-0.5-1	8/21/18	0.5 - 1	<0.50	<0.56	<0.57	<0.55	<1.5	<16	<0.50	<7.7	<0.53	<1.9	<7.7	<29	<0.50	<0.61	<0.56	<0.56	<1.5
B1	DG-B1S-3.5-4	8/21/18	3.5 - 4	<0.61	<0.68	<0.69	<0.67	<1.9	<20	<0.61	<9.4	<0.64	<2.3	<9.4	<36	<0.61	<0.74	<0.68	<0.68	<1.9
B2	DG-B2S-19.5-20	8/21/18	19.5 - 20	<0.50 J	<0.55 J	<0.56	<0.55 J	<1.5	<16	<0.50 J	<7.7	<0.52 J	<1.9 J	<7.7	**52**	<0.50	<0.61 J	<0.55	<0.55	<1.5
B5	DG-B5S-0.5-1	8/23/18	0.5 - 1	<0.52	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	**35 J**	<0.52	<0.63	<0.58	<0.58	<1.6
B5	DG-B5S-3.5-4	8/23/18	1 - 2.5	<0.49	<0.54	<0.55	<0.53	<1.5	<16	<0.49	<7.5	<0.51	<1.9	<7.5	**40**	<0.49	<0.60	<0.54	<0.54	<1.5
B7	DG-B7S-14.5-15	8/23/18	14.5 - 15	<0.46	<0.51	<0.51	<0.50	<1.4	<15	<0.46	<7.0	<0.48	<1.8	<7.0	**52 ***	<0.46	<0.55	<0.51	<0.51	<1.4
B9	DG-B9S-0.5-1	8/24/18	0.5 - 1	<0.62	<0.69	<0.70	<0.68	<1.9	<20	<0.62	<9.5	<0.65	<2.4	<9.5	<36	<0.62	<0.75	<0.69	<0.69	<1.9
B9	DG-B9S-3.5-4	8/24/18	2.5 - 4	<0.64	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.8	<0.67	<2.5	<9.8	<37	<0.64	<0.77	<0.71	<0.71	<2.0
B9	DG-B9S-9.5-10	8/24/18	9.5 - 10	<0.52	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	**79**	<0.52	<0.64	<0.58	<0.58	<1.6
B10	DG-B10S-0.5-1	8/24/18	0.5 - 1	<0.61	<0.67	<0.68	<0.66	<1.9	<20	<0.61	<9.4	<0.64	<2.3	<9.4	<36	<0.61	<0.74	<0.67	<0.67	<1.9
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5 - 1	<0.65	<0.72	<0.73	<0.71	<2.0	<21	<0.65	<10	<0.68	<2.5	<10	<38	<0.65	<0.79	<0.72	<0.72	<2.0
B10	DG-B10S-3.5-4	8/24/18	2.5 - 4	<0.53	<0.58	<0.59	<0.57	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**52**	<0.53	<0.64	<0.58	<0.58	<1.6
C3	DG-C3S-0.5-1	8/21/18	0.5 - 1	<0.69 R	<0.77 R	<0.78 R	<0.75 R	<2.1 R	<22 R	<0.69 R	<11 R	<0.72 R	<2.7 R	<11 R	**76 ***	**0.86 J ***	<0.84 R	<0.77	<0.77	<2.1 R
C3	DG-C3S-3.5-4	8/21/18	2.5 - 4	<0.71 R	<0.78 R	<0.79	<0.77 R	<2.2	<23	<0.71 R	<11	<0.74 R	<2.7 R	<11	**44 J ***	**1.6 J ***	<0.86 R	<0.78	<0.78	<2.2
C3	DG-C3S-9.5-10	8/21/18	9.5 - 10	<0.48	<0.54	<0.54	<0.53	<1.5	<16	<0.48	<7.4	<0.51	<1.9	<7.4	<28	<0.48	<0.59	<0.54	<0.54	<1.5
C5	DG-C5S-9-9.5	8/23/18	9 - 9.5	<0.45	<0.50	<0.51	<0.49	<1.4	<15	<0.45	<7.0	<0.47	<1.7	<7.0	<26	<0.45	<0.55	<0.50	<0.50	<1.4
C7	DG-C7S-0.5-1	8/24/18	0.5 - 1	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.8	<0.60	<2.2	<8.8	<34	<0.58	<0.70	<0.64	<0.64	<1.8
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5 - 1	<1.1	<1.2	<1.2	<1.2	<3.2	<34	<1.1	<16	<1.1	<4.1	<16	<62	<1.1	<1.3	<1.2	<1.2	<3.2
C7	DG-C7S-3.5-4	8/24/18	3.5 - 4	<0.46	<0.51	<0.52	<0.50	<1.4	<15	<0.46	<7.1	<0.48	<1.8	<7.1	**43**	<0.46	<0.56	<0.51	<0.51	<1.4

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Soil Screening Levels (SSL)				2.1E+05	2.4E+05	4.2E+05	2.6E+03	--	2.7E+07	4.8E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	3.0E+02	2.0E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
C7	DG-C7S-9.5-10	8/24/18	9.5 - 10	<0.61	<0.68	<0.69	<0.67	<1.9	<20	<0.61	<9.4	<0.64	<2.4	<9.4	<36	<0.61	<0.75	<0.68	<0.68	<1.9
D1	DG-D1S-0.5-1	8/20/18	0.5 - 1	<0.53	<0.58	<0.59	<0.57	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	<31	<0.53	<0.64	<0.58	<0.58	<1.6
D1	DG-D1S-3.5-4	8/20/18	2.5 - 4	<0.57	<0.63	<0.64	<0.62	<1.8	<18	<0.57	<8.8	<0.60	<2.2	<8.8	<33	<0.57	<0.69	<0.63	<0.63	<1.8
D1	DG-D1S-9.5-10	8/20/18	9.5 - 10	<0.55	<0.61	<0.62	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.67	<0.61	<0.61	<1.7
D3	DG-D3S-9.5-10	8/21/18	9.5 - 10	<0.62	<0.69	<0.70	<0.68	<1.9	<20	<0.62	<9.5	<0.65	<2.4	<9.5	<36	<0.62	<0.75	<0.69	<0.69	<1.9
D5	DG-D5S-0.5-1	8/22/18	0.5 - 1	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.61	<2.2	<8.9	**39 J**	<0.58	<0.71	<0.64	<0.64	<1.8
D5	DG-D5S-3.5-4	8/22/18	2.5 - 4	<0.62	<0.68	<0.69	<0.67	<1.9	<20	<0.62	<9.5	<0.64	<2.4	<9.5	<36	<0.62	<0.75	<0.68	<0.68	<1.9
D9	DG-D9S-0.5-1	8/24/18	0.5 - 1	<0.49	<0.55	<0.55	<0.54	<1.5	<16	<0.49	<7.6	<0.52	<1.9	<7.6	**49**	<0.49	<0.60	<0.55	<0.55	<1.5
D9	DG-D9S-3.5-4	8/24/18	1 - 2.5	<0.55	<0.61	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	**55**	<0.55	<0.66	<0.61	<0.61	<1.7
D9	DG-D9S-9.5-10	8/24/18	9.5 - 10	<0.53	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.0	<8.2	**40 J**	<0.53	<0.65	<0.59	<0.59	<1.6
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5 - 1	<0.45	<0.50	<0.50	<0.49	<1.4	<14	<0.45	<6.9	<0.47	<1.7	<6.9	**29 J**	<0.45	<0.55	<0.50	<0.50	<1.4
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5 - 4	<0.60	<0.67	<0.68	<0.66	<1.9	<19	<0.60	<9.3	<0.63	<2.3	<9.3	<35	<0.60	<0.73	<0.67	<0.67	<1.9
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5 - 10	<0.47 R	<0.53 R	<0.53	<0.52 R	<1.5	<15	<0.47 R	<7.3	<0.50 R	<1.8 R	<7.3	<28	<0.47	<0.58 R	<0.53	<0.53	<1.5
E3	DG-E3S-9.5-10	8/21/18	9.5 - 10	<0.52	<0.58	<0.58	<0.57	<1.6	<17	<0.52	<8.0	<0.54	<2.0	<8.0	<30	<0.52	<0.63	<0.58	<0.58	<1.6
E5	DG-E5S-9-9.5	8/22/18	9 - 9.5	<0.48	<0.53	<0.54	<0.52	<1.5	<15	<0.48	<7.4	<0.50	<1.8	<7.4	**64**	<0.48	<0.58	<0.53	<0.53	<1.5
E7	DG-E7S-0.5-1	8/24/18	0.5 - 1	<0.70	<0.77	<0.78	<0.76	<2.1	<22	<0.70	<11	<0.73	<2.7	<11	<41	<0.70	<0.85	<0.77	<0.77	<2.1
E7	DG-E7S-3.5-4	8/24/18	2.5 - 4	<0.62	<0.68	<0.69	<0.67	<1.9	<20	<0.62	<9.5	<0.65	<2.4	<9.5	<36	<0.62	<0.75	<0.68	<0.68	<1.9
E7	DG-E7S-9.5-10	8/24/18	9.5 - 10	<0.59	<0.66	<0.67	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	<35	<0.59	<0.72	<0.66	<0.66	<1.8
E11	DG-E11S-0.5-1	8/27/18	0.5 - 1	<0.53	<0.59	<0.59	<0.58	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**57**	<0.53	<0.64	<0.59	<0.59	<1.6
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5 - 1	<0.53	<0.58	<0.59	<0.57	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**45**	<0.53	<0.64	<0.58	<0.58	<1.6
E11	DG-E11S-3.5-4	8/27/18	2.5 - 4	<0.78	<0.86	<0.88	<0.85	<2.4	**79**	<0.78	**16 J**	<0.82	<3.0	<12	**490**	<0.78	<0.95	<0.86	<0.86	<2.4
E11	DG-E11S-9.5-10	8/27/18	9.5 - 10	<0.61	<0.68	<0.69	<0.67	<1.9	**34 J**	<0.61	<9.4	<0.64	<2.3	<9.4	**140**	<0.61	<0.74	<0.68	<0.68	<1.9
F1	DG-F1S-0.5-1	8/20/18	0.5 - 1	<0.50	<0.55	<0.56	<0.54	<1.5	<16	<0.50	<7.6	<0.52	<1.9	<7.6	<29	<0.50	<0.60	<0.55	<0.55	<1.5
F1	DG-F1S-3.5-4	8/20/18	2.5 - 4	<0.50	<0.56	<0.56	<0.55	<1.5	<16	<0.50	<7.7	<0.53	<1.9	<7.7	**29 J**	<0.50	<0.61	<0.56	<0.56	<1.5
F1	DG-F1S-9.5-10	8/20/18	9.5 - 10	<0.50 R	<0.56 R	<0.56	<0.55 R	<1.5	<16	<0.50 R	<7.7	<0.53 R	<1.9 R	<7.7	**33 J**	<0.50	<0.61 R	<0.56	<0.56	<1.5
F3	DG-F3S-0.5-1	8/21/18	0.5 - 1	<0.48	<0.53	<0.53	<0.52	<1.5	<15	<0.48	<7.3	<0.50	<1.8	<7.3	<28	<0.48	<0.58	<0.53	<0.53	<1.5
F3	DG-F3S-3.5-4	8/21/18	1 - 2.5	<0.53	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.1	<8.2	<31	<0.53	<0.65	<0.59	<0.59	<1.6
F3	DG-F3S-9.5-10	8/21/18	9.5 - 10	<0.65	<0.72	<0.73	<0.71	<2.0	<21	<0.65	<10	<0.68	<2.5	<10	<38	<0.65	<0.79	<0.72	<0.72	<2.0
F5	DG-F5S-0.5-1	8/22/18	0.5 - 1	<0.70	<0.77	<0.78	<0.76	<2.1	<23	<0.70	<11	<0.73	<2.7	<11	<41	<0.70	<0.85	<0.77	<0.77	<2.1
F5	DG-F5S-3.5-4	8/22/18	2.5 - 4	<0.76	<0.84	<0.85	<0.83	<2.3	<24	<0.76	<12	<0.79	<2.9	<12	**58 ***	<0.76	<0.92	<0.84	<0.84	<2.3
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5 - 4	<0.44	<0.49	<0.50	<0.49	<1.4	<14	<0.44	<6.8	<0.47	<1.7	<6.8	**85**	<0.44	<0.54	<0.49	<0.49	<1.4
F9	DG-F9S-0.5-1	8/24/18	0.5 - 1	<0.52	<0.57	<0.58	<0.57	<1.6	<17	<0.52	<8.0	<0.54	<2.0	<8.0	<30	<0.52	<0.63	<0.57	<0.57	<1.6
F9	DG-F9S-3.5-4	8/24/18	2.5 - 4	<0.58	<0.65	<0.66	<0.64	<1.8	<19	<0.58	<9.0	<0.61	<2.2	<9.0	<34	<0.58	<0.71	<0.65	<0.65	<1.8
F9	DG-F9S-9.5-10	8/24/18	9.5 - 10	<0.67	<0.74	<0.75	<0.73	<2.1	**29 J**	<0.67	<10	<0.70	<2.6	<10	**160**	<0.67	<0.81	<0.74	<0.74	<2.1

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Soil Screening Levels (SSL)				2.1E+05	2.4E+05	4.2E+05	2.6E+03	--	2.7E+07	4.8E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	3.0E+02	2.0E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
FG910	DG-FG910S-3.5-4	8/27/18	1 - 2.5	<0.51	<0.56	<0.57	<0.55	<1.6	<16	<0.51	<7.8	<0.53	<2.0	<7.8	<30	<0.51	<0.62	<0.56	<0.56	<1.6
FG910	DG-FG910S-0.5-1	8/27/18	0.5 - 1	<0.57	<0.63	<0.64	<0.62	<1.8	<18	<0.57	<8.8	<0.60	<2.2	<8.8	<33	<0.57	<0.69	<0.63	<0.63	<1.8
G3	DG-G3S-9.5-10	8/21/18	9.5 - 10	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.60	<2.2	<8.9	**61**	<0.58	<0.70	<0.64	<0.64	<1.8
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<0.60	<0.67	<0.68	<0.66	<1.9	<19	<0.60	<9.3	<0.63	<2.3	<9.3	<35	<0.60	<0.73	<0.67	<0.67	<1.9
G7	DG-G7S-0.5-1	8/24/18	0.5 - 1	<0.54	<0.60	<0.61	<0.59	<1.7	<18	<0.54	<8.4	<0.57	<2.1	<8.4	<32	<0.54	<0.66	<0.60	<0.60	<1.7
G7	DG-G7S-3.5-4	8/24/18	2.5 - 4	<0.45	<0.50	<0.51	<0.50	<1.4	<15	<0.45	<7.0	<0.48	<1.7	<7.0	<27	<0.45	<0.55	<0.50	<0.50	<1.4
G11	DG-G11S-0.5-1	8/27/18	0.5 - 1	<0.61	<0.68	<0.69	<0.67	<1.9	<20	<0.61	<9.5	<0.64	<2.4	<9.5	<36	<0.61	<0.75	<0.68	<0.68	<1.9
G11	DG-G11S-3.5-4	8/27/18	2.5 - 4	<0.59	<0.66	<0.66	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	**52**	<0.59	<0.72	<0.66	<0.66	<1.8
G11	DG-G11S-9.5-10	8/27/18	9.5 - 10	<0.52	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	**59**	<0.52	<0.63	<0.58	<0.58	<1.6
H1	DG-H1S-0.5-1	8/20/18	0.5 - 1	<0.51	<0.57	<0.58	<0.56	<1.6	<17	<0.51	<7.9	<0.54	<2.0	<7.9	<30	<0.51	<0.62	<0.57	<0.57	<1.6
H1	DG-H1S-3.5-4	8/20/18	2.5 - 4	<0.55	<0.60	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.66	<0.60	<0.60	<1.7
H3	DG-H3S-0.5-1	8/21/18	0.5 - 1	<0.56	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.58	<2.1	<8.6	**57**	<0.56	<0.68	<0.62	<0.62	<1.7
H3	DG-H3S-3.5-4	8/21/18	2.5 - 4	<0.52	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	<31	<0.52	<0.63	<0.58	<0.58	<1.6
H3	DG-H3S-9.5-10	8/21/18	9.5 - 10	<0.46	<0.51	<0.51	<0.50	<1.4	<15	<0.46	<7.1	<0.48	<1.8	<7.1	**66**	<0.46	<0.56	<0.51	<0.51	<1.4
H5	DG-H5S-0.5-1	8/22/18	0.5 - 1	<0.53	<0.59	<0.59	<0.58	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**36 J**	<0.53	<0.64	<0.59	<0.59	<1.6
H5	DG-H5S-3.5-4	8/22/18	2.5 - 4	<0.41	<0.45	<0.46	<0.44	<1.3	<13	<0.41	<6.3	<0.43	<1.6	<6.3	**24 J**	<0.41	<0.49	<0.45	<0.45	<1.3
H6	DG-H6S-0.5-1	8/23/18	0.5 - 1	<0.57	<0.64	<0.64	<0.63	<1.8	<19	<0.57	<8.8	<0.60	<2.2	<8.8	<34	<0.57	<0.70	<0.64	<0.64	<1.8
H6	DG-H6S-3.5-4	8/23/18	1 - 2.5	<0.50	<0.55	<0.56	<0.54	<1.5	<16	<0.50	<7.7	<0.52	<1.9	<7.7	**43 H**	<0.50	<0.60	<0.55	<0.55	<1.5
H9	DG-H9S-0.5-1	8/27/18	0.5 - 1	<0.55	<0.60	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.66	<0.60	<0.60	<1.7
H9	DG-H9S-3.5-4	8/27/18	2.5 - 4	<0.50	<0.56	<0.57	<0.55	<1.6	<16	<0.50	<7.8	<0.53	<1.9	<7.8	<30	<0.50	<0.61	<0.56	<0.56	<1.6
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5 - 4	<0.51	<0.57	<0.58	<0.56	<1.6	<17	<0.51	<7.9	<0.54	<2.0	<7.9	**32 J ***	<0.51	<0.62	<0.57	<0.57	<1.6
H9	DG-H9S-9.5-10	8/27/18	9.5 - 10	<0.51	<0.56	<0.57	<0.56	<1.6	<16	<0.51	<7.8	<0.53	<2.0	<7.8	**38 J**	<0.51	<0.62	<0.56	<0.56	<1.6
I3	DG-I3S-0.5-1	8/22/18	0.5 - 1	<0.61	<0.67	<0.68	<0.66	<1.9	**35 J**	<0.61	<9.3	<0.64	<2.3	<9.3	**70**	<0.61	<0.74	<0.67	<0.67	<1.9
I3	DG-I3S-3.5-4	8/22/18	1 - 2.5	<0.54	<0.60	<0.61	<0.59	<1.7	<17	<0.54	<8.3	<0.56	<2.1	<8.3	**48**	<0.54	<0.66	<0.60	<0.60	<1.7
I7	DG-I7S-0.5-1	8/24/18	0.5 - 1	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.60	<2.2	<8.9	**37 J**	<0.58	<0.70	<0.64	<0.64	<1.8
I7	DG-I7S-3.5-4	8/24/18	2.5 - 4	<0.53	<0.59	<0.59	<0.58	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	<31	<0.53	<0.64	<0.59	<0.59	<1.6
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5 - 4	<0.59	<0.66	<0.67	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	<35	<0.59	<0.72	<0.66	<0.66	<1.8
I9	DG-I9S-0.5-1	8/24/18	0.5 - 1	<390	<400	<450	<810	<390	<24,000	<390	<11,000	<390	<2,900	<11,000	<28,000	<390	<460	<440	<440	<410
I11	DG-I11S-0.5-1	8/27/18	0.5 - 1	<0.56	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.58	<2.1	<8.6	<33	<0.56	<0.68	<0.62	<0.62	<1.7
I11	DG-I11S-3.5-4	8/27/18	2.5 - 4	<0.57	<0.63	<0.64	<0.62	<1.8	<18	<0.57	<8.8	<0.60	<2.2	<8.8	<33	<0.57	<0.69	<0.63	<0.63	<1.8
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5 - 4	<0.50	<0.55	<0.56	<0.55	<1.5	<16	<0.50	<7.7	<0.52	<1.9	<7.7	**30 J**	<0.50	<0.61	<0.55	<0.55	<1.5
I11	DG-I11S-9.5-10	8/27/18	9.5 - 10	<0.81	<0.90	<0.91	<0.89	<2.5	<26	<0.81	<12	<0.85	<3.1	<12	**160 ***	<0.81	<0.99	<0.90	<0.90	<2.5
J1	DG-J1S-0.5-1	8/20/18	0.5 - 1	<0.62	<0.69	<0.70	<0.68	<1.9	<20	<0.62	<9.6	<0.65	<2.4	<9.6	<36	<0.62	<0.76	<0.69	<0.69	<1.9
J1	DG-J1S-3.5-4	8/20/18	2.5 - 4	<0.56	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.59	<2.2	<8.6	<33	<0.56	<0.68	<0.62	<0.62	<1.7

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Soil Screening Levels (SSL)				2.1E+05	2.4E+05	4.2E+05	2.6E+03	--	2.7E+07	4.8E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	3.0E+02	2.0E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
J5	DG-J5S-0.5-1	8/22/18	0.5 - 1	<0.46	<0.51	<0.52	<0.50	<1.4	<15	<0.46	<7.1	<0.48	<1.8	<7.1	**56**	<0.46	<0.56	<0.51	<0.51	<1.4
J5	DG-J5S-3.5-4	8/22/18	2.5 - 4	<0.51	<0.56	<0.57	<0.55	<1.6	<16	<0.51	<7.8	<0.53	<1.9	<7.8	<30	<0.51	<0.62	<0.56	<0.56	<1.6
J5	DG-J5S-7-7.5	8/22/18	7 - 7.5	<0.45	<0.49	<0.50	<0.49	<1.4	<14	<0.45	<6.9	<0.47	<1.7	<6.9	<26	<0.45	<0.54	<0.49	<0.49	<1.4
J9	DG-J9S-0.5-1	9/26/18	0.5 - 1	<0.73	<0.81	<0.82	<0.79	<2.2	<24	<0.73	<11	<0.76	<2.8	<11	**49 J**	<0.73	<0.88	<0.81	<0.81	<2.2
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5 - 1	<0.63	<0.69	<0.70	<0.68	<1.9	<20	<0.63	<9.6	<0.66	<2.4	<9.6	<37	<0.63	<0.76	<0.69	<0.69	<1.9
J9	DG-J9S-3.5-4	9/26/18	3.5 - 4	<0.60	<0.67	<0.68	<0.66	<1.9	<20	<0.60	<9.3	<0.63	<2.3	<9.3	<35	<0.60	<0.74	<0.67	<0.67	<1.9
K3	DG-K3S-0.5-1	8/22/18	0.5 - 1	<0.52	<0.57	<0.58	<0.57	<1.6	**28 J**	<0.52	<8.0	<0.54	<2.0	<8.0	<30	<0.52	<0.63	<0.57	<0.57	<1.6
K3	DG-K3S-3.5-4	8/22/18	2.5 - 4	<0.49	<0.55	<0.55	<0.54	<1.5	<16	<0.49	<7.6	<0.52	<1.9	<7.6	**42 ***	<0.49	<0.60	<0.55	<0.55	<1.5
K7	DG-K7S-0.5-1	8/24/18	0.5 - 1	<0.57	<0.63	<0.64	<0.62	<1.7	<18	<0.57	<8.7	<0.59	<2.2	<8.7	<33	<0.57	<0.69	<0.63	<0.63	<1.7
K7	DG-K7S-3.5-4	8/24/18	2.5 - 4	<0.46	<0.51	<0.52	<0.51	<1.4	<15	<0.46	<7.1	<0.49	<1.8	<7.1	**80**	<0.46	<0.56	<0.51	<0.51	<1.4
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5 - 4	**0.59 J**	<0.52	<0.52	<0.51	<1.4	<15	<0.47	<7.2	<0.49	**5.0**	<7.2	**68**	<0.47	<0.57	<0.52	<0.52	<1.4
K8	DG-K8S-1-2[b,c]	8/22/18	2-Jan	<0.63	<0.70	<0.71	<0.69	<1.9	<20	<0.63	<9.7	<0.66	<2.4	<9.7	<37	<0.63	<0.77	<0.70	<0.70	<1.9
K11	DG-K11S-0.5-1	8/27/18	0.5 - 1	<0.56	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.58	<2.2	<8.6	<33	<0.56	<0.68	<0.62	<0.62	<1.7
K11	DG-K11S-3.5-4	8/27/18	1.0 - 2.5	<0.57	<0.63	<0.63	<0.62	<1.7	<18	<0.57	<8.7	<0.59	<2.2	<8.7	<33	<0.57	<0.69	<0.63	<0.63	<1.7
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0 - 2.5	<0.64	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.8	<0.67	<2.5	<9.8	<37	<0.64	<0.78	<0.71	<0.71	<2.0
K11	DG-K11S-9.5-10	8/27/18	9.5 - 10	<0.55	<0.61	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	**44**	<0.55	<0.66	<0.61	<0.61	<1.7
L1	DG-L1S-0.5-1	8/20/18	0.5 - 1	<0.27	<0.30	<0.31	<0.30	<0.84	<8.8	<0.27	<4.2	<0.29	<1.0	<4.2	<16	<0.27	<0.33	<0.30	<0.30	<0.84
L1	DG-L1S-3.5-4	8/20/18	1.0 - 2.5	<0.29	<0.33	<0.33	<0.32	<0.90	<9.5	<0.29	<4.5	<0.31	<1.1	<4.5	<17	<0.29	<0.36	<0.33	<0.33	<0.90
L5	DG-L5S-0.5-1	8/22/18	0.5 - 1	<0.53	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.1	<8.2	**33 J**	<0.53	<0.65	<0.59	<0.59	<1.6
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5 - 1	<0.51	<0.57	<0.57	<0.56	<1.6	<17	<0.51	<7.9	<0.53	<2.0	<7.9	**56**	<0.51	<0.62	<0.57	<0.57	<1.6
L5	DG-L5S-3.5-4	8/22/18	2.5 - 4	<0.55	<0.61	<0.62	<0.60	<1.7	<18	<0.55	<8.5	<0.58	<2.1	<8.5	**46**	<0.55	<0.67	<0.61	<0.61	<1.7
L9	DG-L9S-0.5-1	8/27/18	0.5 - 1	<0.78	<0.86	<0.87	<0.85	<2.4	<25	<0.78	<12	<0.81	<3.0	<12	<45	<0.78	<0.94	<0.86	<0.86	<2.4
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5 - 1	<0.58	<0.65	<0.66	<0.64	<1.8	<19	<0.58	<9.0	<0.61	<2.2	<9.0	**54**	<0.58	<0.71	<0.65	<0.65	<1.8
L9	DG-L9S-3.5-4	8/27/18	1.0 - 2.5	<0.63	<0.69	<0.70	<0.68	<1.9	<20	<0.63	<9.6	<0.66	<2.4	<9.6	<37	<0.63	<0.76	<0.69	<0.69	<1.9
L13	DG-L13S-0.5-1[c]	8/24/18	0.5 - 1	<0.64	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.9	<0.67	<2.5	<9.9	<38	<0.64	<0.78	<0.71	<0.71	<2.0
L13	DG-L13S-3.5-4	8/24/18	1.0 - 2.5	<0.54	<0.60	<0.61	<0.59	<1.7	<17	<0.54	<8.3	<0.57	<2.1	<8.3	<32	<0.54	<0.66	<0.60	<0.60	<1.7
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0 - 2.5	<0.59	<0.66	<0.66	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	**50**	<0.59	<0.72	<0.66	<0.66	<1.8
M3	DG-M3S-0.5-1	8/22/18	0.5 - 1	<0.56	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.59	<2.2	<8.6	**68**	<0.56	<0.68	<0.62	<0.62	<1.7
M3	DG-M3S-3.5-4	8/22/18	2.5 - 4	<0.76	<0.84	<0.86	<0.83	<2.3	<25	<0.76	<12	<0.80	<2.9	<12	**63**	<0.76	<0.93	<0.84	<0.84	<2.3
M3	DG-M3S-7.5-8	8/22/18	7.5 - 8	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.61	<2.2	<8.9	**49**	<0.58	<0.70	<0.64	<0.64	<1.8
M7	DG-M7S-0.5-1	8/24/18	0.5 - 1	<0.54	<0.60	<0.60	<0.59	<1.7	<17	<0.54	<8.3	<0.56	<2.1	<8.3	<31	<0.54	<0.65	<0.60	<0.60	<1.7
M7	DG-M7S-3.5-4	8/24/18	3.5 - 4	<0.49	<0.54	<0.55	<0.53	<1.5	<16	<0.49	<7.5	<0.51	<1.9	<7.5	**45**	<0.49	<0.59	<0.54	<0.54	<1.5
M11	DG-M11S-0.5-1	8/27/18	0.5 - 1	<0.55	<0.60	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.66	<0.60	<0.60	<1.7
M11	DG-M11S-3.5-4	8/27/18	2.5 - 4	<0.64	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.8	<0.67	<2.5	<9.8	**45 J**	<0.64	<0.78	<0.71	<0.71	<2.0

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)
Soil Screening Levels (SSL)				6.8E+03	7.7E+05	9.9E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.8E+04	--	9.5E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.9E+03	4.7E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5 - 20	<0.59	<1.5	<0.46	<0.52	<0.42	<0.49	<0.59	<0.51	<0.52	<0.53	<0.64	<0.59	<0.56	<0.67	<0.51	<4.2	<0.90
A3	DG-A3S-0.5-1	8/21/18	0.5 - 1	<0.70	<1.8	<0.55	<0.61	<0.50	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.80	<0.60	<5.0	<1.1
A3	DG-A3S-3.5-4	8/21/18	2.5 - 4	<0.54	<1.4	<0.42	<0.47	<0.38	<0.45	<0.54	<0.46	<0.47	<0.48	<0.58	<0.54	<0.51	<0.61	<0.46	<3.8	<0.82
A3	DG-A3S-9.5-10	8/21/18	9.5 - 10	<0.57	<1.4	<0.45	<0.50	<0.41	<0.48	<0.57	<0.49	<0.50	<0.51	<0.62	<0.57	<0.54	<0.65	<0.49	<4.1	<0.87
A4	DG-A4S-19.5-20	8/22/18	19.5 - 20	<0.54	<1.4	<0.42	<0.47	<0.38	<0.45	<0.54	<0.46	<0.47	<0.48	<0.58	<0.54	<0.51	<0.61	<0.46	<3.8	<0.81
A5	DG-A5S-19.5-20	8/23/18	19.5 - 20	<0.63	<1.6	<0.49	<0.55	<0.45	<0.53	<0.63	**120 ***	<0.55	<0.57	<0.68	<0.63	<0.60	<0.72	<0.54	<4.5	<0.95
A6	DG-A6S-19.5-20	8/22/18	19.5 - 20	<0.54	<1.4	<0.43	<0.48	<0.39	<0.45	<0.54	**35**	<0.48	<0.49	<0.59	<0.54	<0.52	<0.62	<0.47	<3.9	<0.83
A7	DG-A7S-0.5-1	8/23/18	0.5 - 1	<0.65	<1.6	<0.51	<0.56	<0.46	<0.54	<0.65	<0.56	<0.56	<0.58	<0.70	<0.65	<0.61	<0.73	<0.56	<4.6	<0.98
A7	DG-A7S-3.5-4	8/23/18	2.5 - 4	<0.58	<1.5	<0.45	<0.50	<0.41	<0.48	<0.58	<0.50	<0.50	<0.52	<0.63	<0.58	<0.55	<0.66	<0.50	<4.1	<0.88
A7	DG-A7S-10-10.5	8/23/18	10 - 10.5	<0.63	**3.0 J ***	<0.49	<0.55	<0.44	<0.52	<0.63	**18**	<0.55	<0.56	<0.68	<0.63	<0.60	<0.71	<0.54	<4.4	<0.95
A7	DG-A7S-10-10.5 (D)	8/23/18	10 - 10.5	<0.59	**2.0 J**	<0.46	<0.51	<0.42	<0.49	<0.59	**12**	<0.51	<0.53	<0.64	<0.59	<0.56	<0.67	<0.50	<4.2	<0.89
A8	DG-A8S-0.5-1	8/27/18	0.5 - 1	<0.81	<2.0	<0.63	<0.71	<0.57	<0.67	<0.81	<0.70	<0.71	<0.73	<0.88	<0.81	<0.77	<0.92	<0.70	<5.7	<1.2
A8	DG-A8S-3.5-4	8/27/18	2.5 - 4	<0.67	<1.7	<0.53	<0.59	<0.48	<0.56	<0.67	<0.58	<0.59	<0.60	<0.73	<0.67	<0.64	<0.76	<0.58	<4.8	<1.0
A8	DG-A8S-17-17.5	8/27/18	17 - 17.5	<0.50	<1.3	<0.40	<0.44	<0.36	<0.42	<0.50	**2.1 J**	<0.44	<0.45	<0.55	<0.50	<0.48	<0.58	<0.43	<3.6	<0.77
A8	DG-A8S-17-17.5 (D)	8/27/18	17 - 17.5	<0.54	<1.4	<0.42	<0.47	<0.38	<0.45	<0.54	**1.4 J**	<0.47	<0.48	<0.58	<0.54	<0.51	<0.61	<0.46	<3.8	<0.81
B1	DG-B1S-0.5-1	8/21/18	0.5 - 1	<0.61	<1.5	<0.48	<0.53	<0.43	<0.51	<0.61	<0.53	<0.53	<0.55	<0.67	<0.61	<0.58	<0.70	<0.53	<4.3	<0.93
B1	DG-B1S-3.5-4	8/21/18	3.5 - 4	<0.74	<1.9	<0.58	<0.65	<0.53	<0.62	<0.74	<0.64	<0.65	<0.67	<0.81	<0.74	<0.70	<0.84	<0.64	<5.3	<1.1
B2	DG-B2S-19.5-20	8/21/18	19.5 - 20	<0.61	<1.5	<0.48	<0.53	<0.43	<0.51	<0.61	<0.52	<0.53	<0.55	<0.66	<0.61	<0.58	<0.69	<0.52	<4.3	<0.92
B5	DG-B5S-0.5-1	8/23/18	0.5 - 1	<0.63	<1.6	<0.50	<0.55	<0.45	<0.53	<0.63	<0.55	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.55	<4.5	<0.96
B5	DG-B5S-3.5-4	8/23/18	1 - 2.5	<0.60	<1.5	<0.47	<0.52	<0.42	<0.50	<0.60	**2.3 J**	<0.52	<0.53	<0.65	<0.60	<0.57	<0.68	<0.51	<4.2	<0.90
B7	DG-B7S-14.5-15	8/23/18	14.5 - 15	<0.55	<1.4	<0.44	<0.48	<0.39	<0.46	<0.55	<0.48	<0.48	<0.50	<0.60	<0.55	<0.53	<0.63	<0.48	<3.9	<0.84
B9	DG-B9S-0.5-1	8/24/18	0.5 - 1	<0.75	<1.9	<0.59	<0.66	<0.53	<0.63	<0.75	<0.65	<0.66	<0.68	<0.82	<0.75	<0.71	<0.86	<0.65	<5.3	<1.1
B9	DG-B9S-3.5-4	8/24/18	2.5 - 4	<0.77	<2.0	<0.61	<0.68	<0.55	<0.65	<0.77	<0.67	<0.68	<0.70	<0.84	<0.77	<0.74	<0.88	<0.67	<5.5	<1.2
B9	DG-B9S-9.5-10	8/24/18	9.5 - 10	<0.64	<1.6	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.69	<0.64	<0.60	<0.72	<0.55	<4.5	<0.97
B10	DG-B10S-0.5-1	8/24/18	0.5 - 1	<0.74	<1.9	<0.58	<0.65	<0.52	<0.62	<0.74	<0.64	<0.65	<0.66	<0.81	<0.74	<0.70	<0.84	<0.64	<5.2	<1.1
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5 - 1	<0.79	<2.0	<0.62	<0.69	<0.56	<0.66	<0.79	<0.68	<0.69	<0.71	<0.86	<0.79	<0.75	<0.90	<0.68	<5.6	<1.2
B10	DG-B10S-3.5-4	8/24/18	2.5 - 4	<0.64	<1.6	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.70	<0.64	<0.61	<0.73	**1.9 J**	<4.5	<0.97
C3	DG-C3S-0.5-1	8/21/18	0.5 - 1	<0.84 R	<2.1 R	<0.66 R	<0.73 R	<0.60 R	<0.70 R	<0.84 R	<0.72 R	<0.73 R	<0.75 R	<0.91 R	<0.84 R	<0.80 R	<0.96 R	<0.72 R	<6.0 R	<1.3 R
C3	DG-C3S-3.5-4	8/21/18	2.5 - 4	<0.86	<2.2	<0.67	<0.75	<0.61	<0.72	<0.86	**1.4 J ***	<0.75	<0.77	<0.93	<0.86	<0.82	<0.98 R	<0.74	<6.1	<1.3
C3	DG-C3S-9.5-10	8/21/18	9.5 - 10	<0.59	**5.7**	<0.46	<0.51	<0.42	<0.49	<0.59	<0.51	<0.51	<0.53	<0.64	<0.59	<0.56	<0.67	<0.51	<4.2	<0.89
C5	DG-C5S-9-9.5	8/23/18	9 - 9.5	<0.55	<1.4	<0.43	<0.48	<0.39	<0.46	<0.55	**87**	<0.48	<0.49	<0.60	<0.55	<0.52	<0.63	<0.47	<3.9	<0.84
C7	DG-C7S-0.5-1	8/24/18	0.5 - 1	<0.70	<1.8	<0.55	<0.61	<0.50	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.80	<0.60	<5.0	<1.1
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5 - 1	<1.3	<3.2	<1.0	<1.1	<0.91	<1.1	<1.3	<1.1	<1.1	<1.2	<1.4	<1.3	<1.2	<1.5	<1.1	<9.1	<1.9
C7	DG-C7S-3.5-4	8/24/18	3.5 - 4	<0.56	<1.4	<0.44	<0.49	<0.40	<0.47	<0.56	<0.48	<0.49	<0.50	<0.61	<0.56	<0.53	<0.64	<0.48	<4.0	<0.85

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)
Soil Screening Levels (SSL)				6.8E+03	7.7E+05	9.9E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.8E+04	--	9.5E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.9E+03	4.7E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
C7	DG-C7S-9.5-10	8/24/18	9.5 - 10	<0.75	<1.9	<0.58	<0.65	<0.53	<0.62	<0.75	<0.64	<0.65	<0.67	<0.81	<0.75	<0.71	<0.85	<0.64	<5.3	<1.1
D1	DG-D1S-0.5-1	8/20/18	0.5 - 1	<0.64	<1.6	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.70	<0.64	<0.61	<0.73	<0.55	<4.5	<0.97
D1	DG-D1S-3.5-4	8/20/18	2.5 - 4	<0.69	<1.8	<0.54	<0.60	<0.49	<0.58	<0.69	<0.60	<0.60	<0.62	<0.75	<0.69	<0.66	<0.79	<0.60	<4.9	<1.1
D1	DG-D1S-9.5-10	8/20/18	9.5 - 10	<0.67	<1.7	<0.52	<0.58	<0.47	<0.56	<0.67	<0.57	<0.58	<0.60	<0.73	<0.67	<0.63	<0.76	<0.57	<4.7	<1.0
D3	DG-D3S-9.5-10	8/21/18	9.5 - 10	<0.75	<1.9	<0.59	<0.66	<0.53	<0.63	<0.75	<0.65	<0.66	<0.68	<0.82	<0.75	<0.72	<0.86	<0.65	<5.3	<1.1
D5	DG-D5S-0.5-1	8/22/18	0.5 - 1	<0.71	<1.8	<0.55	<0.62	<0.50	<0.59	<0.71	<0.61	<0.62	<0.63	<0.77	<0.71	<0.67	<0.80	<0.61	<5.0	<1.1
D5	DG-D5S-3.5-4	8/22/18	2.5 - 4	<0.75	<1.9	<0.59	<0.65	<0.53	<0.62	<0.75	<0.64	<0.65	<0.67	<0.81	<0.75	<0.71	<0.85	<0.64	<5.3	<1.1
D9	DG-D9S-0.5-1	8/24/18	0.5 - 1	<0.60	<1.5	<0.47	<0.52	<0.43	<0.50	<0.60	<0.52	<0.52	<0.54	<0.65	<0.60	<0.57	<0.68	<0.52	<4.3	<0.91
D9	DG-D9S-3.5-4	8/24/18	1 - 2.5	<0.66	<1.7	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0
D9	DG-D9S-9.5-10	8/24/18	9.5 - 10	<0.65	<1.6	<0.51	<0.56	<0.46	<0.54	<0.65	<0.56	<0.56	<0.58	<0.70	<0.65	<0.61	<0.74	<0.56	<4.6	<0.98
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5 - 1	<0.55	<1.4	<0.43	<0.48	<0.39	<0.46	<0.55	<0.47	<0.48	<0.49	<0.59	<0.55	<0.52	<0.62	<0.47	<3.9	<0.83
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5 - 4	<0.73	<1.9	<0.58	<0.64	<0.52	<0.61	<0.73	<0.63	<0.64	<0.66	<0.80	<0.73	<0.70	<0.83	<0.63	<5.2	<1.1
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5 - 10	<0.58	<1.5	<0.45	<0.50	<0.41	<0.48	<0.58	<0.50	<0.50	<0.52	<0.63	<0.58	<0.55	<0.66 R	<0.50	<4.1	<0.88
E3	DG-E3S-9.5-10	8/21/18	9.5 - 10	<0.63	<1.6	<0.50	<0.55	<0.45	<0.53	<0.63	**1.9 J**	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.54	<4.5	<0.96
E5	DG-E5S-9-9.5	8/22/18	9 - 9.5	<0.58	<1.5	<0.46	<0.51	<0.41	<0.49	<0.58	**5.7**	<0.51	<0.52	<0.63	<0.58	<0.55	<0.66	<0.50	<4.1	<0.88
E7	DG-E7S-0.5-1	8/24/18	0.5 - 1	<0.85	<2.1	<0.66	<0.74	<0.60	<0.71	<0.85	<0.73	<0.74	<0.76	<0.92	<0.85	<0.80	<0.96	<0.73	<6.0	<1.3
E7	DG-E7S-3.5-4	8/24/18	2.5 - 4	<0.75	<1.9	<0.59	<0.65	<0.53	<0.63	<0.75	<0.65	<0.65	<0.67	<0.82	<0.75	<0.71	<0.85	<0.65	<5.3	<1.1
E7	DG-E7S-9.5-10	8/24/18	9.5 - 10	<0.72	<1.8	<0.57	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1
E11	DG-E11S-0.5-1	8/27/18	0.5 - 1	<0.64	<1.6	<0.50	<0.56	<0.46	<0.54	<0.64	<0.55	<0.56	<0.58	<0.70	<0.64	<0.61	<0.73	<0.55	<4.6	<0.98
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5 - 1	<0.64	<1.6	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.70	<0.64	<0.61	<0.73	<0.55	<4.5	<0.97
E11	DG-E11S-3.5-4	8/27/18	2.5 - 4	<0.95	<2.4	<0.74	<0.83	<0.67	<0.79	<0.95	<0.82	<0.83	<0.85	<1.0	<0.95	<0.90	<1.1	<0.82	<6.7	<1.4
E11	DG-E11S-9.5-10	8/27/18	9.5 - 10	<0.74	<1.9	<0.58	<0.65	<0.53	<0.62	<0.74	<0.64	<0.65	<0.67	<0.81	<0.74	<0.70	<0.85	<0.64	<5.3	<1.1
F1	DG-F1S-0.5-1	8/20/18	0.5 - 1	<0.60	<1.5	<0.47	<0.53	<0.43	<0.50	<0.60	<0.52	<0.53	<0.54	<0.66	<0.60	<0.57	<0.69	<0.52	<4.3	<0.91
F1	DG-F1S-3.5-4	8/20/18	2.5 - 4	<0.61	<1.5	<0.48	<0.53	<0.43	<0.51	<0.61	<0.53	<0.53	<0.55	<0.66	<0.61	<0.58	<0.69	<0.53	<4.3	<0.93
F1	DG-F1S-9.5-10	8/20/18	9.5 - 10	<0.61	<1.5	<0.48	<0.53	<0.43	<0.51	<0.61	<0.53	<0.53	<0.55	<0.66	<0.61	<0.58	<0.70 R	<0.53	<4.3	<0.93
F3	DG-F3S-0.5-1	8/21/18	0.5 - 1	<0.58	<1.5	<0.45	<0.51	<0.41	<0.48	<0.58	<0.50	<0.51	<0.52	<0.63	<0.58	<0.55	<0.66	<0.50	<4.1	<0.88
F3	DG-F3S-3.5-4	8/21/18	1 - 2.5	<0.65	<1.6	<0.51	<0.57	<0.46	<0.54	<0.65	<0.56	<0.57	<0.58	<0.71	<0.65	<0.62	<0.74	<0.56	<4.6	<0.99
F3	DG-F3S-9.5-10	8/21/18	9.5 - 10	<0.79	<2.0	<0.62	<0.69	<0.56	<0.66	<0.79	<0.68	<0.69	<0.71	<0.86	<0.79	<0.75	<0.90	<0.68	<5.6	<1.2
F5	DG-F5S-0.5-1	8/22/18	0.5 - 1	<0.85	<2.1	<0.66	<0.74	<0.60	<0.71	<0.85	<0.73	<0.74	<0.76	<0.92	<0.85	<0.80	<0.96	<0.73	<6.0	<1.3
F5	DG-F5S-3.5-4	8/22/18	2.5 - 4	<0.92	<2.3	<0.72	<0.80	<0.65	<0.77	<0.92	<0.79	<0.80	<0.83	<1.0	<0.92	<0.87	<1.0	<0.79	<6.5	<1.4
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5 - 4	<0.54	<1.4	<0.42	<0.47	<0.38	<0.45	<0.54	**0.76 J**	<0.47	<0.49	<0.59	<0.54	<0.51	<0.62	<0.47	<3.8	<0.82
F9	DG-F9S-0.5-1	8/24/18	0.5 - 1	<0.63	<1.6	<0.49	<0.55	<0.45	<0.53	<0.63	<0.54	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.54	<4.5	<0.96
F9	DG-F9S-3.5-4	8/24/18	2.5 - 4	<0.71	<1.8	<0.56	<0.62	<0.50	<0.59	<0.71	<0.61	<0.62	<0.64	<0.77	<0.71	<0.67	<0.81	<0.61	<5.0	<1.1
F9	DG-F9S-9.5-10	8/24/18	9.5 - 10	<0.81	<2.1	<0.64	<0.71	<0.58	<0.68	<0.81	<0.70	<0.71	<0.73	<0.89	<0.81	<0.77	<0.93	<0.70	<5.8	<1.2

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)
Soil Screening Levels (SSL)				6.8E+03	7.7E+05	9.9E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.8E+04	--	9.5E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.9E+03	4.7E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
FG910	DG-FG910S-3.5-4	8/27/18	1 - 2.5	<0.62	<1.6	<0.48	<0.54	<0.44	<0.52	<0.62	<0.53	<0.54	<0.55	<0.67	<0.62	<0.59	<0.70	<0.53	<4.4	<0.94
FG910	DG-FG910S-0.5-1	8/27/18	0.5 - 1	<0.69	<1.8	<0.54	<0.61	<0.49	<0.58	<0.69	<0.60	<0.61	<0.62	<0.76	<0.69	<0.66	<0.79	<0.60	<4.9	<1.1
G3	DG-G3S-9.5-10	8/21/18	9.5 - 10	<0.70	<1.8	<0.55	<0.61	<0.50	<0.59	<0.70	**3.0 J**	<0.61	<0.63	<0.76	<0.70	<0.67	<0.80	<0.60	<5.0	<1.1
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<0.73	<1.9	<0.57	<0.64	<0.52	<0.61	<0.73	<0.63	<0.64	<0.66	<0.80	<0.73	<0.69	<0.83	<0.63	<5.2	<1.1
G7	DG-G7S-0.5-1	8/24/18	0.5 - 1	<0.66	<1.7	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.59	<0.72	<0.66	<0.63	<0.75	<0.57	<4.7	<1.0
G7	DG-G7S-3.5-4	8/24/18	2.5 - 4	<0.55	<1.4	<0.43	<0.48	<0.39	<0.46	<0.55	**2.8 J**	<0.48	<0.50	<0.60	<0.55	<0.52	<0.63	<0.48	<3.9	<0.84
G11	DG-G11S-0.5-1	8/27/18	0.5 - 1	<0.75	<1.9	<0.59	<0.65	<0.53	<0.62	<0.75	<0.64	<0.65	<0.67	<0.81	<0.75	<0.71	<0.85	<0.64	<5.3	<1.1
G11	DG-G11S-3.5-4	8/27/18	2.5 - 4	<0.72	<1.8	<0.56	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1
G11	DG-G11S-9.5-10	8/27/18	9.5 - 10	<0.63	<1.6	<0.50	<0.55	<0.45	<0.53	<0.63	<0.55	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.55	<4.5	<0.96
H1	DG-H1S-0.5-1	8/20/18	0.5 - 1	<0.62	<1.6	<0.49	<0.55	<0.44	<0.52	<0.62	<0.54	<0.55	<0.56	<0.68	<0.62	<0.59	<0.71	<0.54	<4.4	<0.95
H1	DG-H1S-3.5-4	8/20/18	2.5 - 4	<0.66	<1.7	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.75	<0.57	<4.7	<1.0
H3	DG-H3S-0.5-1	8/21/18	0.5 - 1	<0.68	<1.7	<0.53	<0.59	<0.48	<0.57	<0.68	<0.58	<0.59	<0.61	<0.74	<0.68	<0.64	<0.77	<0.58	<4.8	<1.0
H3	DG-H3S-3.5-4	8/21/18	2.5 - 4	<0.63	<1.6	<0.50	<0.55	<0.45	<0.53	<0.63	<0.55	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.55	<4.5	<0.96
H3	DG-H3S-9.5-10	8/21/18	9.5 - 10	<0.56	**14**	<0.44	<0.49	<0.39	<0.47	<0.56	<0.48	<0.49	<0.50	<0.61	<0.56	<0.53	<0.63	<0.48	<3.9	<0.85
H5	DG-H5S-0.5-1	8/22/18	0.5 - 1	<0.64	<1.6	<0.50	<0.56	<0.46	<0.54	<0.64	<0.55	<0.56	<0.58	<0.70	<0.64	<0.61	<0.73	<0.55	<4.6	<0.98
H5	DG-H5S-3.5-4	8/22/18	2.5 - 4	<0.49	<1.3	<0.39	<0.43	<0.35	<0.41	<0.49	<0.43	<0.43	<0.44	<0.54	<0.49	<0.47	<0.56	<0.43	<3.5	<0.75
H6	DG-H6S-0.5-1	8/23/18	0.5 - 1	<0.70	<1.8	<0.55	<0.61	<0.49	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.79	<0.60	<4.9	<1.1
H6	DG-H6S-3.5-4	8/23/18	1 - 2.5	<0.60	<1.5	<0.47	<0.53	<0.43	<0.51	<0.60	<0.52	<0.53	<0.54	<0.66	<0.60	<0.57	<0.69	<0.52	<4.3	<0.92
H9	DG-H9S-0.5-1	8/27/18	0.5 - 1	<0.66	<1.7	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0
H9	DG-H9S-3.5-4	8/27/18	2.5 - 4	<0.61	<1.6	<0.48	<0.54	<0.44	<0.51	<0.61	<0.53	<0.54	<0.55	<0.67	<0.61	<0.58	<0.70	<0.53	<4.4	<0.93
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5 - 4	<0.62	<1.6	<0.49	<0.54	<0.44	<0.52	<0.62	<0.54	<0.54	<0.56	<0.68	<0.62	<0.59	<0.71	<0.54	<4.4	<0.95
H9	DG-H9S-9.5-10	8/27/18	9.5 - 10	<0.62	<1.6	<0.48	<0.54	<0.44	<0.52	<0.62	<0.53	<0.54	<0.56	<0.67	<0.62	<0.59	<0.70	<0.53	<4.4	<0.94
I3	DG-I3S-0.5-1	8/22/18	0.5 - 1	<0.74	<1.9	<0.58	<0.64	<0.52	<0.62	<0.74	<0.64	<0.64	<0.66	<0.80	<0.74	<0.70	<0.84	<0.64	<5.2	<1.1
I3	DG-I3S-3.5-4	8/22/18	1 - 2.5	<0.66	<1.7	<0.51	<0.57	<0.46	<0.55	<0.66	<0.56	<0.57	<0.59	<0.71	<0.66	<0.62	<0.75	<0.56	<4.6	<1.0
I7	DG-I7S-0.5-1	8/24/18	0.5 - 1	<0.70	<1.8	<0.55	<0.61	<0.50	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.80	<0.60	<5.0	<1.1
I7	DG-I7S-3.5-4	8/24/18	2.5 - 4	<0.64	<1.6	<0.51	<0.56	<0.46	<0.54	<0.64	<0.55	<0.56	<0.58	<0.70	<0.64	<0.61	<0.73	<0.55	<4.6	<0.98
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5 - 4	<0.72	<1.8	<0.57	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1
I9	DG-I9S-0.5-1	8/24/18	0.5 - 1	<560	<530	<520	<400	<520	<390	<560	<420	<390	<390	<400	<910	<860	<680	<600	<3,400	<1,400
I11	DG-I11S-0.5-1	8/27/18	0.5 - 1	<0.68	<1.7	<0.53	<0.59	<0.48	<0.57	<0.68	<0.58	<0.59	<0.61	<0.74	<0.68	<0.64	<0.77	<0.58	<4.8	<1.0
I11	DG-I11S-3.5-4	8/27/18	2.5 - 4	<0.69	<1.8	<0.55	<0.61	<0.49	<0.58	<0.69	<0.60	<0.61	<0.62	<0.76	<0.69	<0.66	<0.79	<0.60	<4.9	<1.1
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5 - 4	<0.61	<1.5	<0.48	<0.53	<0.43	<0.51	<0.61	<0.52	<0.53	<0.55	<0.66	<0.61	<0.58	<0.69	<0.52	<4.3	<0.92
I11	DG-I11S-9.5-10	8/27/18	9.5 - 10	<0.99	**4.3 J ***	<0.77	<0.86	<0.70	<0.82	<0.99	<0.85	<0.86	<0.89	<1.1	<0.99	<0.94	<1.1	<0.85	<7.0	<1.5
J1	DG-J1S-0.5-1	8/20/18	0.5 - 1	<0.76	<1.9	<0.60	<0.66	<0.54	<0.63	<0.76	<0.65	<0.66	<0.68	<0.83	<0.76	<0.72	<0.86	<0.65	<5.4	<1.2
J1	DG-J1S-3.5-4	8/20/18	2.5 - 4	<0.68	<1.7	<0.54	<0.60	<0.48	<0.57	<0.68	<0.59	<0.60	<0.61	<0.74	<0.68	<0.65	<0.78	<0.59	<4.8	<1.0

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)
Soil Screening Levels (SSL)				6.8E+03	7.7E+05	9.9E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.8E+04	--	9.5E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.9E+03	4.7E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
J5	DG-J5S-0.5-1	8/22/18	0.5 - 1	<0.56	<1.4	<0.44	<0.49	<0.40	<0.47	<0.56	<0.48	<0.49	<0.50	<0.61	<0.56	<0.53	<0.64	<0.48	<4.0	<0.85
J5	DG-J5S-3.5-4	8/22/18	2.5 - 4	<0.62	<1.6	<0.48	<0.54	<0.44	<0.51	<0.62	<0.53	<0.54	<0.55	<0.67	<0.62	<0.58	<0.70	<0.53	<4.4	<0.94
J5	DG-J5S-7-7.5	8/22/18	7 - 7.5	<0.54	<1.4	<0.43	<0.47	<0.38	<0.45	<0.54	**5.4**	<0.47	<0.49	<0.59	<0.54	<0.51	<0.62	<0.47	<3.8	<0.82
J9	DG-J9S-0.5-1	9/26/18	0.5 - 1	<0.88	<2.2	<0.69	<0.77	<0.63	<0.74	<0.88	<0.76	<0.77	<0.79	<0.96	<0.88	<0.84	<1.0	<0.76	<6.3	<1.3
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5 - 1	<0.76	<1.9	<0.60	<0.67	<0.54	<0.64	<0.76	<0.66	<0.67	<0.68	<0.83	<0.76	<0.72	<0.87	<0.66	<5.4	<1.2
J9	DG-J9S-3.5-4	9/26/18	3.5 - 4	<0.74	<1.9	<0.58	<0.64	<0.52	<0.61	<0.74	<0.63	<0.64	<0.66	<0.80	<0.74	<0.70	<0.84	<0.63	<5.2	<1.1
K3	DG-K3S-0.5-1	8/22/18	0.5 - 1	<0.63	<1.6	<0.49	<0.55	<0.45	<0.53	<0.63	<0.54	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.54	<4.5	<0.96
K3	DG-K3S-3.5-4	8/22/18	2.5 - 4	<0.60	<1.5	<0.47	<0.52	<0.43	<0.50	<0.60	<0.52	<0.52	<0.54	<0.65	<0.60	<0.57	<0.68	<0.52	<4.3	<0.91
K7	DG-K7S-0.5-1	8/24/18	0.5 - 1	<0.69	<1.7	<0.54	<0.60	<0.49	<0.57	<0.69	<0.59	<0.60	<0.62	<0.75	<0.69	<0.65	<0.78	<0.59	<4.9	<1.0
K7	DG-K7S-3.5-4	8/24/18	2.5 - 4	<0.56	<1.4	<0.44	<0.49	<0.40	<0.47	<0.56	<0.49	<0.49	<0.51	<0.61	<0.56	<0.54	<0.64	<0.49	<4.0	<0.86
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5 - 4	<0.57	<1.4	<0.45	<0.50	<0.40	<0.47	<0.57	<0.49	<0.50	<0.51	<0.62	<0.57	<0.54	<0.65	<0.49	<4.0	<0.86
K8	DG-K8S-1-2[b,c]	8/22/18	2-Jan	<0.77	<1.9	<0.60	<0.67	<0.54	<0.64	<0.77	<0.66	<0.67	<0.69	<0.84	<0.77	<0.73	<0.88	<0.66	<5.4	<1.2
K11	DG-K11S-0.5-1	8/27/18	0.5 - 1	<0.68	<1.7	<0.53	<0.59	<0.48	<0.57	<0.68	<0.58	<0.59	<0.61	<0.74	<0.68	<0.65	<0.77	<0.58	<4.8	<1.0
K11	DG-K11S-3.5-4	8/27/18	1.0 - 2.5	<0.69	<1.7	<0.54	<0.60	<0.49	<0.57	<0.69	<0.59	<0.60	<0.62	<0.75	<0.69	<0.65	<0.78	<0.59	<4.9	<1.0
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0 - 2.5	<0.78	<2.0	<0.61	<0.68	<0.55	<0.65	<0.78	<0.67	<0.68	<0.70	<0.85	<0.78	<0.74	<0.88	<0.67	<5.5	<1.2
K11	DG-K11S-9.5-10	8/27/18	9.5 - 10	<0.66	<1.7	<0.52	<0.58	<0.47	<0.56	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0
L1	DG-L1S-0.5-1	8/20/18	0.5 - 1	<0.33	<0.84	<0.26	<0.29	<0.23	<0.28	<0.33	<0.29	<0.29	<0.30	<0.36	<0.33	<0.31	<0.38	<0.29	<2.3	<0.50
L1	DG-L1S-3.5-4	8/20/18	1.0 - 2.5	<0.36	<0.90	<0.28	<0.31	<0.25	<0.30	<0.36	<0.31	<0.31	<0.32	<0.39	<0.36	<0.34	<0.41	<0.31	<2.5	<0.54
L5	DG-L5S-0.5-1	8/22/18	0.5 - 1	<0.65	<1.6	<0.51	<0.57	<0.46	<0.54	<0.65	<0.56	<0.57	<0.58	<0.71	<0.65	<0.62	<0.74	<0.56	<4.6	<0.99
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5 - 1	<0.62	<1.6	<0.49	<0.54	<0.44	<0.52	<0.62	<0.53	<0.54	<0.56	<0.68	<0.62	<0.59	<0.71	<0.53	<4.4	<0.94
L5	DG-L5S-3.5-4	8/22/18	2.5 - 4	<0.67	<1.7	<0.53	<0.59	<0.47	<0.56	<0.67	<0.58	<0.59	<0.60	<0.73	<0.67	<0.64	<0.76	<0.58	<4.7	<1.0
L9	DG-L9S-0.5-1	8/27/18	0.5 - 1	<0.94	<2.4	<0.74	<0.82	<0.67	<0.79	<0.94	<0.81	<0.82	<0.85	<1.0	<0.94	<0.89	<1.1	<0.81	<6.7	<1.4
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5 - 1	<0.71	<1.8	<0.56	<0.62	<0.50	<0.59	<0.71	<0.61	<0.62	<0.64	<0.77	<0.71	<0.67	<0.81	<0.61	<5.0	<1.1
L9	DG-L9S-3.5-4	8/27/18	1.0 - 2.5	<0.76	<1.9	<0.60	<0.66	<0.54	<0.64	<0.76	<0.66	<0.66	<0.68	<0.83	<0.76	<0.72	<0.87	<0.66	<5.4	<1.2
L13	DG-L13S-0.5-1[c]	8/24/18	0.5 - 1	<0.78	<2.0	<0.62	<0.68	<0.56	<0.65	<0.78	<0.67	<0.68	<0.70	<0.85	<0.78	<0.74	<0.89	<0.67	<5.6	<1.2
L13	DG-L13S-3.5-4	8/24/18	1.0 - 2.5	<0.66	<1.7	<0.52	<0.57	<0.47	<0.55	<0.66	<0.57	<0.57	<0.59	<0.71	<0.66	<0.62	<0.75	<0.57	<4.7	<1.0
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0 - 2.5	<0.72	<1.8	<0.56	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1
M3	DG-M3S-0.5-1	8/22/18	0.5 - 1	<0.68	<1.7	<0.53	<0.59	<0.48	<0.57	<0.68	<0.59	<0.59	<0.61	<0.74	<0.68	<0.65	<0.77	<0.59	<4.8	<1.0
M3	DG-M3S-3.5-4	8/22/18	2.5 - 4	<0.93	<2.3	<0.73	<0.81	<0.66	<0.77	<0.93	<0.80	<0.81	<0.83	<1.0	<0.93	<0.88	<1.1	<0.80	<6.6	<1.4
M3	DG-M3S-7.5-8	8/22/18	7.5 - 8	<0.70	<1.8	<0.55	<0.61	<0.50	<0.59	<0.70	**2.7 J**	<0.61	<0.63	<0.77	<0.70	<0.67	<0.80	<0.61	<5.0	<1.1
M7	DG-M7S-0.5-1	8/24/18	0.5 - 1	<0.65	<1.7	<0.51	<0.57	<0.46	<0.55	<0.65	<0.56	<0.57	<0.59	<0.71	<0.65	<0.62	<0.75	<0.56	<4.6	<0.99
M7	DG-M7S-3.5-4	8/24/18	3.5 - 4	<0.59	<1.5	<0.46	<0.52	<0.42	<0.49	<0.59	<0.51	<0.52	<0.53	<0.64	<0.59	<0.56	<0.67	<0.51	<4.2	<0.90
M11	DG-M11S-0.5-1	8/27/18	0.5 - 1	<0.66	<1.7	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0
M11	DG-M11S-3.5-4	8/27/18	2.5 - 4	<0.78	<2.0	<0.61	<0.68	<0.55	<0.65	<0.78	<0.67	<0.68	<0.70	<0.85	<0.78	<0.74	<0.89	<0.67	<5.5	<1.2

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total
Soil Screening Levels (SSL)				3.8E+03	1.2E+06	3.8E+06	2.2E+06	6.0E+06	2.2E+06	5.9E+02	1.1E+06	6.7E+02	--	9.4E+02	1.2E+06	9.1E+05	8.7E+00	5.8E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5 - 20	<1.1	<0.75	<0.49	<0.54	<0.47	<0.54	<0.50	<0.53	<0.56	<0.50	<0.47	<0.42	<3.7	<0.54	<0.91
A3	DG-A3S-0.5-1	8/21/18	0.5 - 1	<1.3	<0.89	<0.58	<0.64	<0.56	<0.65	<0.59	<0.63	<0.66	<0.59	<0.56	<0.50	<4.4	<0.65	<1.1
A3	DG-A3S-3.5-4	8/21/18	2.5 - 4	<1.0	<0.68	<0.45	<0.49	<0.43	<0.50	<0.46	<0.48	<0.51	<0.46	<0.43	<0.38	<3.4	<0.50	<0.83
A3	DG-A3S-9.5-10	8/21/18	9.5 - 10	<1.1	<0.72	<0.48	<0.52	<0.46	<0.53	<0.49	<0.51	<0.54	<0.49	<0.46	<0.41	<3.6	<0.53	<0.88
A4	DG-A4S-19.5-20	8/22/18	19.5 - 20	<1.0	<0.68	<0.45	<0.49	<0.43	<0.50	<0.45	<0.48	<0.51	<0.45	<0.43	<0.38	<3.4	<0.50	<0.83
A5	DG-A5S-19.5-20	8/23/18	19.5 - 20	<1.2	<0.80	<0.53	<0.57	<0.50	<0.58	<0.53	<0.57	**15 ***	<0.53	**38 ***	<0.45	<4.0	<0.58	<0.97
A6	DG-A6S-19.5-20	8/22/18	19.5 - 20	<1.0	<0.69	<0.45	<0.50	<0.43	<0.50	<0.46	<0.49	**0.96 J**	<0.46	**0.53 J**	<0.39	<3.4	<0.50	<0.84
A7	DG-A7S-0.5-1	8/23/18	0.5 - 1	<1.3	<0.82	<0.54	<0.59	<0.51	<0.60	<0.55	<0.58	<0.61	<0.55	<0.51	<0.46	<4.1	<0.60	<1.0
A7	DG-A7S-3.5-4	8/23/18	2.5 - 4	<1.1	<0.73	<0.48	<0.53	<0.46	<0.53	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.7	<0.53	<0.89
A7	DG-A7S-10-10.5	8/23/18	10 - 10.5	<1.2	<0.79	<0.52	<0.57	<0.50	<0.58	<0.53	<0.56	**1.9 J**	<0.53	<0.50	<0.44	<4.0	**1.1 J**	<0.97
A7	DG-A7S-10-10.5 (D)	8/23/18	10 - 10.5	<1.1	<0.74	<0.49	<0.53	<0.47	<0.54	<0.50	<0.53	**1.1 J**	<0.50	<0.47	<0.42	<3.7	<0.54	<0.90
A8	DG-A8S-0.5-1	8/27/18	0.5 - 1	<1.5	<1.0	<0.67	<0.74	<0.64	<0.75	<0.68	<0.73	<0.77	<0.68	<0.64	<0.57	<5.1	<0.75	<1.2
A8	DG-A8S-3.5-4	8/27/18	2.5 - 4	<1.3	<0.85	<0.56	<0.61	<0.53	<0.62	<0.57	<0.60	<0.64	<0.57	<0.53	<0.48	<4.2	<0.62	<1.0
A8	DG-A8S-17-17.5	8/27/18	17 - 17.5	<0.96	<0.64	<0.42	<0.46	<0.40	<0.47	<0.43	<0.45	<0.48	<0.43	**10**	<0.36	<3.2	<0.47	<0.78
A8	DG-A8S-17-17.5 (D)	8/27/18	17 - 17.5	<1.0	<0.68	<0.45	<0.49	<0.43	<0.50	<0.45	<0.48	<0.51	<0.45	**6.7**	<0.38	<3.4	<0.50	<0.83
B1	DG-B1S-0.5-1	8/21/18	0.5 - 1	<1.2	<0.77	<0.51	<0.56	<0.49	<0.57	<0.52	<0.55	<0.58	<0.52	<0.49	<0.43	<3.9	<0.57	<0.94
B1	DG-B1S-3.5-4	8/21/18	3.5 - 4	<1.4	<0.94	<0.62	<0.68	<0.59	<0.69	<0.63	<0.67	<0.70	<0.63	<0.59	<0.53	<4.7	<0.69	<1.1
B2	DG-B2S-19.5-20	8/21/18	19.5 - 20	<1.2 J	<0.77 J	<0.51 J	<0.55 J	<0.48	<0.56 J	<0.51	<0.55	<0.58	<0.51	<0.48	<0.43	<3.8	<0.56	<0.94
B5	DG-B5S-0.5-1	8/23/18	0.5 - 1	<1.2	<0.80	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.60	<0.54	**1.1 J**	<0.45	<4.0	<0.59	<0.98
B5	DG-B5S-3.5-4	8/23/18	1 - 2.5	<1.1	<0.75	<0.50	<0.54	<0.47	<0.55	**9.1**	<0.53	<0.57	<0.50	**76**	<0.42	<3.8	<0.55	<0.92
B7	DG-B7S-14.5-15	8/23/18	14.5 - 15	<1.1	<0.70	<0.46	<0.51	<0.44	<0.51	<0.47	<0.50	<0.53	<0.47	<0.44	<0.39	<3.5	<0.51	<0.86
B9	DG-B9S-0.5-1	8/24/18	0.5 - 1	<1.4	<0.95	<0.63	<0.69	<0.60	<0.70	<0.64	<0.68	<0.71	<0.64	<0.60	<0.53	<4.8	<0.70	<1.2
B9	DG-B9S-3.5-4	8/24/18	2.5 - 4	<1.5	<0.98	<0.65	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.55	<4.9	<0.72	<1.2
B9	DG-B9S-9.5-10	8/24/18	9.5 - 10	<1.2	<0.80	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.60	<0.54	<0.51	<0.45	<4.0	<0.59	<0.98
B10	DG-B10S-0.5-1	8/24/18	0.5 - 1	<1.4	<0.94	<0.62	<0.67	<0.59	<0.68	<0.63	<0.66	<0.70	<0.63	<0.59	<0.52	<4.7	<0.68	<1.1
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5 - 1	<1.5	<1.0	<0.66	<0.72	<0.63	<0.73	<0.67	<0.71	<0.75	<0.67	<0.63	<0.56	<5.0	<0.73	<1.2
B10	DG-B10S-3.5-4	8/24/18	2.5 - 4	<1.2	**0.86 J**	**1.6 J**	**1.1 J**	<0.51	<0.59	<0.54	<0.57	<0.61	<0.54	<0.51	<0.45	<4.0	<0.59	**1.1 J**
C3	DG-C3S-0.5-1	8/21/18	0.5 - 1	<1.6 R	<1.1 R	<0.70 R	<0.77 R	<0.67 R	<0.78 R	<0.71 R	**1.7 J ***	<0.80 R	<0.71 R	**18 ***	<0.60 R	<5.3 R	<0.78 R	<1.3 R
C3	DG-C3S-3.5-4	8/21/18	2.5 - 4	<1.6 R	<1.1 R	<0.72 R	<0.78 R	<0.68	<0.79 R	<0.73	**1.6 J ***	<0.82	<0.73	**22 ***	<0.61	<5.4	<0.79	<1.3
C3	DG-C3S-9.5-10	8/21/18	9.5 - 10	<1.1	<0.74	<0.49	<0.54	<0.47	<0.54	<0.50	<0.53	<0.56	<0.50	<0.47	<0.42	<3.7	<0.54	<0.91
C5	DG-C5S-9-9.5	8/23/18	9 - 9.5	<1.0	<0.70	<0.46	<0.50	<0.44	<0.51	<0.47	<0.49	**1.7 J**	<0.47	**120**	<0.39	<3.5	<0.51	<0.85
C7	DG-C7S-0.5-1	8/24/18	0.5 - 1	<1.3	<0.88	<0.58	<0.64	<0.56	<0.65	<0.59	<0.63	<0.66	<0.59	<0.56	<0.50	<4.4	<0.65	<1.1
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5 - 1	<2.4	<1.6	<1.1	<1.2	<1.0	<1.2	<1.1	<1.2	<1.2	<1.1	<1.0	<0.91	<8.1	<1.2	<2.0
C7	DG-C7S-3.5-4	8/24/18	3.5 - 4	<1.1	<0.71	<0.47	<0.51	<0.45	<0.52	<0.48	<0.50	<0.53	<0.48	<0.45	<0.40	<3.6	<0.52	<0.87

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total
Soil Screening Levels (SSL)				3.8E+03	1.2E+06	3.8E+06	2.2E+06	6.0E+06	2.2E+06	5.9E+02	1.1E+06	6.7E+02	--	9.4E+02	1.2E+06	9.1E+05	8.7E+00	5.8E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
C7	DG-C7S-9.5-10	8/24/18	9.5 - 10	<1.4	<0.94	<0.62	<0.68	<0.59	<0.69	<0.63	<0.67	<0.71	<0.63	<0.59	<0.53	<4.7	<0.69	<1.2
D1	DG-D1S-0.5-1	8/20/18	0.5 - 1	<1.2	<0.81	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.61	<0.54	<0.51	<0.45	<4.0	<0.59	<0.99
D1	DG-D1S-3.5-4	8/20/18	2.5 - 4	<1.3	<0.88	<0.58	<0.63	<0.55	<0.64	<0.59	<0.62	<0.66	<0.59	<0.55	<0.49	<4.4	<0.64	<1.1
D1	DG-D1S-9.5-10	8/20/18	9.5 - 10	<1.3	<0.84	<0.56	<0.61	<0.53	<0.62	<0.57	<0.60	<0.63	<0.57	<0.53	<0.47	<4.2	<0.62	<1.0
D3	DG-D3S-9.5-10	8/21/18	9.5 - 10	<1.4	<0.95	<0.63	<0.69	<0.60	<0.70	<0.64	<0.68	<0.72	<0.64	<0.60	<0.53	<4.8	<0.70	<1.2
D5	DG-D5S-0.5-1	8/22/18	0.5 - 1	<1.3	<0.89	<0.59	<0.64	<0.56	<0.65	<0.60	<0.63	<0.67	<0.60	**0.57 J**	<0.50	<4.5	<0.65	<1.1
D5	DG-D5S-3.5-4	8/22/18	2.5 - 4	<1.4	<0.95	<0.62	<0.68	<0.60	<0.69	<0.63	<0.67	<0.71	<0.63	<0.60	<0.53	<4.7 R	<0.69	<1.2
D9	DG-D9S-0.5-1	8/24/18	0.5 - 1	<1.1	<0.76	<0.50	<0.55	<0.48	<0.55	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.55	<0.93
D9	DG-D9S-3.5-4	8/24/18	1 - 2.5	<1.3	<0.84	<0.55	<0.61	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0
D9	DG-D9S-9.5-10	8/24/18	9.5 - 10	<1.2	<0.82	<0.54	<0.59	<0.52	<0.60	<0.55	<0.58	<0.61	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5 - 1	<1.0	<0.69	<0.46	<0.50	<0.43	<0.50	<0.46	**0.49 J**	<0.52	<0.46	<0.43	<0.39	<3.5	<0.50	<0.84
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5 - 4	<1.4	<0.93	<0.61	<0.67	<0.58	<0.68	<0.62	<0.66	<0.70	<0.62	<0.58	<0.52	<4.6	<0.68	<1.1
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5 - 10	<1.1 R	<0.73 R	<0.48 R	<0.53 R	<0.46	<0.53 R	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.6	<0.53	<0.89
E3	DG-E3S-9.5-10	8/21/18	9.5 - 10	<1.2	<0.80	<0.53	<0.58	<0.50	<0.58	<0.54	<0.57	<0.60	<0.54	**0.52 J**	<0.45	<4.0	<0.58	<0.98
E5	DG-E5S-9-9.5	8/22/18	9 - 9.5	<1.1	<0.74	<0.49	<0.53	<0.46	<0.54	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.7	**0.85 J**	<0.90
E7	DG-E7S-0.5-1	8/24/18	0.5 - 1	<1.6	<1.1	<0.71	<0.77	<0.67	<0.78	<0.72	<0.76	<0.80	<0.72	<0.67	<0.60	<5.3	<0.78	<1.3
E7	DG-E7S-3.5-4	8/24/18	2.5 - 4	<1.4	<0.95	<0.63	<0.68	<0.60	<0.69	<0.64	<0.67	<0.71	<0.64	<0.60	<0.53	<4.7	<0.69	<1.2
E7	DG-E7S-9.5-10	8/24/18	9.5 - 10	<1.4	<0.91	<0.60	<0.66	<0.57	<0.67	<0.61	**0.75 J**	<0.68	<0.61	<0.57	<0.51	<4.6	<0.67	<1.1
E11	DG-E11S-0.5-1	8/27/18	0.5 - 1	<1.2	<0.81	<0.54	<0.59	<0.51	<0.59	<0.55	<0.58	<0.61	<0.55	<0.51	<0.46	<4.1	<0.59	<0.99
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5 - 1	<1.2	<0.81	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.61	<0.54	<0.51	<0.45	<4.0	<0.59	<0.99
E11	DG-E11S-3.5-4	8/27/18	2.5 - 4	<1.8	<1.2	<0.79	<0.86	<0.76	<0.88	<0.80	<0.85	<0.90	<0.80	<0.76	<0.67	<6.0	<0.88	<1.5
E11	DG-E11S-9.5-10	8/27/18	9.5 - 10	<1.4	<0.94	<0.62	<0.68	<0.59	<0.69	<0.63	<0.67	<0.70	<0.63	<0.59	<0.53	<4.7	<0.69	<1.1
F1	DG-F1S-0.5-1	8/20/18	0.5 - 1	<1.1	<0.76	<0.50	<0.55	<0.48	<0.56	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.56	<0.93
F1	DG-F1S-3.5-4	8/20/18	2.5 - 4	<1.2	<0.77	<0.51	<0.56	<0.49	<0.56	<0.52	<0.55	<0.58	<0.52	<0.49	<0.43	<3.9	<0.56	<0.94
F1	DG-F1S-9.5-10	8/20/18	9.5 - 10	<1.2 R	<0.77 R	<0.51 R	<0.56 R	<0.49	<0.56 R	<0.52	<0.55	<0.58	<0.52	**0.96 J**	<0.43	<3.9	<0.56	<0.94
F3	DG-F3S-0.5-1	8/21/18	0.5 - 1	<1.1	<0.73	<0.48	<0.53	<0.46	<0.53	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.7	<0.53	<0.89
F3	DG-F3S-3.5-4	8/21/18	1 - 2.5	<1.2	<0.82	<0.54	<0.59	<0.52	<0.60	<0.55	<0.58	<0.62	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0
F3	DG-F3S-9.5-10	8/21/18	9.5 - 10	<1.5	<1.0	<0.66	<0.72	<0.63	<0.73	<0.67	<0.71	<0.75	<0.67	<0.63	<0.56	<5.0	<0.73	<1.2
F5	DG-F5S-0.5-1	8/22/18	0.5 - 1	<1.6	<1.1	<0.71	<0.77	<0.68	<0.78	<0.72	<0.76	<0.80	<0.72	<0.68	<0.60	<5.4	<0.78	<1.3
F5	DG-F5S-3.5-4	8/22/18	2.5 - 4	<1.7	<1.2	<0.77	<0.84	<0.73	<0.85	<0.78	<0.83	<0.87	<0.78	<0.73	<0.65	<5.8	<0.85	<1.4
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5 - 4	<1.0	<0.68	<0.45	<0.49	<0.43	<0.50	<0.46	<0.49	<0.51	<0.46	<0.43	<0.38	<3.4	**0.88 J**	<0.84
F9	DG-F9S-0.5-1	8/24/18	0.5 - 1	<1.2	<0.80	<0.53	<0.57	<0.50	<0.58	<0.53	<0.57	<0.60	<0.53	<0.50	<0.45	<4.0	<0.58	<0.97
F9	DG-F9S-3.5-4	8/24/18	2.5 - 4	<1.3	<0.90	<0.59	<0.65	<0.57	<0.66	<0.60	<0.64	<0.67	<0.60	<0.57	<0.50	<4.5	<0.66	<1.1
F9	DG-F9S-9.5-10	8/24/18	9.5 - 10	<1.5	<1.0	<0.68	<0.74	<0.65	<0.75	<0.69	<0.73	<0.77	<0.69	<0.65	<0.58	<5.2	<0.75	<1.3

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total
Soil Screening Levels (SSL)				3.8E+03	1.2E+06	3.8E+06	2.2E+06	6.0E+06	2.2E+06	5.9E+02	1.1E+06	6.7E+02	--	9.4E+02	1.2E+06	9.1E+05	8.7E+00	5.8E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
FG910	DG-FG910S-3.5-4	8/27/18	1 - 2.5	<1.2	<0.78	<0.52	<0.56	<0.49	<0.57	<0.52	<0.55	<0.59	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95
FG910	DG-FG910S-0.5-1	8/27/18	0.5 - 1	<1.3	<0.88	<0.58	<0.63	<0.55	<0.64	<0.59	<0.62	<0.66	<0.59	<0.55	<0.49	<4.4	<0.64	<1.1
G3	DG-G3S-9.5-10	8/21/18	9.5 - 10	<1.3	<0.89	<0.59	<0.64	<0.56	<0.65	<0.60	<0.63	<0.67	<0.60	<0.56	<0.50	<4.4	<0.65	<1.1
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<1.4	<0.93	<0.61	<0.67	<0.58	<0.68	<0.62	<0.66	<0.69	<0.62	<0.58	<0.52	<4.6	<0.68	<1.1
G7	DG-G7S-0.5-1	8/24/18	0.5 - 1	<1.3	<0.84	<0.55	<0.60	<0.53	<0.61	<0.56	**0.81 J**	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0
G7	DG-G7S-3.5-4	8/24/18	2.5 - 4	<1.0	<0.70	<0.46	<0.50	<0.44	<0.51	**1.8 J**	<0.50	<0.52	<0.47	**31**	<0.39	<3.5	<0.51	<0.85
G11	DG-G11S-0.5-1	8/27/18	0.5 - 1	<1.4	<0.95	<0.62	<0.68	<0.60	<0.69	<0.63	<0.67	<0.71	<0.63	<0.60	<0.53	<4.7	<0.69	<1.2
G11	DG-G11S-3.5-4	8/27/18	2.5 - 4	<1.4	<0.91	<0.60	<0.66	<0.57	<0.66	<0.61	<0.65	<0.68	<0.61	<0.57	<0.51	<4.6	<0.66	<1.1
G11	DG-G11S-9.5-10	8/27/18	9.5 - 10	<1.2	<0.80	<0.53	<0.58	<0.50	<0.59	<0.54	<0.57	<0.60	<0.54	<0.50	<0.45	<4.0	<0.59	<0.98
H1	DG-H1S-0.5-1	8/20/18	0.5 - 1	<1.2	<0.79	<0.52	<0.57	<0.50	<0.58	<0.53	<0.56	<0.59	<0.53	<0.50	<0.44	<4.0	<0.58	<0.96
H1	DG-H1S-3.5-4	8/20/18	2.5 - 4	<1.3	<0.84	<0.55	<0.60	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0
H3	DG-H3S-0.5-1	8/21/18	0.5 - 1	<1.3	<0.86	<0.57	<0.62	<0.54	<0.63	<0.58	<0.61	<0.64	<0.58	<0.54	<0.48	<4.3	<0.63	<1.0
H3	DG-H3S-3.5-4	8/21/18	2.5 - 4	<1.2	<0.80	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.60	<0.54	<0.51	<0.45	<4.0	<0.59	<0.98
H3	DG-H3S-9.5-10	8/21/18	9.5 - 10	<1.1	<0.71	<0.47	<0.51	<0.44	<0.51	<0.47	<0.50	<0.53	<0.47	<0.44	<0.39	<3.5	<0.51	<0.86
H5	DG-H5S-0.5-1	8/22/18	0.5 - 1	<1.2	<0.81	<0.54	<0.59	<0.51	<0.59	<0.55	<0.58	<0.61	<0.55	<0.51	<0.46	<4.1	<0.59	<0.99
H5	DG-H5S-3.5-4	8/22/18	2.5 - 4	<0.94	<0.63	<0.41	<0.45	<0.39	<0.46	<0.42	<0.44	<0.47	<0.42	<0.39	<0.35	<3.1	<0.46	<0.76
H6	DG-H6S-0.5-1	8/23/18	0.5 - 1	<1.3	<0.88	<0.58	<0.64	<0.56	<0.64	<0.59	<0.63	<0.66	<0.59	<0.56	<0.49	<4.4	<0.64	<1.1
H6	DG-H6S-3.5-4	8/23/18	1 - 2.5	<1.1	<0.77	<0.51	<0.55	<0.48	<0.56	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.56	<0.93
H9	DG-H9S-0.5-1	8/27/18	0.5 - 1	<1.3	<0.84	<0.55	<0.60	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0
H9	DG-H9S-3.5-4	8/27/18	2.5 - 4	<1.2	<0.78	<0.51	<0.56	<0.49	<0.57	<0.52	<0.55	<0.58	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5 - 4	<1.2	<0.79	<0.52	<0.57	<0.50	<0.58	<0.53	<0.56	<0.59	<0.53	<0.50	<0.44	<3.9	<0.58	<0.96
H9	DG-H9S-9.5-10	8/27/18	9.5 - 10	<1.2	<0.78	<0.52	<0.56	<0.49	<0.57	<0.52	<0.56	<0.59	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95
I3	DG-I3S-0.5-1	8/22/18	0.5 - 1	<1.4	<0.93	<0.62	<0.67	<0.59	<0.68	<0.63	<0.66	<0.70	<0.63	<0.59	<0.52	<4.7	<0.68	<1.1
I3	DG-I3S-3.5-4	8/22/18	1 - 2.5	<1.2	<0.83	<0.55	<0.60	<0.52	<0.61	<0.56	<0.59	<0.62	<0.56	<0.52	<0.46	<4.1	<0.61	<1.0
I7	DG-I7S-0.5-1	8/24/18	0.5 - 1	<1.3	<0.89	<0.58	<0.64	<0.56	<0.65	<0.59	<0.63	<0.66	<0.59	<0.56	<0.50	<4.4	<0.65	<1.1
I7	DG-I7S-3.5-4	8/24/18	2.5 - 4	<1.2	<0.81	<0.54	<0.59	<0.51	<0.59	<0.55	<0.58	<0.61	<0.55	**0.97 J**	<0.46	<4.1	<0.59	<0.99
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5 - 4	<1.4	<0.91	<0.60	<0.66	<0.57	<0.67	<0.61	**0.69 J**	<0.68	<0.61	**2.5 J**	<0.51	<4.6	<0.67	<1.1
I9	DG-I9S-0.5-1	8/24/18	0.5 - 1	**26,000**	<1,100	<420	<490	<390	<390	<500	<810	<620	<390	<390	<640	<1,300	<610	<1,400
I11	DG-I11S-0.5-1	8/27/18	0.5 - 1	<1.3	<0.86	<0.57	<0.62	<0.54	<0.63	<0.58	<0.61	<0.64	<0.58	<0.54	<0.48	<4.3	<0.63	<1.0
I11	DG-I11S-3.5-4	8/27/18	2.5 - 4	<1.3	<0.88	<0.58	<0.63	<0.55	<0.64	<0.59	<0.62	<0.66	<0.59	<0.55	<0.49	<4.4	<0.64	<1.1
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5 - 4	<1.2	<0.77	<0.51	<0.55	<0.48	<0.56	<0.52	<0.55	<0.58	<0.52	<0.48	<0.43	<3.8	<0.56	<0.94
I11	DG-I11S-9.5-10	8/27/18	9.5 - 10	<1.9	<1.2	<0.82	<0.90	<0.79	<0.91	<0.84	<0.89	<0.94	<0.84	<0.79	<0.70	<6.2	<0.91	<1.5
J1	DG-J1S-0.5-1	8/20/18	0.5 - 1	<1.4	<0.96	<0.63	<0.69	<0.60	<0.70	<0.64	<0.68	<0.72	<0.64	<0.60	<0.54	<4.8	<0.70	<1.2
J1	DG-J1S-3.5-4	8/20/18	2.5 - 4	<1.3	<0.86	<0.57	<0.62	<0.54	<0.63	<0.58	<0.61	<0.65	<0.58	<0.54	<0.48	<4.3	<0.63	<1.1

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total
Soil Screening Levels (SSL)				3.8E+03	1.2E+06	3.8E+06	2.2E+06	6.0E+06	2.2E+06	5.9E+02	1.1E+06	6.7E+02	--	9.4E+02	1.2E+06	9.1E+05	8.7E+00	5.8E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
J5	DG-J5S-0.5-1	8/22/18	0.5 - 1	<1.1	<0.71	<0.47	<0.51	<0.44	<0.52	<0.47	<0.50	<0.53	<0.47	<0.44	<0.40	<3.5	<0.52	<0.86
J5	DG-J5S-3.5-4	8/22/18	2.5 - 4	<1.2	<0.78	<0.51	<0.56	<0.49	<0.57	<0.52	<0.55	<0.58	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95
J5	DG-J5S-7-7.5	8/22/18	7 - 7.5	<1.0	<0.69	<0.45	<0.49	<0.43	<0.50	<0.46	<0.49	<0.51	<0.46	<0.43	<0.38	<3.4	<0.50	<0.84
J9	DG-J9S-0.5-1	9/26/18	0.5 - 1	<1.7	<1.1	<0.74	<0.81	<0.71	<0.82	<0.75	<0.79	<0.84	<0.75	<0.71	<0.63	<5.6	<0.82	<1.4
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5 - 1	<1.4	<0.96	<0.64	<0.69	<0.61	<0.70	<0.65	<0.68	<0.72	<0.65	<0.61	<0.54	<4.8	<0.70	<1.2
J9	DG-J9S-3.5-4	9/26/18	3.5 - 4	<1.4	<0.93	<0.61	<0.67	<0.59	<0.68	<0.62	<0.66	<0.70	<0.62	<0.59	<0.52	<4.7	<0.68	<1.1
K3	DG-K3S-0.5-1	8/22/18	0.5 - 1	<1.2	<0.80	<0.53	<0.57	<0.50	<0.58	<0.53	<0.57	<0.60	<0.53	<0.50	<0.45	<4.0	<0.58	<0.97
K3	DG-K3S-3.5-4	8/22/18	2.5 - 4	<1.1	<0.76	<0.50	<0.55	<0.48	<0.55	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.55	<0.93
K7	DG-K7S-0.5-1	8/24/18	0.5 - 1	<1.3	<0.87	<0.57	<0.63	<0.55	<0.64	<0.58	<0.62	<0.65	<0.58	<0.55	<0.49	<4.4	<0.64	<1.1
K7	DG-K7S-3.5-4	8/24/18	2.5 - 4	<1.1	<0.71	<0.47	<0.51	<0.45	<0.52	<0.55	<0.51	<0.54	<0.48	<0.45	<0.40	<3.6	<0.52	<0.87
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5 - 4	<1.1	**0.73 J**	**0.63 J**	**0.80 J**	<0.45	**0.67 J**	<0.48	**0.52 J**	<0.54	<0.48	<0.45	<0.40	<3.6	<0.52	<0.88
K8	DG-K8S-1-2[b,c]	8/22/18	2-Jan	<1.5	<0.97	<0.64	<0.70	<0.61	<0.71	<0.65	<0.69	<0.73	<0.65	<0.61	<0.54	<4.9	<0.71	<1.2
K11	DG-K11S-0.5-1	8/27/18	0.5 - 1	<1.3	<0.86	<0.57	<0.62	<0.54	<0.63	<0.58	<0.61	<0.65	<0.58	<0.54	<0.48	<4.3	<0.63	<1.0
K11	DG-K11S-3.5-4	8/27/18	1.0 - 2.5	<1.3	<0.87	<0.57	<0.63	<0.55	<0.63	<0.58	<0.62	<0.65	<0.58	<0.55	<0.49	<4.3	<0.63	<1.1
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0 - 2.5	<1.5	<0.98	<0.65	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.55	<4.9	<0.72	<1.2
K11	DG-K11S-9.5-10	8/27/18	9.5 - 10	<1.3	<0.84	<0.56	<0.61	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0
L1	DG-L1S-0.5-1	8/20/18	0.5 - 1	<0.63	<0.42	<0.28	<0.30	<0.26	<0.31	<0.28	<0.30	<0.31	<0.28	<0.26	<0.23	<2.1	<0.31	<0.51
L1	DG-L1S-3.5-4	8/20/18	1.0 - 2.5	<0.68	<0.45	<0.30	<0.33	<0.28	<0.33	<0.30	<0.32	<0.34	<0.30	<0.28	<0.25	<2.3	<0.33	<0.55
L5	DG-L5S-0.5-1	8/22/18	0.5 - 1	<1.2	<0.82	<0.54	<0.59	<0.52	<0.60	<0.55	<0.58	<0.62	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5 - 1	<1.2	<0.79	<0.52	<0.57	<0.50	<0.57	<0.53	<0.56	<0.59	<0.53	<0.50	<0.44	<3.9	<0.57	<0.96
L5	DG-L5S-3.5-4	8/22/18	2.5 - 4	<1.3	<0.85	<0.56	<0.61	<0.53	<0.62	<0.57	<0.60	<0.64	<0.57	<0.53	<0.47	<4.2	<0.62	<1.0
L9	DG-L9S-0.5-1	8/27/18	0.5 - 1	<1.8	<1.2	<0.79	<0.86	<0.75	<0.87	<0.80	<0.85	<0.89	<0.80	<0.75	<0.67	<6.0	<0.87	<1.5
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5 - 1	<1.3	<0.90	<0.59	<0.65	<0.57	<0.66	<0.60	<0.64	<0.67	<0.60	<0.57	<0.50	<4.5	<0.66	<1.1
L9	DG-L9S-3.5-4	8/27/18	1.0 - 2.5	<1.5	<0.96	<0.64	<0.69	<0.61	<0.70	<0.65	<0.68	<0.72	<0.65	<0.61	<0.54	<4.8	<0.70	<1.2
L13	DG-L13S-0.5-1[c]	8/24/18	0.5 - 1	<1.5	<0.99	<0.65	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.56	<5.0	<0.72	<1.2
L13	DG-L13S-3.5-4	8/24/18	1.0 - 2.5	<1.2	<0.83	<0.55	<0.60	<0.52	<0.61	<0.56	<0.59	<0.62	<0.56	<0.52	<0.47	<4.2	<0.61	<1.0
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0 - 2.5	<1.4	<0.91	<0.60	<0.66	<0.57	<0.66	<0.66	<0.65	<0.68	<0.61	<0.57	<0.51	<4.5	<0.66	<1.1
M3	DG-M3S-0.5-1	8/22/18	0.5 - 1	<1.3	<0.86	<0.57	<0.62	<0.54	<0.63	<0.58	<0.61	<0.65	<0.58	<0.54	<0.48	<4.3	<0.63	<1.1
M3	DG-M3S-3.5-4	8/22/18	2.5 - 4	<1.8	<1.2	<0.77	<0.84	<0.74	<0.86	<0.78	<0.83	<0.88	<0.78	<0.74	<0.66	<5.9	<0.86	<1.4
M3	DG-M3S-7.5-8	8/22/18	7.5 - 8	<1.3	<0.89	<0.59	<0.64	<0.56	<0.65	<0.60	<0.63	<0.67	<0.60	<0.56	<0.50	<4.4	<0.65	<1.1
M7	DG-M7S-0.5-1	8/24/18	0.5 - 1	<1.2	<0.83	<0.55	<0.60	<0.52	<0.60	<0.55	**0.71 J**	<0.62	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0
M7	DG-M7S-3.5-4	8/24/18	3.5 - 4	<1.1	<0.75	<0.49	<0.54	<0.47	<0.55	<0.50	<0.53	<0.56	<0.50	<0.47	<0.42	<3.7	<0.55	<0.91
M11	DG-M11S-0.5-1	8/27/18	0.5 - 1	<1.3	<0.84	<0.55	<0.60	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0
M11	DG-M11S-3.5-4	8/27/18	2.5 - 4	<1.5	<0.98	<0.65	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.55	<4.9	<0.72	<1.2

Table 8: Summary of Volatile Organic Compounds in Soil
UPC OU-SM
Brisbane, California

Notes:
a. Sample DG-G6S-1-2 was named DG-G6S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
b. Sample DG-K8S-1-2 was named DG-K8S-MS/MDS on the chain-of-custody and in labora µg/kg
c. Sample analyzed by 5030B/8260B.
1. VOCs were analyzed by USEPA Method 8260B.
2. SSLs are from, in order of hierarchy, DTSC (April 2019), USEPA (April 2019), or San Francisco Regional Water Quality Control Board (January 2019).
3. Non-detect results are presented with "<" followed by the MDL.
4. Results in **bold** font indicate a detection above the MDL.
5. Results shaded with gray indicate the MDL exceeded the SSL.

Abbreviations:
"--" = not available
"<" = non-detect result
"*" = ISTD response ore retention time outside acceptable limits or LCS/LCSD is outside of acceptance limits
µg/kg = microgram per kilogram
(D) = duplicate sample
ft bgs = feet below ground surface
H = sample was prepared or analyzed beyond the specified holding time
J = estimated value
MDL = method detection limit
mg/kg = milligram per kilogram
R = rejected in validation
RL = reporting limit
SSL = soil screening level
USEPA = United States Environmental Protection Agency
VOCs = volatile organic compounds

Table 9: Summary of Volatile Organic Compounds in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene
Groundwater Screening Level (GSL)			5.7E-01	2.0E+02	1.0E+00	--	5.0E+00	5.0E+00	6.0E+00	--	--	5.0E-03	5.0E+00	--	2.0E-01	5.0E-02	6.5E+01	5.0E-01	5.0E+00	--
Vapor Intrusion Screening Level			3.8E+00	1.5E+03	3.2E+00	--	5.2E+00	7.6E+00	6.6E+01	--	--	2.2E+01	3.6E+01	--	2.8E-02	1.7E-01	2.7E+03	2.2E+00	2.3E+00	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<2.0	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
B4	DG-B4W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
B5	DG-B5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.44 J**	<4.0	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
B9	DG-B9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
C3	DG-C3W	8/22/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.14 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
C7	DG-C7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
D1	DG-D1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
D5	DG-D5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.11 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
D9	DG-D9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
DE8-9	DG-DE8-9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
E7	DG-E7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
E11	DG-E11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
E11	DG-E11W (D)	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
F1	DG-F1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
F3	DG-F3W	8/22/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
F9	DG-F9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.12 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
FG9-10	DG-FG9-10W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
G7	DG-G7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
G11	DG-G11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
H1	DG-H1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
H5	DG-H5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
H6	DG-H6W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
H9	DG-H9W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
I3	DG-I3W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
I7	DG-I7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
I7	DG-I7W (D)	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
I11	DG-I11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
J5	DG-J5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
J9	DG-J9W	9/26/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
K3	DG-K3W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
K11	DG-K11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
L1	DG-L1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
L5	DG-L5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
L5	DG-L5W (D)	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17

Table 9: Summary of Volatile Organic Compounds in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene
Groundwater Screening Level (GSL)			5.7E-01	2.0E+02	1.0E+00	--	5.0E+00	5.0E+00	6.0E+00	--	--	5.0E-03	5.0E+00	--	2.0E-01	5.0E-02	6.5E+01	5.0E-01	5.0E+00	--
Vapor Intrusion Screening Level			3.8E+00	1.5E+03	3.2E+00	--	5.2E+00	7.6E+00	6.6E+01	--	--	2.2E+01	3.6E+01	--	2.8E-02	1.7E-01	2.7E+03	2.2E+00	2.3E+00	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
L9	DG-L9W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
L9	DG-L9W (D)	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
M3	DG-M3W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
M7	DG-M7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
M11	DG-M11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
GWE-1	GWE-1	8/30/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.35 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
GWE-2	GWE-2	8/30/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
GWE-3	GWE-3	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
GWE-4	GWE-4	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
GWE-4	GWE-4 (D)	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
MK-2A	MK-2A	8/14/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
MK-4A	MK-4A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
MK-5AR	MK-5AR	8/14/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
MK-5AR	MK-5AR (D)	8/14/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
MK-6A	MK-6A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
MW-4A	MW-4A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
MW-6AR	MW-6AR	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
MW-7A	MW-7A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17
MW-8A	MW-8A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17

Table 9: Summary of Volatile Organic Compounds in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	1,3-Dichloropropene	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide
Groundwater Screening Level (GSL)			6.5E+01	--	5.0E+00	--	5.0E-01	--	--	--	--	1.2E+02	1.4E+04	1.0E+00	--	--	8.0E+01	8.0E+01	7.5E+00	--
Vapor Intrusion Screening Level			--	--	2.6E+00	--	1.2E+00	--	--	--	--	--	2.3E+07	4.2E-01	--	--	8.7E-01	--	1.7E+01	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
B4	DG-B4W	8/23/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
B5	DG-B5W	8/23/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
B9	DG-B9W	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
C3	DG-C3W	8/22/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
C7	DG-C7W	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
D1	DG-D1W	8/21/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
D5	DG-D5W	8/23/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
D9	DG-D9W	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
DE8-9	DG-DE8-9W	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
E7	DG-E7W	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
E11	DG-E11W	8/27/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
E11	DG-E11W (D)	8/27/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
F1	DG-F1W	8/21/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
F3	DG-F3W	8/22/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
F9	DG-F9W	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
FG9-10	DG-FG9-10W	8/27/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
G7	DG-G7W	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
G11	DG-G11W	8/27/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
H1	DG-H1W	8/21/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
H5	DG-H5W	8/23/18	<0.20	<0.17	<0.16	<0.17	**8.8 J**	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
H6	DG-H6W	8/23/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
H9	DG-H9W	8/27/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
I3	DG-I3W	8/23/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
I7	DG-I7W	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
I7	DG-I7W (D)	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
I11	DG-I11W	8/27/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
J5	DG-J5W	8/23/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
J9	DG-J9W	9/26/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
K3	DG-K3W	8/23/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
K11	DG-K11W	8/27/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
L1	DG-L1W	8/21/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
L5	DG-L5W	8/23/18	<0.20	<0.17	<0.16	<0.17	**8.8 J**	<0.20	<3.0	<0.20	<0.20	<4.5	<20	**0.27 J**	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
L5	DG-L5W (D)	8/23/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78

Table 9: Summary of Volatile Organic Compounds in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	1,3-Dichloropropene	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide
Groundwater Screening Level (GSL)			6.5E+01	--	5.0E+00	--	5.0E-01	--	--	--	--	1.2E+02	1.4E+04	1.0E+00	--	--	8.0E+01	8.0E+01	7.5E+00	--
Vapor Intrusion Screening Level			--	--	2.6E+00	--	1.2E+00	--	--	--	--	--	2.3E+07	4.2E-01	--	--	8.7E-01	--	1.7E+01	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
L9	DG-L9W	8/27/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
L9	DG-L9W (D)	8/27/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
M3	DG-M3W	8/23/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
M7	DG-M7W	8/24/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
M11	DG-M11W	8/27/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
GWE-1	GWE-1	8/30/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
GWE-2	GWE-2	8/30/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
GWE-3	GWE-3	8/15/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
GWE-4	GWE-4	8/15/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
GWE-4	GWE-4 (D)	8/15/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
MK-2A	MK-2A	8/14/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
MK-4A	MK-4A	8/15/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
MK-5AR	MK-5AR	8/14/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
MK-5AR	MK-5AR (D)	8/14/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
MK-6A	MK-6A	8/15/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
MW-4A	MW-4A	8/15/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
MW-6AR	MW-6AR	8/15/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
MW-7A	MW-7A	8/15/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78
MW-8A	MW-8A	8/15/18	<0.20	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78

Table 9: Summary of Volatile Organic Compounds in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)	Naphthalene	n-Butylbenzene	n-Propylbenzene
Groundwater Screening Level (GSL)			2.2E-01	5.0E+01	1.6E+01	2.3E+00	1.9E+02	6.0E+00	--	8.0E+01	--	--	1.3E+01	1.4E-01	--	5.0E+00	5.0E+00	1.7E-01	--	--
Vapor Intrusion Screening Level			6.1E-02	4.0E+02	2.3E+04	8.1E-01	2.6E+02	4.9E+01	--	--	--	--	3.5E+00	3.0E-01	--	7.8E+00	4.5E+02	4.6E+00	--	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	**130**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
B4	DG-B4W	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.86**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
B5	DG-B5W	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	**160**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
B9	DG-B9W	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	**2.1**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
C3	DG-C3W	8/22/18	<0.11	<0.13	<0.17	<0.40	<0.19	**7.6**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
C7	DG-C7W	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
D1	DG-D1W	8/21/18	<0.11	<0.13	<0.17	<0.40	<0.19	**1.0**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.16 J**	<0.22	<0.30	<0.20
D5	DG-D5W	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	**6.0**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
D9	DG-D9W	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.62**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
DE8-9	DG-DE8-9W	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.15 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
E7	DG-E7W	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.50**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
E11	DG-E11W	8/27/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
E11	DG-E11W (D)	8/27/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
F1	DG-F1W	8/21/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.55**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.33 J**	<0.22	<0.30	<0.20
F3	DG-F3W	8/22/18	<0.11	<0.13	<0.17	<0.40	<0.19	**7.9**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
F9	DG-F9W	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.095 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
FG9-10	DG-FG9-10W	8/27/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
G7	DG-G7W	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	**23**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
G11	DG-G11W	8/27/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
H1	DG-H1W	8/21/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.30 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.27 J**	<0.22	<0.30	<0.20
H5	DG-H5W	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	**3.2**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
H6	DG-H6W	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.25 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
H9	DG-H9W	8/27/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
I3	DG-I3W	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	**6.0**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
I7	DG-I7W	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	**18**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
I7	DG-I7W (D)	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	**21**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
I11	DG-I11W	8/27/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
J5	DG-J5W	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	**1.6**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
J9	DG-J9W	9/26/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
K3	DG-K3W	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	**3.9**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
K11	DG-K11W	8/27/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
L1	DG-L1W	8/21/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.26 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.49 J**	<0.22	<0.30	<0.20
L5	DG-L5W	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
L5	DG-L5W (D)	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20

Table 9: Summary of Volatile Organic Compounds in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)	Naphthalene	n-Butylbenzene	n-Propylbenzene
Groundwater Screening Level (GSL)			2.2E-01	5.0E+01	1.6E+01	2.3E+00	1.9E+02	6.0E+00	--	8.0E+01	--	--	1.3E+01	1.4E-01	--	5.0E+00	5.0E+00	1.7E-01	--	--
Vapor Intrusion Screening Level			6.1E-02	4.0E+02	2.3E+04	8.1E-01	2.6E+02	4.9E+01	--	--	--	--	3.5E+00	3.0E-01	--	7.8E+00	4.5E+02	4.6E+00	--	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
L9	DG-L9W	8/27/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.82**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
L9	DG-L9W (D)	8/27/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.79**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
M3	DG-M3W	8/23/18	<0.11	<0.13	<0.17	<0.40	<0.19	**1.3**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
M7	DG-M7W	8/24/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.23 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
M11	DG-M11W	8/27/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
GWE-1	GWE-1	8/30/18	<0.11	<0.13	<0.17	<0.40	<0.19	**70**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<15	<0.11	<0.22	<0.30	<0.20
GWE-2	GWE-2	8/30/18	<0.11	<0.13	<0.17	<0.40	<0.19	**0.34 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
GWE-3	GWE-3	8/15/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
GWE-4	GWE-4	8/15/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
GWE-4	GWE-4 (D)	8/15/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
MK-2A	MK-2A	8/14/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
MK-4A	MK-4A	8/15/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
MK-5AR	MK-5AR	8/14/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
MK-5AR	MK-5AR (D)	8/14/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
MK-6A	MK-6A	8/15/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
MW-4A	MW-4A	8/15/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
MW-6AR	MW-6AR	8/15/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
MW-7A	MW-7A	8/15/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20
MW-8A	MW-8A	8/15/18	<0.11	<0.13	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20

Table 9: Summary of Volatile Organic Compounds in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total
Groundwater Screening Level (GSL)			--	1.0E+01	--	3.0E+00	4.0E+01	1.0E+01	--	5.0E+00	--	--	6.1E-02	2.0E+01
Vapor Intrusion Screening Level			--	8.5E+03	--	6.4E-01	1.2E+03	2.2E+02	--	1.2E+00	--	--	8.6E-03	3.9E+02
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<0.17	<0.22	<0.20	**5.7**	<0.17	**24**	<0.17	**200**	<0.30	<0.60	**2.6**	<0.40
B4	DG-B4W	8/23/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**1.8**	<0.40
B5	DG-B5W	8/23/18	<0.17	<0.22	<0.20	<0.20	<0.17	<2.6	<0.17	**8.5**	<0.30	<0.60	**410**	<0.40
B9	DG-B9W	8/24/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.37 J**	<0.40
C3	DG-C3W	8/22/18	<0.17	<0.22	<0.20	<0.20	<0.17	**0.53**	<0.17	**3.9**	<0.30	<0.60	**0.78**	<0.40
C7	DG-C7W	8/24/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	**1.2**	<0.30	<0.60	<0.20	<0.40
D1	DG-D1W	8/21/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	**0.25 J**	<0.30	<0.60	<0.20	<0.40
D5	DG-D5W	8/23/18	<0.17	<0.22	<0.20	**0.33 J**	<0.17	**0.75**	<0.17	**4.1**	<0.30	<0.60	**0.73**	<0.40
D9	DG-D9W	8/24/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.51**	<0.40
DE8-9	DG-DE8-9W	8/24/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.24 J**	<0.40
E7	DG-E7W	8/24/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	**1.0**	<0.30	<0.60	<0.20	<0.40
E11	DG-E11W	8/27/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
E11	DG-E11W (D)	8/27/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
F1	DG-F1W	8/21/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
F3	DG-F3W	8/22/18	<0.17	<0.22	<0.20	<0.20	<0.17	**0.39 J**	<0.17	**0.60**	<0.30	<0.60	<0.20	<0.40
F9	DG-F9W	8/24/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
FG9-10	DG-FG9-10W	8/27/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
G7	DG-G7W	8/24/18	<0.17	<0.22	<0.20	<0.20	<0.17	**1.9**	<0.17	**15**	<0.30	<0.60	**4.6**	<0.40
G11	DG-G11W	8/27/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
H1	DG-H1W	8/21/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
H5	DG-H5W	8/23/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	**0.22 J**	<0.30	<0.60	<0.20	<0.40
H6	DG-H6W	8/23/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
H9	DG-H9W	8/27/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
I3	DG-I3W	8/23/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	**0.52**	<0.30	<0.60	<0.20	<0.40
I7	DG-I7W	8/24/18	<0.17	<0.22	<0.20	<0.20	<0.17	**1.1**	<0.17	**5.3**	<0.30	<0.60	**13**	<0.40
I7	DG-I7W (D)	8/24/18	<0.17	<0.22	<0.20	<0.20	<0.17	**1.2**	<0.17	**5.9**	<0.30	<0.60	**16**	<0.40
I11	DG-I11W	8/27/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
J5	DG-J5W	8/23/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.37 J**	<0.40
J9	DG-J9W	9/26/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
K3	DG-K3W	8/23/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
K11	DG-K11W	8/27/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
L1	DG-L1W	8/21/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
L5	DG-L5W	8/23/18	<0.17	<0.22	<0.20	<0.20	**0.26 J**	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
L5	DG-L5W (D)	8/23/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40

Table 9: Summary of Volatile Organic Compounds in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total
Groundwater Screening Level (GSL)			--	1.0E+01	--	3.0E+00	4.0E+01	1.0E+01	--	5.0E+00	--	--	6.1E-02	2.0E+01
Vapor Intrusion Screening Level			--	8.5E+03	--	6.4E-01	1.2E+03	2.2E+02	--	1.2E+00	--	--	8.6E-03	3.9E+02
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
L9	DG-L9W	8/27/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
L9	DG-L9W (D)	8/27/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.37 J**	<0.40
M3	DG-M3W	8/23/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
M7	DG-M7W	8/24/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	**0.36 J**	<0.30	<0.60	<0.20	<0.40
M11	DG-M11W	8/27/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
GWE-1	GWE-1	8/30/18	<0.17	<0.22	<0.20	**0.28 J**	<0.17	**0.85**	<0.17	**3.0**	<0.30	<0.60	**210**	<0.40
GWE-2	GWE-2	8/30/18	<0.17	<0.22	<0.20	<0.20	<0.17	**0.15 J**	<0.17	<0.20	<0.30	<0.60	**0.34 J**	<0.40
GWE-3	GWE-3	8/15/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
GWE-4	GWE-4	8/15/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
GWE-4	GWE-4 (D)	8/15/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
MK-2A	MK-2A	8/14/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
MK-4A	MK-4A	8/15/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
MK-5AR	MK-5AR	8/14/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
MK-5AR	MK-5AR (D)	8/14/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
MK-6A	MK-6A	8/15/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
MW-4A	MW-4A	8/15/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
MW-6AR	MW-6AR	8/15/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
MW-7A	MW-7A	8/15/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40
MW-8A	MW-8A	8/15/18	<0.17	<0.22	<0.20	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40

Table 9: Summary of Volatile Organic Compounds in Fill Groundwater
UPC OU-SM
Brisbane, California

Notes:
a. VOCs were analyzed by USEPA Method 8260B, with the exception of 1,2,3-Trichloropropane, which was analyzed by USEPA Method E524.2 SIM for the following samples: DG-B4W, DG-B5W, DG-D1W, DG-F1W, GWE-3, GWE-4,GWE-4 (D), DG-H1W, DG-L1W, MK-2A, MK-4A, MK-5AR, MK-5AR (D), MK-6A, MW-4A, MW-6AR, MW-7A, and MW-8A; the remaining samples were anlyzed by USEPA Method 8260B SIM.
1. 1,2,3-Trichloropropane results were analyzed by USEPA Method 8260B SIM for select samples.
2. GSLs are from (1) Maximum Contaminant Levels, consisten with cleanup levels for COCs at the Schlage OU, and (2) vapor intrusion screening levels for residential land use. Per the Order (DTSC, 2008), VOCs at the UPC OU-SM are sourced from, and will be cleaned up under, the Schlage OU remedy.
3. Non-detect results are presented with "<" followed by the MDL.
4. Results in bold font indicate a detection above the MDL.
5. All wells are screened in Fill water-bearing zone.

Abbreviations:
"--" = not available
"<" = non-detect result
µg/L = microgram per liter
(D) = duplicate sample
GSL = groundwater screening level
J = estimated value
MDL = method detection limit
SIM = selected ion monitoring
USEPA = United States Environmental Protection Agency
VOCs = volatile organic compounds

Table 10: Summary of Total Petroleum Hydrocarbons in Fill Groundwater

UPC OU-SM

Brisbane, California

Sample Location	Sample Name	Collection Date	TPH-gasoline (C4-C12)	TPH-diesel (C10-C28)
Groundwater Screening Level (GSL)			3.7E+05	6.4E+04
Units			µg/L	µg/L
A7	DG-A7W	8/24/18	**280**	**55**
B4	DG-B4W	8/23/18	**30 J**	**260**
B5	DG-B5W	8/23/18	**380**	**57**
B9	DG-B9W	8/24/18	**24 J**	**180**
C3	DG-C3W	8/22/18	<21	**69**
C7	DG-C7W	8/24/18	**24 J**	**240**
D1	DG-D1W	8/21/18	<21	**73**
D5	DG-D5W	8/23/18	**30 J**	**130**
D9	DG-D9W	8/24/18	**30 J**	**170**
DE8-9	DG-DE8-9W	8/24/18	<21	**210**
E7	DG-E7W	8/24/18	**26 J**	**170**
E11	DG-E11W	8/27/18	<21	**99**
E11	DG-E11W (D)	8/27/18	**29 J**	**110 B**
F1	DG-F1W	8/21/18	<21	**120**
F3	DG-F3W	8/22/18	<21	**120**
F9	DG-F9W	8/24/18	<21	**220**
FG9-10	DG-FG9-10W	8/27/18	<21	**230**
G7	DG-G7W	8/24/18	**54**	**130**
G11	DG-G11W	8/27/18	**85**	**670**
H1	DG-H1W	8/21/18	<21	**96**
H5	DG-H5W	8/23/18	<21	**59**
H6	DG-H6W	8/23/18	<21	**71**
H9	DG-H9W	8/27/18	<21	**160**
I3	DG-I3W	8/23/18	<21	**57**
I7	DG-I7W	8/24/18	**42 J**	**100**
I7	DG-I7W (D)	8/24/18	**30 J**	**110**
I11	DG-I11W	8/27/18	<21	**220**
J5	DG-J5W	8/23/18	<21	**76**
J9	DG-J9W	9/26/18	<21	**78**
K3	DG-K3W	8/23/18	<21	**52**
K11	DG-K11W	8/27/18	<21	**68**
L1	DG-L1W	8/21/18	<21	**220**
L5	DG-L5W	8/23/18	**57**	**170**
L5	DG-L5W (D)	8/23/18	**31 J**	**190**
L9	DG-L9W	8/27/18	<21	**80**
L9	DG-L9W (D)	8/27/18	<21	**91**
M3	DG-M3W	8/23/18	<21	**56**

Table 10: Summary of Total Petroleum Hydrocarbons in Fill Groundwater

UPC OU-SM

Brisbane, California

Sample Location	Sample Name	Collection Date	TPH-gasoline (C4-C12)	TPH-diesel (C10-C28)
Groundwater Screening Level (GSL)			3.7E+05	6.4E+04
Units			µg/L	µg/L
M7	DG-M7W	8/24/18	<21	**600**
M11	DG-M11W	8/27/18	<21	**77**
GWE-1	GWE-1	8/30/18	**120**	**64**
GWE-2	GWE-2	8/30/18	<21	**73**
GWE-3	GWE-3	8/15/18	<25	<32
GWE-4	GWE-4	8/15/18	<25	**120**
GWE-4	GWE-4 (D)	8/15/18	<25	**120**
MK-2A	MK-2A	8/14/18	<25	<32
MK-4A	MK-4A	8/15/18	<25	**55**
MK-5AR	MK-5AR	8/14/18	<25	**250**
MK-5AR	MK-5AR (D)	8/14/18	<25	**240**
MK-6A	MK-6A	8/15/18	<25	**200**
MW-4A	MW-4A	8/15/18	<25	**1,100**
MW-6AR	MW-6AR	8/15/18	<25	**58**
MW-7A	MW-7A	8/15/18	<25	**97**
MW-8A	MW-8A	8/15/18	<25	**120**

Notes:

1. TPH-g was analyzed by USEPA Method 8260B.
2. TPH-d were analyzed by USEPA Method 8015B.
3. Non-detect results are presented with "<" followed by the MDL.
4. Results in bold font indicate a detection above the MDL.
5. GSLs are San Francisco Regional Quality Control Board Environmental Screening Levels for saltwater ecotoxicity (April 2019) with an attenuation factor of 100 to account for sorption and dilution between the Site and San Francisco Bay.
6. All wells are screened in Fill water-bearing zone.

Abbreviations:

"<" = non-detect result
µg/L = microgram per liter
(D) = duplicate sample
GSL = groundwater screening level
J = estimated value
MDL = method detection limit
TPH-g/-d = total petroleum hydrocarbons as gasoline / diesel
USEPA = United States Environmental Protection Agency

Table 11: Summary of Dissolved Metals in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium, Hexavalent	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Groundwater Screening Level (GSL)			6.0E+02	1.0E+03	1.0E+05	4.0E+02	5.0E+02	5.0E+03	1.0E+03	6.0E+02	3.1E+02	8.1E+02	9.4E+01	1.0E+04	8.2E+02	5.0E+03	1.9E+01	2.0E+02	5.0E+03	8.1E+03
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<2.7	<2.6	**150**	**0.50 J**	<1.3	<1.5	<3.7 R	**4.9**	**1.5 J**	<2.3	<0.10	**3.5 J**	**5.5 J**	<7.1	**17**	<3.5	**1.1 J**	**48 F1**
B4	DG-B4W	8/23/18	**38**	**14**	**600**	<0.33	<1.3	**1.6 J**	<3.7	**3.5**	**20**	**10**	<0.10	**9.0 J**	**4.6 J**	<7.1	<1.2	<3.5	**1.9 J**	**150**
B5	DG-B5W	8/23/18	<2.7	**8.4 J**	**320**	<0.33	<1.3	<1.5	<3.7	**2.9**	**3.0 J**	**7.9**	<0.10	**4.3 J**	**4.7 J**	<7.1	<1.2	<3.5	**0.91 J**	**69**
B9	DG-B9W	8/24/18	**3.5 J**	**34 J**	**470**	<0.33	<1.3	**3.7 J**	<3.7 R	**4.0**	**12 J**	**3.2 J**	<0.10	**7.4 J**	**6.0 J**	<7.1	**10**	<3.5	<0.70	**96**
C3	DG-C3W	8/22/18	**12**	**7.1 J**	**270**	**0.42 J B**	<1.3	<1.5	<3.7	**4.7**	**12 J**	**21**	<0.10	**7.7 J**	**6.0 J**	<7.1	<1.2	<3.5	<0.70	**90**
C7	DG-C7W	8/24/18	<2.7	**5.8 J**	**720**	<0.33	<1.3	**15**	<3.7 R	**2.1**	**2.4 J**	<2.3	<0.10	**3.8 J**	**4.4 J**	<7.1	**15**	<3.5	**2.3 J**	**52**
D1	DG-D1W	8/21/18	<2.7	**25**	**140**	**0.34 J**	<1.3	<1.5	<3.7	**2.4**	**4.5 J**	**6.0**	<0.10	**4.2 J**	**2.7 J**	<7.1	<1.2	<3.5	<0.70	**41**
D5	DG-D5W	8/23/18	<2.7	**14**	**480**	**0.34 J B**	<1.3	<1.5	<3.7	**1.9 J**	**2.5 J**	**15**	<0.10	**5.7 J**	**4.9 J**	<7.1	<1.2	<3.5	<0.70	**34**
D9	DG-D9W	8/24/18	<2.7	**18**	**280**	<0.33	<1.3	**2.4 J**	<3.7 R	<1.2	**2.6 J**	<2.3	<0.10	**2.8 J**	**3.0 J**	<7.1	**12**	<3.5	**0.73 J**	**17 J**
DE8-9	DG-DE8-9W	8/24/18	<2.7	**29**	**150**	<0.33	<1.3	**2.0 J**	<3.7 R	**1.5 J**	**4.0 J**	<2.3	<0.10	**5.5 J**	**4.3 J**	<7.1	**11**	<3.5	<0.70	**23**
E7	DG-E7W	8/24/18	**2.7 J**	<2.6	**500**	<0.33	<1.3	**2.1 J**	<3.7 R	**2.4**	**6.4 J**	**2.8 J**	**0.25 F1 F2**	**5.6 J**	**6.1 J**	<7.1	**15**	<3.5	**0.97 J**	**36**
E11	DG-E11W	8/27/18	<2.7	**14**	**430**	**0.56 J**	<1.3	**2.0 J**	**8.4 J**	**1.6 J**	<1.5	**7.9**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	**1.4 J**	<9.6
E11	DG-E11W (D)	8/27/18	<2.7	**13**	**360**	<0.33	<1.3	**1.6 J**	**6.3 J**	**3.3**	**2.6 J**	**9.9**	<0.10	**3.6 J**	**1.0 J**	<7.1	<1.2	<3.5	**1.2 J**	**13 J**
F1	DG-F1W	8/21/18	<2.7	**20**	**79**	**0.53 J**	<1.3	<1.5	<3.7	**3.6**	**2.8 J**	**6.2**	<0.10	**4.5 J**	**2.4 J**	<7.1	<1.2	<3.5	<0.70	**26**
F3	DG-F3W	8/22/18	**3.4 J**	**190**	**200**	**0.69 J B**	<1.3	<1.5	<3.7	**1.9 J**	**3.9 J**	**11**	<0.10	**5.9 J**	**2.9 J**	<7.1	<1.2	<3.5	**0.97 J**	**36**
F9	DG-F9W	8/24/18	<2.7	**37**	**180**	<0.33	<1.3	**2.4 J**	<3.7 R	**5.0**	**3.9 J**	<2.3	<0.10	**7.2 J**	**6.9 J**	<7.1	**14**	<3.5	<0.70	**26**
FG9-10	DG-FG9-10W	8/27/18	<2.7	**5.9 J**	**430**	<0.33	<1.3	<1.5	<3.7	<1.2	**2.2 J**	**11**	<0.10	**3.7 J**	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
G7	DG-G7W	8/24/18	<2.7	**20**	**1,400**	<0.33	<13	**2.4 J**	<3.7 R	**15 J**	**5.7 J**	**30 J**	<0.10	**12**	**7.4 J**	<7.1	**20**	<35	<0.70	<96
G11	DG-G11W	8/27/18	<2.7	**25**	**910**	<0.33	<1.3	**7.0 J**	<3.7	**10**	**11 J**	**14**	<0.10	**7.1 J**	**10**	<7.1	<1.2	<3.5	**4.0 J**	**27**
H1	DG-H1W	8/21/18	<2.7	**19**	**97**	**0.34 J**	<1.3	<1.5	<3.7	**3.6**	**3.4 J**	**4.9 J**	<0.10	**4.5 J**	**2.8 J**	<7.1	<1.2	<3.5	<0.70	**30**
H5	DG-H5W	8/23/18	<2.7	**28**	**260**	**0.62 J B**	<1.3	**4.0 J**	<3.7	**2.3**	**4.8 J**	**8.3**	<0.10	**4.3 J**	**3.2 J**	<7.1	<1.2	<3.5	<0.70	**77**
H6	DG-H6W	8/23/18	<2.7	**44**	**240**	<0.33	<1.3	**1.9 J**	<3.7	**1.5 J**	**1.5 J**	**12**	<0.10	**4.4 J**	**1.9 J**	<7.1	<1.2	<3.5	**1.7 J**	**39**
H9	DG-H9W	8/27/18	<2.7	**3.0 J**	**790**	<0.33	<1.3	<1.5	<3.7	**1.2 J**	**3.7 J**	**11**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	**0.95 J**	<9.6
I3	DG-I3W	8/23/18	**2.8 J**	**84**	**72**	**0.89 J B**	<1.3	<1.5	<3.7	<1.2	**3.2 J**	**8.6**	<0.10	**6.3 J**	**1.8 J**	<7.1	<1.2	<3.5	**2.0 J**	**25**
I7	DG-I7W	8/24/18	<2.7	**31**	**120**	<0.33	<1.3	**27**	<3.7 R	**2.0**	**3.0 J**	<2.3	<0.10	**5.3 J**	**9.6 J**	<7.1	**15**	<3.5	<0.70	<9.6
I7	DG-I7W (D)	8/24/18	<2.7	**31**	**110**	<0.33	<1.3	**1.5 J**	<3.7	**1.3 J**	**1.6 J**	**9.4**	<0.10	**3.8 J**	**2.0 J**	<7.1	<1.2	<3.5	<0.70	<9.6
I11	DG-I11W	8/27/18	<2.7	**17**	**1,100**	**0.64 J B**	<1.3	**3.3 J**	**4.3 J**	**6.8**	**24**	**21**	<0.10	**10**	**3.0 J**	<7.1	<1.2	<3.5	**0.91 J**	**61**
J5	DG-J5W	8/23/18	<2.7	**42**	**240**	**3.0 B**	<1.3	**1.7 J**	<3.7	**1.3 J**	**4.2 J**	**9.2**	<0.10	**5.8 J**	**1.6 J**	<7.1	<1.2	<3.5	**1.3 J**	**53**
J9	DG-J9W	9/26/18	<2.7	**6.8 J**	**35**	<0.33	<1.3	<1.5	<3.7	**2.1**	<1.5	**4.7 J**	<0.10	**5.1 J**	**1.7 J**	<7.1	<1.2	<3.5	**1.4 J**	<9.6
K3	DG-K3W	8/23/18	<2.7	**63**	**130**	<0.33	<1.3	<1.5	<3.7	**1.2 J**	**4.2 J**	**9.6**	<0.10	**4.9 J**	**1.6 J**	<7.1	<1.2	<3.5	**0.97 J**	**50**
K11	DG-K11W	8/27/18	<2.7	**28**	**240**	<0.33	<1.3	<1.5	<3.7	**1.3 J**	**2.7 J**	**9.5**	<0.10	**2.4 J**	<0.80	<7.1	<1.2	<3.5	**1.7 J**	<9.6
L1	DG-L1W	8/21/18	<2.7	**15**	**210**	**0.50 J**	<1.3	<1.5	<3.7	**9.5**	**9.0 J**	**7.6**	<0.10	**4.8 J**	**6.7 J**	<7.1	<1.2	<3.5	<0.70	**64**
L5	DG-L5W	8/23/18	**6.6 J**	**3.2 J**	**360**	**1.0 J B**	<1.3	<1.5	<3.7	**3.0**	**160**	**15**	<0.10	**10**	**8.5 J**	<7.1	<1.2	<3.5	<0.70	**180**
L5	DG-L5W (D)	8/23/18	**7.8 J**	**3.7 J**	**360**	<0.33	<1.3	**1.9 J**	<3.7	**3.0**	**150**	**15**	<0.10	**10**	**7.8 J**	<7.1	<1.2	<3.5	<0.70	**170**
L9	DG-L9W	8/27/18	<2.7	**9.0 J**	**50**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**6.3**	<0.10	**6.5 J**	<0.80	<7.1	<1.2	<3.5	**0.89 J**	<9.6
L9	DG-L9W (D)	8/27/18	<2.7	**8.2 J**	**50**	**0.97 J**	<1.3	<1.5	<3.7	<1.2	**1.8 J**	**7.0**	<0.10	**9.8 J**	<0.80	<7.1	<1.2	<3.5	**1.0 J**	<9.6
M3	DG-M3W	8/23/18	**3.6 J**	**31**	**89**	**1.1 J B**	<1.3	<1.5	<3.7	<1.2	**4.4 J**	**8.1**	<0.10	**5.4 J**	**1.5 J**	<7.1	<1.2	<3.5	**1.0 J**	**37**
M7	DG-M7W	8/24/18	<2.7	**13**	**520**	<0.33	<1.3	**3.4 J**	<3.7 R	**9.6**	**11 J**	**2.3 J**	<0.10	**9.0 J**	**14**	<7.1	**12**	<3.5	**2.0 J**	**56**
M11	DG-M11W	8/27/18	<2.7	**2.7 J**	**63**	<0.33	<1.3	**5.9 J**	<3.7	**1.4 J**	**2.2 J**	**4.1 J**	<0.10	<2.3	**1.9 J**	<7.1	<1.2	<3.5	**9.6 J**	**11 J**
GWE-1	GWE-1	8/30/18	<2.7	**10**	**220**	<0.33	<1.3	**1.8 J**	<3.7	<1.2	**1.9 J**	**8.6**	<0.10	<2.3	**5.9 J**	<7.1	<1.2	<3.5	**1.4 J**	<9.6
GWE-2	GWE-2	8/30/18	<2.7	**21**	**790**	<0.33	<1.3	<1.5	<3.7	**2.6**	**2.0 J**	**9.6**	<0.10	<2.3	**6.6 J**	<7.1	<1.2	<3.5	<0.70	**13 J**
GWE-3	GWE-3	8/15/18	<2.7	**18**	**290**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	<2.3	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
GWE-4	GWE-4	8/15/18	<2.7	<2.6	**970**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**14**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
GWE-4	GWE-4 (D)	8/15/18	<2.7	<2.6	**940**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**13**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MK-2A	MK-2A	8/14/18	<2.7	<2.6	**330**	<0.33	<1.3	<1.5	<3.7	**79**	<1.5	<2.3	<0.10	<2.3	**49**	<7.1	<1.2	<3.5	<0.70	<9.6
MK-4A	MK-4A	8/15/18	<2.7	**41**	**69**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	<2.3	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MK-5AR	MK-5AR	8/14/18	<2.7	**130**	**79**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**8.1**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	**24**
MK-5AR	MK-5AR (D)	8/14/18	<2.7	**130**	**79**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**8.1**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	**26**

Table 11: Summary of Dissolved Metals in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium, Hexavalent	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Groundwater Screening Level (GSL)			6.0E+02	1.0E+03	1.0E+05	4.0E+02	5.0E+02	5.0E+03	1.0E+03	6.0E+02	3.1E+02	8.1E+02	9.4E+01	1.0E+04	8.2E+02	5.0E+03	1.9E+01	2.0E+02	5.0E+03	8.1E+03
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MK-6A	MK-6A	8/15/18	<2.7	<2.6	**81**	<0.33	<1.3	<1.5	<3.7	**5.2**	<1.5	**6.2**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MW-4A	MW-4A	8/15/18	<2.7	**120**	**210**	<0.33	<1.3	<1.5	<3.7	**13**	<1.5	**12**	<0.10	**14**	**24**	<7.1	<1.2	<3.5	<0.70	**22**
MW-6AR	MW-6AR	8/15/18	<2.7	**12**	**200**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**5.3**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MW-7A	MW-7A	8/15/18	<2.7	<2.6	**560**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**16**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MW-8A	MW-8A	8/15/18	<2.7	<2.6	**280**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**7.8**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6

Notes:

1. Metals were analyzed by USEPA Methods 6010B, 7196, and 7471A.
2. GSLs are San Francisco Regional Water Quality Control Board Environmental Screening Levels for saltwater ecotoxicity (April 2019) with an attenuation factor of 100 to account for sorption and dilution between the Site and San Francisco Bay.
3. Non-detect results are presented with "<" followed by the MDL.
4. Results in **bold** font indicate a detection above the MDL.
5. Results shaded with gray indicate the MDL exceeded the GSL.
6. Results highlighted with yellow indicate the result exceeds the GSL.

Abbreviations:

"<" = non-detect result
µg/L = microgram per liter
B = compound was found in the blank and sample.
(D) = duplicate sample
F1 = MS and/or MSD Recovery is outside acceptance limits.
F2 = MS/MSD relative percent difference exceeds control limits.
GSL = groundwater screening level
J = estimated value
MDL = method detection limit
R = result rejected during data validation
USEPA = United States Environmental Protection Agency

Table 12: Potentially Applicable or Relevant and Appropriate Requirements (ARARs)

UPC OU-SM

Brisbane, California

ARAR Type	Standard, Requirement, Criterion, Limitation	Citation	Description
Federal ARARs			
Chemical	Clean Air Act (CAA)	42 USC 7401-7642	Emission standards for stationary and mobile sources
Chemical	Hazardous Waste Identification	40 CFR 261.24	Establishes criteria to determine whether solid waste exhibits hazard characteristics
Chemical	Toxic Substances Control Act (TSCA)	40 CFR 761	Regulates the use and disposal of various chemicals, including PCBs. Subpart D of 40 CFR Part 761 outlines disposal and cleanup procedures for "PCB remediation waste," which is defined as waste with a PCB concentration greater than 50 mg/kg. Under 40 CFR, Part 761.61(a)(4) a sliding cleanup scale for PCB-impacted soil based on high- and low-occupancy future site uses is established. High-Occupancy Areas: The cleanup level (CUL) for bulk PCB remediation material / soil in high-occupancy areas is less than or equal to 1 mg/kg without further conditions. High-occupancy areas where bulk PCB remediation material/soil remains at concentrations greater than 1 mg/kg and less than or equal to 10 mg/kg shall be covered with a cap. Low-Occupancy Areas: 1) the CUL for bulk PCB remediation material/soil in low-occupancy areas is less than or equal to 25 mg/kg; 2) bulk PCB remediation material/soil may remain at a cleanup site at concentrations greater than 25 mg/kg and less than or equal to 50 mg/kg if the site is secured by a fence and marked with a sign; 3) bulk PCB remediation material/soil may remain at a cleanup site at concentrations greater than 25 mg/kg and less than or equal to 100 mg/kg if the site is covered with a cap. Under 40 CFR Part 761.61(c), alternative soil CULs can be proposed to EPA based on an evaluation of risks associated with PCBs remaining on site.

Table 12: Potentially Applicable or Relevant and Appropriate Requirements (ARARs)

UPC OU-SM

Brisbane, California

ARAR Type	Standard, Requirement, Criterion, Limitation	Citation	Description
Federal ARARs (continued)			
Chemical/ Action	Classification and Regulation of Hazardous Waste	40 CFR 260	Establishes criteria for the determination of hazardous waste and its regulation
Chemical/ Action	Clean Water Act (CWA)	33 USC 1251	Establishes regulatory and nonregulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff
Action	National Pollutant Discharge Elimination System (NPDES)	40 CFR Parts 122-124	Establishes requirements to ensure storm-water discharges do not contribute to a violation of surface-water quality standards
Action	NPDES	40 CFR Part 403 (33-USC 1251-1376)	Establishes national pretreatment standards to control pollutants that pass through or interfere with treatment processes in POTWs or that may contaminate sewage sludge
Action	Comprehensive, Environmental Response, Compensation and Recovery Act and Superfund Amendments and Reauthorization Act of 1986, and National Oil and Hazardous Substances Pollution Contingency Plan	40 CFR 300	Establishes policies and procedures for investigation and remediation decisions for protection of public health and the environment
Action	Drinking Water Standards	40 CFR Part 141	Establishes maximum contaminant levels (MCLs) to protect water quality in public drinking water systems
Action	Occupational Health and Safety	29 CFR 1910, 120	Establishes requirements for health and safety training
TBC	Health Risk Assessment (HRA)	US EPA, Risk Assessment Guidance for Superfund (1989)	Guidance and framework to assess health risk
State and Local ARARs			
Chemical	Ambient Air Quality Standards	HSC 39000-44071	Establishes standards for emissions of chemical vapors and dust
Chemical	Determination of Characteristic Wastes	22 CCR 66261.24	Establishes criteria for identifying characteristic wastes
Location	Remedial Requirements for Residential Development	Brisbane Measure JJ	Requires that all residential development be designed and remediated to accommodate ground-level residential uses and ground-level residential supportive uses (e.g., parks, schools, etc.)

Table 12: Potentially Applicable or Relevant and Appropriate Requirements (ARARs)
UPC OU-SM
Brisbane, California

ARAR Type	Standard, Requirement, Criterion, Limitation	Citation	Description
State and Local ARARs (continued)			
Action	Emission Standard	BAAQMD Regulation 6	Establishes emission standards for particulates
Action	Emission Standard	BAAQMD Regulations 2 and 8	Establish emission and permitting standards for volatile organic compounds (VOCs)
Action	Hazardous Waste Control	HAC 25100-25250.26	Establishes hazardous waste control measures
Action	Hazardous Waste Generator Requirements	22 CCR 66262.11 et seq.	Establishes standards applicable to generators of hazardous waste
Action	Discharge to POTW	City/County Wastewater Discharge Requirements	Establishes pretreatment standards to control pollutants
Action	State Superfund Act	HSC 25300 et. seq.	Establishes policies and procedures for investigation and remediation decisions for protection of public health and the environment
Action	DTSC Site Mitigation Program Policies and Procedures	DTSC	Applicable policies, procedures, management memos, and related guidance documents
Action	Drinking Water Standards	22 CCR 64431 and 64444	Establishes maximum contaminant levels to protect water quality in public drinking water systems
Action	Porter-Cologne Water Quality Control Act	SWRCB	Establishes policies and procedures for investigation and remediation decisions for preservation and protection of waters of the state for beneficial uses
Action	Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin	SFBRWQCB	Establishes water quality objectives for the San Francisco Bay
Action	California Occupational Health and Safety	8 CCR 1500, 2300, and 3200 et seq.	Establishes standards for working conditions, employee matters, and notification requirements
Action	Environmental Impact Review (EIR)	PRC 21000-2177	Mandates environmental impact review of project approved by governmental agencies

Table 12: Potentially Applicable or Relevant and Appropriate Requirements (ARARs)

UPC OU-SM

Brisbane, California

ARAR Type	Standard, Requirement, Criterion, Limitation	Citation	Description
State and Local ARARs (continued)			
Action	Land Use Covenants (LUC)	22 CCR 67391.1	Specify that a LUC imposing appropriate limitations on land use shall be executed and recorded when hazardous materials, hazardous wastes or constituents, or hazardous substances will remain at the property at levels, which are not suitable for unrestricted use of the land
TBC	Health Risk Assessment (HRA)	DTSC (Human Health Risk Assessment (HHRA) Note 3 – DTSC-Modified Screening Levels)	Guidance and framework to assess health risk
TBC	Health Risk Assessment (HRA)	SFBRWQCB (Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater)	Guidance and framework to assess health risk

Abbreviations:

BAAQMD = Bay Area Air Quality Management District
CAA = Clean Air Act
CCR = California Code of Regulations
CWA = Clean Water Act
DTSC = Department of Toxic Substances Control
EIR = environmental impact review/report
HSC = California Health and Safety Code
USC = United States Code
HRA = health risk assessment
LUCs = land use covenants
MCL = maximum contaminant level
POTW = publicly owned treatment works
PRC = California Public Resources Code
RCRA = Resource Conservation and Recovery Act
SFBRWQCB = San Francisco Bay Regional Water Quality Control Board
SWRCB= State Water Resources Control Board
TBC = to be considered

Table 13
Remedial Technology Screening Matrix
UPC OU-SM
Brisbane, California

Environmental Media	Remedial Technology	Description	Effectiveness	Implementability	Relative Cost	Recommended for Alternative Development
All Media	No Action	No institutional controls, engineering controls, actions, treatment, or monitoring.	Not effective in reducing toxicity, mobility, or volume through treatment and does not minimize residual human health and environmental risks. Does not comply with ARARs.	Technically and administratively feasible but is likely not an acceptable technology to the general public or government agencies due to its lack of effectiveness.	None.	Not recommended.
	Land use and activity restrictions, including institutional controls and/or engineering controls	Restrict certain future sensitive land uses and activities on the site for the protection of human health and environment. Impose institutional controls, such as the prohibition of certain sensitive land uses without DTSC approval, prohibitions on beneficial uses of groundwater where potential risks are present, and prohibitions on growing fruits, vegetables, and other edible food in areas where contaminated soil is exposed at ground surface. Engineering controls could include Site management protocols should soil and/or groundwater with residual levels of COCs be encountered during future construction or Site development activities. Engineering controls could include dust control, vapor intrusion mitigation systems, access restrictions, among other activities.	Not effective in reducing toxicity, mobility, or volume through treatment and does not comply with all ARARs. The long-term effectiveness for protection of human health and environment would depend on enforcement of and compliance with land use covenants. This technology would not allow for the highest and best use of the land in a manner that provides for the long term protectiveness of human health.	Technically and administratively feasible but may be difficult to monitor and enforce in the long term from an administrative persepctive. Specific legal requirements and authority would need to be met.	Low capital.	Recommended in combination with other technologies.
Soil	Capping	Placement of a minimum of 5 feet of clean, imported soil or hardscape over areas of soil with COCs above CULs. Includes relocation and on-Site consolidation of soil where appropriate to reduce the footprint of the impacted area.	Caps would prevent direct exposure to soil containing COCs above CULs, and would reduce the mobility of soluble constituents by reducing the quantity of surface water that can migrate through the soil. Not effective in reducing toxicity or volume through treatment. By intself, the technology does not comply with all ARARs. This technology would provide for the long-term effectiveness for protection of human health and environment as long as the cap is maintained as designed.	Technically and administratively feasible. Capping materials are readily available and caps could integrate well with future land development elements.	Moderate capital. Low to moderate O&M depending on cap type.	Recommended in combination with other technologies.
	Soil Vapor Extraction (SVE)	Installation of extraction wells in the vadose zone and SVE system infrastructure, including conveyance piping and treatment system. Vacuum is applied through extraction pipes to create a pressure gradient in impacted areas, which induces gas-phase volatiles to migrate through soil to extraction wells. The gas-phase volatiles would likely be treated via granular activated carbon (GAC) filtration with the treated vapor discharged to the atmosphere under a Bay Area Air Quality Management District (BAAQMD) permit. Performance monitoring would also be conducted to assess SVE radius of influence and progress toward remedial goals.	SVE would be effective for reducing toxicity, mobility, and volume of VOCs in the vadose zone. The technology is more effective in coarser-grained soils and significantly less effective in fine-grained soil. Overall effectiveness may be limited due to shallow depth to groundwater; short-circuiting may occur and would greatly reduce its effectiveness. Not effective for non-volatile VOCs such as metals, PCBs, or PAHs. Would comply with ARARs associated with VOCs in the vadose zone.	Technically diffucult to effectively implement due to shallow groundwater table and fine-grained soils. Administratively feasible.	Moderate to high capital. Moderate O&M.	Not recommended.
	Excavation	Excavation of soil in areas where COCs exceed CULs are present in vadose zone soil. The excavated material will be profiled and either relocated onsite into containment cells or beneath proposed roadway areas or disposed of at an appropriate offsite waste disposal facility.	Excavation and relocation or offsite disposal would be effective at preventing direct exposure to soil containing COCs above CULs. Not effective in reducing toxicity, mobility, or volume through treatment as excavation simply moves the impacted soil to another location. Not effective for COCs in groundwater. Excavation may not comply with all ARARs.	Technically challenging to implement as it requires significant diesel powered excavation equipment, diesel powered trucks and/or trains for transportation and disposal. Significant traffic congestion and air pollution will result and high risk of transportation related accidents. Disposal at an offsite facility presents risks of a release due to factors beyond the control of the Site owner. Administratively feasible to implement.	Very high capital. Negligible O&M.	Recommended in limited application only and in combination with other technologies.
	Thermal Destruction	Installation of thermal treatment system (heating wells, vapor extraction wells, aboveground treatment) to address VOCs , PAHs, and PCBs in vadose zone. Performance of the system would be monitored during operation to confirm treatment and following operation to evaluate remedy performance.	Can effectively reduce the toxicity, mobility, and volume of VOC, PAH, and PCBs in high and low permeability units through treatment. Not effective for metals. May comply with most ARARs for all COCs but metals.	Technically difficult to implement over a large area with relatively low concentrations. Requires significant electrical power to heat soil and groundwater and to extract volatile vapors. Power demands would require installation of a dedicated power distribution system. Administratively feasible to implement but would involve special permits, easements, and other administrative requirements.	Very high capital. High O&M.	Not recommended.

Table 13
Remedial Technology Screening Matrix
UPC OU-SM
Brisbane, California

Environmental Media	Remedial Technology	Description	Effectiveness	Implementability	Relative Cost	Recommended for Alternative Development
Soil	Air Sparging/soil vapor extraction (AS/SVE)	Installation of wells (horizontal or vertical) for injecting air into the vadose zone where VOCs are present. Includes construction of aboveground infrastructure for distributing air to the subsurface or a supplemental SVE system to capture and remove the sparge vapors.	AS/SVE would be effective for reducing toxicity, mobility, and volume of VOCs in the vadose zone and shallow groundwater. The technology is more effective in coarser-grained soils and significantly less effective in fine-grained soil. Overall effectiveness may be limited due to shallow depth to groundwater and fine-grained soil; short-circuiting may occur and would greatly reduce its effectiveness in the vadose zone. Would comply with ARARs associated with VOCs in the vadose zone and groundwater. Not effective for non-volatile COCs such as metals, PCBs, or PAHs.	Technically diffucult to effectively implement due to shallow groundwater table and fine-grained soils. Requires the use of significant electrical power to run blowers and vacuum pumps. Administratively feasible.	Moderate-high capital. High O&M	Not recommended.
	Soil Mixing	Use of a large diameter auger or similar technology to mix a chemical oxidant (for VOC destruction) and/or clay (for COC sequestration) into soil above and below groundwater that contains COCs at concentrations above CULs. If used for soil below groundwater, this technology will significantly alter the movement of groundwater beneath the Site.	Could effectively reduce mass and mobility of VOCs and reduce the toxicity and mobility of other COCs through treatment. This technology will alter the movement of groundwater beneath the Site. Would comply with ARARs.	Technically difficult to effecitively implement over a large area. Requires significant Site preparation work and staging areas to support the mixing equipment. Mixing agents are readily available. Administratively feasible.	Very high capital. Low O&M	Not recommended.
	Dual-Phase Extraction (DPE)	Extraction of soil vapor and groundwater containing VOCs above CULs using extraction wells, coupled with ex-situ treatment of extracted vapor/groundwater and off-site disposal. Would require installation of vadose zone and groundwater extraction wells.	DPE would be effective for reducing toxicity, mobility, and volume of VOCs in the vadose zone and shallow groundwater. The technology is more effective in coarser-grained soils and significantly less effective in fine-grained soil. Overall effectiveness may be limited due to shallow depth to groundwater and fine-grained soil; short-circuiting may occur and would greatly reduce its effectiveness in the vadose zone. Would comply with ARARs associated with VOCs in the vadose zone and groundwater. Not effective for non-volatile COCs such as metals, PCBs, or PAHs.	Technically diffucult to effectively implement due to shallow groundwater table and fine-grained soils. Requires the use of significant electrical power to run blowers and vacuum pumps. Administratively feasible.	Moderate-high capital. High O&M.	Not recommended.

Notes:
1. The remedial technologies screened in this table were based on commonly successful remediation technologies and the use of particular technologies that have been implemented at the Site to date.

Abbreviations:
COC = contaminants of concern
O&M = operation and maintenance
VOCs = volatile organic compounds

Table 14
Comparative Analysis of Remedial Alternatives
UPC OU-SM
Brisbane, California

	Criteria	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		No Action	**Land Use Restrictions**	**Land Use Restrictions / Soil Capping / Limited Excavation with Partial Onsite Relocation and Partial Offsite Disposal**	**Land Use Restrictions / Soil Capping / Limited Excavation with Offsite Disposal**	**Land Use Restrictions / Complete Excavation with Offsite Disposal / Restoring to Original Grade**
Threshold Criteria						
1	Overall Protection of Human Health and the Environment	Does not provide an adequate level of protection of human health and the environment.		Mitigates exposure to COCs sitewide.		
2	Compliance with ARARs	Does not comply with ARARs.		Complies with ARARs.		
Balancing Criteria						
3	Reduction of Toxicity, Mobility, and Volume through Treatment	Does not reduce toxicity, mobility, and volume through treatment.		Sitewide reduction in COC mobility by capping/backfilling excavations. Although there is reduction in onsite COC volume by offsite disposal, the volume is merely transferred to an offsite landfill.		
4	Long-Term Effectiveness and Permanence	No mechanism to ensure long-term effectiveness and permanence.	Some long-term effectiveness through land use restrictions, but no mechanism to ensure protectiveness.	Long-term effectiveness and permanence through land use restrictions and Site documents including a Soil Management Plan and Operations and Maintenance Plan.		
5	Short-Term Effectiveness	No sitewide short-term effectiveness.		Safe construction practices provide short-term effectiveness. Duration of possible exposure during implementation (excavation/offhaul) less than Alternatives 4 and 5.	Safe construction practices provide short-term effectiveness. Duration of possible exposure during implementation longer than Alternative 3 but less than Alternative 5. Will pose some environmental impacts due to vehicle exhaust, noise, and traffic. Moderate to high risk of accidents due to high traffic volumes. Will pose some conflicts with local community due to noise, exhaust, and traffic.	Extensive excavation and offhaul provides highest risk of exposure and greatest impacts to air quality, noise, and traffic during implementation.
6	Implementability	Readily implementable because no actions taken, but not likely acceptable to stakeholders because it does not meet threshold criteria.	Readily implementable, involves only administrative actions. Not likely acceptable to stakeholders because it does not meet threshold criteria.	Readily implementable, likely acceptable to stakeholders, small environmental impact during implementation of remedy.	Readily implementable, likely acceptable to stakeholders, moderate environmental impact during implementation of remedy.	Readily implementable, likely acceptable to stakeholders, greatest environmental impact during implementation of remedy due to vehicle exhaust, noise, and other factors. Greatest risk of accidents due to high traffic volumes. High local traffic volumes, exhaust, and noise will pose conflicts with local community.
7	Cost	$0	$4,430,000	$12,600,000	$13,000,000	$61,600,000 - Cost is at least 4.7 times higher than all other alternatives and does not provide a commensurate level of protectiveness.
	Point Total	4	5	19	17	13
	Overall Comparative Ranking	5	4	1	2	3

Notes:
Alternative meets/addresses criteria (3 points)
Alternative mostly meets/addresses criteria (2 points)
Alternative partially meets/addresses criteria (1 point)
Alternative does not meet/address criteria (0 points)

Abbreviations:
ARARs = applicable or relevant and appropriate requirements
COCs = chemicals of concern

FIGURES



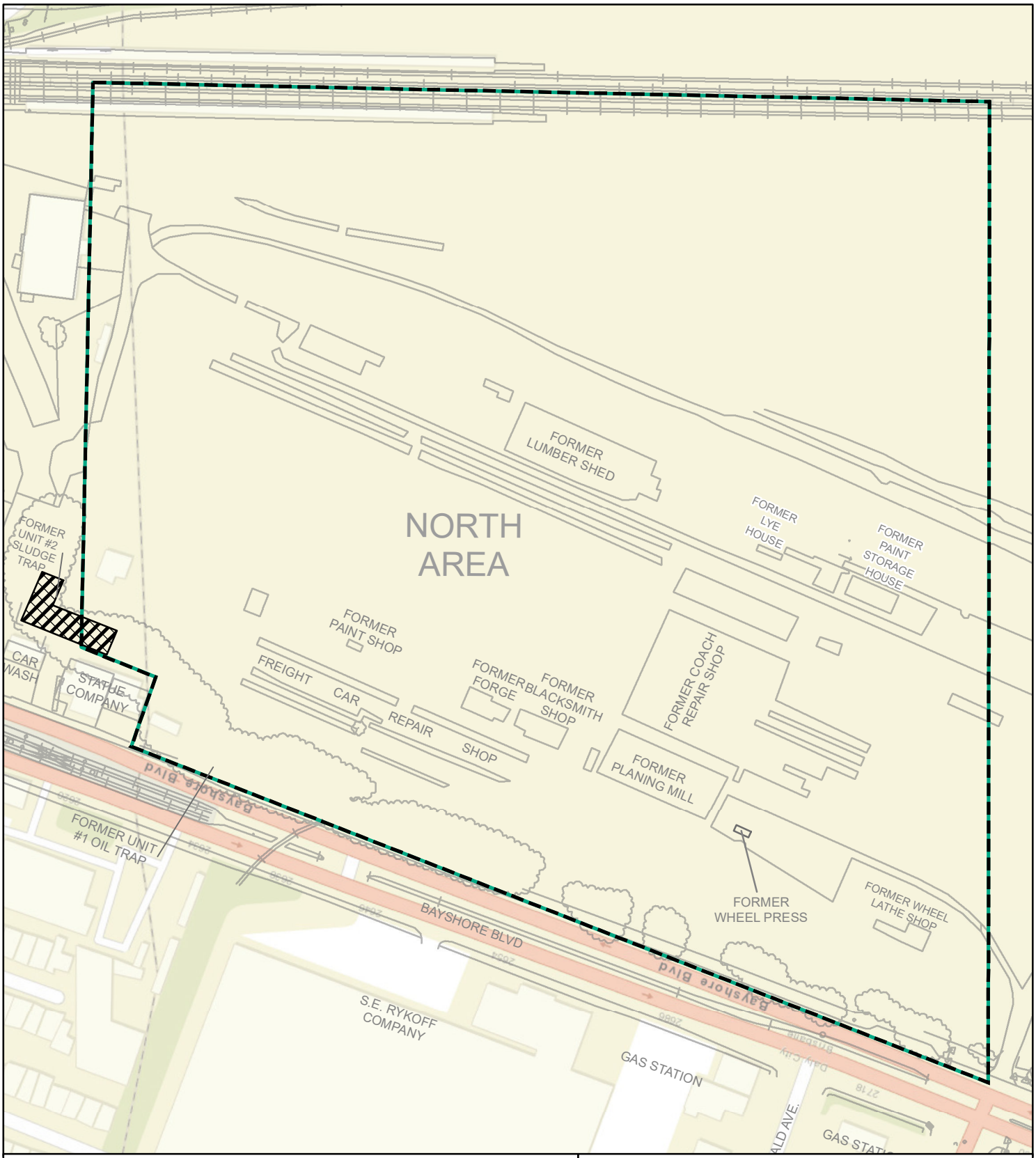
Site Location Map

UPC OU-SM
Brisbane, California

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Legend

Soil Excavation, Former Sludge Traps (ITC, 1994)

Site Boundary

Note:
- All Locations are approximate.

N

0 200 Feet

Historical Site Plan

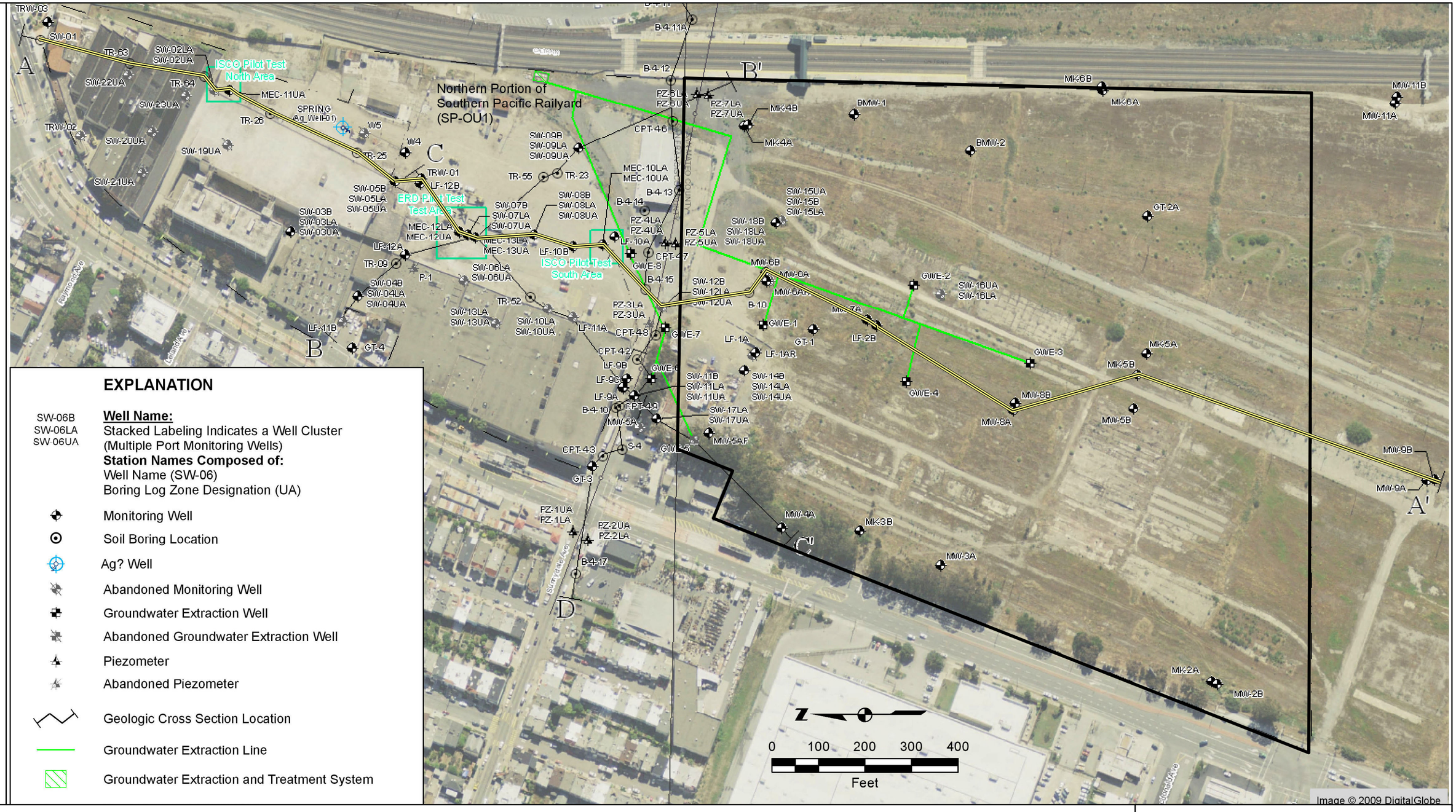
UPC OU-SM
Brisbane, California

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Figure 2

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EXPLANATION

SW-06B
SW-06LA
SW-06UA

Well Name:
Stacked Labeling Indicates a Well Cluster (Multiple Port Monitoring Wells)
Station Names Composed of:
Well Name (SW-06)
Boring Log Zone Designation (UA)

- Monitoring Well
- Soil Boring Location
- Ag? Well
- Abandoned Monitoring Well
- Groundwater Extraction Well
- Abandoned Groundwater Extraction Well
- Piezometer
- Abandoned Piezometer
- Geologic Cross Section Location
- Groundwater Extraction Line
- Groundwater Extraction and Treatment System

Legend
- Site Boundary
- A-A' Transect

Source: Mactec, 2010. Groundwater Monitoring Report, First Quarter 2010. Schlage OU, San Francisco and Brisbane, California. May 21.

0 200 Feet

Location of Cross-Section A-A'

UPC OU-SM
Brisbane, California

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Figure 3a

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A North

A' South

Elevation (feet MSL)

80 60 40 20 0 -20 -40 -60

SW-01 TR-63 TR-64 SW-02 MEC-11UA TR-26 Spring (40 ft. E) TR-25 SW-05 TRW-01* LF-12B* MEC-12 SW-07 MEC-13 SW-08 LF-10B MEC-10 B-4-15 STORM SEWER SW-12 B-10 MW-6B* MW-7A LF-2B* MW-8* MK-5B* MW-9B*

TD=65 TD=28 TD=12 TD=16 TD=17 TD=22 TD=34 TD=52.5 TD=18 TD=65 TD=42 TD=56 TD=70 TD=69 TD=45 TD=45 1/2 TD=91 1/2 TD=14 1/2 TD=35 TD=13 TD=44 TD=39 TD=30 TD=39

Site Boundary

County Line

Fill

Young Bay Margin Deposit

Stacked Channel Deposits

Colma Formation

Old Bay Margin Deposit

Merced Formation

Bedrock

Clay

?

Legend

Geologic Units (as described on driller's logs):

- Coarse Material (Gravel & Sand)
- Fine Material (Silt, Clay & Peat)
- Fill

- Well Location and Depth
- Screen Interval
- Gravel Pack
- Total Depth of Well

TD=70

Notes:

* = Well information for screened interval only

Source: Mactec, 2010. Groundwater Monitoring Report, First Quarter 2010. Schlage OU, San Francisco and Brisbane, California. May 21.

SCALE IN FEET

20 0 0 200

SCALE IN FEET

Cross-Section A-A'

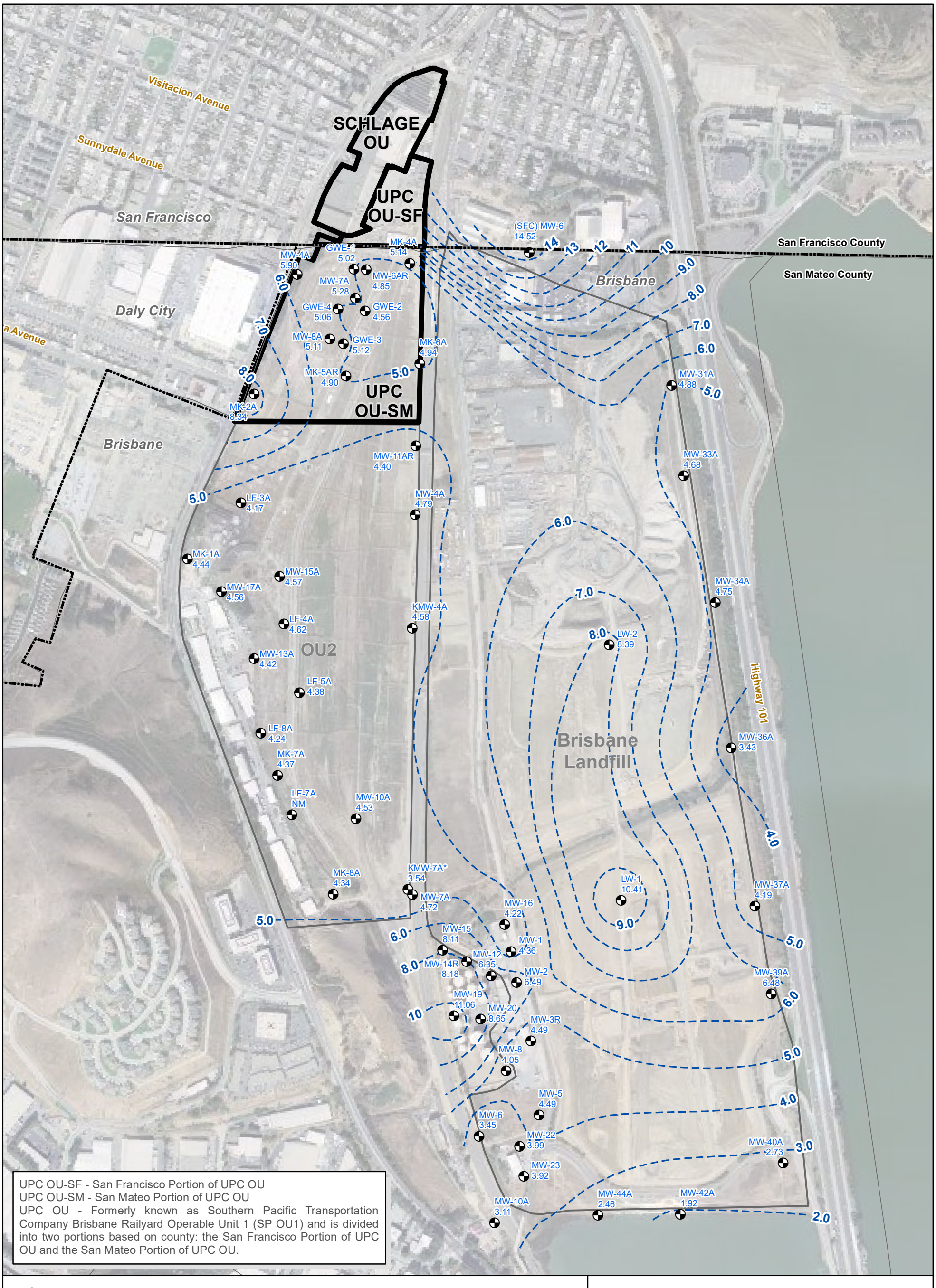
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Figure 3b

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UPC OU-SF - San Francisco Portion of UPC OU
UPC OU-SM - San Mateo Portion of UPC OU
UPC OU - Formerly known as Southern Pacific Transportation Company Brisbane Railyard Operable Unit 1 (SP OU1) and is divided into two portions based on county: the San Francisco Portion of UPC OU and the San Mateo Portion of UPC OU.

LEGEND

- Groundwater Monitoring Well
- Groundwater Elevation Contour - August 2018 (ft aMSL)
- DTSC Oversite Operable Unit
- CRWQCB Oversite Operable Unit
- City Boundary
- County Boundary

Notes:
* = not used in contouring
NM = not monitored
ft aMSL = feet above mean sea level
Aerial Photo Source: Terraserver, 27 February 2008.
Boundaries and locations are approximate.

N

700 350 0 700 Feet

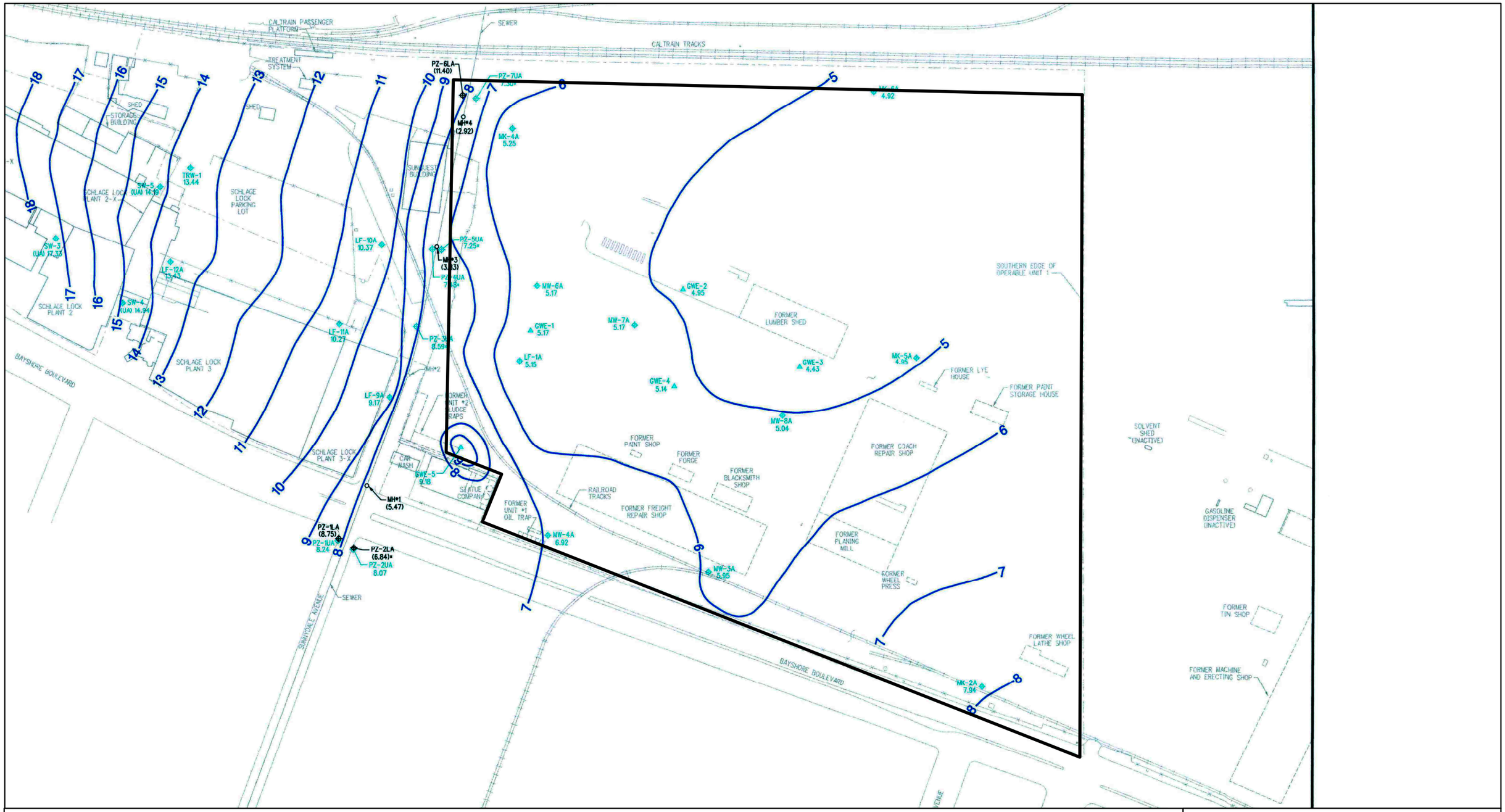
Fill Groundwater Surface Elevation Map, August, 2018

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Legend

- Site Boundary
- Water Table Elevation Contour (ft bgs)
- Monitoring Well (Surveyed Location)
- Piezometer
- Extraction Well (Surveyed Location)
- Sewer Manhole

Notes:
ft bgs = feet below ground surface
VOC = volatile organic compound
- Water levels obtained on July 11, 2000, approximately 24 hours after pump shutdown test began.
-Water levels in sewer were measured through standpipes installed in manholes; data not used in contouring.
-Data showing in parenthesis not used in contouring because of poor hydrulic connection to aquifer.
Source: B&M and T&R, 2002

N

0 200 Feet

Fill Groundwater Surface Elevation Map, July 2000

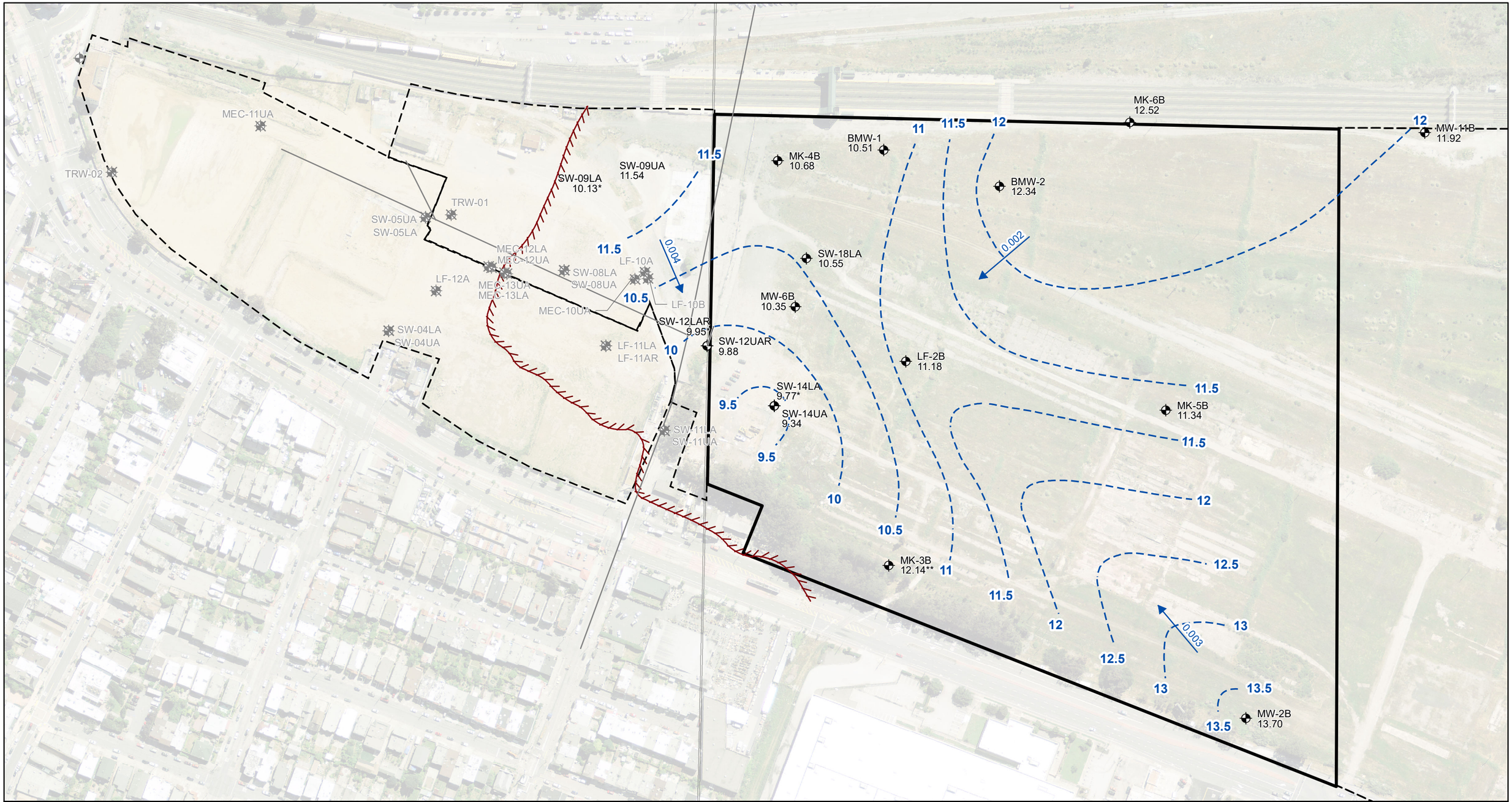
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Figure 4b

\\oakland-01\data\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure04b_GW_FillGWE.mxd 10/23/2019 11:00:47 AM



Legend

- Groundwater Monitoring Well
- Groundwater Monitoring Well (Not Sampled This Quarter)
- Decommissioned Groundwater Monitoring Well (In Monitoring Well Network)
- Groundwater Contour
- Groundwater Flow
- Sewer Line
- Approximate Extent of Bay Margin Deposits
- UPC OU-SM, Brisbane
- Other Operable Unit Boundary
- County Boundary

Notes:
* Not used in contouring (at locations with two wells screened in Colma Formation, the groundwater elevation in the shallower well was used for contouring, following the convention used by AMEC [2015]).
** Not used in contouring. Well box flooded - after bailing water out of well box, unable to determine whether groundwater elevation is at top of casing or whether well is flooded.
Well pairs used for horizontal gradient calculation: SW-09UA and SW-12UAR; MK-6B and LF-2B; and MW-2B and LF-2B.
All locations are approximate and were obtained from AMEC [2015].
Elevations are in feet above MSL (mean sea level).

N

0 200 Feet

Colma Formation Potentiometric Map, 15 May 2018

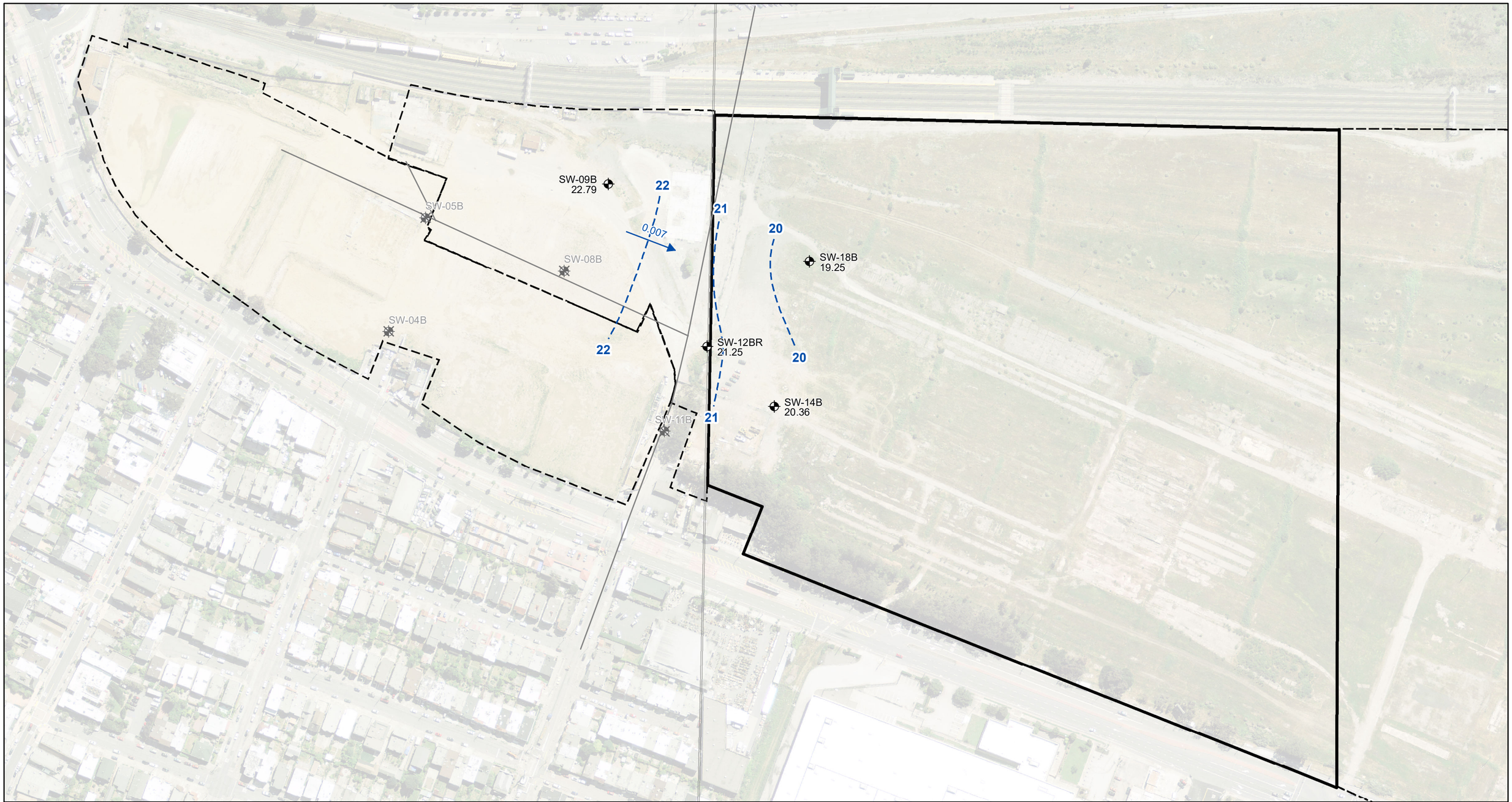
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Figure 5

\\oakland-01\data\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure05_GW-Colma.mxd 12/11/2019 1:17:16 PM



Legend

- Groundwater Monitoring Well
- Decommissioned Groundwater Monitoring Well (In Monitoring Well Network)
- Groundwater Contour
- Groundwater Flow
- Sewer Line
- UPC OU-SM, Brisbane
- Other Operable Unit Boundary
- County Boundary

Notes:
All locations are approximate and were obtained from AMEC [2015].
Elevations are in feet above MSL (mean sea level).
Well pair used for horizontal gradient calculation: SW-09B and SW-18B

N

0 200 Feet

Merced Formation Potentiometric Map, 15 May 2018

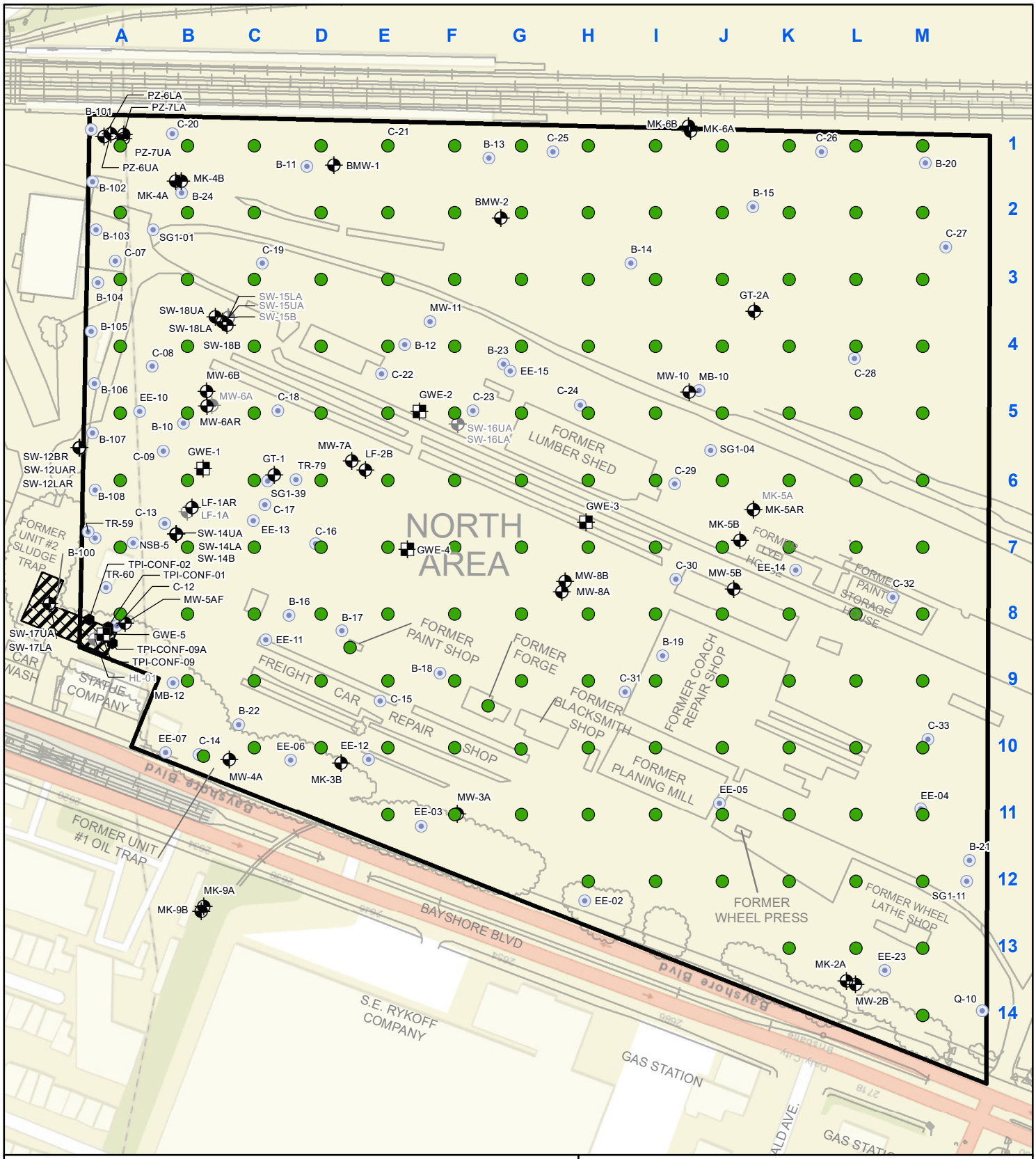
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Figure 6

\\Oakland-01\data\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure06_GW-Merced.mxd 12/11/2019 12:34:37 PM



Legend

- Soil Sample Location
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Historical Soil Sample Location
- TPI Conf Samples
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Notes:
- All Locations are approximate.
ft bgs - feet below ground surface

Soil Sample Locations

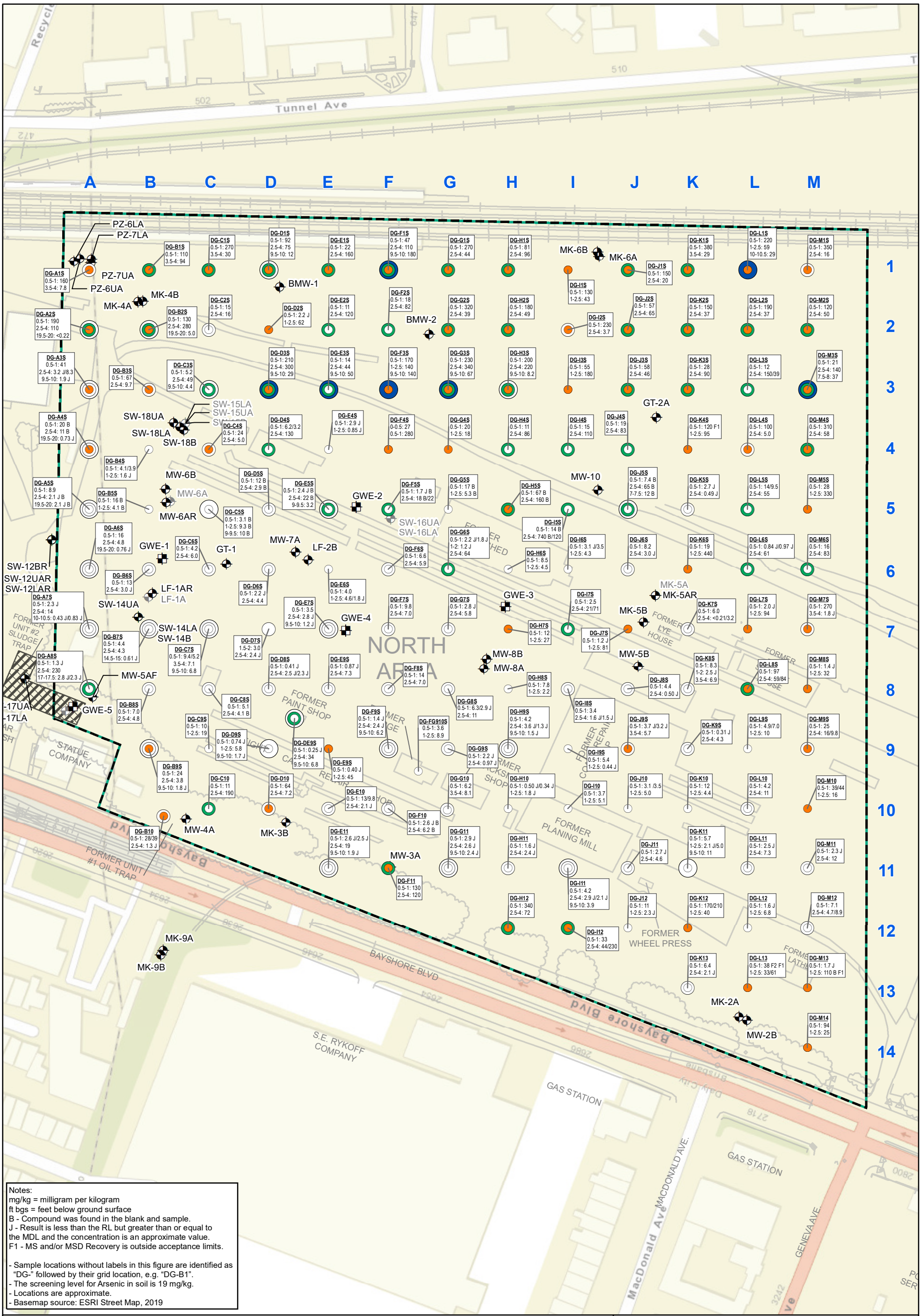
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Figure 7

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Notes:
mg/kg = milligram per kilogram
ft bgs = feet below ground surface
B - Compound was found in the blank and sample.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1 - MS and/or MSD Recovery is outside acceptance limits.

- Sample locations without labels in this figure are identified as "DG-" followed by their grid location, e.g. "DG-B1".
- The screening level for Arsenic in soil is 19 mg/kg.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, exceeds screening level at shallow depth
- Sample Location, exceeds screening level at intermediate depth
- Sample Location, exceeds screening level at deep depth
- Sample Location, below screening level at shallow depth
- Sample Location, below screening level at intermediate depth
- Sample Location, below screening level at deep depth
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Sample Depth (ft bgs) - DG-K11 | 0.5-1: 5.7 | 1-2.5: 2.1 J/5.0 | 9.5-10: 11 - Arsenic Concentration (mg/kg)

N

0 150 Feet

Distribution of Arsenic in Soil

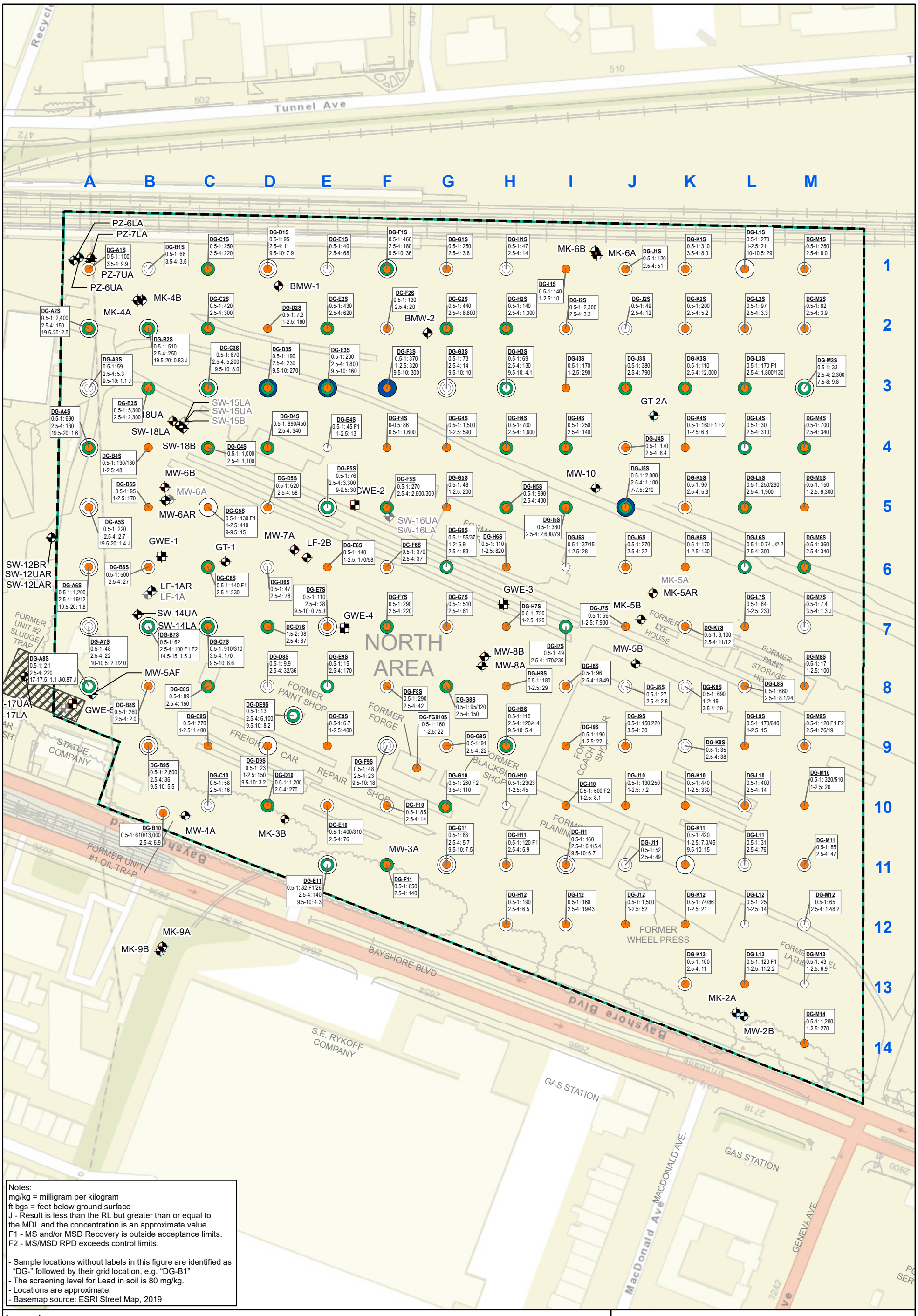
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Figure 8

D:\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure08_Soil_Arsenic.mxd 12/23/2019 12:11:34 PM



Notes:
mg/kg = milligram per kilogram
ft bgs = feet below ground surface
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1 - MS and/or MSD Recovery is outside acceptance limits.
F2 - MS/MSD RPD exceeds control limits.

- Sample locations without labels in this figure are identified as "DG-" followed by their grid location, e.g. "DG-B1"
- The screening level for Lead in soil is 80 mg/kg.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, exceeds screening level at shallow depth
- Sample Location, exceeds screening level at intermediate depth
- Sample Location, exceeds screening level at deep depth
- Sample Location, below screening level at shallow depth
- Sample Location, below screening level at intermediate depth
- Sample Location, below screening level at deep depth
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Sample Depth (ft bgs) - DG-K11 | 0.5-1: 5.7 | 1-2.5: 2.1 J/5.0 | 9.5-10: 11 - Lead Concentration (mg/kg)

N

0 150 Feet

Distribution of Lead in Soil

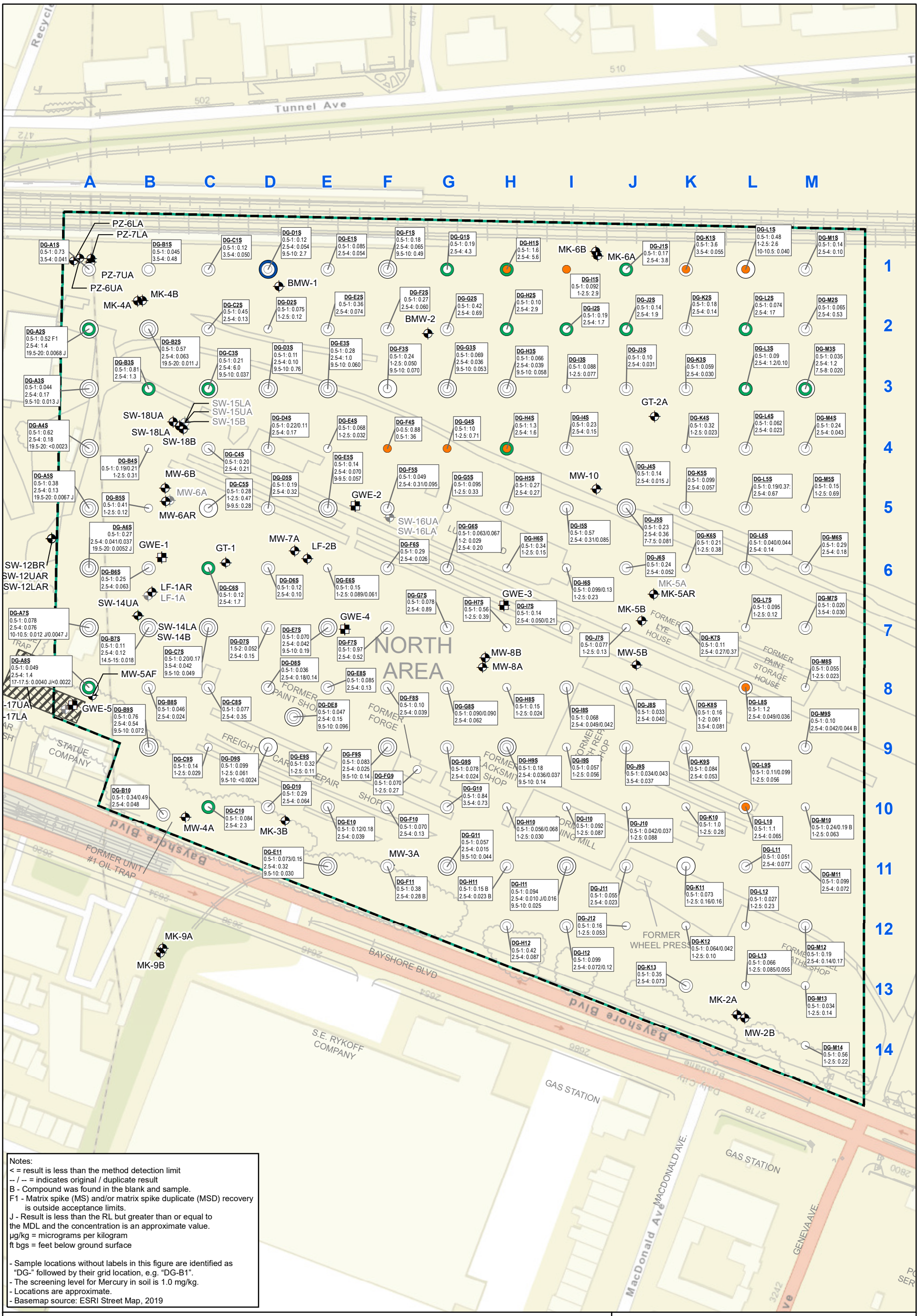
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Figure 9

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Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
B - Compound was found in the blank and sample.
F1 - Matrix spike (MS) and/or matrix spike duplicate (MSD) recovery is outside acceptance limits.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
µg/kg = micrograms per kilogram
ft bgs = feet below ground surface

- Sample locations without labels in this figure are identified as "DG-" followed by their grid location, e.g. "DG-B1".
- The screening level for Mercury in soil is 1.0 mg/kg.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, exceeds screening level at shallow depth
- Sample Location, exceeds screening level at intermediate depth
- Sample Location, exceeds screening level at deep depth
- Sample Location, below screening level at shallow depth
- Sample Location, below screening level at intermediate depth
- Sample Location, below screening level at deep depth
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Sample Depth (ft bgs) - DG-M14 (0.5-1: 0.56 / 1-2.5: 0.22) - Mercury Concentration (µg/kg)

N

0 150 Feet

Distribution of Mercury in Soil

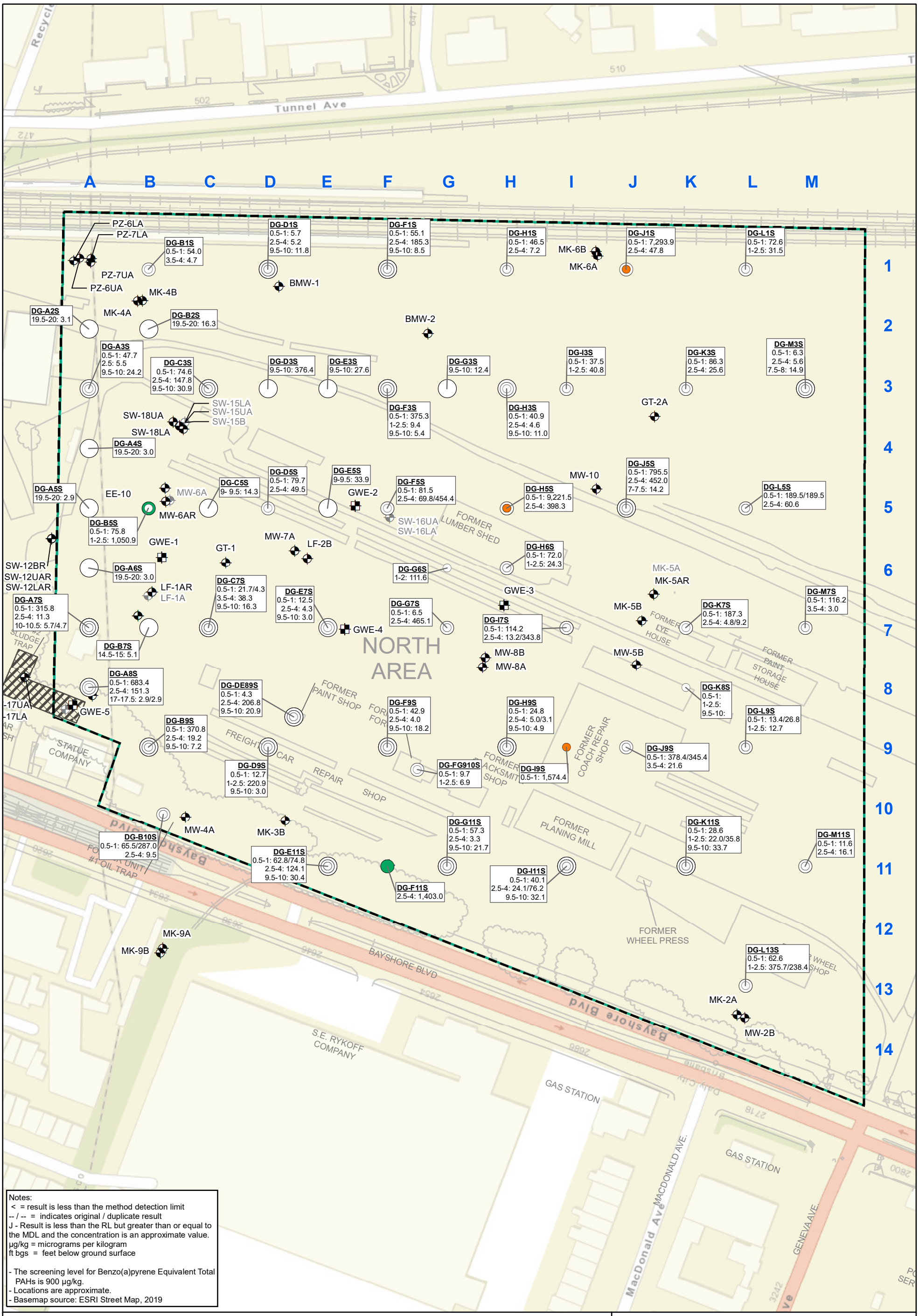
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Figure 10

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Distribution of Benzo(a)pyrene Toxicity Equivalents in Soil

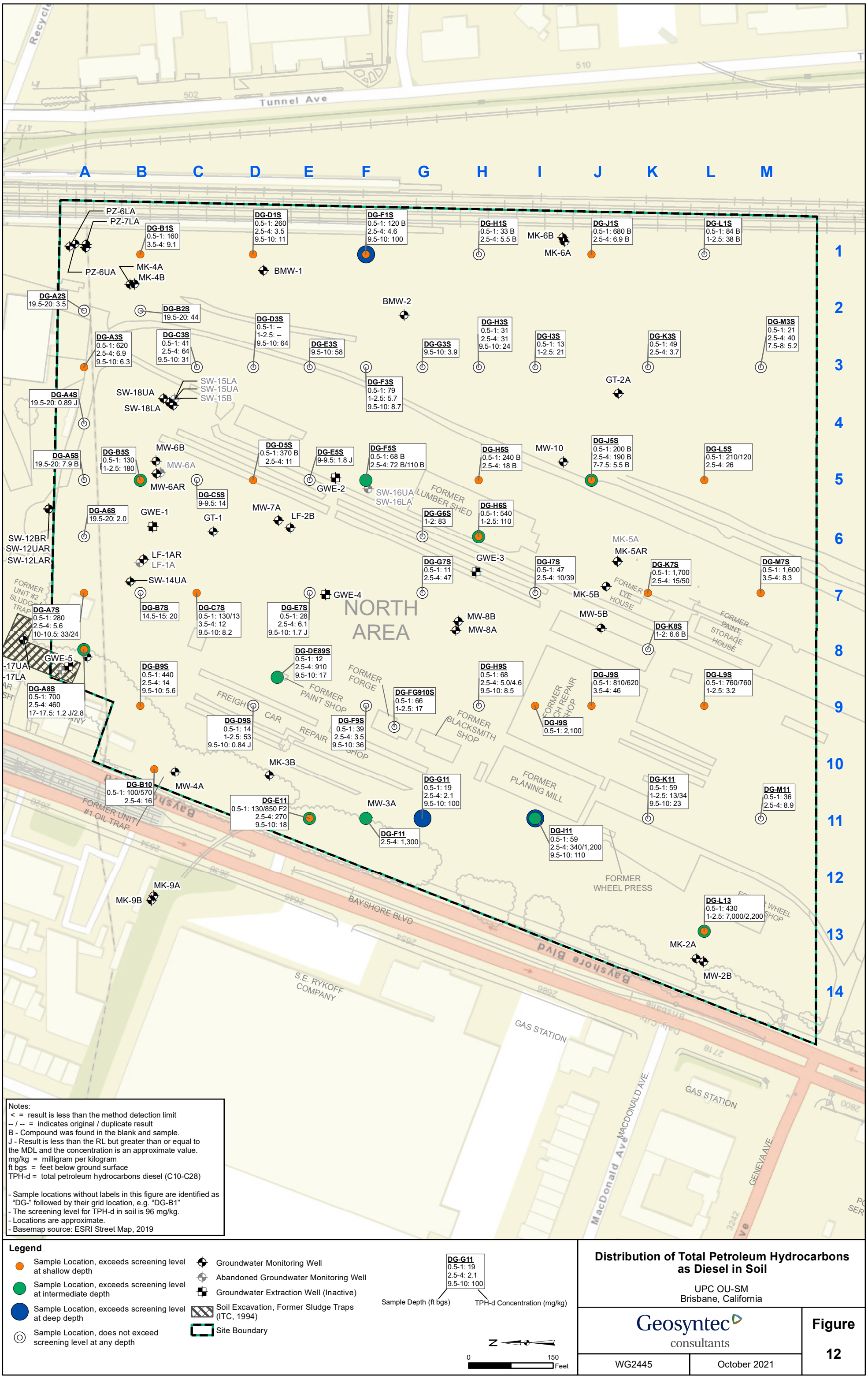
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Figure 11

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Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
B - Compound was found in the blank and sample.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
mg/kg = milligram per kilogram
ft bgs = feet below ground surface
TPH-d = total petroleum hydrocarbons diesel (C10-C28)

- Sample locations without labels in this figure are identified as "DG-" followed by their grid location, e.g. "DG-B1"
- The screening level for TPH-d in soil is 96 mg/kg.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, exceeds screening level at shallow depth
- Sample Location, exceeds screening level at intermediate depth
- Sample Location, exceeds screening level at deep depth
- Sample Location, does not exceed screening level at any depth
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

DG-G11
0.5-1: 19
2.5-4: 2.1
9.5-10: 100

Sample Depth (ft bgs) — TPH-d Concentration (mg/kg)

N

0 150 Feet

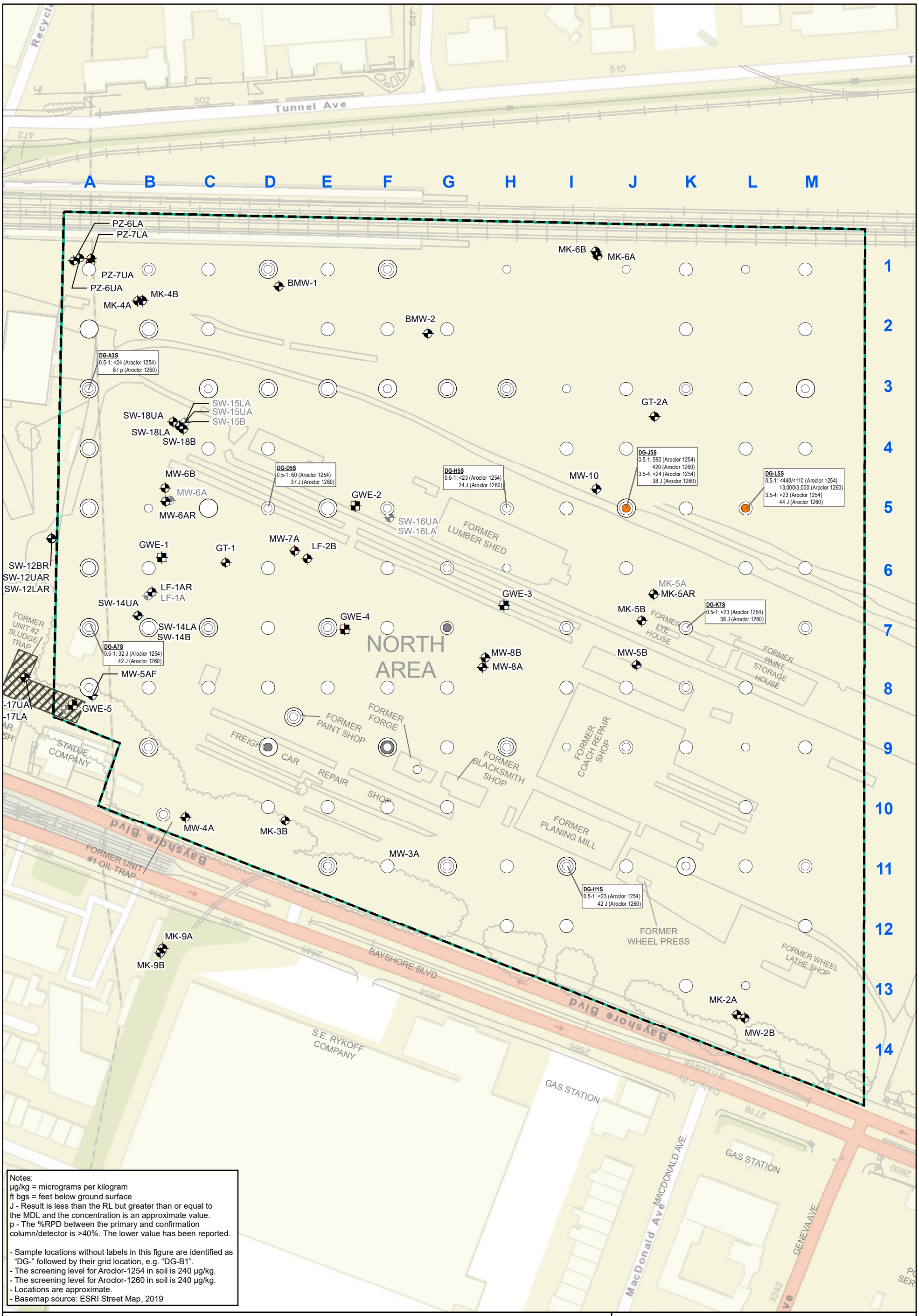
Distribution of Total Petroleum Hydrocarbons as Diesel in Soil

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Notes:
µg/kg = micrograms per kilogram
ft bgs = feet below ground surface
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
p - The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.

- Sample locations without labels in this figure are identified as "DG-" followed by their grid location, e.g. "DG-B1".
- The screening level for Aroclor-1254 in soil is 240 µg/kg.
- The screening level for Aroclor-1260 in soil is 240 µg/kg.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, exceeds screening level at shallow depth
- Method detction limit, exceeds screening level at shallow depth
- Sample Location, exceeds screening level at intermediate depth
- Method detction limit, exceeds screening level at intermediate depth
- Sample Location, below screening level at shallow depth
- Sample Location, below screening level at intermediate depth
- Sample Location, below screening level at deep depth
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Sample Depth (ft bgs) - DG-A7S 0.5-1: 32 J (Aroclor 1254) 42 J (Aroclor 1260) - Detected Concentration (µg/kg)

N

0 150 Feet

Distribution of Aroclor 1254 and Aroclor 1260 in Soil

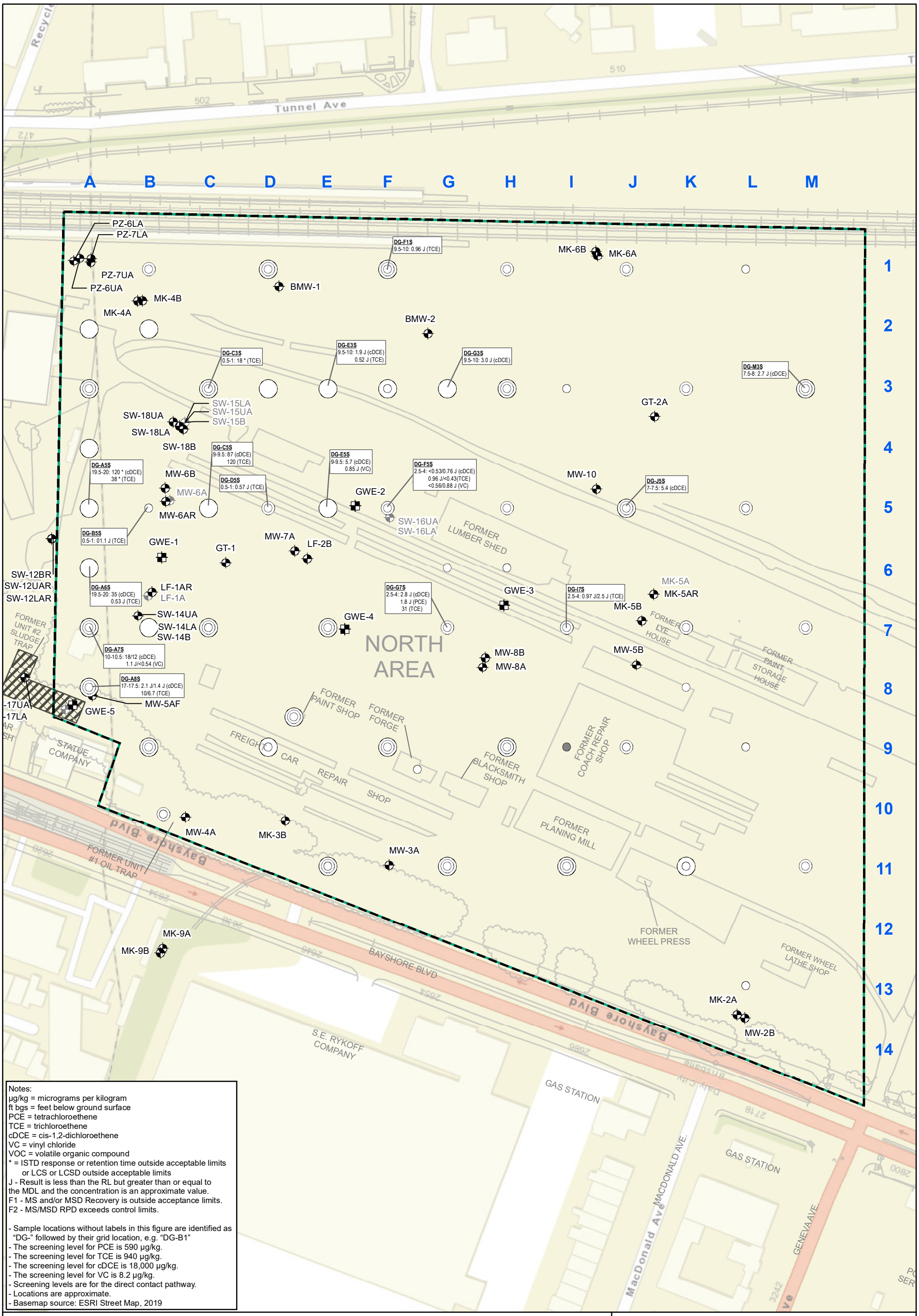
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Figure 13

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Notes:
µg/kg = micrograms per kilogram
ft bgs = feet below ground surface
PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
VOC = volatile organic compound
* = ISTD response or retention time outside acceptable limits or LCS or LCSD outside acceptable limits
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1 - MS and/or MSD Recovery is outside acceptance limits.
F2 - MS/MSD RPD exceeds control limits.

- Sample locations without labels in this figure are identified as "DG-" followed by their grid location, e.g. "DG-B1"
- The screening level for PCE is 590 µg/kg.
- The screening level for TCE is 940 µg/kg.
- The screening level for cDCE is 18,000 µg/kg.
- The screening level for VC is 8.2 µg/kg.
- Screening levels are for the direct contact pathway.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, detection limit exceeds screening level at shallow depth
- Sample Location, below screening level at shallow depth
- Sample Location, below screening level at intermediate depth
- Sample Location, below screening level at deep depth
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Sample Depth (ft bgs) - DG-D5S 0.5-1: 0.57 J (TCE) - Detected Concentration (µg/kg)

N

0 150 Feet

Distribution of Chlorinated VOCs in Soil

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Figure 14

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Source: AMEC, 2013. Summary of Phase II Soil Gas Sampling Progress Report, South of Visitacion Avenue, Schlage Operable Unit, San Francisco and Brisbane, California. August 20.

Legend

- Site Boundary
- SG-67 - Soil Gas Sample Location
- 1,400 - TCE concentration in µg/m³
- Extraction Well
- Montoring Well
- Piezometer

TCE Concentration in Groundwater as of Second Quarter 2013

Concentration (µg/L)

- 10 - 99
- 100 - 999
- 1,000 - 9,999

- Excavation Limits
- Soil Gas Grid
- UPC Property Boundary
- Former Schlage Lock / Southern Pacific Railroad Property Boundary
- Sewer Line and Storm Drain

Notes:
TCE = trichloroethene
µg/L = micrograms per liter
µg/m³ = micrograms per cubic meter
The residential screening level for TCE in soil vapor is 16 µg/m³ (RWQCB, 2019).

Soil Vapor Sampling Results

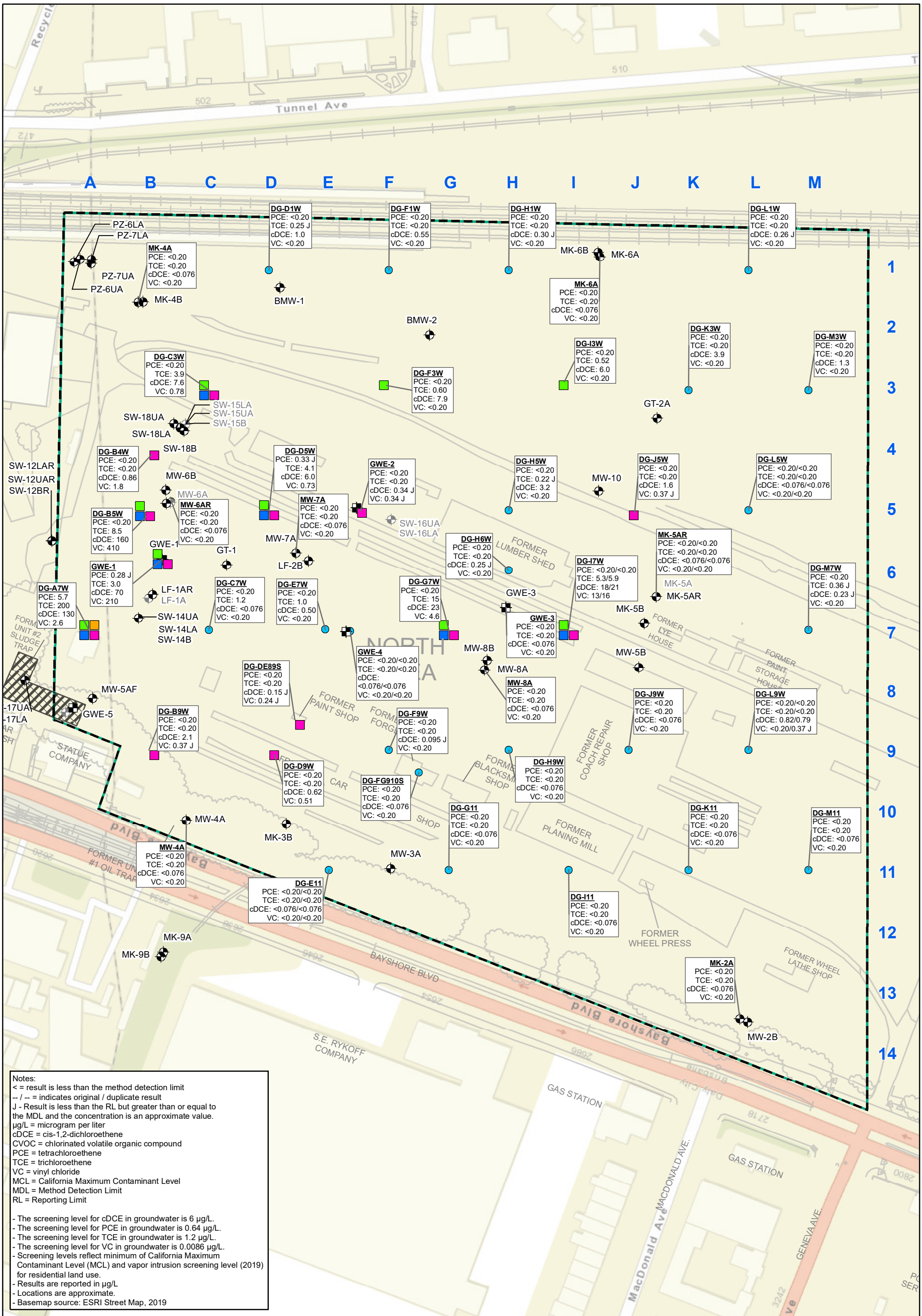
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Figure 15

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Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
µg/L = microgram per liter
cDCE = cis-1,2-dichloroethene
CVOC = chlorinated volatile organic compound
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride
MCL = California Maximum Contaminant Level
MDL = Method Detection Limit
RL = Reporting Limit

- The screening level for cDCE in groundwater is 6 µg/L.
- The screening level for PCE in groundwater is 0.64 µg/L.
- The screening level for TCE in groundwater is 1.2 µg/L.
- The screening level for VC in groundwater is 0.0086 µg/L.
- Screening levels reflect minimum of California Maximum Contaminant Level (MCL) and vapor intrusion screening level (2019) for residential land use.
- Results are reported in µg/L
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample location exceeds PCE screening level
- Sample location exceeds cDCE screening level
- Sample location exceeds TCE screening level
- Sample location exceeds VC screening level
- Groundwater Sample Location
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

DG-I11
PCE: <0.20
TCE: <0.20
cDCE: <0.076
VC: <0.20
Constituent / Concentration (µg/L)

N
0 150 Feet

CVOC Concentrations in Fill Groundwater

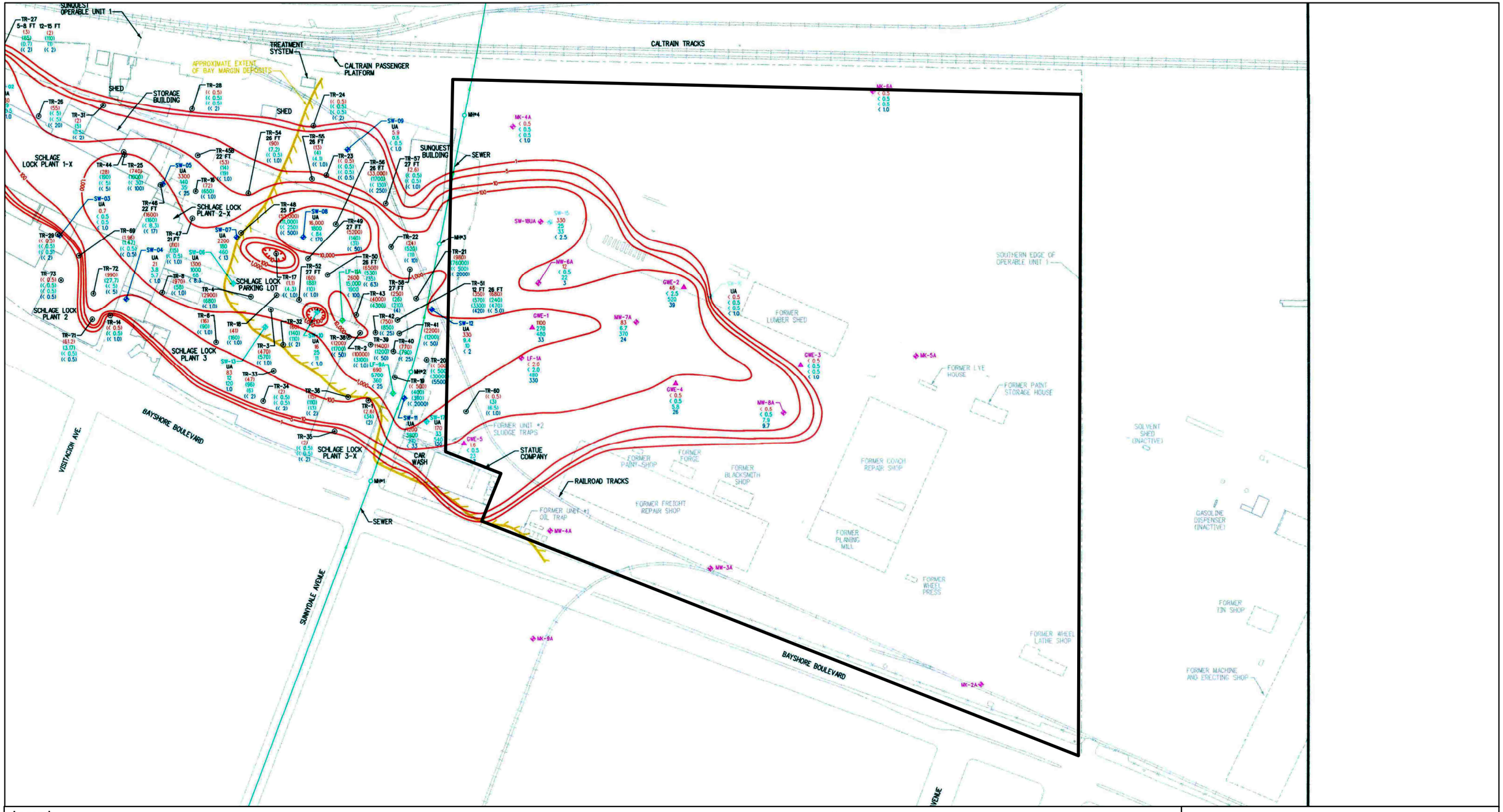
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Figure 16A

P:\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure16A_GW_ChlorinatedSolvents.mxd 12/23/2019 12:45:34 PM



Legend

- Site Boundary
- Total VOCs Concentration (µg/L)
- Hatch marks indicating decreasing concentration
- Existing Structrure
- Former Structrure
- Sewer Line
- A-Sand Well
- A-Fill Well
- Multi-Level Well Screen in A-Sand Only
- Multi-Level Well Screen in A-Sand and B-Sand
- Multi-Level Well Screen in A-Sand Only
- Multi-Level Well Screen in A-Sand Only
- A-Fill Extraction Well
- Soil Boring

UA Uppermost Screened Interval
(680) TCE Concentration
(240) PCE Concentration
(470) C-1,2-DCE Concentration
(<5.0) VC Concentration

Notes:
µg/L = micrograms per liter
C-1,2-DCE = cis-1,2-dichloroethene
CVOC = chlorinated volatile organic compound
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride
- All concentrations are in units µg/L
- Data shown are from the November/December 2000 sampling event.
- Total VOCs is calculated by the concentration of TCE, PCE, Cis-1,2-DCE, and VC.

Source: B&M and T&R, 2002

0 200 Feet

Historical CVOC Concentrations in Fill Groundwater [B&M & T&R, 2002]

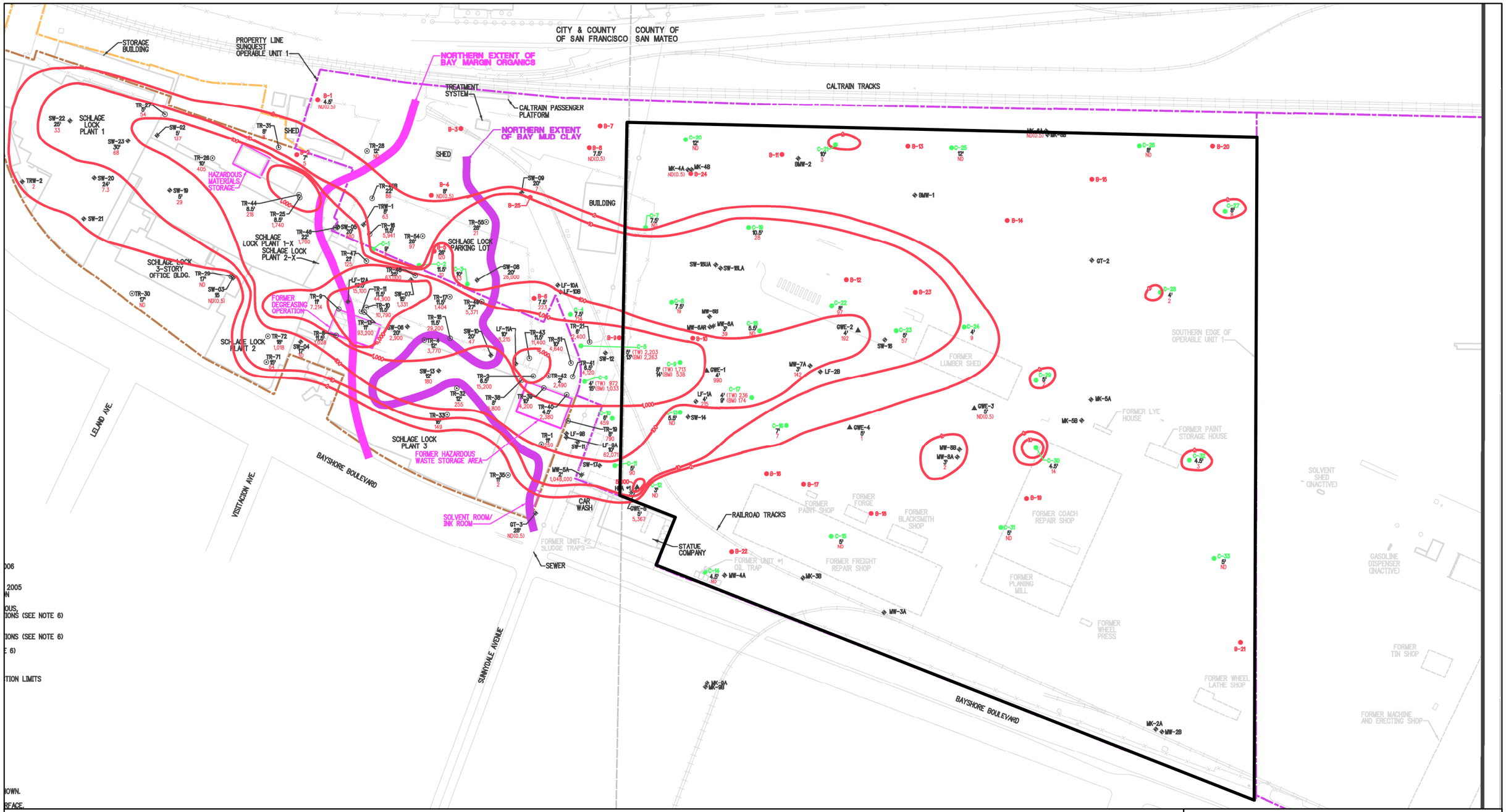
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Figure 16B

P:\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure16B_VOCDistribution2002.mxd 10/23/2019 10:32:16 AM



Legend

- Site Boundary
- Total VOCs Concentration (µg/L)
- Existing Structrure
- Former Structrure
- Borings Drilled in the August 2006 Subsurface Investigation
- Borings Drilled in the December 2005 Shallow Subsurface Investigation
- Monitoring Well Drilled in Previous, Historical Subsurface Investigations
- Soil Boring Drilled in Previous, Historical Subsurface Investigations
- A-Fill Extraction Well

C-8 - Sample Location Name
7.5' - Sample Depth in Feet Below Ground Surface
19 - Concentration of Total VOCs (µg/L)

Notes:
µg/L = micrograms per liter
C-1,2-DCE = cis-1,2-dichloroethene
CVOC = chlorinated volatile organic compound
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride
ND = not detected at or above detection limits
TW = results from top of water
BM = results from water at bay mud
- Only A-Fill and A-Sand wells are shown.
- Total VOCs is calculated by the concentration of TCE, PCE, Cis-1,2-DCE, and VC.
Source: Source: B&M, 2006b

N

0 200 Feet

Historical CVOC Concentrations in Fill Groundwater [B&M, 2006b]

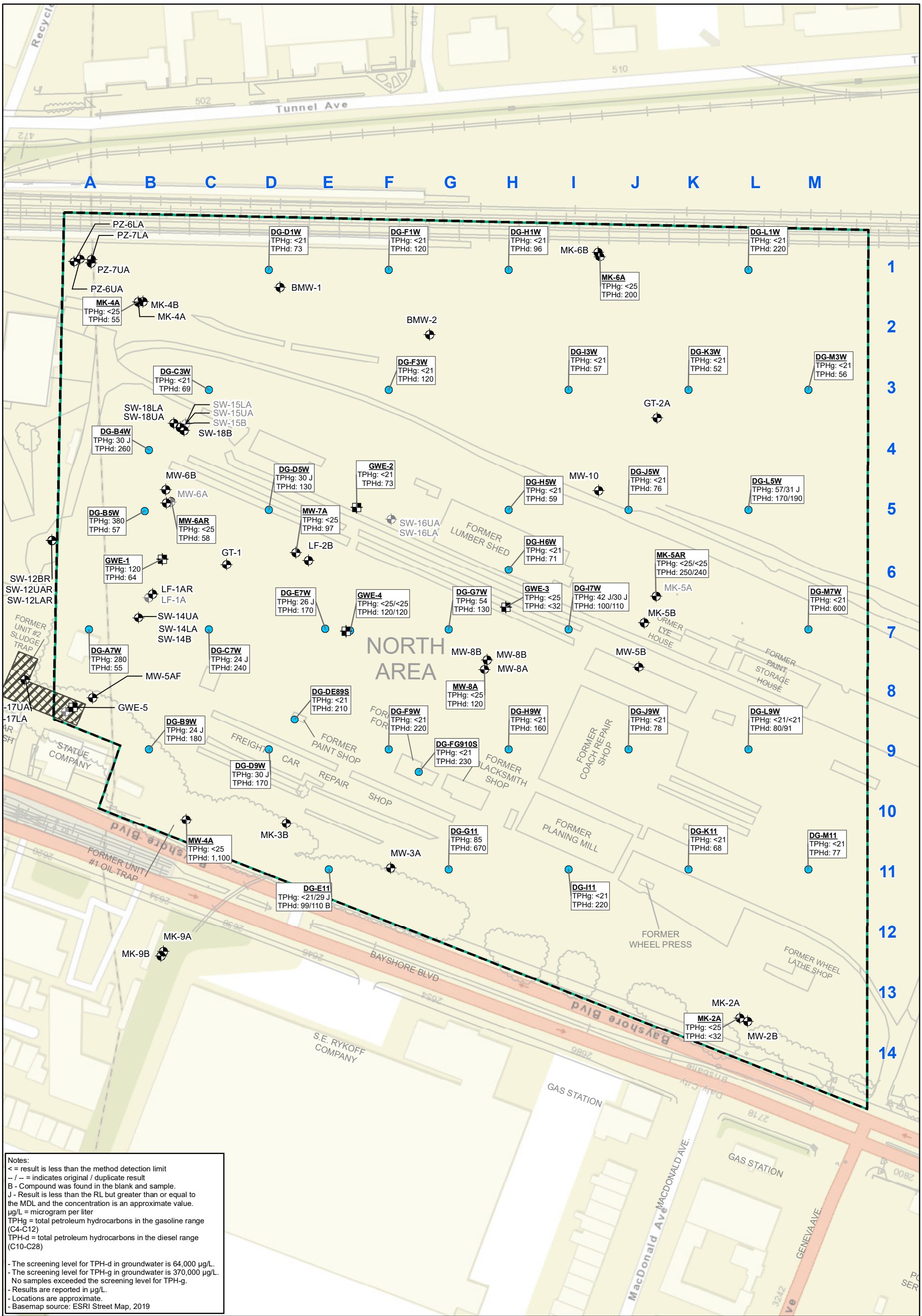
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Figure 16C

P:\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure16C_VOCDistribution2006.mxd 10/23/2019 10:32:14 AM



Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
B - Compound was found in the blank and sample.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
µg/L = microgram per liter
TPHg = total petroleum hydrocarbons in the gasoline range (C4-C12)
TPH-d = total petroleum hydrocarbons in the diesel range (C10-C28)

- The screening level for TPH-d in groundwater is 64,000 µg/L.
- The screening level for TPH-g in groundwater is 370,000 µg/L. No samples exceeded the screening level for TPH-g.
- Results are reported in µg/L.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Groundwater Sample Location Below Screening Level
- DG-I11 / TPHg: <21 / TPHd: 220 (Constituent / Concentration (µg/L))
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

N

0 150 Feet

Petroleum Hydrocarbon Concentrations in Fill Groundwater

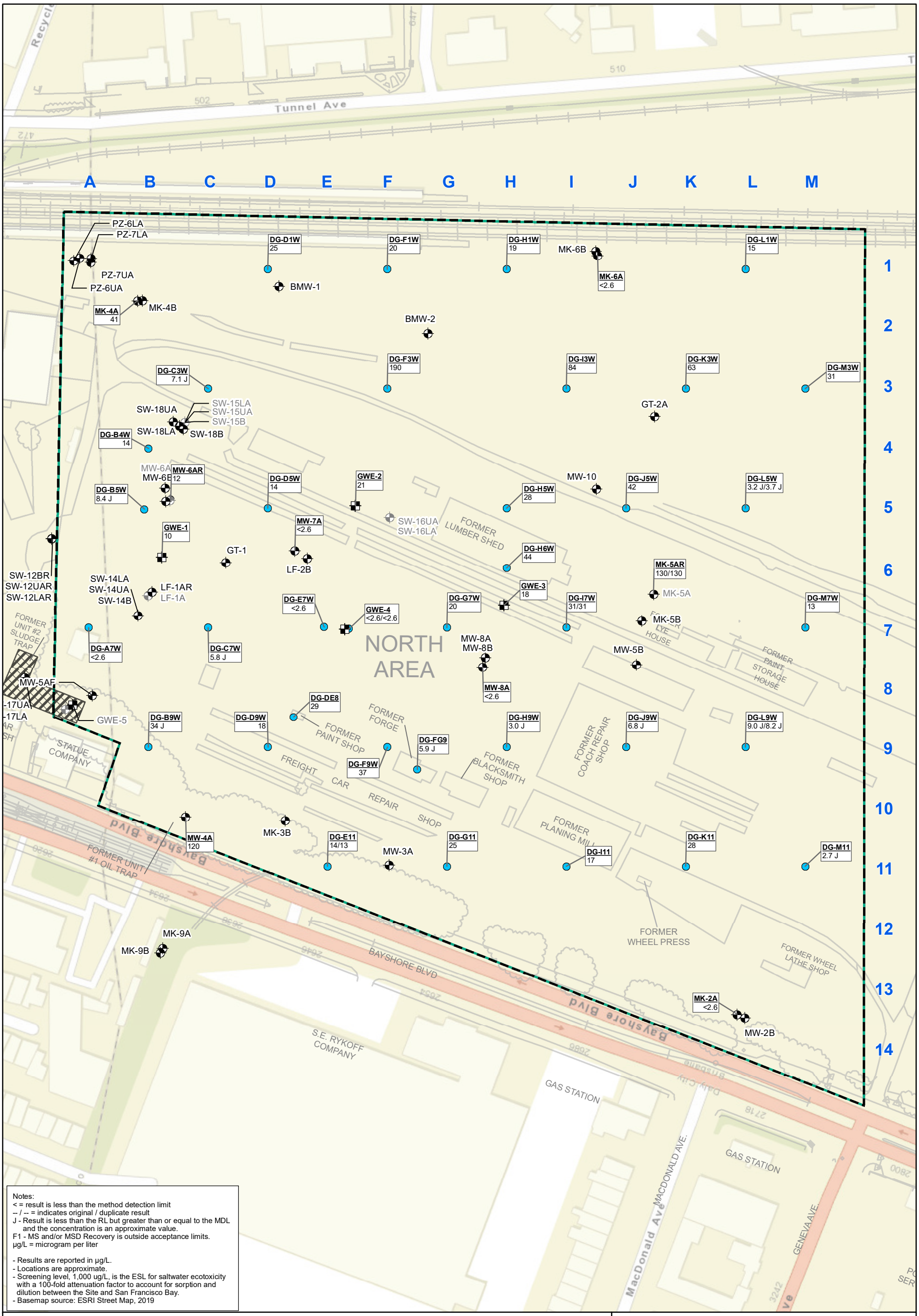
UPC OU-SM
Brisbane, California

Geosyntec consultants

WG2445 | October 2021

Figure 17

P:\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure17_GW_TPH.mxd 12/23/2019 12:28:37 PM



Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1 - MS and/or MSD Recovery is outside acceptance limits.
µg/L = microgram per liter

- Results are reported in µg/L.
- Locations are approximate.
- Screening level, 1,000 ug/L, is the ESL for saltwater ecotoxicity with a 100-fold attenuation factor to account for sorption and dilution between the Site and San Francisco Bay.
- Basemap source: ESRI Street Map, 2019

Legend

- Groundwater Sample Location Below Screening Level
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

DG-L9W
9.0 J/8.2 J - Concentration (µg/L)

N

0 150 Feet

Dissolved Arsenic Concentrations in Fill Groundwater

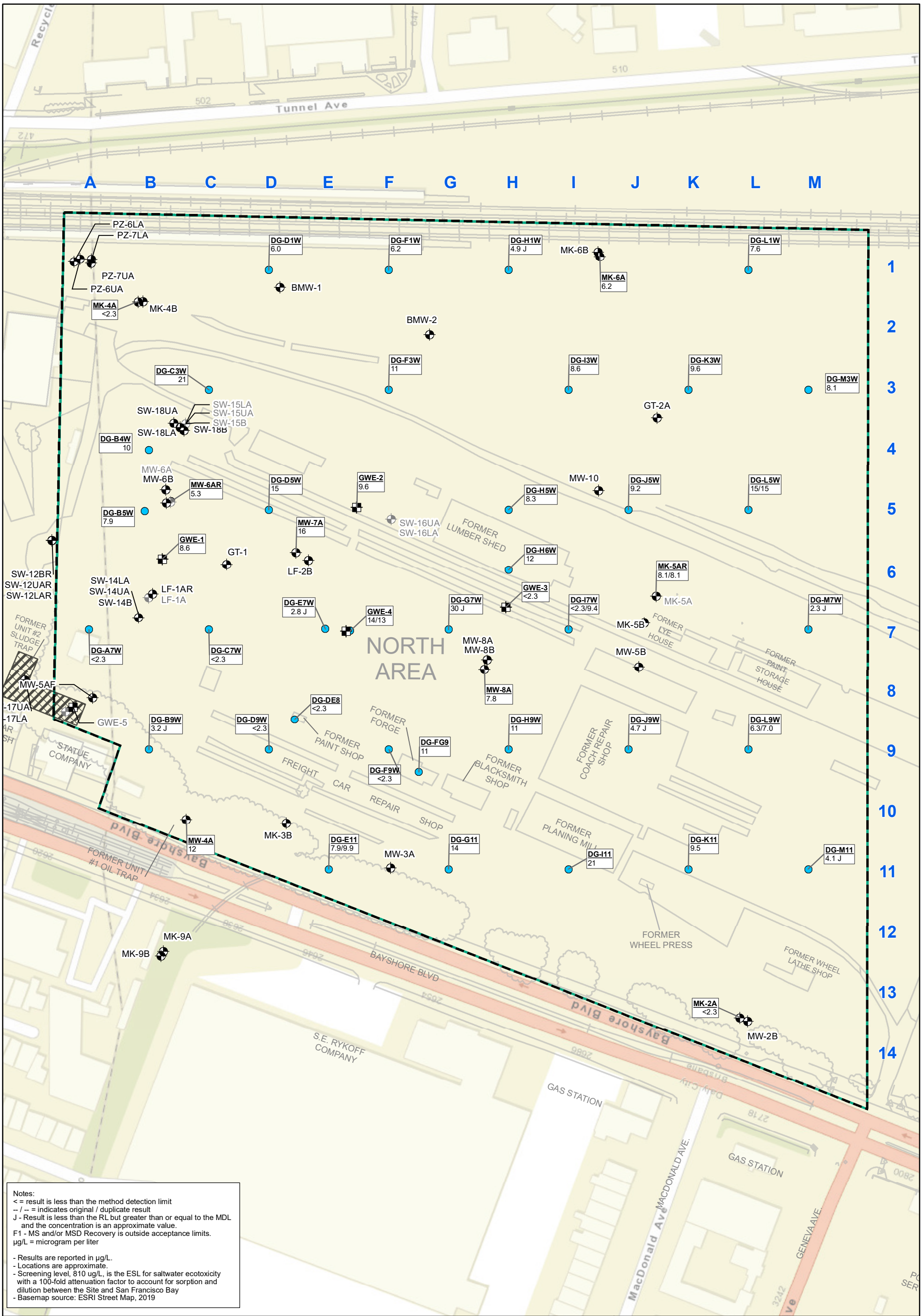
UPC OU-SM
Brisbane, California

Geosyntec consultants

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Figure 18

P:\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure18_GW_Arsenic.mxd 12/23/2019 12:28:31 PM



Dissolved Lead Concentrations in Fill Groundwater

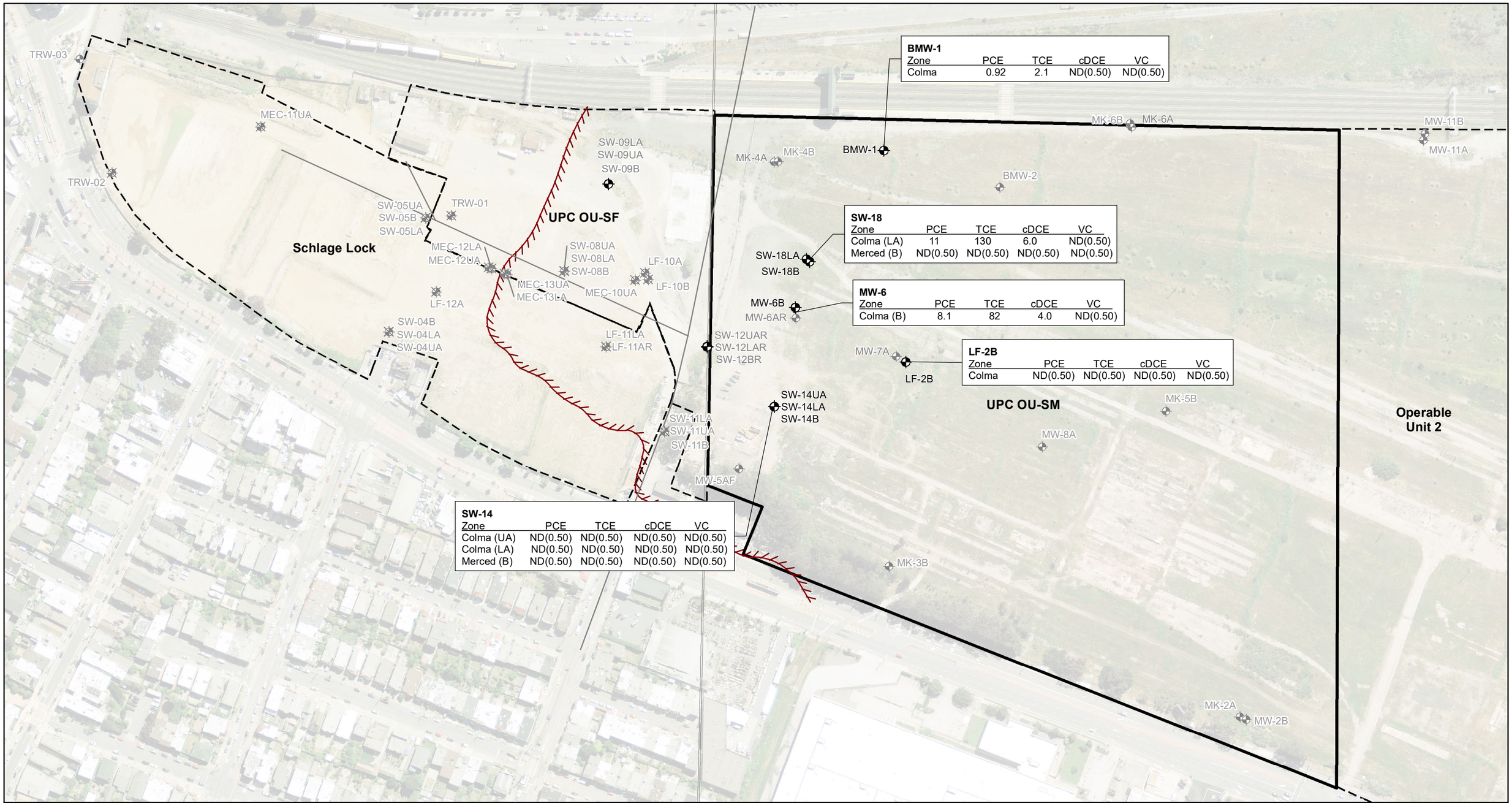
UPC OU-SM
Brisbane, California

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Figure 19

P:\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure19_GW_Lead.mxd 12/23/2019 12:29:54 PM



BMW-1

Zone	PCE	TCE	cDCE	VC
Colma	0.92	2.1	ND(0.50)	ND(0.50)

SW-18

Zone	PCE	TCE	cDCE	VC
Colma (LA)	11	130	6.0	ND(0.50)
Merced (B)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

MW-6

Zone	PCE	TCE	cDCE	VC
Colma (B)	8.1	82	4.0	ND(0.50)

LF-2B

Zone	PCE	TCE	cDCE	VC
Colma	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

SW-14

Zone	PCE	TCE	cDCE	VC
Colma (UA)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Colma (LA)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Merced (B)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

Legend

- Groundwater Monitoring Well
- Groundwater Monitoring Well (Not Sampled This Quarter)
- Abandoned Groundwater Monitoring Well (In Monitoring Network)
- Sewer Line
- Approximate Extent of Bay Margin Deposits
- UPC OU-SM, Brisbane
- Other Operable Unit Boundary
- County Boundary

Notes:
Concentrations are reported in micrograms per liter (µg/L).
The maximum concentration of the sample and the sample duplicate is shown.
CVOC = chlorinated volatile organic compound
UA = upper A zone
LA = lower A zone
B = B zone
PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
ND = not detected at or above the reporting limit indicated.
All locations are approximate and were obtained from AMEC [2015].

Screening levels are California Maximum Contaminant Levels (MCLs):
PCE = 5.0 µg/L
TCE = 5.0 µg/L
cDCE = 6.0 µg/L
VC = 0.5 µg/L

N

0 200 Feet

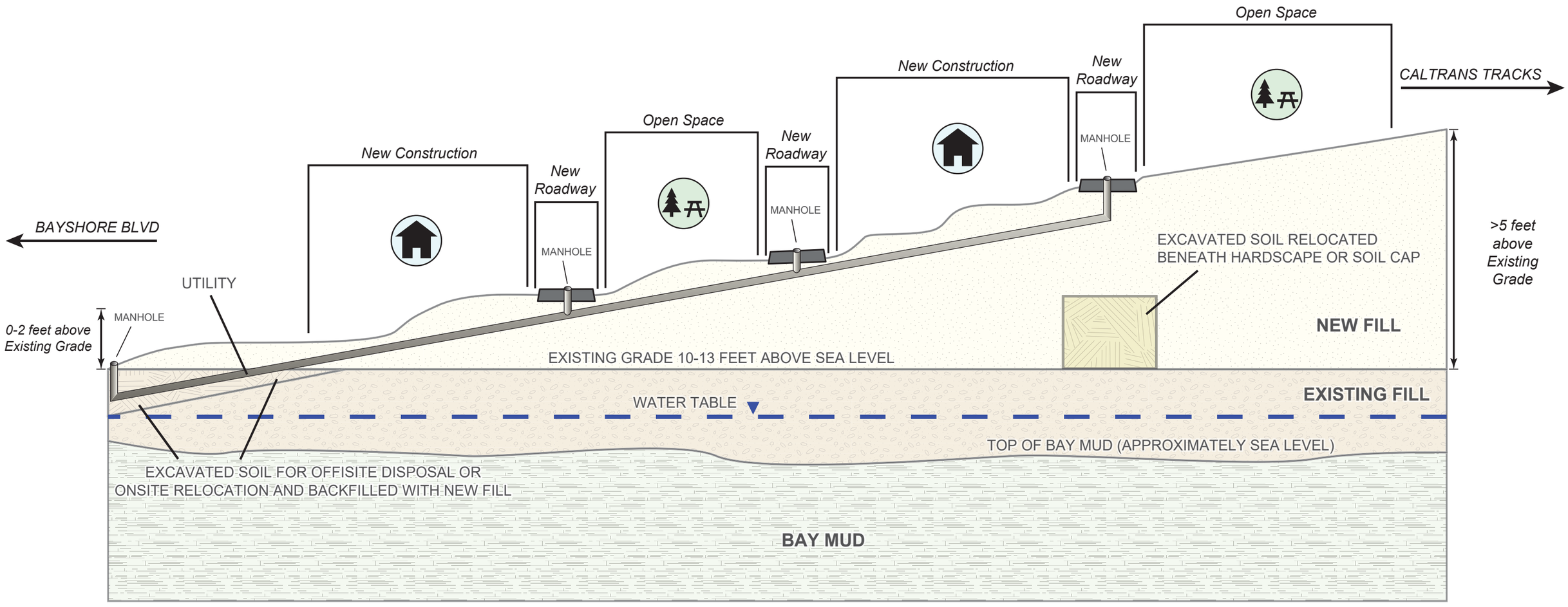
CVOC Concentrations in Colma and Merced Formations Groundwater
14 November 2018
UPC OU-S M
Brisbane, California

Geosyntec consultants

WG2445 | October 2021

Figure 20

P:\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure20_CVOCs_ColmaMerced.mxd 10/22/2019 2:17:40 PM



Not to Scale

Legend

Note:
Conceptual cross-section intended to illustrate elements of preferred remedy with generalized Site grading following redevelopment; final grade, site uses, and roadway and utility layout are not currently known.

Conceptual Cross-Section of Redevelopment with Preferred Alternative

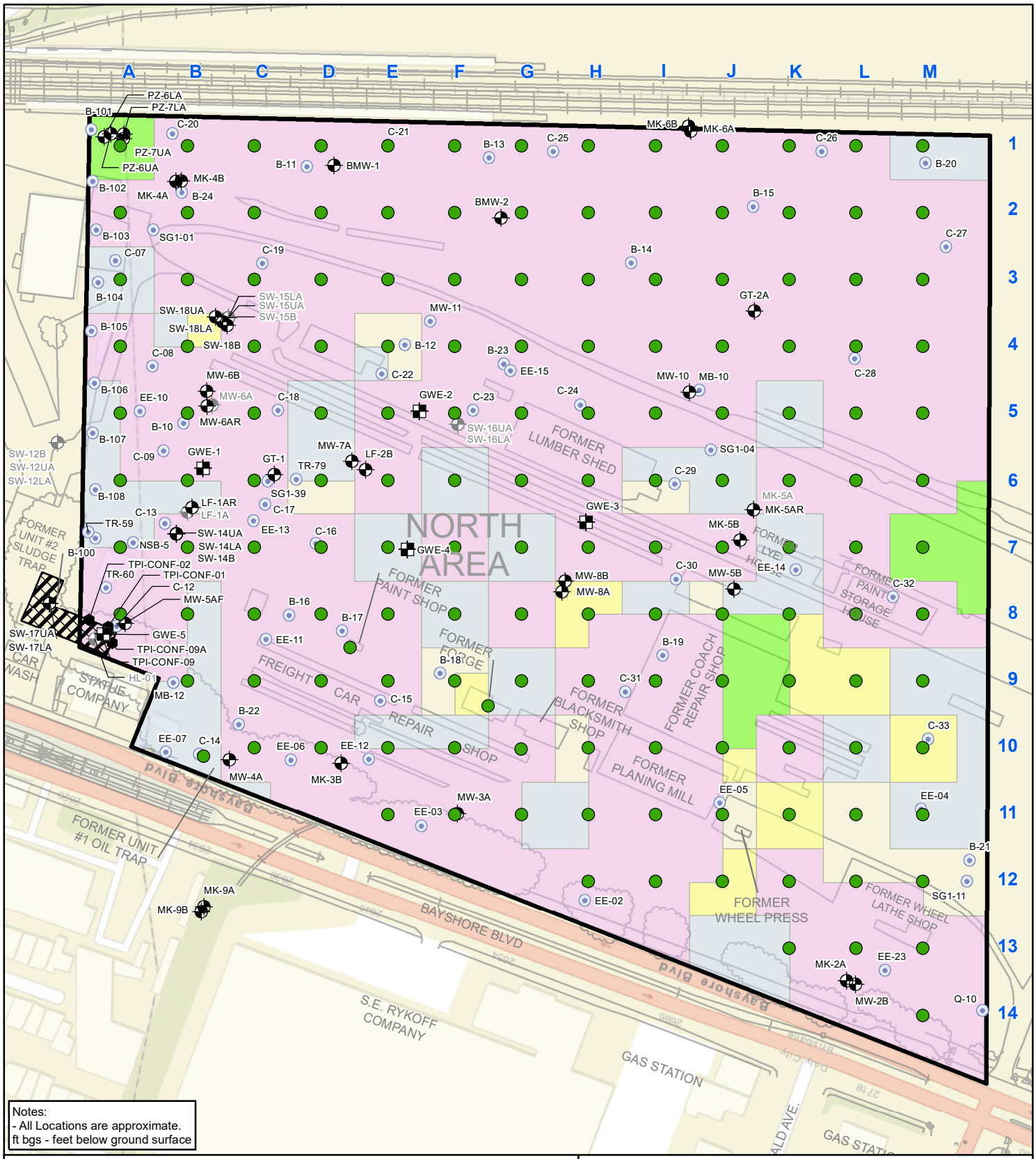
Brisbane UPC OU-SM
Brisbane, California

Geosyntec consultants

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Figure 21

P:\GIS\UPC\Brisbane\Project\2019_09\Fig0X_Cut-Fill_Cross-Section.ai



Notes:
- All Locations are approximate.
ft bgs - feet below ground surface

Legend

- Soil Sample Location
- Groundwater Monitoring Well
- Abandoned Groundwater Monitoring Well
- Groundwater Extraction Well (Inactive)
- Historical Soil Sample Location
- TPI Conf Samples
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Proposed Excavation Depth (ft bgs)

- 1
- 2.5
- 3.5
- 5

N

0 200 Feet

Soil Excavation Plan – Alternative 5

UPC OU-SM
Brisbane, California

Geosyntec consultants

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Figure 22

P:\GIS\UPC\Brisbane\Project\2019_01_OU-SM_RAP\Figure22_ExcavationPlan.mxd 10/10/2019 2:53:58 PM

APPENDIX A

UPC OU-SM Data Gap Investigation Report
(separate file)

APPENDIX B
Baseline Health Risk Assessment

Geosyntec consultants

engineers | scientists | innovators

FS/RAP APPENDIX B

HEALTH RISK ASSESSMENT

SAN MATEO COUNTY PORTION OF UNIVERSAL PARAGON CORPORATION OPERABLE UNIT (UPC OU-SM) BRISBANE, CALIFORNIA

Prepared for

Universal Paragon Corporation
150 Executive Park Boulevard, Suite 4000
San Francisco, California 94134

Prepared by

Geosyntec Consultants, Inc.
2700 Ygnacio Valley Road, Suite 130
Walnut Creek, California 94598

Project Number: WG2445

August 19, 2020

Geosyntec consultants

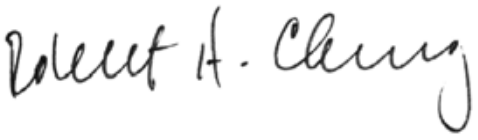
APPENDIX B

Health Risk Assessment

San Mateo County Portion of Universal Paragon Corporation Operable Unit (UPC OU-SM) Brisbane, California

Prepared for
Universal Paragon Corporation
150 Executive Park Boulevard, Suite 4000
San Francisco, California 94134

Prepared by
Geosyntec Consultants, Inc.
2700 Ygnacio Valley Road, Suite 130
Walnut Creek, California 94598



Robert H. Cheung.
Senior Toxicologist / Risk Assessor

Project Number: WG2445

August 19, 2020

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ACRONYMS AND ABBREVIATIONS

µg/dL	micrograms per deciliter
11DCE	1,1-dichloroethene
95% UCL	95 percent upper confidence limit
AMEC	AMEC Environment and Infrastructure, Inc.
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
Cal-EPA	California Environmental Protection Agency
Caltrain	Peninsula Corridor Joint Powers Board
cDCE	cis-1,2-dichloroethene
CFR	Code of Federal Regulations
Consent Order	DTSC Consent Order in the Matter of the Schlage OU and Brisbane Railyard (OU-1)
COPCs	chemicals of potential concern
CSM	conceptual site model
CTR	California Toxics Rule
CVOCs	chlorinated volatile organic compounds
DTSC	Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
EPC	exposure point concentration
ESLs	environmental screening levels
FS/RAP	Feasibility Study/Remedial Action Plan
Geosyntec	Geosyntec Consultants, Inc.
HI	hazard index
HQ	hazard quotient
HRA	Health Risk Assessment
IRIS	Integrated Risk Information System
IUR	Inhalation Unit Risk factors
MCLs	maximum contaminant levels
mg/kg	milligrams per kilogram
msl	mean sea level

MTBE	methyl-tert-butyl-ether
NAVD88	North American Vertical Datum of 1988
NCP	National Contingency Plan
ND	non-detect
NGVD29	National Geodetic Vertical Datum of 1929
OBM	Old Bay Mud
OBMD	Old Bay Margin Deposit
OEHHA	Office of Environmental Health Hazard Assessment
OMBD-SU	Old Bay Margin Deposit Sand Unit
OU	Operable Unit
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCE	tetrachloroethene
QA/QC	quality assurance/quality control
RAGS	Risk Assessment Guidance for Superfund
RfC	reference concentration
RfD	reference dose
RME	Reasonable Maximum Exposure
RSL	Regional Screening Level
RWQCB	California Regional Water Quality Control Board, San Francisco Bay
SF	slope factors
SLs	screening levels
SPTC	Southern Pacific Transportation Company
SSL	soil screening level
Sunquest	Sunquest Properties, Inc.
TCE	trichloroethene
tDCE	trans-1,2-dichloroethene
the Site	UPC OU-SM located in Brisbane, California
TPH	total petroleum hydrocarbons
TPHCWG	Total Petroleum Hydrocarbon Criteria Working Group
TPHd	total petroleum hydrocarbons as diesel

TPHg	total petroleum hydrocarbons as gasoline
Tuntex	Tuntex USA, Inc.
UPC	Universal Paragon Corporation, Inc.
VC	vinyl chloride
VOC	volatile organic compound
YBM	Young Bay Mud
YBMD	Young Bay Margin Deposits

EXECUTIVE SUMMARY

Geosyntec Consultants, Inc. (Geosyntec) has prepared this health risk assessment (HRA) to review potential exposures to chemicals detected in soil, soil vapor, and groundwater at the San Mateo County portion of the Universal Paragon Corporation, Inc. Operable Unit (UPC OU-SM), located in Brisbane, California (the Site). The objective of the HRA is to provide an analysis of potential adverse health effects from exposure to chemicals detected in soil, soil vapor, and groundwater considering future redevelopment of the Site into mixed of high-density residential, commercial/industrial, retail, and recreational uses. This document calculates estimated risks assuming no remedial actions or mitigation measures are implemented and considers potential exposures to Site-related chemicals following development. The intent is to provide risk managers a basis for evaluating whether action to mitigate potential health risks is warranted to support redevelopment of the Site. The results of the assessment will be used to support the Feasibility Study/Remedial Action Plan (FS/RAP) by identifying the media and chemicals detected at the Site that may require further evaluation, risk management, and/or remediation measures to limit potential exposures following development.

Numerous investigations to assess the nature and extent of contaminants have been conducted on the Site, with regulatory oversight, beginning in 1984. The results of previous investigations at the Site indicated that groundwater is impacted by chlorinated volatile organic compounds (CVOCs) emanating from an upgradient source, and near-surface soils are impacted by metals and polynuclear aromatic hydrocarbons (PAHs) across certain areas of the Site. Specifically, arsenic and lead were detected frequently at relatively elevated concentrations in shallow soil, likely resulting from the historical application of lead arsenate herbicide to the ground surface. The analytical data serving as the basis for the HRA were primarily based on the results of the data gap investigation performed at the Site in August 2018, as well as historical soil data for metals, and soil vapor data collected in January 2011 and September 2012.

Future redevelopment of the Site will likely include uses for high-density residents, commercial/industrial buildings, research and development (R&D) labs, retail, and recreational and open space. Based on these possible future uses, potentially exposed populations are a future resident, a future worker (inclusive of commercial, industrial, and retail uses), a future construction worker, a future recreational user, and an off-Site worker and resident. Potential exposures to a recreational user are likely to be much less frequent and lower than the daily exposure assumed for a future resident or worker. Thus, an assessment of a future on-Site worker and resident is more conservative and protective than a recreational user. The potential complete exposure pathways for a future worker, resident, construction worker, and off-Site worker and resident are summarized below:

- Incidental ingestion of soil, dermal contact with soil, and inhalation of particulates or volatiles in ambient air (future worker, resident and construction worker).
- Inhalation of chemicals in soil vapor or groundwater migrating through the soil column and an at-grade building foundation into indoor air (future worker and resident).
- Inhalation of volatile COPCs migrating from soil vapor into ambient air within a trench (future construction worker).
- Inhalation of COPCs in air at off-Site locations potentially migrating from on-Site soil due to wind erosion and dispersion.

For aquatic receptors, potential leaching of chemicals in soil to groundwater and off-Site transport of COPCs in groundwater to the Bay is the primary pathway.

The HRA evaluated both potential cancer risks and noncancer hazard indices in a manner consistent with current California Environmental Protection Agency (Cal-EPA) and the United States Environmental Protection Agency (EPA) guidance. The assessment evaluated potential noncarcinogenic hazard based on the comparison of the calculated noncarcinogenic hazard index (HI) to Cal-EPA and EPA's point of departure level of an HI of 1. That is, if the calculated HI for a receptor to chemicals detected in soil and soil vapor is less than 1, no further evaluation is necessary, and it can be concluded that no unacceptable risks are present. The EPA explained the use of an HI as follows: "*Aggregate exposures equal to or below a hazard index (HI) of 1.0 derived using target organ specific hazard quotients likely will not result in adverse noncancer health effects over a lifetime of exposure and would ordinarily be considered acceptable. However, an HI greater than 1.0 does not necessarily suggest a likelihood of adverse effects nor does it imply an unacceptable level of effect*" (EPA, 2011).

For evaluating potential cancer risk associated with exposure to chemicals, a lifetime incremental increase in cancer risk in the range of 1×10^{-6} to 1×10^{-4} is generally considered to be acceptable (EPA, 1990). These values correspond to one additional cancer case in 10,000 people (1×10^{-4}) and one additional case in one-million people (1×10^{-6}) above the baseline lifetime cancer risk. The 1×10^{-6} risk level is considered a *de minimis* risk and is generally used as a point of departure for making risk management decisions at a site. With a risk of 1×10^{-4} or greater, an evaluation of remedial measures is required. The risk range between 1×10^{-6} to 1×10^{-4} is commonly called the "discretionary risk range" to assess whether a response action is warranted depending upon site-specific conditions. This risk range is in addition to the background risk of Americans in the general population developing cancer from causes unrelated to a Site-specific exposure. The background risk is one chance in three (0.3 or 3×10^{-1}) for an American female, and one chance in two (0.5 or 5×10^{-1}) for an American male of eventually developing cancer (ACS, 2017).

As a risk management policy, the Cal-EPA generally considers 1×10^{-6} to be a point of departure for purposes of making risk management decisions. For a future worker, an HI of 1 and excess cancer risk of 1×10^{-5} (the "mid-point" of the risk management range and commonly used for managing commercial/industrial land uses). For a future resident, an HI of 1 and excess cancer risk of 1×10^{-6} were used as acceptable target levels (the 1×10^{-6} risk level is considered the accepted point of departure for unrestricted land use). These target thresholds are consistent with the federal and state criteria described above.

Because arsenic, identified as a chemical of potential concern (COPC), is naturally-occurring and typically is present at concentrations greater than risk-based screening levels, it is appropriate to also evaluate the significance of arsenic by estimating the incremental risk and hazard from potential exposures to arsenic over naturally-occurring background. The incremental excess lifetime cancer risk and noncancer hazard is the difference between exposure to arsenic in soil and arsenic as background. On the adjacent parcels (Schlage OU and UPC OU-SF), a background concentration was adopted based on the study conducted by the Lawrence Berkeley National Laboratory (LBNL) [2009]. For consistency across operable units at the Brisbane Baylands development, the same background concentration for arsenic is proposed for the Site. Similarly, there are many natural sources of PAHs in the environment as PAHs are found in virtually all surface soils in both urban and rural areas. As such, the incremental risk and hazard to PAHs, particularly carcinogenic PAHs,

identified as COPCs, also are presented. For this Site, a natural-occurring background concentration of 0.9 mg/kg, equal to the 95th percentile benzo(a)pyrene equivalent value from the northern California ambient data set [DTSC, 2009a] is used.

The results of the HRA indicate that in the absence of any remediation or mitigation efforts:

- For a future worker, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 27 and 3×10^{-4}, respectively. Arsenic, lead, total petroleum hydrocarbons (TPH) as diesel (TPHd), and polychlorinated biphenyl (PCB)-1260 are the primary risk-driving COPCs. The HQs and cancer risks for all other COPCs are less than 1 and 1×10^{-6}, respectively.

  For arsenic, the estimated noncancer hazard quotient and excess lifetime cancer risk are 24 and 3×10^{-4}, respectively. The estimated background noncancer hazard quotient and excess lifetime cancer risk attributed to arsenic are 4.5 and 5×10^{-5}, respectively. Based on these estimates, the incremental noncancer hazard and excess lifetime cancer risk is the difference between baseline and background. The incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 20 and 2×10^{-4}, respectively. The results of the assessment indicate that the incremental increase in risk over background is 5.3 times higher than baseline. For carcinogenic PAHs, the incremental noncancer hazard and excess lifetime cancer risk are 0.003 and 3×10^{-7}, respectively. The incremental increase in risk for carcinogenic PAHs over background is 1.8 times higher than background.

  In soil vapor with an attenuation factor of 0.0005, the baseline cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 3 and 2×10^{-5}, respectively. TCE is the primary risk-driving COPC. The HQs and the estimated cancer risks for the other COPCs are less than 1 and 1×10^{-6}, respectively.

  Based on an attenuation factor of 0.03, the cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 180 and 1×10^{-3}, respectively. TCE and vinyl chloride are the primary risk-driving COPCs.

  Volatile COPCs in groundwater were evaluated by comparing exposure point concentrations to groundwater screening levels protective of vapor intrusion. The estimated 95% UCLs for 1,3-Dichloropropene, TCE, and VC are higher than their respective screening levels. 1,3-Dichloropropene may not be a Site-related COPC as the chemical was detected in only 2 samples at a frequency of detection of 4%.

- For a future resident, in the absence of any remediation or mitigation efforts, the baseline cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 270 and 9×10^{-4}, respectively. Arsenic, lead, mercury, benzo(a)pyrene, benzo(a)fluoranthene, dibenzo(a,h)anthracene, collectively referred to as carcinogenic PAHs, naphthalene, TPHd, and PCB-1260 are the primary risk-driving COPCs.

  For arsenic, the estimated noncancer hazard quotient and excess lifetime cancer risk are 250 and 9×10^{-4}, respectively. The estimated background noncancer hazard quotient and excess lifetime cancer risk to arsenic are 48 and 2×10^{-4}, respectively. The incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 207 and 8×10^{-4}, respectively. The incremental increase in risk for arsenic over background is 5.3 times higher than baseline. For carcinogenic PAHs, the incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 0.04

and 6×10^{-6}, respectively. The incremental increase in risk for carcinogenic PAHs over background is 1.8 times higher than background.

In soil vapor with an attenuation factor of 0.001, the baseline cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 25 and 4×10^{-4}, respectively. Tetrachloroethene (PCE), TCE, cis-1,2-dichloroethene (cDCE), and vinyl chloride (VC) are the primary risk-driving COPCs. The HQs and the estimated cancer risks for the other COPCs are less than 1 and 1×10^{-6}, respectively.

Based on an attenuation factor of 0.03, the cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 760 and 1×10-2, respectively. TCE and vinyl chloride are the primary risk-driving COPCs.

In groundwater, volatile VOCs identified as risk-driving COPCs based on the potential for vapor intrusion are 1,3-Dichloropropene, cDCE, TCE, and VC. As discussed above, 1,3-Dichlorpropene may not be site-related.

- For a future construction worker, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 71 and 3×10^{-5}, respectively. However, without arsenic, where the 95% UCL is above naturally-occurring background, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 2.3 and 7×10^{-7}, respectively. The HQs and cancer risks for all COPCs are less than 1 and 1×10^{-6}, respectively. Except for arsenic and lead, there are no other risk-driving COPCs in soil.

  For volatile COPCs potentially migrating from soil vapor into trench air, the cumulative HI and cumulative excess lifetime cancer risk are 1.1 and 3×10^{-7}, respectively. The HQs and the estimated cancer risks for all volatile COPCs are less than 1 and 1×10^{-6}, respectively.

- For an off-Site worker and resident, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in air as fugitive dusts from soil are less than 1 and 1×10^{-6}, respectively. In addition, action levels were estimated assuming short-term exposures to airborne particles 10 microns or smaller in diameter (PM10) or COPC adhered dust that may be present in air along the perimeter of the Site. The results of the analysis indicate that the project respirable action of level for PM10 can be used to limit concentrations of non-volatile risk-based COPCs as well as PM10. Maintaining respirable particulates below the PM10 action level will ensure that both PM10 emissions and risk-based COPC dust particulates will not reasonably result in unacceptable exposures.

- Because groundwater in the Fill has been determined by the California Regional Water Quality Control Board, San Francisco Bay (RWQCB) as not having potential beneficial uses for drinking water,[1] groundwater concentrations were conservatively compared to surface water screening levels for a marine habitat even though existing information documents that groundwater does not migrate to the Bay. Potential exposures to aquatic receptors from COPCs in groundwater are not expected to pose a significant risk to aquatic organisms because the shoreline of the Bay is

[1] In 2019, the RWQCB issued a determination acknowledging that groundwater in the Fill, to a depth of approximately 15 feet below ground surface, meets exceptions (a) and (c) of State Water Resources Control Board Resolution No. 88-63 (i.e., total dissolved solids concentrations and well yield, respectively) and is not likely to be used as a source of drinking water [RWQCB, 2019a].

located approximately 0.5 miles east of the Site and attenuation (e.g., adsorption) and dilution will reduce concentrations. Surface water screening levels for a marine habitat used in the analysis do not consider dilution and/or attenuation of groundwater upon discharge to surface water. The detected concentrations of dissolved constituents in groundwater at the Site prior to entering the Bay would likely be reduced 100-fold or greater due to factors such as adsorption of dissolved constituents to soil and dilution effects from tidal and groundwater influence. Based on an attenuation factor of 100 that has been used at other bayfront sites (e.g., Mission Bay, San Francisco International Airport, and East Bay Regional Shoreline Park), the estimated 95 percent upper confidence limit (95% UCL) of the mean for chemicals in shallow groundwater are below surface water screening levels for a marine habitat. Because a single measurement of a chemical is not representative of the concentration to which an individual organism would be exposed across the entire site, the 95% UCLs for COPCs in groundwater are considered applicable for comparison. Based on the analysis, COPCs in groundwater are not expected to pose a significant risk to aquatic organisms as a result of shallow groundwater potentially migrating from the Site to the San Francisco Bay. Action is not warranted for groundwater to be protective of aquatic receptors.

- For this HRA, shallow groundwater in the Fill zone at the Site is not considered a potential drinking water source; the soil leaching to groundwater pathway was evaluated by comparing exposure point concentrations (EPCs) for COPCs in soil to soil screening levels (SSLs) that are protective of aquatic habitats (i.e., the San Francisco Bay) and a lateral attenuation factor of 100 as described above. While groundwater is not anticipated to reach the San Francisco Bay, as discussed above, the results of the analysis indicated that COPCs in soil that exceeded estimated SSLs protective of aquatic receptors are cobalt, copper, lead, mercury, selenium, silver, zinc, and total petroleum hydrocarbons as diesel (TPHd)[2]. However, as described above, the estimated 95% UCLs for these COPCs in groundwater do not exceed screening criteria that are protective of aquatic receptors with an attenuation factor of 100. Because the concentrations of dissolved metals and TPHd in groundwater from the data gap investigation were generally low and below drinking water criteria and surface water criteria for aquatic receptors with an attenuation factor of 100, the COPCs in soil are not considered to represent a significant threat to aquatic organisms in the Bay through leaching and lateral migration in groundwater even if groundwater were to reach the San Francisco Bay.

Under the assumptions and conditions presented in the HRA, COPCs in soil and soil vapor may pose a theoretical risk and noncancer hazard to a future worker and resident if the Site conditions were not remediated or mitigated. The primary risk driving COPCs in soil are arsenic, lead, and mercury, carcinogenic PAHs, naphthalene, TPHd, and PCB-1260. Further action to remediate or mitigate potential exposure to these risk-driving COPCs in soil to a future worker and a future resident is appropriate. Arsenic and lead are the primary risk-driving COPCs in soil for a future construction worker. In soil vapor, the risk-driving COPCs are PCE, TCE, cDCE, and VC. Similarly, in groundwater due to the potential for vapor intrusion, the risk-driving COPCs are cDCE, TCE and VC. These risk-driving COPCs in soil vapor and groundwater were identified as risk-driving COPCs in the Schlage OU, located north of the Site, and not from onsite sources. Actions to remediate or

[2] Selenium was not detected in groundwater.

mitigate these chlorinated COPCs are addressed in the Schlage OU remedial action plan (MACTEC, 2009a).

1. INTRODUCTION

This Health Risk Assessment (HRA) was prepared to evaluate potential human exposures and health risks associated with future uses in support of decision-making during future construction and property development at the San Mateo County portion of the Universal Paragon Corporation, Inc. (UPC) Operable Unit (UPC OU-SM), located in Brisbane, California (the Site) (**Figure 1**). By definition, the "Site" consists of the groundwater and soil portions of the UPC OU that are impacted with chemicals other than chlorinated volatile organic compounds (CVOCs) and are located within the County of San Mateo, known as the UPC OU-SM.

The HRA was prepared on behalf of Universal Paragon Corporation (UPC), the owner of the Site,[3] to comply with the California Department of Toxic Substances Control (DTSC) *Consent Order in the Matter of the Schlage OU and Brisbane Railyard (OU-1)* (Consent Order), Docket Number HAS CO 07/08 185, dated May 22, 2008 (DTSC, 2008). A background risk assessment is generally required under section 6.8 of the California Health and Safety Codes. Background risk assessments are also required under the 1990 National Contingency Plan (NCP) (55 Fed. Reg. 8665-8865 (Mar. 8, 1990)) promulgated by the United States Environmental Protection Agency.

Environmental investigations began at the Site in 1985 and are summarized in the Feasibility Study/Remedial Action Plan (FS/RAP; Geosyntec Consultants, Inc. [Geosyntec], 2021). Geosyntec reviewed the results of previous investigations to develop a preliminary conceptual site model (CSM), which served as a basis to develop a Data Gap Investigation Work Plan. The results from the data gap field investigation (Geosyntec, 2018b) combined with the results of soil vapor investigations performed in 2011 and 2012 (AMEC Environment and Infrastructure, Inc. [AMEC], 2013) serve as the primary dataset for this HRA.

1.1 Objective

The objective of the HRA is to provide an analysis of potential adverse health effects, in the absence of any site remediation or mitigation, from exposure to chemicals detected in soil, soil vapor, and groundwater considering future redevelopment of the Site into mixed high-density residential/commercial/industrial, research and development (R&D) labs, retail, and recreational open space uses.[4] This document calculates estimated risks assuming no remedial actions are implemented and considers potential exposures to Site-related chemicals post-development. The intent is to provide risk managers a basis for evaluating whether action to mitigate potential health risks is warranted to support redevelopment of the Site. The results of the assessment will be used to identify the media and chemicals detected at the Site that may require further evaluation, risk management, and/or remediation measures to limit potential exposures under future uses.

[3] Sunquest Properties, Inc., holds title to the former Southern Pacific Transportation Company (SPTC) parcels in San Mateo County.

[4] Brisbane Baylands Development Plans -www.brisbanebaylands.com/plan

1.2 Approach

This HRA was prepared in general accordance with United States Environmental Protection Agency (EPA) and California Environmental Protection Agency (Cal-EPA) guidelines for the preparation of risk assessments as specified in the following documents:

- Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part A) (RAGS; EPA, 1989); and
- Preliminary Endangerment Assessment Guidance Manual. Cal-EPA, Department of Toxic Substances Control (DTSC, 2015).

These documents were supplemented by additional EPA and Cal-EPA guidance documents referenced in Section 9.

The technical approaches for exposure and toxicity employed in this HRA are based on current scientific data and are consistent with regulatory guidelines. The assumptions used in this assessment are conservative based on regulatory agency recommendations. As a result, risk calculations presented herein may overestimate actual risks associated with the Site.

1.3 Document Organization

The remainder of this report is organized as follows:

- Section 2, Background, presents a description of the Site and Site setting;
- Section 3, Data Evaluation and Selection of Chemicals of Potential Concern, presents the environmental sampling data from recent Site investigations that serve as the basis for the HRA;
- Section 4, Exposure Assessment, identifies receptors that may be exposed to chemicals in environmental media, the exposure pathways, and the route of potential intake;
- Section 5, Toxicity Assessment, evaluates the toxicity data available for the chemicals evaluated in this HRA;
- Section 6, Screening Level Risk Characterization, provides quantitative estimates of risk and noncancer hazard and compares the estimates to target levels;
- Section 7, Uncertainties, summarizes the uncertainties inherent in evaluation of risks to human health;
- Section 8, Summary, Conclusions, and Recommendations, presents the summary, conclusions, and recommendations of the HRA; and
- Section 9, References, presents the references that are cited in the preparation of this report.

HRA tables, figures, and appendices are included at the end of this report.

2. BACKGROUND

This section provides descriptions of the Site and the Site geologic/hydrogeologic setting.

2.1 Site Description

The Site, approximately 35 acres, occupies the northern portion of the former Southern Pacific Transportation Company (SPTC) Brisbane Railyard within San Mateo County, between Bayshore Boulevard on the west, the Peninsula Corridor Joint Powers Board (Caltrain) railroad tracks on the east, and extending northward from Geneva Avenue to the San Francisco/San Mateo County line (Portions of Assessor's Parcel Numbers 005-340-060 and 005-340-100) (**Figure 1**). The San Francisco Bay is located approximately 0.5 miles to the east. The Schlage OU and UPC OU-SF are north of the county line, and OU-2, which is under the California Regional Water Quality Control Board, San Francisco Bay (RWQCB) oversight, is located to the south. The Brisbane Landfill is located to the east of the Caltrain tracks (**Figure 1**).

The Site was acquired by Southern Pacific Transportation Company (SPTC) in 1896. SPTC operated the former Brisbane Rail Yard from approximately 1907 through 1982 (Lipps, 2013). SPTC's major railroad operations resulted in the construction of numerous railroad facilities. The railyard was used as SPTC's railroad switching yard. Railcar maintenance and repair activities, railcar parking, and materials transfer operations were also conducted on the railyard. It is believed that herbicides containing lead and arsenic were sprayed at the railyard for weed control during that period [MACTEC, 2009a]. In 1960, SPTC's major railyard operations ceased. The Site was unused between 1960 and 1989. Tuntex USA, Inc. (Tuntex) acquired most of the railyard from SPTC in December 1989, after the majority of the railyard facilities had been abandoned and removed.

The Site is nearly flat and ground surface elevations range from approximately 10 to 13 feet above mean sea level (msl) relative to the National Geodetic Vertical Datum of 1929 (NGVD29), or 12.7 to 15.7 feet relative to the North American Vertical Datum of 1988 (NAVD88).

UPC OU-SM consists of the northern portion of the former Brisbane Rail Yard and includes portions of San Mateo County Tax Assessor Parcel Number 005-340-060.

2.2 Site Geology/Hydrogeology

Based on previous investigations conducted by others, Site stratigraphy generally consists of the following from top to bottom (Burns and McDonnell, 2006; Treadwell and Rollo, 2002):

- 10 to 15 feet of fill consisting of a heterogeneous mixture of clay, silt, sand, gravel, and building debris from the 1906 San Francisco earthquake ("Fill" zone);
- 5 to 20 feet of Young Bay Margin Deposits (YBMD), including high-plasticity and low-permeability clay known as Young Bay Mud (YBM), and some interbedded silty sand layers and organic material;
- Approximately 30 feet of Colma Formation sand, consisting of yellow to brown, fine- to medium-grained sand with some silt and clay. The Old Bay Margin Deposit (OBMD) Sand

Unit (OBMD-SU) is located within the aquitard below the Colma Formation and is considered part of the Colma Formation. The OBMD-SU is a water-bearing zone but is not laterally contiguous;

- Approximately 10 to 20 feet of OBMD, including yellow to brown, stiff, low-plasticity clay known as Old Bay Mud (OBM); and
- Merced Formation sand, which has a similar lithology to the Colma Formation sand.

Franciscan Assemblage bedrock generally occurs at a depth of 50 to 60 feet below ground surface (bgs) (MACTEC, 2009b). The Franciscan bedrock consists of partially metamorphosed, weathered, and sheared greenstone, interbedded chert and shale, and interbedded sandstone and shale.

The water-bearing zones at the Site are the Fill Water-Bearing Zone, the Colma Formation, and the Merced Formation (MACTEC, 2010). The YBMD, where present to the south, constitute an aquitard that separates the Fill from the Colma Formation and confines the underlying Colma Formation. The aquitard that contains the OBMD-SU separates the Colma Formation from the Merced Formation and confines the underlying Merced Formation. The depth to groundwater at the Site was approximately 3 to 6 feet bgs in August 2018 (Geosyntec, 2018b).

The direction and magnitude of lateral hydraulic gradients beneath the Site vary by location and water-bearing zone. In the Fill Water-Bearing Zone, the lateral hydraulic gradient is generally flat. Horizontal groundwater flow in the Fill Water-Bearing Zone is toward the center of the UPC OU-SM Site, caused by higher topography and groundwater elevations to the north, south, east, and west. The Fill Water-Bearing Zone is likely recharged by surface water infiltration and discharge is likely through evapotranspiration. In the Colma Formation, hydraulic gradients were toward the Sunnydale Avenue sewer line to the west. The direction of the lateral hydraulic gradient in the Merced Formation is predominantly to the south.

Groundwater at the Site is not used for domestic or industrial purposes. The Fill water-bearing zone is characterized by poor water quality (i.e., high electrical conductivity) because the Site was originally under the saline waters of San Francisco Bay, and the RWQCB exempted it from consideration as a municipal water supply (RWQCB, 2019a). By contrast, the Colma and Merced Formations do not exhibit high electrical conductivity values and are likely capable of producing 200 gpd; therefore, the groundwater in these zones is considered to be a potential municipal supply. Naturally occurring strong upward gradients protect these deeper zones from graded water quality in the Fill Water-Bearing Zone.

3. DATA EVALUATION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Data evaluation identifies the data available for use in an HRA, including the identification of chemicals of potential concern (COPCs).

3.1 Data Evaluation

The first step is to identify the analytical data set for the HRA. The most comprehensive investigations conducted at the Site in terms of number of sampling points and number of chemicals analyzed include the soil vapor investigations in 2011 and 2012 and the recent Geosyntec data gap investigation. Because these investigations are the most comprehensive, and most recent, the data were judged to best represent current and potential future conditions for the Site and form the basis for the risk assessment chemical database. Because metals are not expected to attenuate with time, historical soil sampling data for metals, particularly results since 1985, also were evaluated in the HRA.

The data used in the HRA were collected and analyzed following procedures performed in accordance with EPA methods and met quality assurance/quality control (QA/QC) goals for the project. Following guidance provided by EPA in RAGS (EPA, 1989) and Guidance for Data Usability in Risk Assessments (EPA, 1992a), analytical data from the Site were found to be of acceptable quality for use in the HRA.

Summaries of available soil, soil vapor, and grab and groundwater monitoring data are presented in tables in **Appendix A**. **Figure 2** presents the locations where soil, soil vapor, and groundwater samples have been collected.

The dataset includes field duplicates, which are usually two samples collected simultaneously from the same sampling location. Duplicates are collected as a measure of the homogeneity of the medium sampled in a location. For cases where a field duplicate sample result is present for the same chemical in a sample, a single representative concentration for the sample was selected as follows:

1. If there was a detection in both samples, the maximum concentration was used;
2. If there was a detection in one sample but not the other, the detected concentration was selected; and
3. If both samples were below laboratory reporting limits, the highest reporting limit was selected.

Results qualified as estimated ("J" qualified) were used in the HRA.

3.2 Selection of Chemicals of Potential Concern

All chemicals detected in at least one soil and soil vapor sample were identified as COPCs to ensure the inclusion of chemicals that may pose a significant risk to human health. According to guidance for naturally-occurring materials, such as metals, an evaluation of background

concentrations is important to evaluate whether the metals concentrations on the Site are consistent with naturally-occurring levels in the area, and whether they should be included in the assessment. For example, arsenic is naturally-occurring and commonly found in soil. However, because arsenic was detected at concentrations ranging from 0.25 to 790 milligrams per kilogram (mg/kg), with an arithmetic mean of 41.4 mg/kg (**Table 1**), exceeding background concentrations found in San Francisco Bay Area soil (i.e., 19.1 mg/kg; LBNL, 2009), arsenic was selected as a COPC. Other chemicals detected in soil include polynuclear aromatic hydrocarbons (PAHs), organochloride pesticides, and polychlorinated biphenyls (PCBs).

In soil vapor, the chlorinated COPCs are volatile organic compounds (VOCs) including tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloreothene (cDCE), trans-1,2-dichloroethene (tDCE), vinyl chloride (VC), and 1,1-dichloroethene (11DCE). Other volatile VOCs detected in at least one sample are presented in **Table 2,** and include but not limited to, benzene, ethylbenzene, toluene, and xylenes, collectively referred to as BTEX, freon-based constituents, 1,3,5- and 1,2,4-trimethylbenzene, methylene chloride, and chloroform.

In groundwater, all metals except for cadmium, selenium, and thallium were detected in at least one sample. VOCs detected in groundwater are identical to the constituents detected in soil vapor, except for 11DCE. In addition, 1,1-dichloroethane, 1,3-dichloropropene, benzene, methyl-tert-butyl-ether (MTBE), and total petroleum hydrocarbons (TPH) as diesel (TPHd) and gasoline (TPHg) were detected in at least one groundwater sample.

Tables 1 and **2** present the statistical summaries of COPCs in soil and soil vapor, respectively, including the number of samples, the minimum and maximum detected concentrations, and the frequency of detection. **Table 3** presents the statistical summaries of COPCs in groundwater.

4. EXPOSURE ASSESSMENT

The objectives of an exposure assessment are to identify receptors (populations) that may be exposed to chemicals in environmental media, the exposure pathways, and the route of potential intake. The exposure assessment is conducted within the context of a risk-based conceptual site model (CSM), where chemical sources, potentially impacted media, exposed populations, exposure media, and exposure routes and pathways are identified. The HRA CSM, presented in **Figure 3,** represents the current understanding of the sources of COPCs, the means by which they may be released and transported within and among media, and the exposure pathways and routes by which they may contact human receptors.

4.1 Potentially Exposed Populations

To evaluate whether the levels of chemicals present in soil, soil vapor, and groundwater at the Site would pose a risk to human populations, it is necessary to identify the populations that may potentially be exposed to these chemicals and determine the pathways by which the exposures may occur.

Given that the Site is currently vacant, there are no on-Site receptors under current conditions. Future redevelopment of the Site will likely include uses for high-density residents, commercial/industrial buildings, research and development (R&D) labs, retail, and recreational and open space.[5] Based on these possible future uses, potentially exposed populations are a future resident, a future worker (inclusive of commercial, industrial, and retail uses), a future construction worker, and a future recreational user. Potential exposures to a recreational user are likely to be much less frequent than the daily exposure assumed for a future resident or worker. Therefore, a recreational user was only qualitatively evaluated in the HRA.

Although potential exposures and health risks to a future worker are generally greater than a construction worker due to longer exposure frequencies and exposure durations and any potential impacts associated with possible exposures to chemicals in soil and soil vapor by a future construction worker will be managed under a site management plan, a future construction worker was evaluated.

A nearby adjacent off-Site worker and resident also were identified as potential receptors assuming a theoretical scenario where on-Site soil particles could migrate to off-Site locations via wind erosion and dispersion.

Potential receptors typically evaluated as part of an ecologic risk evaluation include terrestrial, avian, and aquatic receptors. However, based on conceptual design plans typical of high density development projects, much of the Site is expected to be covered by landscaping, buildings, and/or paved streets and parking lots, thereby eliminating the potential for exposure to soil. The presence of the developed Site and the lack of natural habitats and supporting vegetation within the

[5] Brisbane Baylands Development Plans - www.brisbanebaylands.com/plan

immediate vicinity of the Site perimeter would limit exposures by terrestrial organisms and avian species to COPCs in soil and groundwater.

4.2 Potential Exposure Pathways

Based on the COPC-affected media, points of human contact with Site-related COPCs are soil, ambient air, and indoor air.

Under future conditions, the majority of the Site will likely be paved or covered by buildings and structures. The HRA conservatively assumes that the configuration and layout of the planned development could be altered and soil outside buildings could be uncovered and left exposed in the future. Therefore, in the event the site configuration is altered, a future resident or worker could potentially be exposed to COPCs through incidental ingestion of soil, dermal contact with soil, and inhalation of particulates or VOCs in ambient air if impacted soil were left uncovered. Potential exposures to VOCs migrating into indoor air is typically evaluated using soil vapor data because soil vapor data represent a direct measurement of the gas-phase constituents that may migrate from soil or shallow groundwater.

Some chemicals in soil can potentially leach from soil and migrate to groundwater. VOCs and metals can move in groundwater, depending on conditions and their physical chemical properties. For this HRA, it was assumed that chemicals detected in groundwater could potentially at some time migrate off-Site and discharge into surface water of the Bay, more than 0.5 miles to the east, where marine organisms (i.e., water column and benthic organisms) could be exposed. This assumption is contrary to known conditions; however, the assumption is made as a conservative measure[6]. Based on this assumption, the HRA addresses COPCs in groundwater and the potential impacts to marine aquatic organisms in the Bay.

Groundwater at the Site is not used for domestic or industrial purposes. In 2019, the Water Board issued a determination acknowledging that groundwater in the Fill, to a depth of approximately 15 feet below ground surface, meets exceptions (a) and (c) of State Water Resources Control Board Resolution No. 88-63 (i.e., total dissolved solids concentrations and well yield, respectively) and is not likely to be used as a source of drinking water [RWQCB, 2019a]. Groundwater in the Colma and Merced Formations beneath the Site is presently considered a potential municipal supply under the San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) [RWQCB, 2017]. The City of Brisbane provides the Site and surrounding residences and businesses with public water. Water service originates from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains. Therefore, potable use of groundwater underlying the Site is considered an incomplete exposure pathway as there are no nearby known or planned drinking water wells. Potential exposures by a future resident, a future worker, or a future construction worker to COPCs in shallow groundwater from direct exposures (i.e., dermal contact) in a small excavation is

[6] Potential exposures by aquatic receptors from non-dissolved insoluble chemicals adsorbed to soil are incomplete under current conditions because an environmental transport mechanism does not exist that would transport insoluble COPCs from soil to sediments along the shoreline of the Bay.

extremely unlikely.[7] As indicated above, potential inhalation exposures to volatile COPCs in groundwater migrating into a trench by a future construction worker are evaluated using soil vapor data.

Given the characteristics of the COPCs, the potential complete exposure pathways are summarized below for a future resident, worker, construction worker, and off-site worker and resident:

- Incidental ingestion of soil, dermal contact with soil, and inhalation of particulates or volatiles in ambient air.
- Inhalation of chemicals in soil vapor or groundwater migrating through the soil column and an at-grade building foundation into indoor air.
- Inhalation of volatile COPCs migrating from soil vapor into ambient air within a trench.[8]
- Inhalation of COPCs in windborne dust generated from soil.

4.3 Exposure Quantification

The following section describes how exposure was quantified for the above exposure scenarios. The assumptions and approaches used are consistent with a Reasonable Maximum Exposure (RME) approach, in which the RME scenario is defined as the "highest exposure that is reasonably expected to occur at the site."

Exposure point concentrations (EPCs) are defined as the representative chemical concentrations a receptor may contact at an exposure area over the exposure period. The concept is that individuals contact the impacted medium (i.e., soil) on a periodic and random basis. Because of the repeated and random nature of such contact, human exposure does not occur at a fixed point, but rather at a variety of points with equal likelihood that any given point within the exposure area will be the contact location on any given day. Thus, the EPCs should be representative of the conservatively established average concentration within the exposure area to which a person would be exposed over the duration of the exposure. This assumption is reasonable for a high-density mixed-use scenario, where future site users do not have exclusive use of defined limited areas (e.g., backyards).

EPCs generally are estimated using measured concentrations in environmental media or estimated based on fate and transport models. Depending on a number of factors, including the distribution of the data, the proportion of the samples reported as non-detect (ND), and the total number of samples, several statistical parameters may be used to estimate EPCs. EPA's supplemental risk assessment guidance (EPA, 2002a) recommends that EPC estimates should be based on the 95 percent upper confidence limit (95% UCL) of the mean to estimate an RME scenario. In the event

[7] Direct exposures to shallow groundwater were only evaluated for a future construction worker in the health risk assessment for the adjacent Schlage OU (Mactec 2009a); however, potential exposures to groundwater at the Site are unlikely because future intrusive activities to the water table likely would require dewatering of trenches or excavations, thereby limiting dermal contact with groundwater by future receptors.

[8] Inhalation of volatile COPCs migrating from soil vapor into outdoor ambient air is considered less significant than in a trench as VOCs are subject to dispersion in outdoor air.

that the calculated 95% UCLs exceed the maximum detected value, the maximum value can be used as the EPC.

As discussed in the sections below, because detailed site-specific future plans are not available at this time, the estimated 95% UCLs for COPCs in soil and groundwater were used as representative EPCs. In soil vapor, the 95% UCLs for chlorinated COPCs and the maximum detected concentrations for other volatile COPCs were used as representative EPCs.

4.3.1 Soil

EPCs for COPCs in soil were estimated using data for samples collected from the ground surface to 2 feet bgs. The soil depth interval of 0 to 2 feet bgs represents "potential" surface soil for a future resident and worker. Residential exposure to deeper soil in the unsaturated zone (i.e., 0 to 10 feet bgs) was not evaluated because high-density residential housing will likely be planned and residents are not expected to participate in activities that would expose them to soil deeper than 2 feet bgs, such as planting trees or installing a swimming pool. The same rationale also applies to a future worker. Conversely, a future construction worker may be exposed to COPCs in soil from 0 to 10 feet bgs. Because VOCs in soil were generally not detected at depths between 0 and 2 feet bgs, the EPCs for VOCs in soil were conservatively estimated using soil data collected from 0 to 10 feet bgs to account for the inclusion of more VOCs in the estimation of health risks. To assess the potential for COPCs in soil to leach to groundwater, analytical data from 0 to 10 feet bgs were used.

Seven of the PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) are classified as carcinogens. The Office of Environmental Health Hazard Assessment (OEHHA) of Cal-EPA has developed potency equivalency factors (PEFs) based on their potential carcinogenicity relative to benzo(a)pyrene. Concentrations of the carcinogenic, "benzo(a)pyrene-like" PAHs in soil were converted to benzo(a)pyrene equivalents (BaP TEQ) by multiplying the concentration of each PAH by the appropriate PEF developed by OEHHA and then summing the resulting toxicity-weighted concentrations.

A summary of the EPCs for soil based on either the 95% UCL or the maximum detected concentrations is presented in **Table 4**, along with the basis for choosing the EPC; the supporting output files are included in **Appendix B**. ProUCL will only calculate upper concentration limits for datasets with at least three detected values and more than five samples. For chemicals with less than four detects or less than five samples, the maximum sample concentration was used as the EPC.

4.3.2 Soil Vapor

Shallow soil vapor data collected from 5 feet bgs at the site were evaluated and used to develop representative concentrations for subsurface volatilization to indoor air. For a future resident and worker, the estimated 95% UCLs across the northern portion of the Site above the groundwater plume from the Schlage OU were used to evaluate potential exposures to chlorinated VOCs to assess if mitigation measures are warranted to address the potential for vapor intrusion. For other volatile COPCs in soil vapor, the maximum detected concentrations were conservatively used. A summary of the EPCs in soil vapor is presented in **Tables 5a and 5b.**

4.3.3 Indoor Air

EPCs for indoor air were calculated using soil vapor data and DTSC default attenuation factors for a future residential and commercial/industrial building (DTSC, 2011a). For a future worker, predicted EPCs in indoor air were calculated using soil vapor data and the DTSC's default attenuation factor of 0.0005 for a commercial building. For a future resident, predicted EPCs in indoor air were calculated using soil vapor data and the DTSC's default attenuation factor of 0.001. In addition, the generic default attenuation factor of 0.03 for sub-slab soil gas and "near-source" exterior soil gas also was used to estimate EPCs (DTSC, 2019).[9] A summary of the EPCs in indoor air is presented in **Tables 5a and 5b.**

The basis for calculating EPCs based on alternate default attenuation factors of 0.001 for residential use and 0.0005 for commercial use are based on the planned development consisting of new buildings. Additional lines of evidence for alternate default attenuation factors may include, but are not limited, the following:

- The source of CVOCs in soil vapor at the Site is groundwater that has been contaminated by historical activities in the Schlage OU. Groundwater in the Schlage OU has been actively remediated since a groundwater extraction system started operating in 1995 and continued through enhanced reductive dechlorination injections that began in 2010. DTSC certified the Schlage OU remedial action as complete in 2014 and the groundwater cleanup is continuing through processes known as natural attenuation. Periodic groundwater monitoring data show that CVOC concentrations in Fill groundwater are gradually decreasing over time [e.g., Appendix C of Geosyntec, 2018a] and are reasonably expected to continue to decrease in the future. As CVOC concentrations in groundwater decrease, vapor intrusion potential becomes less of a threat to residential and commercial buildings. The effectiveness of the groundwater remedy will continue to be monitored through the Five Year Review process and contingency measures will be implemented as necessary until the groundwater remedial goals have been achieved.

- Newly constructed buildings will have robust floors. The slabs will be high-density concrete 8 to 10 inches in thickness, and utility penetrations will be sealed. The concrete will be cured in a manner so as to eliminate joints and minimize the potential for vapor intrusion. In addition, buildings will be equipped with modern heating, ventilation, and air conditioning systems that will be programmed to maintain a positive interior pressure to prevent the intrusion of soil vapor into the pressurized building air space.

[9] For preliminary screening evaluations, DTSC recommended default attenuation factors of 0.0005 and 0.001 can be used as documented in the *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* [Vapor Intrusion Guidance], October 2011. DTSC also recommends that screening assessments evaluate the default attenuation factors of 0.03 for sub-slab soil gas and "near-source" exterior soil gas (EPA, 2015). The EPA generic attenuation factor (AF) of 0.03 is calculated from paired sub-slab/indoor air data from predominantly single-family residences with basements from states outside of California with relatively cold climates where the stack effect due to building heating would be expected to enhance the potential for vapor intrusion (EPA's *Vapor Intrusion Database: Evaluation and Characterization of Attenuation Factors for Chlorinated Volatile Organic Compounds and Residential Building*, March 2012).

- In most areas of the Site, building slabs will be underlain with engineered fill that is five feet or more in thickness. The fill will be placed to adjust the existing ground surface elevation to the future base grade of the development. This engineered fill will act as a buffer zone that will create greater distance between the CVOC source (i.e., groundwater) and receptors in the overlying buildings.
- Some buildings will incorporate an "intrinsically safe" building design whereby the ground floor will consist of ventilated parking garages or commercial retail and amenity spaces. The ventilated garage space acts as a buffer to more rapidly attenuate vapors that could potentially migrate into garage air space before entering commercial and residential space. The ground floor commercial space provides a buffer for overlying residential space and provides greater attenuation of CVOCs migrating through the commercial space. Such intrinsically safe design provides for a more effective attenuation of infiltrating vapors.

Assumptions relating to building-specific attenuation factors will be verified empirically prior to building occupancy. Details will be provided in the Remedial Design documents.

4.3.4 Fugitive Dust Emissions from Soil

Chemicals detected in soil at the Site may become airborne due to fugitive dust emissions. Non-volatile compounds (e.g., SVOCs and metals) can adhere to soil particles then become airborne due to wind erosion, which could generate dust containing COPCs. Exposure to these chemicals may then occur via inhalation of airborne fugitive dust at off-Site locations. Inhalation exposure to non-volatile compounds is typically minor in fugitive dust when compared to direct ingestion exposure (EPA, 2002b). Nevertheless, a relationship can be estimated between the chemical concentration in soil and the corresponding concentration in air (secondary media) attributable to fugitive dust emissions from soil.

Potential exposure to airborne dust is estimated using a particulate emission factor (PEF) that relates the concentration of a soil constituent to the concentration of dust particles in air. The PEF represents an annual average emission rate based on wind erosion. The PEF equation can be found in Section 4.2.3 (Equation 4-5: Derivation of the PEF) of the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (EPA, 2002b). The emissions part of the PEF equation is based on the "unlimited reservoir" model developed to estimate PM_{10} emissions (particulate matter less than 10 micrometers in diameter [PM_{10}]) due to wind erosion (Cowherd et al., 1985).

The PEF was derived using the following equation (EPA, 2002b):

$$PEF = \frac{Q/C \times 3600}{\left[\left(0.036 \times (1 - V) \times \left({U_m}/{U_t}\right)^3 \times F_x\right)\right]}$$

Where:

PEF = particulate emission factor cubic meters per kilogram (m^3/kg);

Q/C = inverse of mean concentration at center of a 35-acre source (g/m^2-s per kg/m^3);

V = fraction of vegetative cover (0.5, unitless);

U_m = mean annual wind speed (4.70 m/s, average Site-specific);

U_t = equivalent threshold value of wind speed at 7 meters (11.32 m/s, EPA 2002 default)

F_x = function dependent on U_m/U_t derived using Cowherd et al. 1985 (0.19 unitless; and

0.036 = respirable fraction (g/m^2-hr).

The dispersion part of the PEF equation includes the dispersion coefficient (Q/C) in units of grams per square meter-second per kilogram per cubic meter (g/m^2-s per kg/m^3). The Q/C term was generated using the Industrial Source Complex model and varies depending on the source area, city, and climatic zone. This term accounts for the dispersion of particulate matter, once emitted, and was estimated using the following equation (EPA, 2002):

$$Q/C = A \times \exp[(\mathrm{Ln}A - B)^2 \div C]$$

Where:

A_{SITE} = aerial extent of soil impact (35 acres);

A = constant 13.1994 (EPA, 2002b);

B = constant 23.6414 (EPA, 2002b); and

C = constant 283.5307 (EPA, 2002b).

The coefficients A, B, and C are for the San Francisco area and are published in the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (EPA, 2002). A Q/C value of 54.77 g/m^2-s per kg/m^3 was estimated as the inverse of the mean concentration at the center of a 35-acre source in San Francisco, California (EPA, 2002). The PEF was therefore estimated at $7.9E10^8$ m^3/kg for the off-Site worker and resident potentially exposed to fugitive dusts in air transported via wind erosion and dispersion from on-Site soil.

The assessment to off-Site receptors is overly conservative in that the modeling assumes the receptor is located adjacent to the Site. In reality, the off-Site resident and worker are located some distance from the Site boundary thereby resulting in lower estimates of exposure.

Using COPC soil concentrations (Cs) and the estimated PEF, outdoor air concentrations (Ca) were estimated using the following equation:

$$C_a = \left(\frac{C_s}{PEF}\right)$$

Where:

Ca = concentration of COPC in ambient air (mg/m^3);
Cs = concentration of COPC in soil (mg/kg); and
PEF = particulate emission factor (m^3/kg).

4.3.5 Action Level for Airborne PM10 and COCs

Airborne particles can be classified by their particle diameter and health effects. Large particles typically settle out of the air rapidly and pose a limited health risk, but small particles may remain in the air for longer time periods and can penetrate deeply into the human respiratory system where they can cause harmful health effects. Particles 10 microns or smaller in diameter (PM_{10}) and particles 2.5 microns or smaller in diameter ($PM_{2.5}$) (i.e., respirable particles) pose the greatest health risk because they can penetrate deeply into the human respiratory system.

Appendix C presents Action Levels of respirable particulate matter (PM_{10}) and chemical-specific adhered dusts that could be transported from soil to the perimeter of the Site. The "Action Level" is intended to reduce the possibility of adverse health impacts to nearby off-site receptors and was developed using risk-based procedures that are consistent with EPA guidelines to protect human health for intermediate exposures [EPA, 1989]. The lower of either the proposed action level for PM_{10} or the chemical-specific action level based on concentrations reported in soil and assumptions regarding exposure is selected as the project-specific action level that would be used to assess whether dust mitigation measures are warranted. The results indicate that the Action Level for airborne PM10 dust that may be generated during construction activities (i.e., 0.11 mg/m^3 on an 8-hour time-weighted average basis) would be protective of off-site populations. Dust generated from on-site operations will be mitigated following Bay Area Air Quality Management District guidance.

4.3.6 Ambient Air in Trench

The concentrations of VOCs in trench air were estimated using a modified version of the Virginia Department of Environmental Quality (VDEQ) model (VDEQ, 2019). This transport process is characterized by a "volatilization factor" (VF), which is defined as the volatile chemical concentration in outdoor air in a trench divided by the volatile chemical concentration in soil vapor. Thus, the concentrations of VOCs may be expressed as a function of the chemical concentration in soil vapor and the VF. Details of the assessment and chemical-specific VFs are presented in **Appendix D**.

4.3.7 Groundwater

EPCs for groundwater were based on either the 95% UCL or the maximum detected concentrations and are presented in **Table 6.**

In summary, points of potential human contact with Site-related COPCs are soil, ambient air, and indoor air. As previously described, chemicals present in groundwater could potentially impact the aquatic environment if the chemicals migrate from the Site into the San Francisco Bay.

Based on the characteristics of the COPCs, the receptor and potential complete exposure pathways are summarized below:

Future Worker is assumed to work 8 hours per day, 5 days per week, 250 days per year for 25 years. Their jobs are assumed to require time spent indoors and outdoors, and access to soil is assumed to be possible. Therefore, potential exposures to chemicals in soil are assessed. In addition, soil vapor results are used to assess the potential risk of vapor intrusion into indoor air.

Future Resident is assumed to live on-Site for 350 days per year for 26 years. Residential exposure consists of 6 years as a child and 20 years as an adult. Potential exposures to chemicals in soil and in soil vapor migrating from the subsurface into indoor air of future buildings are assessed.

Future Construction Worker is assumed to work 8 hours per day, 5 days per week, 250 days per year over a 1-year period. The 1-year period is a default value provided in Cal-EPA DTSC HHRA Note 1 (DTSC, 2014), and is generally consistent with estimates of the time period that construction will take place. Further, a future construction worker is assumed to work in a trench for 1 hour per day (exposure time) for a total of 20 days (exposure frequency) over a 1-year period (exposure duration).

Exposure parameters for a future worker and resident are the same for an off-Site worker and resident.

As stated in Section 2.2, in the Fill Water-Bearing Zone, the lateral hydraulic gradient is generally nearly flat with a historical magnitude of approximately 0.0005 ft/ft. Horizontal groundwater flow in this zone appears to be toward the east near the western boundary of the Site and is flat or slightly toward the west near the eastern boundary of the Site. Groundwater gradient appears to be influenced by higher topography and groundwater elevations to the north, south, and west. The Fill Water-Bearing Zone is likely recharged by surface water infiltration and discharge is likely through evapotranspiration. Due to the presence of topographic and hydraulic highs surrounding the Site, there is no hydraulic communication between the Site and the Bay. However, as part of the conservative nature for the HRA, it was assumed that chemicals detected in groundwater could potentially at some time migrate off-Site and discharge into surface water of San Francisco Bay, where marine organisms (i.e., water column and benthic organisms) could be exposed. Therefore, the HRA addresses COPCs in groundwater and the potential impacts to marine aquatic organisms in San Francisco Bay.

5. TOXICITY ASSESSMENT

The toxicity assessment evaluates the toxicity data available for the COPCs. There are two major classifications of toxicants that are evaluated: noncancer threshold toxicants and cancer-causing toxicants. Noncancer toxicity factors (reference dose [RfD] and reference concentration [RfC]) and cancer toxicity factors (slope factors [SF] and Inhalation Unit Risk factors [IUR]) are used to calculate screening levels. The current toxicity values (**Table 7**) for the COPCs are available from the OEHHA Toxicity Criteria Database (OEHHA, 2019) and the EPA Integrated Risk Information System (IRIS) (EPA, 2019b), and are used to derive screening levels presented in the following sections.

In cases where the toxicity criteria for noncancer hazards are available from either OEHHA or EPA, the more conservative criterion was selected. For example, toxicity criteria from OEHHA were used for PCE. This approach is consistent with the approach advocated by the DTSC, particularly in its version of the DTSC-screening levels, in which the noncancer RfCs and carcinogenic IURs are based on the more conservative value of the two recommended by OEHHA or EPA.

TPH constituents detected at the Site consist of petroleum hydrocarbons in the TPHg and TPHd ranges. In general, petroleum hydrocarbons are comprised of four major groups: alkanes, alkenes, cycloalkanes, and aromatics. Except for several specifically identified aromatic compounds such as benzene and certain PAHs, the hydrocarbons typically found in petroleum products are considered noncarcinogenic. If present at all, the carcinogenic hydrocarbons typically comprise a very small fraction of the mass of most petroleum releases. From a human health-risk standpoint, the main chemicals of potential concern in TPH mixtures are the aromatics. These aromatics, such as benzene, toluene, ethylbenzene, and xylene (BTEX), have been individually characterized and included in this HRA. However, these aromatic compounds represent a very small fraction of the hundreds of noncarcinogenic hydrocarbon constituents present in TPHg and TPHd ranges.

To address this issue, the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG, 1997-1999) developed an approach to address noncancer hazards posed by petroleum products. The TPHCWG is comprised of industry, government, and academic scientists, working to develop a broad set of guidelines to be used by engineering and public health professionals in decisions on petroleum contaminated media. The approach is based on the segregation of petroleum mixtures into categories of hydrocarbons with similar boiling ranges. The basis for the TPHCWG methodology is the examination of a mixture as the product of several smaller subsets, which are defined by specific carbon ranges and are referred to as fractions. Within each fraction, toxicity criteria are conservatively selected to be representative of the mixture of compounds comprising that fraction. Separate RfDs were selected for the aliphatics (i.e., alkanes, alkenes, alkynes, and cycloalkanes) and the aromatics (i.e., polynuclear aromatics, diaromatics, and monoaromatics). This is based upon the TPHCWG assumption that within a given carbon range and structural class (i.e., aliphatic or aromatic), individual chemical components have similar toxic effects. The more conservative RfDs recommended in the EPA Regional Screening Levels (EPA, 2019a) for TPHg (aromatic low) and TPHd (aliphatic medium) are presented in **Table 7**.

The traditional RfD approach to the evaluation of chemicals is not applied to inorganic lead because lead is typically evaluated using blood lead concentrations, rather than external dose (DTSC, 2011b).

Blood lead concentration is an integrated measure of internal dose, reflecting total exposure from Site-related and background sources. The EPA has determined that lead exposure can result in neurotoxic and developmental effects at very low concentrations. The primary receptors of concern are children, whose nervous systems are undergoing development and who also exhibit behavioral tendencies that increase their likelihood of exposure. These effects, which may occur at exposures so low that they may be considered to have no threshold, have been correlated to blood-lead concentrations. Because there appears to be no clear threshold for neurotoxic effects of lead in children, the EPA has not developed noncarcinogenic "safe" exposure levels (e.g., RfDs) for lead. Instead, a bio-uptake model, LeadSpread 8 (DTSC, 2011b) is used by DTSC that relates measured lead concentrations in the environmental media with an estimated blood-lead level. For this HRA, OEHHA recommended screening levels of 320 and 80 mg/kg for a worker and a resident, respectively are used (OEHHA, 2009). The RWQCB recommended Environmental Screening Level (ESL; RWQCB, 2019b) of 160 mg/kg for lead is used for a future construction worker.

6. RISK CHARACTERIZATION

Regulatory agencies have developed screening levels for chemicals in environmental media to provide a basis for evaluating environmental conditions at a site. The screening levels are based on conservative assumptions regarding human exposures to chemicals in various media. In general, screening levels combine current toxicity values with standard exposure factors to estimate concentrations in environmental media (e.g., soil) that are protective. If a chemical is detected below its screening criteria, and potential exposure at the site of interest is not substantially different from the exposure assumptions used in deriving the screening criteria, then it is reasonable to conclude that the chemical poses a negligible risk to human health. Conversely, the presence of chemicals at concentrations that exceed the corresponding conservative screening criteria does not necessarily indicate that adverse health effects will occur, but simply indicates that further evaluation or additional investigation of the potential risks may be warranted. Because of the conservative assumptions regarding human exposure to chemicals in various media, exceeding a screening level would not necessarily indicate an adverse health effect.

The basis for the screening criteria selected to estimate the risks and hazards associated with COPCs in soil and soil vapor data are described below and are presented in **Tables 8** through **14** with appropriate references.

6.1 Soil Screening Criteria

The DTSC-modified screening levels (SLs; DTSC, 2019) for a commercial/industrial worker and resident were used to evaluate soil data. For COPCs that do not have a published SL, EPA Regional Screening Levels (RSLs; EPA, 2019a) for industrial and residential land use were used. The RWQCB ESLs were used for a future construction worker.

The SLs, RSLs, and ESLs represent the concentration of chemicals in soil associated with a target cancer risk level of 1×10^{-6} or a target non-cancer hazard index (HI) of 1.0. They are based on standard estimates of toxicity and exposure scenarios and consider potential exposure to soil via ingestion, dermal contact, and inhalation of particulates or volatiles in outdoor ambient air.

Because arsenic is naturally-occurring and typically is present at concentrations greater than risk-based screening levels, it is appropriate to also evaluate the significance of arsenic by estimating the incremental risk and hazard from potential exposures to arsenic over naturally-occurring background. The incremental excess lifetime cancer risk and noncancer hazard is the difference between exposure to arsenic in soil and arsenic as background. For this Site, a background concentration of 19 mg/kg has been established for arsenic (LBNL, 2009). Similarly, there are many natural sources of PAHs in the environment as PAHs are found in virtually all surface soils in both urban and rural areas. As such, the incremental risk and hazard to PAHs, particularly carcinogenic PAHs, also are presented. For this Site, a natural-occurring background concentration of 0.9 mg/kg is used (DTSC, 2009).

For TPH, the RSLs for aromatic low and aliphatic medium were used for TPHg and TPHd, respectively. For lead, DTSC screening levels of 320 and 80 mg/kg were used for a future worker and resident, respectively (OEHHA, 2009). For the future worker, the screening level is equivalent to a blood lead level of 1 microgram per deciliter (µg/dL) in the fetus of an adult worker exposed

to lead in soil. Similarly, the residential screening value for inorganic lead corresponds to the soil concentration that results in a blood lead level of 1 µg/dL in children at the 90th percentile. For a construction worker, the RWQCB ESL of 160 mg/kg for lead is used.

Because shallow groundwater at the Site is not considered a potential drinking water source, soil screening levels for the protection of groundwater were derived using surface water screening levels for a marine habitat with an attenuation factor of 100, which has been used at other bayfront sites (e.g., Mission Bay, San Francisco International Airport, and East Bay Regional Shoreline Park).

6.2 Air Screening Criteria

The DTSC-modified SLs (DTSC, 2019) for a future worker and resident were used to evaluate indoor air based on the predicted concentrations from the product of soil vapor data and the attenuation factor. For COPCs that do not have a published SL in air, EPA RSLs (2019a) for residential and industrial land use were used. The same criteria were also used to evaluate ambient air exposures from fugitive dusts for the off-Site worker and resident.

6.3 Groundwater Screening Criteria

Groundwater vapor intrusion ESLs published by the RWQCB were used to identify risk-driving VOCs in groundwater.

As previously discussed, potable use of groundwater underlying the Site is considered an incomplete exposure pathway as there are no nearby known or planned drinking water wells. As such, groundwater concentrations were compared to surface water screening levels for a marine habitat, primarily environmental screening levels (ESLs) published by the RWQCB (Table GW-2; RWQCB, 2019b) with an attenuation factor of 100 that has been used at other bayfront sites (e.g., Mission Bay, San Francisco International Airport, East Bay Shoreline Park). In this analysis, applicable aquatic screening criteria are being compared directly to groundwater chemical concentrations from locations well removed from a point of potential receptor exposure and without accounting for the attenuation that will likely occur as groundwater is discharged into the San Francisco Bay. The detected concentrations of constituents in groundwater prior to entering the San Francisco Bay likely would be reduced 100-fold or greater due to tidal influence given that the nearest point of the property is approximately 0.5 miles from the shoreline.

The ESLs incorporate screening values from numerous sources, including the Region 2 Basin Plan (RWQCB, 2017); the California Toxics Rule (CTR) as promulgated in 40 Code of Federal Regulations (CFR) Part 131: Water Quality Standards, Establishment of Numerical Criteria for Priority Toxic Pollutants for the State of California (EPA, 1992b); and the California EPA technical document, A Compilation of Water Quality Goals (Central Valley Regional Water Quality Control Board, 2017). Other sources referenced include EPA's Ecotox Thresholds (EPA, 1996) and EPA's National Recommended Water Quality Criteria (EPA, 2019c). Certain ESLs for surface water in a marine habitat include values protective of fresh water, including drinking water. Criteria based on aquatic organism exposure in a marine environment were the primary values used, when available. Chronic exposures were used for comparison purposes, when available; otherwise, acute exposure values were used.

6.4 Risk Characterization

EPA guidance on protection of human health was used to aid in the interpretation of the results. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP; 40 Code of Federal Regulations 300) indicates that lifetime incremental cancer risks posed by a site should not exceed a range of one in one million (1×10^{-6}) to one hundred in one million (1×10^{-4}) and non-carcinogenic chemicals should not be present at levels expected to cause adverse health effects (i.e., a hazard quotient [HQ] greater than unity, 1).

The risk range between 1×10^{-6} and 1×10^{-4} is commonly called the "discretionary risk range." In contrast, the background risk of Americans in the general population developing cancer is approximately one chance in two (0.5 or 5.0×10^{-1}) for males and one chance in three (0.33 or 3.3×10^{-1}) for females (American Cancer Society, 2017). Estimates of lifetime excess cancer risk of less than one in one-million (1×10^{-6}) are considered *de minimis,* a risk level that is so low as to not warrant any further investigation or analysis (EPA, 1990). Within the state of California, Cal-EPA and DTSC generally target the same range for acceptable risks.

Cancer risks in the 1×10^{-6} to 1×10^{-4} range or higher do not necessarily mean that adverse health effects will be observed. Current methodology for estimating the carcinogenic potential of chemicals is believed to be conservative.

For non-cancer health effects, hazard quotients were calculated by dividing the EPCs by the corresponding non-cancer-based screening levels. For soil vapor, indoor air concentrations were estimated based on the product of the maximum concentrations and the agency default recommended attenuation factor; screening levels in air were then compared to the estimated air concentrations. In cases where individual chemicals potentially act on the same organs or result in the same health endpoint (e.g., respiratory irritants), potential additive effects may be addressed by calculating an HI based on the sum of the hazard quotients. This approach is generally believed to overestimate the potential for noncarcinogenic health effects due to simultaneous exposure to multiple chemicals because it does not account for different toxic endpoints (EPA, 1989; National Research Council, 1988; Risk Commission, 1997; Seed et al., 1995). However, it can be used as a screening tool to rapidly identify those exposure scenarios for which exposure to multiple chemicals does not pose a noncarcinogenic health risk. As indicated above, an HI of less than or equal to 1 indicates acceptable levels of exposure for chemicals having an additive effect.

Similarly, the theoretical excess lifetime cancer risks are calculated from the EPCs of each COPC in soil and soil vapor and the corresponding screening level (soil vapor concentrations were converted to indoor air concentrations, and screening levels in air were compared to the estimated indoor air concentrations). For carcinogens, the theoretical excess lifetime cancer risk was calculated by dividing the measured concentrations in each media by the screening level and then multiplying by the target risk level used in the development of the screening levels (i.e., one-in-one million or 1×10^{-6}). As with HIs, the estimated excess cancer risks for each chemical and exposure route are summed regardless of toxic endpoint to estimate the total excess cancer risk for the exposed individual.

For this HRA, an HI of 1 and excess cancer risk of 1×10^{-5} are used for a future worker. For a future resident, an HI of 1 and excess cancer risk of 1×10^{-6} are used. These target thresholds are consistent with the federal and state criteria described above.

6.5 Risk Characterization Results

Cumulative HIs and excess lifetime cancer risks from potential exposures to COPCs in soil, without any site remediation or mitigation, for a future worker and resident are presented in **Tables 8** and **9**, respectively. **Table 10** presents the cumulative HI and excess lifetime cancer risk from potential exposures to COPCs in soil for a future construction worker. **Tables 11** and **12** present the cumulative HIs and excess lifetime cancer risk for an off-Site worker and resident from potential inhalation exposures to COPCs in air potentially migrating from wind erosion and dispersion. **Tables 13a** and **14a** present the cumulative HIs and excess lifetime cancer risks for a future worker and resident from soil vapor and default attenuation factors, respectively. **Tables 13b** and **14b** present the cumulative HIs and excess lifetime cancer risks for a future worker and resident from soil vapor and the generic attenuation factor of 0.03, respectively. **Table 15** presents the risk-driving VOCs in groundwater based on the potential for vapor intrusion. **Table 16** present the cumulative HI and excess lifetime cancer risk from potential exposures to COPCs in soil vapor migrating into a trench for a future construction worker.

6.5.1 Future Worker

For a future worker, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 27 and 3×10^{-4}, respectively. Arsenic, TPHd, and polychlorinated biphenyl (PCB)-1260 are the primary risk-driving COPCs. The HQs and cancer risks for all other COPCs are less than 1 and 1×10^{-6}, respectively.

For arsenic, the estimated noncancer hazard quotient and excess lifetime cancer risk are 24 and 3×10^{-4}, respectively. The estimated background noncancer hazard quotient and excess lifetime cancer risk to arsenic are 4.5 and 5×10^{-5}, respectively. Based on these estimates, the incremental noncancer hazard and excess lifetime cancer risk is the difference between baseline and background. The incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 20 and 2×10^{-4}, respectively. The results of the assessment indicate that the incremental increase in risk over background is 5.3 times higher than baseline. For carcinogenic PAHs, the incremental noncancer hazard and excess lifetime cancer risk are 0.003 and 3×10^{-7}, respectively. The incremental increase in risk for carcinogenic PAHs over background is 1.8 times higher than background. Lead also is a risk-driving COPC in soil as the estimated 95% UCL of 685.6 mg/kg exceeds the worker screening level of 320 mg/kg.

In soil vapor, the cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 3 and 2×10^{-5}, respectively, using an attenuation factor of 0.0005. TCE is the primary risk-driving COPC. The HQs and the estimated cancer risks for other volatile COPCs are less than 1 and 1×10^{-6}, respectively.

Based on an attenuation factor of 0.03, without any site remediation or mitigation, the cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in

soil vapor to indoor air are 180 and 1×10^{-3}, respectively. TCE and vinyl chloride are the primary risk-driving COPCs.

Volatile COPCs in groundwater were evaluated by comparing exposure point concentrations to groundwater screening levels protective of vapor intrusion. The estimated 95% UCLs for 1,3-Dichloropropene, TCE, and VC are higher than their respective screening levels. 1,3-Dichloropropene may not be a Site-related COPC as the chemical was detected in only 2 samples at a frequency of detection of 4%.

6.5.2 Future Resident

For a future resident, without any site remediation or mitigation, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 270 and 9×10^{-4}, respectively. Arsenic, mercury, benzo(a)pyrene, benzo(a)fluoranthene, dibenzo(a,h)anthracene, collectively referred to as carcinogenic PAHs, naphthalene, TPHd, and PCB-1260 are the primary risk-driving COPCs. The HQs and cancer risks for all other COPCs are less than 1 and 1×10^{-6}, respectively.

For arsenic, the estimated noncancer hazard quotient and excess lifetime cancer risk are 250 and 9×10^{-4}, respectively. The estimated background noncancer hazard quotient and excess lifetime cancer risk to arsenic are 48 and 2×10^{-4}, respectively. The incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 207 and 8×10^{-4}, respectively. For carcinogenic PAHs, the incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 0.04 and 6×10^{-6}, respectively. Lead also is a risk-driving COPC in soil as the estimated 95% UCL of 685.6 mg/kg exceeds the screening level of 80 mg/kg.

In soil vapor, without any site remediation or mitigation, the cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 25 and 4×10^{-4}, respectively, using an attenuation factor of 0.001. PCE, TCE, cDCE, and VC are the primary risk-driving COPCs. The HQs and the estimated cancer risks for other volatile COPCs are less than 1 and 1×10^{-6}, respectively.

Based on an attenuation factor of 0.03, without any site remediation or mitigation, the cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 760 and 1×10^{-2}, respectively. TCE and vinyl chloride are the primary risk-driving COPCs.

In groundwater, volatile VOCs identified as risk-driving COPCs based on the potential for vapor intrusion are 1,3-Dichloropropene, cDCE, TCE, and VC. As discussed above, 1,3-Dichlorpropene may not be site-related.

6.5.3 Future Construction Worker

For a future construction worker, without any site remediation or mitigation, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 71 and 3×10^{-5}, respectively. However, without arsenic, where the 95% UCL is above naturally-occurring background, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 2.3 and 7×10^{-7}, respectively. The HQs and cancer risks for all COPCs are less than 1 and 1×10^{-6}, respectively. Except for arsenic and lead, where the estimated 95% UCL of 783.5 mg/kg for lead exceeds the screening level of 160 mg/kg, there are no other risk-driving COPCs in soil.

For volatile COPCs potentially migrating from soil vapor into trench air, without any site remediation or mitigation, the cumulative HI and cumulative excess lifetime cancer risk are 1.1 and 3×10^{-7}, respectively. The HQs and the estimated cancer risks for all volatile COPCs are less than 1 and 1×10^{-6}, respectively.

6.5.4 Off-Site Worker and Resident

For potential exposures to air via fugitive dusts from the Site, the cancer risk and noncancer hazard estimates for an off-Site worker and resident are below (safer than) the noncancer hazard index of 1 and cancer risk level of 1×10^{-6}.

In addition, action levels were estimated for PM_{10} and COPCs in dust to reduce the possibility of adverse health impacts to nearby off-site receptors. As indicated in **Appendix C**, maintaining respirable particulates below the PM_{10} action level (0.11 mg/m^3) will ensure that both PM_{10} emissions and COPC dust particulates from the project will not reasonably cause the 24-hour time weighted average (TWA) for PM_{10} or the risk-based concentrations to be exceeded.

6.5.5 Groundwater Impacts to Aquatic Receptors

In this step, analytical results that were considered representative of COPCs flowing from the Site to off-site areas, including the San Francisco Bay, were evaluated. According to EPA's Office of Water, concentrations of dissolved metals, rather than total metals, are used to set and measure compliance with water quality standards because dissolved metal concentrations more closely approximate the bioavailable fraction of metals in the water column (EPA, 1996).

Because grab groundwater sampling may result in turbid samples (i.e., turbidity refers to the presence of suspended particles in the sample), sample turbidity can cause bias as a result of the adsorption of chemicals onto, or the release of chemicals from, the surface of particles in the sample (Yeskis and Zavala, 2002). Sample collection practices that induce artificially high levels of turbidity have been shown to have the greatest negative impacts on sample quality (Puls and Powell, 1992). The goal is to consider groundwater data that are representative of existing conditions that could potentially affect San Francisco Bay, were groundwater able to reach the Bay.

The potential for COPCs in groundwater to pose a risk to aquatic organisms in the San Francisco Bay was evaluated by comparing representative dissolved-phase groundwater data to published environmental screening levels for aquatic receptors to assess the potential adverse impacts on the marine habitat. An exposure pathway is complete if there is a source and transport mechanism, an environmental medium (e.g., sediment) for the released chemical, a point of potential contact with the medium, and an exposure route (e.g., ingestion and dermal contact). All four elements must be present for an exposure pathway to be complete. Potential exposures to aquatic receptors from COPCs adsorbed to soil at depth are incomplete under current conditions because an environmental transport mechanism does not exist that would transport insoluble PAHs from soil at depth to sediments along the shoreline of the San Francisco Bay that is located more than 0.5 miles to the east.

For COPCs in groundwater, the comparison of groundwater concentrations to surface water criteria is provided for screening-level purposes, and actual surface water concentrations would likely be significantly less due to surface water (i.e., San Francisco Bay)–groundwater interactions

in the tidal zone. This method of evaluating chemicals also should be considered very conservative because it does not consider the potential dilution of groundwater from the Site as it enters the San Francisco Bay. In addition, the criteria used in this evaluation assume that the aquatic organisms are living in the water being evaluated. In this analysis, applicable aquatic screening criteria are being compared directly to groundwater chemical concentrations from locations well removed from a point of potential receptor exposure and without accounting for the attenuation that will likely occur as groundwater is discharged into the San Francisco Bay. Therefore, exceedance of these levels in groundwater is not necessarily indicative of a significant risk to aquatic organisms in the San Francisco Bay.

The estimated 95% UCLs for each of the COPCs were compared to their respective marine aquatic ESLs. As shown in **Table 15** the estimated 95% UCLs for arsenic, barium, cobalt, lead, mercury, and silver are above applicable objectives and criteria.

The chronic aquatic criteria used in this screening evaluation are considered conservative. The detected concentrations of constituents in groundwater prior to entering the San Francisco Bay likely would be reduced 100-fold or greater due to tidal influence and dilution/adsorption given that the nearest point of the property is approximately 0.5 miles from the shoreline. Based on an attenuation factor of 100 that has been used at other bayfront sites (e.g., Mission Bay, San Francisco International Airport, East Bay Shoreline Park), the estimated 95% UCLs for all chemicals are below applicable screening criteria.

In summary, concentrations of chemicals detected in groundwater across the entire Site prior to entering the Bay would be reduced 100-fold or greater based on the distance from the Site perimeter to the Bay and the dilution of groundwater as it enters the Bay. Based on an attenuation factor of 100 that has been applied at other bayfront sites, the estimated 95% UCLs for all chemicals are below applicable screening criteria.

6.5.6 Leaching to Groundwater

Table 16 presents a comparison of the EPCs for COPCs in soil to soil screening levels (SSLs) that are protective of groundwater based on surface water concentrations that are protective of aquatic habitats and a lateral attenuation factor of 100 as described above. The results of this analysis indicated that COPCs in soil that exceeded estimated SSLs protective of aquatic receptors are cobalt, copper, lead, mercury, selenium, silver, zinc, and total petroleum hydrocarbons as diesel (TPHd). However, as described above, the estimated 95% UCLs for these COPCs in groundwater (note selenium was not detected in groundwater) do not exceed screening criteria that are protective of aquatic receptors with an attenuation factor of 100. Because the concentrations of dissolved metals and TPHd in groundwater from the data gap investigation were generally low (below drinking water criteria) and below surface water criteria for aquatic receptors with an additional factor of 100, the COPCs in soil are not considered to represent a significant threat to aquatic organisms in the Bay through leaching and lateral migration in groundwater.

7. UNCERTAINTIES

As in any risk assessment, the estimates of risk have many associated uncertainties. The procedures used result in conditional estimates of risk that incorporate assumptions concerning chemical toxicity, human exposure, and unavoidable uncertainties. As a result, the risk estimates presented herein have associated uncertainties reflecting the limitations in Site concentrations, exposure assumptions, and chemical toxicity.

Where necessary, conservative (erring on being over-protective) assumptions were made. For example, default attenuation factors for future buildings were used to estimate indoor air concentrations. In addition, the predicted indoor air concentrations were based on the maximum concentrations in soil vapor. These methods likely result in an overestimation of exposures and subsequent health risks.

The assumed exposure durations represent upper-bound estimates of the total amount of time that an individual may be in one location. For example, the soil vapor screening levels based on vapor intrusion assume the receptor is indoors the entire duration of the exposure period. It also is assumed that the source of contamination is infinite (i.e., not depleting). The actual source of contamination will deplete over time.

Further, it is assumed that under future scenarios, direct contact with exposed soil is potentially complete. However, under a typical commercial or high-density residential land use scenarios, much of the soil will be covered with asphalt pavement or buildings, thereby limiting any exposures.

Uncertainty in the toxicity assessment arises for those chemicals which rely on animal studies as the basis for determining the appropriate toxicity value for effects on humans. Toxicity values typically assume that adverse effects observed in animal toxicity experiments would also be observed in humans. Toxicity values are typically developed using conservative uncertainty factors, which result in an overestimation of risk.

It is assumed that the total risk associated with exposure to multiple COPCs is equal to the sum of the individual risks for each chemical (i.e., the risks are additive). Other possible interactions include synergism, where the total risk is higher than the sum of the individual risks, and antagonism, where the total risk is lower than the sum of the individual risks. Relatively little data are available regarding potential chemical interactions after environmental exposure to chemical mixtures. Some studies have been carried out in rodents given simultaneous doses of multiple chemicals. The results of these studies indicated that no interactive effects were observed for mixtures of chemicals affecting different target organs (i.e., each chemical acted independently), whereas antagonism was observed for mixtures of chemicals affecting the same target organ, but by different mechanisms (Risk Commission, 1997).

Based on existing information regarding groundwater flow, there is no hydraulic communication between the Site and the Bay. However, as part of the conservative nature for the HRA, it was assumed that chemicals detected in groundwater could potentially at some time migrate off-Site and discharge into surface water of San Francisco Bay, where marine organisms (i.e., water column and benthic organisms) could be exposed.

In summary, because this risk evaluation contains multiple sources of uncertainty, simplifying assumptions were made so that potential health risks can be estimated quantitatively. The exact amount of uncertainty cannot be quantified, and the HRA is intended to overestimate rather than underestimate probable risk.

8. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Geosyntec conducted an HRA to evaluate, in the absences of any site remediation or mitigation, potential adverse health effects as a result of potential exposure to chemicals in soil and soil vapor. Potential noncarcinogenic hazard indices and theoretical excess lifetime cancer risks were estimated quantitatively for a future worker and a future resident. The results of the HRA are described below.

8.1 HRA Summary

In absence of any site remediation or mitigation:

- For a future worker, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 27 and 3×10^{-4}, respectively. Arsenic, lead, TPHd, and polychlorinated biphenyl (PCB)-1260 are the primary risk-driving COPCs. The HQs and cancer risks for all other COPCs are less than 1 and 1×10^{-6}, respectively.

  For arsenic, the estimated noncancer hazard quotient and excess lifetime cancer risk are 24 and 3×10^{-4}, respectively. The estimated background noncancer hazard quotient and excess lifetime cancer risk to arsenic are 4.5 and 5×10^{-5}, respectively. Based on these estimates, the incremental noncancer hazard and excess lifetime cancer risk is the difference between baseline and background. The incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 20 and 2×10^{-4}, respectively. The results of the assessment indicate that the incremental increase in risk over background is 5.3 times higher than baseline. For carcinogenic PAHs, the incremental noncancer hazard and excess lifetime cancer risk are 0.003 and 3×10^{-7}, respectively. The incremental increase in risk for carcinogenic PAHs over background is 1.8 times higher than background.

  In soil vapor, the baseline cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 3 and 2×10^{-5}, respectively, using an alternate default attenuation factor of 0.0005. TCE is the primary risk-driving COPC. The HQs and the estimated cancer risks for the other COPCs are less than 1 and 1×10^{-6}, respectively.

  Based on the generic default attenuation factor of 0.03, the cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 180 and 1×10^{-3}, respectively. TCE and vinyl chloride are the primary risk-driving COPCs.

  Volatile COPCs in groundwater were evaluated by comparing exposure point concentrations to groundwater screening levels protective of vapor intrusion. The estimated 95% UCLs for 1,3-Dichloropropene, TCE, and VC are higher than their respective screening levels. 1,3-Dichloropropene may not be a Site-related COPC as the chemical was detected in only 2 samples at a frequency of detection of 4%.

- For a future resident, in the absence of any remediation or mitigation, the baseline cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 270 and 9×10^{-4}, respectively. Arsenic, lead, mercury, benzo(a)pyrene, benzo(a)fluoranthene,

dibenzo(a,h)anthracene, collectively referred to as carcinogenic PAHs, naphthalene, TPHd, and PCB-1260 are the primary risk-driving COPCs.

For arsenic, the estimated noncancer hazard quotient and excess lifetime cancer risk are 250 and 9×10^{-4}, respectively. The estimated background noncancer hazard quotient and excess lifetime cancer risk to arsenic are 48 and 2×10^{-4}, respectively. The incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 207 and 8×10^{-4}, respectively. The incremental increase in risk for arsenic over background is 5.3 times higher than baseline. For carcinogenic PAHs, in the absence of any remediation or mitigation the incremental noncancer hazard and excess lifetime cancer risk to arsenic in soil are 0.04 and 6×10^{-6}, respectively. The incremental increase in risk for carcinogenic PAHs over background is 1.8 times higher than background.

In soil vapor, the baseline cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air in the absence of any remediation or mitigation are 25 and 4×10^{-4}, respectively, using an alternate default attenuation factor of 0.001. PCE, TCE, cDCE, and VC are the primary risk-driving COPCs. The HQs and the estimated cancer risks for the other COPCs are less than 1 and 1×10^{-6}, respectively.

Based on the generic default attenuation factor of 0.03, in the absence of any remediation or mitigation, the cumulative HI and cumulative excess lifetime cancer risk from potential exposures to COPCs migrating in soil vapor to indoor air are 760 and 1×10^{-2}, respectively. TCE and vinyl chloride are the primary risk-driving COPCs.

In groundwater, volatile VOCs identified as risk-driving COPCs based on the potential for vapor intrusion are 1,3-Dichloropropene, cDCE, TCE, and VC. As discussed above, 1,3-Dichlorpropene may not be site-related.

- For a future construction worker, in the absence of any remediation or mitigation the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 71 and 3×10^{-5}, respectively. However, without arsenic, where the 95% UCL is above naturally-occurring background, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in soil are 2.3 and 7×10^{-7}, respectively. The HQs and cancer risks for all COPCs are less than 1 and 1×10^{-6}, respectively. Except for arsenic and lead, there are no other risk-driving COPCs in soil.

  For volatile COPCs potentially migrating from soil vapor into trench air, in the absence of any remediation or mitigation the cumulative HI and cumulative excess lifetime cancer risk are 1.1 and 3×10^{-7}, respectively. The HQs and the estimated cancer risks for all volatile COPCs are less than 1 and 1×10^{-6}, respectively.

- For an off-Site worker and resident, the cumulative HI and cumulative excess lifetime cancer risk from COPCs in air as fugitive dusts from soil are less than 1 and 1×10^{-6}, respectively. In addition, action levels were estimated assuming short-term exposures to airborne particles 10 microns or smaller in diameter (PM10) or COPC adhered dust that may be present in air along the perimeter of the Site. The results of the analysis indicate that the project respirable action of level for PM10 can be used to limit concentrations of non-volatile risk-based COPCs as well as PM10. Maintaining respirable particulates below the PM10 action level will ensure that both

PM10 emissions and risk-based COPC dust particulates will not reasonably result in unacceptable exposures.

- Because shallow groundwater underlying the Site is not a drinking water resource, groundwater concentrations were conservatively compared to surface water screening levels for a marine habitat even though existing information suggest groundwater does not migrate to the Bay. Were groundwater to reach the Bay, which is not anticipate based on existing known conditions, potential exposures to aquatic receptors from COPCs in groundwater are not expected to pose a significant risk to aquatic organisms because the shoreline of the Bay is located approximately 0.5 miles east of the Site and attenuation (e.g., adsorption) and dilution are expected to occur. Surface water screening levels for a marine habitat used in the analysis do not consider dilution and/or attenuation of groundwater upon discharge to surface water. The detected concentrations of dissolved constituents in groundwater at the Site prior to entering the Bay would likely be reduced 100-fold or greater due to factors such as adsorption of dissolved constituents to soil and dilution effects from tidal influence. Based on an attenuation factor of 100 that has been used at other bayfront sites (e.g., Mission Bay, San Francisco International Airport, and East Bay Regional Shoreline Park), the estimated 95 percent upper confidence limit (95% UCL) of the mean for chemicals in shallow groundwater are below surface water screening levels for a marine habitat. Because a single measurement of a chemical is not representative of the concentration to which an individual organism would be exposed across the entire site, the 95% UCLs for COPCs in groundwater are considered applicable for comparison. Based on the analysis, COPCs in groundwater are not expected to pose a significant risk to aquatic organisms as a result of shallow groundwater potentially migrating from the Site to the San Francisco Bay. Action is not warranted for groundwater to be protective of aquatic receptors.
- For this HRA, shallow groundwater in the Fill zone at the Site is not considered a potential drinking water source (RWQCB, 2019a) the soil leaching to groundwater pathway was evaluated by comparing exposure point concentrations (EPCs) for COPCs in soil to soil screening levels (SSLs) that are protective of aquatic habitats and a lateral attenuation factor of 100 as described above. The results of the analysis indicated that COPCs in soil that exceeded estimated SSLs protective of aquatic receptors are cobalt, copper, lead, mercury, selenium, silver, zinc, and total petroleum hydrocarbons as diesel (TPHd). However, as described above, the estimated 95% UCLs for these COPCs in groundwater (note selenium was not detected in groundwater) do not exceed screening criteria that are protective of aquatic receptors with an attenuation factor of 100. Because the concentrations of dissolved metals and TPHd in groundwater from the data gap investigation were generally low and below drinking water criteria and surface water criteria for aquatic receptors with an attenuation factor of 100, the COPCs in soil are not considered to represent a significant threat to aquatic organisms in the Bay through leaching and lateral migration in groundwater.

8.2 Conclusions and Recommendations

Under the assumptions and conditions presented in the HRA, COPCs in soil and soil vapor may pose a theoretical risk and noncancer hazard to a future worker and resident if the Site conditions

were not remediated or mitigated. The primary risk driving COPCs in soil are arsenic, lead, and mercury, carcinogenic PAHs, naphthalene, TPHd, and PCB-1260. Further action to remediate or mitigate potential exposure to these risk-driving COPCs in soil to a future worker and a future resident is appropriate. Arsenic and lead are the primary risk-driving COPCs in soil for a future construction worker. In soil vapor, the risk-driving COPCs are PCE, TCE, cDCE, and VC. In groundwater and the potential for vapor intrusion, the risk-driving COPCs are cDCE, TCE and VC. These risk-driving chlorinated COPCs in soil vapor and groundwater due to the potential for vapor intrusion were identified as risk-driving COPCs in the Schlage OU, located north of the Site, and not from onsite sources. Actions to remediate or mitigate these chlorinated COPCs are addressed in the Schlage OU remedial action plan.

The conclusions of this risk assessment are based on the information available at the time the risk assessment was conducted. As new information becomes available, the assumptions and conclusions should be reevaluated.

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TABLES

TABLE 1
SUMMARY STATISTICS OF CHEMICALS IN SOIL SAMPLES[1]
UPC OU-SM
Brisbane, California

Media/Analyte	No. of Samples	No. of Detections	No. of Non-Detects	Frequency of Detection	Min Detected Conc.	Mean Detected Conc.	Max Detected Conc.	Minimum Detection Limit[2]	Maximum Detection Limit[2]
Metals (milligrams per kilogram - mg/kg)									
Antimony	331	293	38	89%	0.13	2.24	340	0.21	7.4
Arsenic	414	404	10	98%	0.25	41.40	790	0.1	5
Barium	414	410	4	99%	8.2	179.39	3,300	1	20
Beryllium	335	182	153	54%	0.075	0.385	0.94	0.067	0.25
Cadmium	385	256	129	66%	0.027	2.37	80	0.026	1
Chromium	405	400	5	99%	3.4	95.20	4,400	5	10
Cobalt	338	336	2	99%	0.81	12.98	37.5	2	3
Copper	387	385	2	99%	1.4	174.44	10,000	2	2.8
Lead	414	407	7	98%	0.48	413.63	13,000	1	10
Mercury	387	374	11	97%	0.004	2.49	100	0.0023	0.2
Molybdenum	334	256	78	77%	0.15	0.607	22	0.13	0.25
Nickel	338	338	0	100%	2.9	61.38	500	0	0
Selenium	385	107	278	28%	0.3	1.07	3.4	0.31	13
Silver	385	192	193	50%	0.12	1.29	9.5	0.1	1
Thallium	334	180	154	54%	0.31	1.11	4.8	0.29	13
Vanadium	337	336	1	100%	7.5	51.3	245	30	30
Zinc	367	367	0	100%	3	256.1	26,000	0	0
Volatile Organic Compounds (VOCs - micrograms per kilogram - µg/kg) and Total Petroleum Hydrocarbons as Gasoline (milligrams per kilogram - mg/kg)									
1,1,1,2-Tetrachloroethane	125	0	125	0%	0	0	0	0.32	390
1,1,1-Trichloroethane	125	0	125	0%	0	0	0	0.26	620
1,1,2,2-Tetrachloroethane	125	0	125	0%	0	0	0	0.31	560
1,1,2-Trichloro-1,2,2-trifluoroethane	125	0	125	0%	0	0	0	0.87	2,400
1,1,2-Trichloroethane	125	0	125	0%	0	0	0	0.29	420
1,1-Dichloroethane	125	0	125	0%	0	0	0	0.29	390
1,1-Dichloroethene	125	1	124	1%	1.8	1.8	1.8	0.26	410
1,1-Dichloropropene	125	0	125	0%	0	0	0	0.29	390
1,2,3-Trichlorobenzene	125	1	124	1%	0.68	0.68	0.68	0.31	850
1,2,3-Trichloropropane	125	0	125	0%	0	0	0	0.32	590
1,2,4-Trichlorobenzene	125	0	125	0%	0	0	0	0.3	630
1,2,4-Trimethylbenzene	125	0	125	0%	0	0	0	0.69	1,800
1,2-Dibromo-3-chloropropane	125	0	125	0%	0	0	0	0.71	690
1,2-Dibromoethane	125	0	125	0%	0	0	0	0.6	1,600
1,2-Dichlorobenzene	125	0	125	0%	0	0	0	0.29	690
1,2-Dichloroethane	125	0	125	0%	0	0	0	0.32	390
1,2-Dichloropropane	125	0	125	0%	0	0	0	0.26	390
1,3,5-Trimethylbenzene	125	1	124	1%	0.59	0.59	0.59	0.27	390
1,3-Dichlorobenzene	125	0	125	0%	0	0	0	0.3	400
1,3-Dichloropropane	125	0	125	0%	0	0	0	0.31	450
1,4-Dichlorobenzene	125	0	125	0%	0	0	0	0.3	810
2,2-Dichloropropane	125	0	125	0%	0	0	0	0.84	390
2-Butanone	125	5	120	4%	28	31.5	79	8.8	24,000
2-Chlorotoluene	125	0	125	0%	0	0	0	0.27	390
2-Hexanone	125	1	124	1%	16	16	16	4.2	11,000
4-Chlorotoluene	125	0	125	0%	0	0	0	0.29	390
4-Isopropyltoluene	125	1	124	1%	5	5	5	1	2,900
4-Methyl-2-pentanone	125	0	125	0%	0	0	0	4.2	11,000
Acetone	125	62	63	50%	24	60.806452	490	16	28,000

TABLE 1
SUMMARY STATISTICS OF CHEMICALS IN SOIL SAMPLES[1]
UPC OU-SM
Brisbane, California

Media/Analyte	No. of Samples	No. of Detections	No. of Non-Detects	Frequency of Detection	Min Detected Conc.	Mean Detected Conc.	Max Detected Conc.	Minimum Detection Limit[2]	Maximum Detection Limit[2]
Benzene	125	2	123	2%	0.86	1.23	1.6	0.27	390
Bromobenzene	125	0	125	0%	0	0	0	0.33	460
Bromochloromethane	125	0	125	0%	0	0	0	0.3	440
Bromodichloromethane	125	0	125	0%	0	0	0	0.3	440
Bromoform	125	0	125	0%	0	0	0	0.84	410
Bromomethane	125	0	125	0%	0	0	0	0.33	560
Carbon disulfide	125	4	121	3%	2.5	6.625	14	0.84	530
Carbon tetrachloride	125	0	125	0%	0	0	0	0.26	520
Chlorobenzene	125	0	125	0%	0	0	0	0.29	400
Chloroethane	125	0	125	0%	0	0	0	0.23	520
Chloroform	125	0	125	0%	0	0	0	0.28	390
Chloromethane	125	0	125	0%	0	0	0	0.33	560
cis-1,2-Dichloroethene	125	14	111	11%	0.76	20.33	120	0.29	420
cis-1,3-Dichloropropene	125	0	125	0%	0	0	0	0.29	390
Dibromochloromethane	125	0	125	0%	0	0	0	0.3	390
Dibromomethane	125	0	125	0%	0	0	0	0.36	400
Dichlorodifluoromethane	125	0	125	0%	0	0	0	0.33	910
Ethylbenzene	125	0	125	0%	0	0	0	0.31	860
Hexachlorobutadiene	125	0	125	0%	0	0	0	0.38	680
Isopropylbenzene	125	1	124	1%	1.9	1.9	1.9	0.29	600
Methylene Chloride	125	0	125	0%	0	0	0	2.3	3,400
Methyl-tert-butyl ether (MTBE)	125	0	125	0%	0	0	0	0.5	1,400
Naphthalene	125	1	124	1%	26000	26000	26000	0.63	2
n-Butylbenzene	125	2	123	2%	0.73	0.795	0.86	0.42	1,100
n-Propylbenzene	125	2	123	2%	0.63	1.12	1.6	0.28	420
sec-Butylbenzene	125	2	123	2%	0.8	0.95	1.1	0.3	490
Styrene	125	0	125	0%	0	0	0	0.26	390
tert-Butylbenzene	125	1	124	1%	0.67	0.67	0.67	0.31	390
Tetrachloroethene (PCE)	125	2	123	2%	1.8	5.45	9.1	0.28	500
Toluene	125	8	117	6%	0.49	0.909	1.7	0.3	810
trans-1,2-Dichloroethene	125	4	121	3%	0.96	4.79	15	0.31	620
trans-1,3-Dichloropropene	125	0	125	0%	0	0	0	0.28	390
Trichloroethene (TCE)	123	11	112	9%	0.52	24.52	120	0.26	390
Trichlorofluoromethane	125	0	125	0%	0	0	0	0.23	640
Vinyl Acetate	125	0	125	0%	0	0	0	2.1	1,300
Vinyl Chloride	125	3	122	2%	0.85	0.94	1.1	0.31	610
Xylenes, Total	125	1	124	1%	1.1	1.1	1.1	0.51	1,400
TPH-g (C4-C12)	125	7	118	6%	0.076	0.25	0.88	0.042	110
Polynuclear Aromatic Hydrocarbons (micrograms per kilogram - µg/kg) and Total Petroleum Hydrocarbons as Diesel (milligrams per kilogram - mg/kg)									
2-Methylnaphthalene	122	60	62	49%	4.8	380.2	18,000	4.7	480
Acenaphthene	122	22	100	18%	4.15	896.3	18,000	2.6	270
Acenaphthylene	122	66	56	54%	2.3	85.5	2,000	2.3	230
Anthracene	122	86	36	70%	1.9	168.0	7,000	1.9	190
Benzo(a)anthracene	122	80	42	66%	1.8	224.4	5,300	1.4	150
Benzo(a)pyrene	122	110	12	90%	1.8	188.6	6,900	1.8	72
Benzo(b)fluoranthene	122	112	10	92%	2.3	232.9	7,400	2	79
Benzo(g,h,i)perylene	122	79	43	65%	4.3	134.3	2,900	4.1	420
Benzo(k)fluoranthene	122	88	34	72%	2	108.8	3,700	2	160
Chrysene	122	107	15	88%	1.3	194.2	4,900	1.3	110

TABLE 1
SUMMARY STATISTICS OF CHEMICALS IN SOIL SAMPLES[1]
UPC OU-SM
Brisbane, California

Media/Analyte	No. of Samples	No. of Detections	No. of Non-Detects	Frequency of Detection	Min Detected Conc.	Mean Detected Conc.	Max Detected Conc.	Minimum Detection Limit[2]	Maximum Detection Limit[2]
Dibenzo(a,h)anthracene	122	50	72	41%	3.4	55.4	930	3.3	340
Fluoranthene	122	114	8	93%	1.4	332.5	17,000	1.3	53
Fluorene	122	41	81	34%	2.1	391.2	13,000	2.1	210
Indeno(1,2,3-cd)pyrene	122	63	59	52%	4.2	118.1	2,500	4	410
Naphthalene	122	76	46	62%	3.5	808.5	57,000	3.3	340
Phenanthrene	122	109	13	89%	1.8	537.3	37,000	1.7	140
Pyrene	122	112	10	92%	1.7	375.8	11,000	1.6	64
TPH-Diesel (C10-C28)	122	122	0	100%	0.84	199.6	4,600	0	0
Organochlorine Pesticides and Polychlorinated Biphenyls (micrograms per kilogram - µg/kg)									
4,4'-DDD	115	3	112	3%	0.65	13.18	38	0.57	12
4,4'-DDE	115	5	110	4%	0.72	5.96	24	0.4	8.4
4,4'-DDT	115	8	107	7%	0.41	10.93	73	0.39	8.2
Aldrin	115	0	115	0%	0	0	0	0.47	9.9
alpha-BHC	115	0	115	0%	0	0	0	0.52	11
alpha-Chlordane	115	10	105	9%	0.41	80.11	780	0.38	8
beta-BHC	115	0	115	0%	0	0	0	0.34	7.2
Chlordane	115	6	109	5%	6.5	672.1	3,900	3	64
delta-BHC	115	1	114	1%	0.96	0.96	0.96	0.41	8.8
Dieldrin	115	1	114	1%	1.4	1.4	1.4	0.56	12
Endosulfan I	115	0	115	0%	0	0	0	0.3	6.4
Endosulfan II	115	0	115	0%	0	0	0	0.46	9.7
Endosulfan sulfate	115	0	115	0%	0	0	0	0.36	7.6
Endrin	115	0	115	0%	0	0	0	0.43	9.2
Endrin aldehyde	115	0	115	0%	0	0	0	0.59	13
Endrin ketone	115	0	115	0%	0	0	0	0.31	6.6
gamma-BHC (Lindane)	115	0	115	0%	0	0	0	0.59	13
gamma-Chlordane	115	7	108	6%	0.93	136.8	940	0.43	9.2
Heptachlor	115	0	115	0%	0	0	0	0.43	9.2
Heptachlor epoxide	115	1	114	1%	11	11	11	0.33	7
Methoxychlor	115	1	114	1%	0.75	0.75	0.75	0.64	14
Toxaphene	115	0	115	0%	0	0	0	6.4	140
PCB-1016 (Aroclor 1016)	122	0	122	0%	0	0	0	21	450
PCB-1221 (Aroclor 1221)	122	0	122	0%	0	0	0	23	490
PCB-1232 (Aroclor 1232)	122	0	122	0%	0	0	0	22	470
PCB-1242 (Aroclor 1242)	122	0	122	0%	0	0	0	18	390
PCB-1248 (Aroclor 1248)	122	0	122	0%	0	0	0	23	490
PCB-1254 (Aroclor 1254)	122	3	119	2%	32	227.3	590	22	470
PCB-1260 (Aroclor 1260)	122	10	112	8%	24	877.2	13,000	21	450

Notes and Abbreviations:

[1] All chemicals analyzed from shallow fill zone, including those that were not detected above the laboratory reporting limits, are presented.

[2] Minimum (min) and maximum (max) detection limits at 0 indicates that the analyte was detected in all samples.

No. = number

Conc. = concentration

TABLE 2

SUMMARY STATISTICS OF CHEMICALS IN SOIL VAPOR SAMPLES[1,2]

UPC OU-SM

Brisbane, California

Concentrations in micrograms per cubic meter ($\mu g/m^3$)

Media/Analyte	No. of Samples	No. of Detections	No. of Non-Detects	Frequency of Detection	Minimum Detected Conc.	Mean Detected Conc.	Maximum Detected Conc.	Minimum Detection Limit[3]	Maximum Detection Limit[3]
Soil Vapor - Chlorinated Volatile Organic Compounds									
Tetrachloroethylene	15	14	1	93.3%	2.8	1,933	12,000	880	880
Trichloroethylene	15	15	0	100.0%	1	12,489	69,000	0	0
cis-1,2-Dichloroethene	15	14	1	93.3%	0.2	6,018	75,000	3.5	3.5
trans-1,2-Dichloroethene	15	4	11	26.7%	4.8	19.5	49	3.4	510
Vinyl Chloride	15	5	10	33.3%	2.3	839.9	3,900	2.2	180
1,1-Dichloroethene	15	6	9	40.0%	0.086	191.1	1,100	3.4	280

Notes and Abbreviations:

[1] Samples collected by AMEC in 2011 and 2012.

[2] All chemicals analyzed from 2.5 and 5 feet below ground surface.

[3] Minimum (min) and maximum (max) detection limits at 0 indicates that the analyte was detected in all samples.

No. = number

Conc. = concentration

TABLE 2 (continued)

SUMMARY STATISTICS OF CHEMICALS IN SOIL VAPOR SAMPLES[1,2]

UPC OU-SM

Brisbane, California

Concentrations in micrograms per cubic meter ($\mu g/m^3$)

Media/Analyte	No. of Samples	No. of Detections	No. of Non-Detects	Frequency of Detection	Minimum Detected Conc.	Mean Detected Conc.	Maximum Detected Conc.	Minimum Detection Limit[3]	Maximum Detection Limit[3]
Soil Vapor - Volatile Organic Compounds									
Freon 12	13	11	2	84.6%	1.7	2.45	4.2	3.7	6.9
Freon 114	13	1	12	7.7%	2.1	2.10	2.1	0.21	26
Chloromethane	13	2	11	15.4%	0.94	1.42	1.9	0.54	68
Bromomethane	13	3	10	23.1%	0.14	0.17	0.22	0.11	14
Chloroethane	13	1	12	7.7%	1.4	1.40	1.4	0.41	51
Trichlorofluoromethane	13	10	3	76.9%	0.5	1.47	5.2	2.9	15
Freon 113	13	5	8	38.5%	0.29	0.40	0.49	0.15	18
Acetone	13	13	0	100.0%	57	145.54	270	0	0
Carbon Disulfide	13	8	5	61.5%	1.1	8.55	37	0.53	11
Methylene Chloride	13	2	11	15.4%	1.9	2.35	2.8	0.07	8.7
1,1-Dichloroethane	13	2	11	15.4%	1.3	1.45	1.6	0.14	17
2-Butanone	13	12	1	92.3%	30	303.83	2000	12	12
Chloroform	13	10	3	76.9%	0.45	4.38	18	0.11	6.9
1,1,1-Trichloroethane	13	10	3	76.9%	0.66	13.90	63	0.21	0.46
Benzene	13	13	0	100.0%	3.7	35.19	110	0	0
4-Methyl-2-Pentanone	13	2	11	15.4%	1.5	8.25	15	0.17	20
Toluene	13	13	0	100.0%	4.1	22.56	69	0	0
2-Hexanone	13	1	12	7.7%	2.2	2.20	2.2	0.23	27
1,2-Dibromoethane	13	1	12	7.7%	0.14	0.14	0.14	0.13	17
Chlorobenzene	13	1	12	7.7%	0.16	0.16	0.16	0.15	19
Ethylbenzene	13	10	3	76.9%	1	2.84	12	2.5	13
m,p-Xylene	13	12	1	92.3%	2.6	10.02	34	15	15
o-Xylene	13	12	1	92.3%	0.72	4.25	18	11	11
Styrene	13	5	8	38.5%	0.2	0.48	0.91	0.091	11
4-Ethyltoluene	13	8	5	61.5%	0.39	0.87	1.7	0.53	10
1,3,5-Trimethylbenzene	13	9	4	69.2%	0.33	1.20	3.5	0.59	12
1,2,4-Trimethylbenzene	13	9	4	69.2%	1.1	2.62	5.8	0.99	20
1,3-Dichlorobenzene	13	1	12	7.7%	1.6	1.60	1.6	0.13	16
Benzyl chloride	13	1	12	7.7%	0.56	0.56	1	0.15	18
Xylene (total)	13	12	1	92.3%	3.3	14.33	53	26	26

Notes and Abbreviations:

[1] Samples collected by AMEC in 2011 and 2012.

[2] All chemicals analyzed from 2.5 and 5 feet below ground surface.

[3] Minimum (min) and maximum (max) detection limits at 0 indicates that the analyte was detected in all samples.

No. = number

Conc. = concentration

TABLE 3

SUMMARY STATISTICS OF CHEMICALS IN GROUNDWATER SAMPLES[1]

UPC OU-SM

Brisbane, California

Media/Analyte	No. of Samples	No. of Detections	No. of Non-Detects	Frequency of Detection	Min Detected Conc.	Mean Detected Conc.	Max Detected Conc.	Minimum Detection Limit[2]	Maximum Detection Limit[2]
Metals (micrograms per liter - µg/L)									
Antimony	47	8	39	17%	2.7	9.15	38	2.7	2.7
Arsenic	47	40	7	85%	2.7	31.46	190	2.6	2.6
Barium	47	47	0	100%	35	347.85	1,400	0	0
Beryllium	47	16	31	34%	0.34	0.778	3	0.33	0.33
Cadmium	47	0	47	0%	0	0.00	0	1.3	13
Chromium	47	19	28	40%	1.6	4.13	15	1.5	1.5
Chromium, Hexavalent	38	2	36	5%	4.3	5.83	7.35	3.7	3.7
Cobalt	47	34	13	72%	1.2	6.31	79	1.2	1.2
Copper	47	36	11	77%	1.5	9.56	155	1.5	1.5
Lead	47	39	8	83%	2.3	9.90	30	2.3	2.3
Mercury	47	1	46	2%	0.25	0.250	0.25	0.1	0.1
Molybdenum	47	34	13	72%	2.4	6.09	14	2.3	2.3
Nickel	47	35	12	74%	1	6.40	49	0.8	0.8
Selenium	47	0	47	0%	0	0.00	0	7.1	7.1
Silver	47	10	37	21%	10	14.10	20	1.2	1.2
Thallium	47	0	47	0%	0	0.0	0	3.5	35
Vanadium	47	22	25	47%	0.73	1.8	10	0.7	0.7
Zinc	47	31	16	66%	11	49.1	175	9.6	96
Volatile Organic Compounds (VOCs - micrograms per liter - µg/L)									
1,1,1,2-Tetrachloroethane	47	0	47	0%	0	0	0	0.067	0
1,1,1-Trichloroethane	47	0	47	0%	0	0	0	0.2	0
1,1,2,2-Tetrachloroethane	47	0	47	0%	0	0	0	0.074	0
1,1,2-Trichloro-1,2,2-trifluoroethane	47	0	47	0%	0	0	0	0.091	0
1,1,2-Trichloroethane	47	0	47	0%	0	0	0	0.11	0
1,1-Dichloroethane	47	5	42	11%	0.11	0.232	0.44	0.11	0
1,1-Dichloroethene	47	0	47	0%	0	0	0	0.2	4
1,1-Dichloropropene	47	0	47	0%	0	0	0	0.2	0
1,2,3-Trichlorobenzene	47	0	47	0%	0	0	0	0.21	0
1,2,3-Trichloropropane	47	0	47	0%	0	0	0	0.0017	0
1,2,4-Trichlorobenzene	47	0	47	0%	0	0	0	0.13	0
1,2,4-Trimethylbenzene	47	0	47	0%	0	0	0	0.2	0
1,2-Dibromo-3-chloropropane	47	0	47	0%	0	0	0	0.3	0
1,2-Dibromoethane	47	0	47	0%	0	0	0	0.075	0
1,2-Dichlorobenzene	47	0	47	0%	0	0	0	0.21	0
1,2-Dichloroethane	47	0	47	0%	0	0	0	0.077	0
1,2-Dichloropropane	47	0	47	0%	0	0	0	0.2	0
1,3,5-Trimethylbenzene	47	0	47	0%	0	0	0	0.17	0
1,3-Dichlorobenzene	47	0	47	0%	0	0	0	0.2	0
1,3-Dichloropropane	47	0	47	0%	0	0	0	0.17	0
1,4-Dichlorobenzene	47	0	47	0%	0	0	0	0.16	0
2,2-Dichloropropane	47	0	47	0%	0	0	0	0.17	0
1,3-Dichloropropene	47	2	45	4%	8.8	8.8	8.8	8.4	8
2-Chlorotoluene	47	0	47	0%	0	0	0	0.2	0
2-Hexanone	47	0	47	0%	0	0	0	3	3
4-Chlorotoluene	47	0	47	0%	0	0	0	0.2	0
4-Isopropyltoluene	47	0	47	0%	0	0	0	0.2	0
4-Methyl-2-pentanone	47	0	47	0%	0	0	0	4.5	5

TABLE 3

SUMMARY STATISTICS OF CHEMICALS IN GROUNDWATER SAMPLES[1]

UPC OU-SM

Brisbane, California

Media/Analyte	No. of Samples	No. of Detections	No. of Non-Detects	Frequency of Detection	Min Detected Conc.	Mean Detected Conc.	Max Detected Conc.	Minimum Detection Limit[2]	Maximum Detection Limit[2]
Acetone	47	0	47	0%	0	0	0	20	20
Benzene	47	1	46	2%	0.27	0.27	0.27	0.25	0
Bromobenzene	47	0	47	0%	0	0	0	0.2	0
Bromochloromethane	47	0	47	0%	0	0	0	0.25	0
Bromodichloromethane	47	0	47	0%	0	0	0	0.2	0
Bromoform	47	0	47	0%	0	0	0	0.5	1
Bromomethane	47	0	47	0%	0	0	0	0.49	0
Carbon disulfide	47	0	47	0%	0	0	0	0.78	1
Carbon tetrachloride	47	0	47	0%	0	0	0	0.11	0
Chlorobenzene	47	0	47	0%	0	0	0	0.13	0
Chloroethane	47	0	47	0%	0	0	0	0.17	0
Chloroform	47	0	47	0%	0	0	0	0.4	0
Chloromethane	47	0	47	0%	0	0	0	0.19	0
cis-1,2-Dichloroethene	47	27	20	57%	0.095	16.59	160	0.076	0
cis-1,3-Dichloropropene	47	0	47	0%	0	0	0	0.1	0
Dibromochloromethane	47	0	47	0%	0	0	0	0.1	0
Dibromomethane	47	0	47	0%	0	0	0	0.3	0
Dichlorodifluoromethane	47	0	47	0%	0	0	0	0.25	0
Ethylbenzene	47	0	47	0%	0	0	0	0.13	0
Hexachlorobutadiene	47	0	47	0%	0	0	0	0.27	0
Isopropylbenzene	47	0	47	0%	0	0	0	0.2	0
Methylene Chloride	47	0	47	0%	0	0	0	1.5	15
Methyl-tert-butyl ether (MTBE)	47	4	43	9%	0.16	0.31	0.49	0.11	0
Naphthalene	47	0	47	0%	0	0	0	0.22	0
n-Butylbenzene	47	0	47	0%	0	0	0	0.3	0
n-Propylbenzene	47	0	47	0%	0	0	0	0.2	0
sec-Butylbenzene	47	0	47	0%	0	0	0	0.17	0
Styrene	47	0	47	0%	0	0	0	0.22	0
tert-Butylbenzene	47	0	47	0%	0	0	0	0.2	0
Tetrachloroethene (PCE)	47	3	44	6%	0.28	2.10	5.7	0.2	0
Toluene	47	0	47	0%	0	0	0	0.17	0
trans-1,2-Dichloroethene	47	8	39	17%	0.15	3.72	24	0.13	3
trans-1,3-Dichloropropene	47	0	47	0%	0	0	0	0.17	0
Trichloroethene (TCE)	47	14	33	30%	0.22	17.45	200	0.2	0
Trichlorofluoromethane	47	0	47	0%	0	0	0	0.3	0
Vinyl Acetate	47	0	47	0%	0	0	0	0.6	1
Vinyl Chloride	47	14	33	30%	0.24	46.23	410	0.2	0
Xylenes, Total	47	0	47	0%	0	0	0	0.4	0
TPH-diesel (C10-C28)	47	45	2	96%	52	168.91	1100	32	32
TPH-gasoline (C4-C12)	47	14	33	30%	24	85.1	380	21	25

Notes and Abbreviations:

[1] All chemicals analyzed in shallow groundwater, including those that were not detected above the laboratory reporting limits, are presented.

[2] Minimum (Min) nd maximum (Max) detection limits at 0 indicates that the analyte was detected in all samples.

No. = number

Conc. = concentration

TABLE 4
EXPOSURE POINT CONCENTRATIONS IN SOIL [1,2]
UPC OU-SM
Brisbane, California

Media/Analyte	Exposure Point Concentration 0 - 2 ft bgs[3]	Basis for Exposure Point Concentration	Exposure Point Concentration1 0 - 10 ft bgs[3]	Basis for Exposure Point Concentration
Metals (milligrams per kilogram - mg/kg)				
Antimony	4.2	KM H-UCL	10.6	95% KM (Chebyshev) UCL
Arsenic	101.6	KM H-UCL	67.2	95% KM (Chebyshev) UCL
Barium	184.9	95% KM (Chebyshev) UCL	216.1	95% KM (Chebyshev) UCL
Beryllium	0.12	KM Student's t	0.23	95% KM (Chebyshev) UCL
Cadmium	2.09	KM H-UCL	2.16	95% KM (Chebyshev) UCL
Chromium	58.22	95% KM (Chebyshev) UCL	112.4	95% KM (Chebyshev) UCL
Cobalt	13.3	KM H-UCL	13.5	95% KM (BCA) UCL
Copper	340.5	95% KM (Chebyshev) UCL	207.7	KM H-UCL
Lead	685.6	KM H-UCL	783.5	KM H-UCL
Mercury	3.58	99% KM (Chebyshev) UCL	3.95	99% KM (Chebyshev) UCL
Molybdenum	2.35	95% KM (Chebyshev) UCL	1.43	95% KM (Chebyshev) UCL
Nickel	32.3	95% H-UCL	53.7	95% H-UCL
Selenium	0.49	KM Student's t	0.58	95% KM (BCA) UCL
Silver	0.636	95% KM (Chebyshev) UCL	0.76	95% KM (Chebyshev) UCL
Thallium	0.72	KM Student's t	0.80	KM H-UCL
Vanadium	86.7	KM H-UCL	72.9	95% GROS Approximate Gamma UCL
Zinc	1,119	95% Chebyshev (Mean, Sd) UCL	725.7	95% Chebyshev (Mean, Sd) UCL
Volatile Organic Compounds (VOCs - micrograms per kilogram - µg/kg) and Total Petroleum Hydrocarbons as Gasoline (milligrams per kilogram - mg/kg)				
1,1-Dichloroethene	ND	ND	1.8	Maximum
1,2,3-Trichlorobenzene	0.68	Maximum	0.68	Maximum
1,3,5-Trimethylbenzene	ND	ND	0.59	Maximum
2-Butanone	11.3	95% KM (t) UCL	15.7	95% KM (BCA) UCL
2-Hexanone	ND	ND	16	Maximum
Acetone	36.34	95% KM (t) UCL	51.8	95% KM (BCA) UCL
Benzene	0.86	Maximum	0.32	95% KM (t) UCL
Carbon disulfide	ND	ND	1.28	95% KM (t) UCL
cis-1,2-Dichloroethene	ND	ND	0.57	KM H-UCL
Isopropylbenzene	ND	ND	1.9	Maximum
n-Butylbenzene	ND	ND	0.49	95% KM (t) UCL
n-Propylbenzene	ND	ND	0.37	95% KM (Chebyshev) UCL
sec-Butylbenzene	ND	ND	0.33	95% KM (t) UCL
tert-Butylbenzene	ND	ND	0.67	Maximum
Tetrachloroethene (PCE)	ND	ND	0.842	95% KM (Chebyshev) UCL
Toluene	0.572	95% KM (t) UCL	0.41	95% KM Approximate Gamma UCL
trans-1,2-Dichloroethene	ND	ND	1.7	Maximum
Trichloroethene (TCE)	1.39	95% KM (t) UCL	6.72	95% KM Approximate Gamma UCL
Vinyl Chloride	ND	ND	0.34	95% KM (t) UCL
Xylenes, Total	ND	ND	1.1	Maximum
TPH-g (C4-C12)	0.120	Maximum	0.053	KM H-UCL
Polynuclear Aromatic Hydrocarbons (micrograms per kilogram - µg/kg) and Total Petroleum Hydrocarbons as Diesel (milligrams per kilogram - mg/kg)				
2-Methylnaphthalene	2,152	95% KM (Chebyshev) UCL	895.1	95% KM (Chebyshev) UCL
Acenaphthene	2,908	Gamma Adjusted KM-UCL	877.2	95% KM (Chebyshev) UCL
Acenaphthylene	349.2	95% KM (Chebyshev) UCL	151.4	95% KM (Chebyshev) UCL
Anthracene	982.8	95% KM (Chebyshev) UCL	424.4	95% KM (Chebyshev) UCL
Benzo(a)anthracene	952.8	95% KM (Chebyshev) UCL	431.1	95% KM (Chebyshev) UCL
Benzo(a)pyrene	1,145	95% KM (Chebyshev) UCL	188	KM H-UCL
Benzo(b)fluoranthene	1,299	95% KM (Chebyshev) UCL	258.1	KM H-UCL
Benzo(g,h,i)perylene	594.1	95% KM (Chebyshev) UCL	260.5	95% KM (Chebyshev) UCL

TABLE 4
EXPOSURE POINT CONCENTRATIONS IN SOIL [1,2]
UPC OU-SM
Brisbane, California

Media/Analyte	Exposure Point Concentration 0 - 2 ft bgs[3]	Basis for Exposure Point Concentration	Exposure Point Concentration1 0 - 10 ft bgs[3]	Basis for Exposure Point Concentration
Benzo(k)fluoranthene	557.6	95% KM (Chebyshev) UCL	246.4	95% KM (Chebyshev) UCL
Chrysene	953.3	95% KM (Chebyshev) UCL	214.9	KM H-UCL
Dibenzo(a,h)anthracene	172.3	95% KM (Chebyshev) UCL	77.1	95% KM (Chebyshev) UCL
Fluoranthene	2,499	95% KM (Chebyshev) UCL	241.7	KM H-UCL
Fluorene	2,173	97.5% KM (Chebyshev) UCL	647.1	95% KM (Chebyshev) UCL
Indeno(1,2,3-cd)pyrene	453.4	95% KM (Chebyshev) UCL	199	95% KM (Chebyshev) UCL
Naphthalene	6,723	95% KM (Chebyshev) UCL	2725	95% KM (Chebyshev) UCL
Phenanthrene	4,705	95% KM (Chebyshev) UCL	282.9	KM H-UCL
Pyrene	2,274	95% KM (Chebyshev) UCL	372.6	KM H-UCL
TPH-Diesel (C10-C28)	655.8	95% H-UCL	360.1	95% H-UCL
BaP TEQ	1,594.3	PAH PEFs	356.6	PAH PEFs
Organochlorine Pesticides and Polychlorinated Biphenyls (micrograms per kilogram - µg/kg)				
4,4'-DDD	0.61	95% KM (t) UCL	1.25	95% KM Approximate Gamma UCL
4,4'-DDE	3.11	Gamma Adjusted KM-UCL	1.25	95% KM Approximate Gamma UCL
4,4'-DDT	10.2	95% KM (Chebyshev) UCL	0.62	KM H-UCL
alpha-Chlordane	0.77	KM H-UCL	0.77	KM H-UCL
Chlordane	5.73	KM H-UCL	21.36	95% KM (Chebyshev) UCL
delta-BHC	ND	ND	0.96	Maximum
Dieldrin	ND	ND	1.4	Maximum
gamma-Chlordane	1.19	95% KM (t) UCL	0.86	KM H-UCL
Heptachlor epoxide	ND	ND	11	Maximum
Methoxychlor	ND	ND	0.75	Maximum
PCB-1254 (Aroclor 1254)	63.3	95% KM (t) UCL	37.5	95% KM (t) UCL
PCB-1260 (Aroclor 1260)	1074.0	95% KM (Chebyshev) UCL	416.6	95% KM (Chebyshev) UCL

Notes and Abbreviations:

[1] Upper confidence limits calculated using U.S. EPA's ProUCL software and based on recommendations from the output files. If more than one recommended UCL was estimated based on the distribution of the dataset, the higher value was selected.

[2] Maximum concentrations were selected if: i) there was an insufficient number of samples in the dataset (typically less than or equal to ten); ii) there was less than two detected samples in the dataset; or iii) the estimated UCL was higher than the maximum detected value.

[3] The data groupings (0 - 2 feet bgs and 0 - 10 feet bgs) are explained in the Exposure Assessment of the HRA.

UCL = Upper Confidence Limit

KM = Kaplan-Meier

BCA = Bias Corrected Accelerated

ND = Not detected

BaP TEQ PEFs = benzo(a)pyrene equivalent concentrations using potency equivalency factors (PEFs), DTSC PEA, October 2015

TABLE 5a

EXPOSURE POINT CONCENTRATIONS IN SOIL VAPOR AND INDOOR AIR
DEFAULT ATTENUATION FACTOR

UPC OU-SM
Brisbane, California

Concentrations in micrograms per cubic meter ($\mu g/m^3$)

Media/Analyte	Exposure Point Concentration (EPC) Soil Vapor[1]	Basis for Soil Vapor Exposure Point Concentration	Commercial/ Industrial Building Attenuation Factor[2]	Residential Building Attenuation Factor[2]	Worker Exposure Point Concentration Indoor Air	Resident Exposure Point Concentration Indoor Air
Soil Vapor - Chlorinated Volatile Organic Compounds						
Tetrachloroethylene	6,615	Gamma Adjusted KM-UCL	0.0005	0.001	3.3	6.6
Trichloroethylene	38,751	95% Adjusted Gamma UCL	0.0005	0.001	19	38.75
cis-1,2-Dichloroethene	55,176	99% KM (Chebyshev) UCL	0.0005	0.001	27.6	55.18
trans-1,2-Dichloroethene	18	95% KM (t) UCL	0.0005	0.001	0.01	0.02
Vinyl Chloride	2,488	Gamma Adjusted KM-UCL	0.0005	0.001	1.24	2.49
1,1-Dichloroethene	714	Gamma Adjusted KM-UCL	0.0005	0.001	0.36	0.71

Notes:

[1] Represents the estimated 95 percent upper confidence limit.

[2] DTSC recommended attenuation factors for future buildings, Vapor Intrusion Guidance, October 2011.

UCL = upper confidence limit

KM = Kaplan-Meier

Sd = Standard Deviation

TABLE 5a (continued)

EXPOSURE POINT CONCENTRATIONS IN SOIL VAPOR AND INDOOR AIR
DEFAULT ATTENUATION FACTOR

UPC OU-SM
Brisbane, California

Concentrations in micrograms per cubic meter ($\mu g/m^3$)

Media/Analyte	Exposure Point Concentration (EPC) Soil Vapor[1]	Basis for Soil Vapor Exposure Point Concentration	Commercial/ Industrial Building Attenuation Factor[2]	Residential Building Attenuation Factor[2]	Worker Exposure Point Concentration Indoor Air	Resident Exposure Point Concentration Indoor Air
Soil Vapor - Volatile Organic Compounds						
Freon 12	4.2	Maximum Concentration	0.0005	0.001	2.1E-03	4.2E-03
Freon 114	2.1	Maximum Concentration	0.0005	0.001	1.1E-03	2.1E-03
Chloromethane	1.9	Maximum Concentration	0.0005	0.001	9.5E-04	1.9E-03
Bromomethane	0.22	Maximum Concentration	0.0005	0.001	1.1E-04	2.2E-04
Chloroethane	1.4	Maximum Concentration	0.0005	0.001	7.0E-04	1.4E-03
Trichlorofluoromethane	5.2	Maximum Concentration	0.0005	0.001	2.6E-03	5.2E-03
Freon 113	0.49	Maximum Concentration	0.0005	0.001	2.5E-04	4.9E-04
Acetone	270	Maximum Concentration	0.0005	0.001	1.4E-01	2.7E-01
Carbon Disulfide	37	Maximum Concentration	0.0005	0.001	1.9E-02	3.7E-02
Methylene Chloride	2.8	Maximum Concentration	0.0005	0.001	1.4E-03	2.8E-03
1,1-Dichloroethane	1.6	Maximum Concentration	0.0005	0.001	8.0E-04	1.6E-03
2-Butanone	2000	Maximum Concentration	0.0005	0.001	1.0E+00	2.0E+00
Chloroform	18	Maximum Concentration	0.0005	0.001	9.0E-03	1.8E-02
1,1,1-Trichloroethane	63	Maximum Concentration	0.0005	0.001	3.2E-02	6.3E-02
Benzene	110	Maximum Concentration	0.0005	0.001	5.5E-02	1.1E-01
4-Methyl-2-Pentanone	15	Maximum Concentration	0.0005	0.001	7.5E-03	1.5E-02
Toluene	69	Maximum Concentration	0.0005	0.001	3.5E-02	6.9E-02
2-Hexanone	2.2	Maximum Concentration	0.0005	0.001	1.1E-03	2.2E-03
1,2-Dibromoethane	0.14	Maximum Concentration	0.0005	0.001	7.0E-05	1.4E-04
Chlorobenzene	0.16	Maximum Concentration	0.0005	0.001	8.0E-05	1.6E-04
Ethylbenzene	12	Maximum Concentration	0.0005	0.001	6.0E-03	1.2E-02
m,p-Xylene	34	Maximum Concentration	0.0005	0.001	1.7E-02	3.4E-02
o-Xylene	18	Maximum Concentration	0.0005	0.001	9.0E-03	1.8E-02
Styrene	0.91	Maximum Concentration	0.0005	0.001	4.6E-04	9.1E-04
4-Ethyltoluene	1.7	Maximum Concentration	0.0005	0.001	8.5E-04	1.7E-03
1,3,5-Trimethylbenzene	3.5	Maximum Concentration	0.0005	0.001	1.8E-03	3.5E-03
1,2,4-Trimethylbenzene	5.8	Maximum Concentration	0.0005	0.001	2.9E-03	5.8E-03
1,3-Dichlorobenzene	1.6	Maximum Concentration	0.0005	0.001	8.0E-04	1.6E-03
Benzyl chloride	0.56	Maximum Concentration	0.0005	0.001	2.8E-04	5.6E-04
Xylene (total)	53	Maximum Concentration	0.0005	0.001	2.7E-02	5.3E-02

Notes:

[1] Represents the maximum detected concentration.

[2] DTSC recommended attenuation factors for future buildings, Vapor Intrusion Guidance, October 2011.

TABLE 5b

EXPOSURE POINT CONCENTRATIONS IN SOIL VAPOR AND INDOOR AIR
GENERIC ATTENUATION FACTOR

UPC OU-SM
Brisbane, California

Concentrations in micrograms per cubic meter ($\mu g/m^3$)

Media/Analyte	Exposure Point Concentration (EPC) Soil Vapor[1]	Basis for Soil Vapor Exposure Point Concentration	Commercial/ Industrial Building Attenuation Factor[2]	Residential Building Attenuation Factor[2]	Worker Exposure Point Concentration Indoor Air	Resident Exposure Point Concentration Indoor Air
Soil Vapor - Chlorinated Volatile Organic Compounds						
Tetrachloroethylene	6,615	Gamma Adjusted KM-UCL	0.03	0.03	198.5	198.5
Trichloroethylene	38,751	95% Adjusted Gamma UCL	0.03	0.03	1,163	1162.53
cis-1,2-Dichloroethene	55,176	99% KM (Chebyshev) UCL	0.03	0.03	1,655.3	1655.28
trans-1,2-Dichloroethene	18	95% KM (t) UCL	0.03	0.03	0.54	0.54
Vinyl Chloride	2,488	Gamma Adjusted KM-UCL	0.03	0.03	74.64	74.64
1,1-Dichloroethene	714	Gamma Adjusted KM-UCL	0.03	0.03	21.42	21.42

Notes:

[1] Represents the estimated 95 percent upper confidence limit.

[2] DTSC recommended attenuation factors for future buildings, Vapor Intrusion Guidance, October 2011.

UCL = upper confidence limit

KM = Kaplan-Meier

Sd = Standard Deviation

TABLE 5b (continued)

EXPOSURE POINT CONCENTRATIONS IN SOIL VAPOR AND INDOOR AIR
GENERIC ATTENUATION FACTOR

UPC OU-SM
Brisbane, California

Concentrations in micrograms per cubic meter ($\mu g/m^3$)

Media/Analyte	Exposure Point Concentration (EPC) Soil Vapor[1]	Basis for Soil Vapor Exposure Point Concentration	Commercial/ Industrial Building Attenuation Factor[2]	Residential Building Attenuation Factor[2]	Worker Exposure Point Concentration Indoor Air	Resident Exposure Point Concentration Indoor Air
Soil Vapor - Volatile Organic Compounds						
Freon 12	4.2	Maximum Concentration	0.03	0.03	1.3E-01	1.3E-01
Freon 114	2.1	Maximum Concentration	0.03	0.03	6.3E-02	6.3E-02
Chloromethane	1.9	Maximum Concentration	0.03	0.03	5.7E-02	5.7E-02
Bromomethane	0.22	Maximum Concentration	0.03	0.03	6.6E-03	6.6E-03
Chloroethane	1.4	Maximum Concentration	0.03	0.03	4.2E-02	4.2E-02
Trichlorofluoromethane	5.2	Maximum Concentration	0.03	0.03	1.6E-01	1.6E-01
Freon 113	0.49	Maximum Concentration	0.03	0.03	1.5E-02	1.5E-02
Acetone	270	Maximum Concentration	0.03	0.03	8.1E+00	8.1E+00
Carbon Disulfide	37	Maximum Concentration	0.03	0.03	1.1E+00	1.1E+00
Methylene Chloride	2.8	Maximum Concentration	0.03	0.03	8.4E-02	8.4E-02
1,1-Dichloroethane	1.6	Maximum Concentration	0.03	0.03	4.8E-02	4.8E-02
2-Butanone	2000	Maximum Concentration	0.03	0.03	6.0E+01	6.0E+01
Chloroform	18	Maximum Concentration	0.03	0.03	5.4E-01	5.4E-01
1,1,1-Trichloroethane	63	Maximum Concentration	0.03	0.03	1.9E+00	1.9E+00
Benzene	110	Maximum Concentration	0.03	0.03	3.3E+00	3.3E+00
4-Methyl-2-Pentanone	15	Maximum Concentration	0.03	0.03	4.5E-01	4.5E-01
Toluene	69	Maximum Concentration	0.03	0.03	2.1E+00	2.1E+00
2-Hexanone	2.2	Maximum Concentration	0.03	0.03	6.6E-02	6.6E-02
1,2-Dibromoethane	0.14	Maximum Concentration	0.03	0.03	4.2E-03	4.2E-03
Chlorobenzene	0.16	Maximum Concentration	0.03	0.03	4.8E-03	4.8E-03
Ethylbenzene	12	Maximum Concentration	0.03	0.03	3.6E-01	3.6E-01
m,p-Xylene	34	Maximum Concentration	0.03	0.03	1.0E+00	1.0E+00
o-Xylene	18	Maximum Concentration	0.03	0.03	5.4E-01	5.4E-01
Styrene	0.91	Maximum Concentration	0.03	0.03	2.7E-02	2.7E-02
4-Ethyltoluene	1.7	Maximum Concentration	0.03	0.03	5.1E-02	5.1E-02
1,3,5-Trimethylbenzene	3.5	Maximum Concentration	0.03	0.03	1.1E-01	1.1E-01
1,2,4-Trimethylbenzene	5.8	Maximum Concentration	0.03	0.03	1.7E-01	1.7E-01
1,3-Dichlorobenzene	1.6	Maximum Concentration	0.03	0.03	4.8E-02	4.8E-02
Benzyl chloride	0.56	Maximum Concentration	0.03	0.03	1.7E-02	1.7E-02
Xylene (total)	53	Maximum Concentration	0.03	0.03	1.6E+00	1.6E+00

Notes:

[1] Represents the maximum detected concentration.

[2] DTSC recommended attenuation factors for future buildings, Vapor Intrusion Guidance, October 2011.

TABLE 6
EXPOSURE POINT CONCENTRATIONS IN GROUNDWATER
UPC OU-SM
Brisbane, California

Analyte	95% UCL[1] µg/L	Basis for 95% UCL
Metals		
Antimony	7.37	95% KM (Chebyshev) UCL
Arsenic	40.78	95% GROS Adjusted Gamma UCL
Barium	790.00	99% Chebyshev(Mean, Sd) UCL
Beryllium	0.61	95% KM Adjusted Gamma UCL
Chromium	4.38	95% KM (Chebyshev) UCL
Chromium, Hexavalent	4.04	95% KM (t) UCL
Cobalt	21.38	99% KM (Chebyshev) UCL
Copper	40.02	99% KM (Chebyshev) UCL
Lead	10.86	95% GROS Adjusted Gamma UCL
Mercury	0.25	Maximum
Molybdenum	5.19	95% KM Adjusted Gamma UCL
Nickel	6.77	95% t UCL (Assumes normality)
Silver	3.71	95% KM (t) UCL
Vanadium	3.12	99% KM (Chebyshev) UCL
Zinc	43.61	95% KM Adjusted Gamma UCL
Volatile Organic Compounds		
1,1-Dichloroethane	0.09	95% t UCL (Assumes normality)
1,3-Dichloropropene	8.80	Maximum
Benzene	0.27	Maximum
cis-1,2-Dichloroethene	54.91	99% KM (Chebyshev) UCL
Methyl-tert-butyl ether (MTBE)	0.09	95% t UCL (Assumes normality)
Tetrachloroethene (PCE)	0.20	95% KM (t) UCL
trans-1,2-Dichloroethene	5.93	99% KM (Chebyshev) UCL
Trichloroethene (TCE)	48.54	99% KM (Chebyshev) UCL
Vinyl Chloride	112.80	99% KM (Chebyshev) UCL
TPH-diesel (C10-C28)	192.40	KM H-UCL
TPH-gasoline (C4-C12)	123.80	99% KM (Chebyshev) UCL

Notes and Abbreviations:

1. The 95% UCL or the maximum detected concentration is presented, whichever is lower.

UCL = upper confidence limit

KM = Kaplan-Meier

BCA = Bias Corrected Accelerated

GROS = gamma regression on order statistics

TABLE 7
TOXICITY CRITERIA OF COPCs
UPC OU-SM
Brisbane, California

Analyte	Cancer Toxicity Criteria				Noncancer Toxicity Criteria			
	Oral Slope Factor CSFo $(mg/kg\text{-}d)^{-1}$	Ref	Inhalation Unit Risk Factor IUR $(\mu g/m^3)^{-1}$	Ref	Oral Reference Dose RfDo mg/kg-d	Ref	Reference Concentration RfC $\mu g/m^3$	Ref
Metals								
Antimony	NC		NC		4.0E-04	i	NA	
Arsenic	9.5E+00	c	3.3E-03	c	3.5E-06	c	1.5E-02	c
Barium	NC		NC		2.0E-01	i	5.0E-01	e
Beryllium	NC		2.4E-03	i	2.0E-04	c	7.0E-03	c
Cadmium	NC		1.8E-03	i	6.3E-06	c	1.0E-02	c
Chromium	NC		NC		1.5E+00	i	NA	
Cobalt	NC		9.0E-03	e	3.0E-04	e	6.0E-03	e
Copper	NC		NC		4.0E-02	e	NA	
Lead	NC		NC		NA		NA	
Mercury	NC		NC		1.6E-04	c	3.0E-02	c
Molybdenum	NC		NC		5.0E-03	i	NA	
Nickel	NC		2.6E-04	c	1.1E-02	c	1.4E-02	c
Selenium	NC		NC		5.0E-03	i	2.0E-02	c
Silver	NC		NC		5.0E-03	i	NA	
Thallium	NC		NC		1.0E-05	e	NA	
Vanadium	NC		NC		5.0E-03	e	1.0E-01	c
Zinc	NC		NC		3.0E-01	i	NA	
Volatile Organic Compounds (VOCs) and Total Petroleum Hydrocarbons as Gasoline								
1,1,1-Trichloroethane	NC		NC		2.0E+00	i	1.0E+03	c
1,1,2,2-Tetrachloroethane	2.0E-01	i	5.8E-05	c	2.0E-02	i	8.0E+01	i
1,1,2-Trichloroethane	5.7E-02	i	1.6E-05	i	4.0E-03	i	2.0E-01	e
1,1-Dichloroethane	5.7E-03	c	1.6E-06	c	2.0E-01	c	8.0E+02	c
1,1-Dichloroethene	NC		NC		5.0E-02	i	2.0E+02	i
1,2,3-Trichlorobenzene	NC		NC		8.0E-04	e	NA	
1,2,4-Trichlorobenzene	2.9E-02	e	NA		1.0E-02	i	2.0E+00	e
1,2,4-Trimethylbenzene	NC		NC		1.0E-02	i	6.0E+01	i
1,2-Dibromoethane	2.0E+00	i	6.0E-04	i	9.0E-03	i	9.0E+00	i
1,2-Dichlorobenzene	NC		NC		9.0E-02	i	2.0E+02	e
1,2-Dichloroethane	9.1E-02	i	2.6E-05	i	6.0E-03	e	7.0E+00	e
1,2-Dichloropropane	3.7E-02	e	3.7E-06	e	4.0E-02	e	4.0E+00	i
1,3,5-Trimethylbenzene	NC		NC		1.0E-02	i	6.0E+01	i
1,3-Dichlorobenzene	5.4E-03	c	1.1E-05	c	7.0E-02	e	8.0E+02	i
1,4-Dichlorobenzene	5.4E-03	c	1.1E-05	c	7.0E-02	e	8.0E+02	I
2-Butanone	NC		NC		6.0E-01	i	5.0E+03	i
2-Hexanone	NC		NC		5.0E-03	i	3.0E+00	i
4-Ethyltoluene	NC		NC		8.0E-02	i	3.0E+02	c
4-Methyl-2-Pentanone	NC		NC		NA		3.0E+03	i
Acetone	NC		NC		9.0E-01	i	3.1E+04	e
Benzene	1.0E-01	c	2.9E-05	c	4.0E-03	i	3.0E+00	c
Benzyl chloride	1.7E-01	i	4.9E-05	c	2.0E-03	e	1.0E+00	e
Bromodichloromethane	6.2E-02	i	3.7E-05	c	2.0E-02	i	8.0E+01	rtr
Bromoform	7.9E-03	i	1.1E-06	i	2.0E-02	i	8.0E+01	rtr
Bromomethane	NC		NC		1.4E-03	i	5.0E+00	i
Carbon disulfide	NC		NC		1.0E-01	i	7.0E+02	i
Carbon Tetrachloride	1.5E-01	c	4.2E-05	c	4.0E-03	i	1.0E+02	i
Chlorobenzene	NC		NC		2.0E-02	i	5.0E+01	e
Chloroethane	NC		NC		NA		1.0E+03	i

TABLE 7
TOXICITY CRITERIA OF COPCs
UPC OU-SM
Brisbane, California

Analyte	Cancer Toxicity Criteria				Noncancer Toxicity Criteria			
	Oral Slope Factor CSFo $(mg/kg\text{-}d)^{-1}$	Ref	Inhalation Unit Risk Factor IUR $(\mu g/m^3)^{-1}$	Ref	Oral Reference Dose RfDo mg/kg-d	Ref	Reference Concentration RfC $\mu g/m^3$	Ref
Chloroform	3.1E-02	c	2.3E-05	i	1.0E-02	i	9.8E+01	e
Chloromethane	NC		NC		NA		9.0E+01	i
cis-1,2-Dichloroethene	NC		NC		2.0E-03	i	8.0E+00	i
cis-1,3,-Dichloropropene	1.0E-01	i	4.0E-06	i	3.0E-02	i	2.0E+01	i
Dibromochloromethane	8.4E-02	i	NA		2.0E-02	i	NA	
Ethylbenzene	1.1E-02	c	2.5E-06	c	1.0E-01	i	1.0E+03	i
Freon 113	NC		NC		3.0E+01	i	5.0E+03	e
Freon 114	NC		NC		3.0E+01	i	5.0E+03	e
Freon 12	NC		NC		2.0E-01	i	1.0E+02	e
Hexachlorobutadiene	7.8E-02	i	2.2E-05	i	1.0E-03	e	4.0E+00	rtr
Isopropylbenzene	NC		NC		1.0E-01	i	4.0E+02	i
m,p-Xylene	NC		NC		2.0E-01	i	1.0E+02	i
Methylene Chloride	1.4E-02	c	1.0E-06	c	6.0E-03	i	6.0E+02	i
n-Butylbenzene	NC		NC		5.0E-02	e	2.0E+02	rtr
n-Propylbenzene	NC		NC		1.0E-01	e	1.0E+03	e
o-Xylene	NC		NC		2.0E-01	i	1.0E+02	i
sec-Butylbenzene	NC		NC		1.0E-01	e	4.0E+02	rtr
Styrene	NC		NC		2.0E-01	i	1.0E+03	i
tert-Butylbenzene	NC		NC		1.0E-01	e	4.0E+02	rtr
Tetrachloroethene (PCE)	5.4E-01	c	6.1E-06	c	6.0E-03	i	4.0E+01	i
Toluene	NC		NC		8.0E-02	i	3.0E+02	c
TPH-g (C4-C12)	NC		NC		4.0E-03	e	3.0E+01	e
trans-1,2-Dichloroethene	NC		NC		2.0E-02	i	8.0E+01	rtr
trans-1,3-Dichloropropene	NA		1.6E-05	c	NA		2.0E+01	i
Trichloroethene (TCE)	4.6E-02	i	4.1E-06	i	5.0E-04	i	2.0E+00	i
Trichlorofluoromethane	NC		NC		3.0E-01	i	1.2E+03	rtr
Vinyl Acetate	NC		NC		1.0E+00	e	2.0E+02	i
Vinyl Chloride	2.7E-01	c	7.8E-05	c	3.0E-03	i	1.0E+02	i
Xylenes, Total	NC		NC		2.0E-01	i	1.0E+02	i
Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel								
2-Methylnaphthalene	NC		NC		4.0E-03	i	NA	
Acenaphthene	NC		NC		6.0E-02	i	NA	
Acenaphthylene	NC		NC		NA		NA	
Anthracene	NC		NC		3.0E-01	i	NA	
Benzo(a)anthracene	1.0E-01	e	6.0E-05	e	NA		NA	
Benzo(a)pyrene	1.0E+00	i	6.0E-04	i	3.0E-04	i	2.0E-03	i
Benzo(b)fluoranthene	1.0E-01	e	6.0E-05	e	NA		NA	
Benzo(g,h,i)perylene	NC		NC		NA		NA	
Benzo(k)fluoranthene	1.0E-02	e	6.0E-06	e	NA		NA	
Chrysene	1.0E-03	e	6.0E-07	e	NA		NA	
Dibenzo(a,h)anthracene	1.0E+00	e	6.0E-04	e	NA		NA	
Fluoranthene	NC		NC		4.0E-02	i	NA	
Fluorene	NC		NC		4.0E-02	i	NA	
Indeno(1,2,3-cd)pyrene	1.0E-01	e	6.0E-05	e	--	--	--	--
Naphthalene	NC		3.4E-05	c	2.0E-02	i	3.0E+00	i
Phenanthrene	NC		NC		NA		NA	
Pyrene	NC		NC		3.0E-02	i	NA	
TPH-Diesel (C10-C28)	NC		NC		3.0E-03	e	3.0E+00	e

TABLE 7
TOXICITY CRITERIA OF COPCs
UPC OU-SM
Brisbane, California

Analyte	Cancer Toxicity Criteria				Noncancer Toxicity Criteria			
	Oral Slope Factor CSFo $(mg/kg\text{-}d)^{-1}$	Ref	Inhalation Unit Risk Factor IUR $(\mu g/m^3)^{-1}$	Ref	Oral Reference Dose RfDo mg/kg-d	Ref	Reference Concentration RfC $\mu g/m^3$	Ref
Organochlorine Pesticides and Polychlorinated Biphenyls								
4,4'-DDD	2.4E-01	i	6.9E-05	c	3.0E-05	e	NA	
4,4'-DDE	3.4E-01	i	9.7E-05	c	3.0E-04	e	NA	
4,4'-DDT	3.4E-01	i	9.7E-05	i	5.0E-04	i	NA	
alpha-Chlordane	3.5E-01	i	1.0E-04	i	5.0E-04	i	7.0E-01	i
Chlordane	3.5E-01	i	1.0E-04	i	5.0E-04	i	7.0E-01	i
delta-BHC	NC		NC		NA		NA	
Dieldrin	1.6E+01	i	4.6E-03	i	5.0E-05	i	NA	
gamma-Chlordane	3.5E-01	i	1.0E-04	i	5.0E-04	i	7.0E-01	i
Heptachlor epoxide	9.1E+00	i	2.6E-03	i	1.3E-05	i	NA	
Methoxychlor	NC		NC		5.0E-03	i	NA	
PCB-1254 (Aroclor 1254)	2.0E+00	e	5.7E-04	e	2.0E-05	i	NA	
PCB-1260 (Aroclor 1260)	2.0E+00	e	5.7E-04	e	NA		NA	

Notes and Abbreviations:
COPCs = chemicals of potential concern
Ref = Reference
c = cal epa oehha
e = US EPA RSLs
i = IRIS
NC = Noncarcinogen
NA = Not Available
rtr = route-to-route

TABLE 8

SUMMARY OF EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD
CHEMICALS IN SOIL - FUTURE WORKER

UPC OU-SM

Brisbane, California

Analyte	Exposure Point Concentration 0 - 2 ft bgs mg/kg	Screening Level Cancer mg/kg	Screening Level Noncancer mg/kg	Screening Level Reference	Excess Cancer Risk	Noncancer Hazard Index	Percent Contribution Cancer	Percent Contribution Noncancer
Metals								
Antimony	4.23	NC	4.70E+02	EPA RSL	NC	9.0E-03	--	0%
Arsenic	101.6	3.60E-01	4.20E+00	DTSC	2.8E-04	2.4E+01	98%	90%
Arsenic naturally-occurring background	*19*	*3.60E-01*	*4.20E+00*	*DTSC*	*5.3E-05*	*4.5E+00*	--	--
Barium	184.9	NC	2.20E+05	EPA RSL	NC	8.4E-04	--	0%
Beryllium	0.119	6.90E+03	2.10E+02	DTSC	1.7E-11	5.7E-04	0%	0%
Cadmium	2.09	9.30E+03	7.30E+00	DTSC	2.3E-10	2.9E-01	0%	1%
Chromium	58.22	NC	1.70E+05	DTSC	NC	3.4E-04	--	0%
Cobalt	13.25	1.90E+03	3.50E+02	EPA RSL	7.0E-09	3.8E-02	0%	0%
Copper	340.5	NC	4.70E+04	EPA RSL	NC	7.2E-03	--	0%
Lead	685.6	NC	3.20E+02	DTSC	NC	NA	--	--
Mercury	3.58	NC	4.40E+00	DTSC	NC	8.1E-01	--	3%
Molybdenum	2.35	NC	5.80E+03	EPA RSL	NC	4.1E-04	--	0%
Nickel	32.3	6.40E+04	3.10E+03	DTSC	5.0E-10	1.0E-02	0%	0%
Selenium	0.49	NC	5.80E+03	EPA RSL	NC	8.4E-05	--	0%
Silver	0.64	NC	5.80E+03	EPA RSL	NC	1.1E-04	--	0%
Thallium	0.72	NC	1.20E+01	EPA RSL	NC	6.0E-02	--	0%
Vanadium	86.72	NC	1.00E+03	DTSC	NC	8.7E-02	--	0%
Zinc	1119	NC	3.50E+05	EPA RSL	NC	3.2E-03	--	0%
Volatile Organic Compounds (VOCs) and Total Petroleum Hydrocarbons as Gasoline								
1,1-Dichloroethene	0.0018	NC	1.00E+03	EPA RSL	NC	1.8E-06	--	0%
1,2,3-Trichlorobenzene	0.00068	NC	9.30E+02	EPA RSL	NC	7.3E-07	--	0%
1,3,5-Trimethylbenzene	0.00059	NC	1.50E+03	EPA RSL	NC	3.9E-07	--	0%
2-Butanone	0.0157	NC	1.90E+05	EPA RSL	NC	8.3E-08	--	0%
2-Hexanone	0.016	NC	1.30E+03	EPA RSL	NC	1.2E-05	--	0%
Acetone	0.052	NC	6.70E+05	EPA RSL	NC	7.7E-08	--	0%
Benzene	0.00032	1.40E+00	4.60E+01	DTSC	2.3E-10	6.9E-06	0%	0%
Carbon disulfide	0.0013	NC	3.50E+03	EPA RSL	NC	3.6E-07	--	0%
cis-1,2-Dichloroethene	0.00057	NC	8.40E+01	DTSC	NC	6.8E-06	--	0%
Isopropylbenzene	0.0019	NC	9.90E+03	EPA RSL	NC	1.9E-07	--	0%
n-Butylbenzene	0.00049	NC	5.80E+04	EPA RSL	NC	8.5E-09	--	0%
n-Propylbenzene	0.00037	NC	2.40E+04	EPA RSL	NC	1.5E-08	--	0%
sec-Butylbenzene	0.00033	NC	1.20E+05	EPA RSL	NC	2.8E-09	--	0%
tert-Butylbenzene	0.00067	NC	1.20E+05	EPA RSL	NC	5.6E-09	--	0%
Tetrachloroethene (PCE)	0.00084	2.70E+00	3.90E+02	DTSC	3.1E-10	2.2E-06	0%	0%
Toluene	0.00041	NC	5.30E+03	DTSC	NC	7.7E-08	--	0%
trans-1,2-Dichloroethene	0.0017	NC	6.00E+02	DTSC	NC	2.8E-06	--	0%
Trichloroethene (TCE)	0.0067	6.00E+00	1.90E+01	EPA RSL	1.1E-09	3.5E-04	0%	0%
Vinyl Chloride	0.00034	1.50E-01	3.70E+02	DTSC	2.2E-09	9.1E-07	0%	0%
Xylenes, Total	0.0011	NC	2.50E+03	EPA RSL	NC	4.4E-07	--	0%
TPH-g (C4-C12)	0.053	NC	4.20E+02	EPA RSL	NC	1.3E-04	--	0%
Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel								
2-Methylnaphthalene	2.15	NC	3.00E+03	EPA RSL	NC	7.2E-04	--	0%
Acenaphthene	2.91	NC	2.30E+04	DTSC	NC	1.3E-04	--	0%
Acenaphthylene	0.35	NC	2.30E+04	acenapthene	NC	1.5E-05	--	0%
Anthracene	0.98	NC	1.30E+05	DTSC	NC	7.6E-06	--	0%
Benzo(a)anthracene	0.95	1.20E+01	NA	DTSC	7.9E-08	NA	0%	--
Benzo(a)pyrene	1.15	1.30E+00	1.30E+02	DTSC	8.8E-07	8.8E-03	0%	0%
Benzo(b)fluoranthene	1.30	1.30E+01	NA	DTSC	1.0E-07	NA	0%	--
Benzo(g,h,i)perylene	0.59	NC	3.00E+04	DTSC	NC	2.0E-05	--	0%
Benzo(k)fluoranthene	0.56	1.30E+02	NA	DTSC	4.3E-09	NA	0%	--

TABLE 8

SUMMARY OF EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD
CHEMICALS IN SOIL - FUTURE WORKER

UPC OU-SM

Brisbane, California

Analyte	Exposure Point Concentration 0 - 2 ft bgs mg/kg	Screening Level Cancer mg/kg	Screening Level Noncancer mg/kg	Screening Level Reference	Excess Cancer Risk	Noncancer Hazard Index	Percent Contribution Cancer	Percent Contribution Noncancer
Chrysene	0.95	1.30E+03	NA	DTSC	7.3E-10	NA	0%	--
Dibenzo(a,h)anthracene	0.17	3.10E-01	NA	DTSC	5.6E-07	NA	0%	--
Fluoranthene	2.50	NC	1.80E+04	DTSC	NC	1.4E-04	--	0%
Fluorene	2.17	NC	1.70E+04	DTSC	NC	1.3E-04	--	0%
Indeno(1,2,3-cd)pyrene	0.45	1.30E+01	NA	DTSC	3.5E-08	NA	0%	--
Naphthalene	6.72	6.50E+00	5.70E+02	DTSC	1.0E-06	1.2E-02	0%	0%
Phenanthrene	4.71	NC	1.30E+04	pyrene	NC	3.6E-04	--	0%
Pyrene	2.27	NC	1.30E+04	DTSC	NC	1.7E-04	--	0%
TPH-Diesel (C10-C28)	655.8	NC	4.40E+02	DTSC	NC	1.5E+00	--	6%
B(a)P TEQ	1.6	1.30E+00	1.30E+02	DTSC	1.2E-06	1.2E-02	--	--
Benzo(a)pyrene naturally-occurring background	*0.90*	*1.30E+00*	*1.30E+02*	*DTSC*	*6.9E-07*	*6.9E-03*	--	--
Organochlorine Pesticides and Polychlorinated Biphenyls								
4,4'-DDD	0.00061	9.60E+00	2.50E+01	EPA RSL	6.4E-11	2.4E-05	0%	0%
4,4'-DDE	0.0031	9.30E+00	3.50E+02	EPA RSL	3.3E-10	8.9E-06	0%	0%
4,4'-DDT	0.010	8.50E+00	5.20E+02	EPA RSL	1.2E-09	2.0E-05	0%	0%
alpha-Chlordane	0.00077	7.70E+00	4.50E+02	chlordane	1.0E-10	1.7E-06	0%	0%
Chlordane	0.0057	7.70E+00	4.50E+02	EPA RSL	7.4E-10	1.3E-05	0%	0%
delta-BHC	ND	1.30E+00	NA	beta-HCH	NA	NA	--	--
Dieldrin	ND	1.40E-01	4.10E+01	EPA RSL	NA	NA	--	--
gamma-Chlordane	0.0012	7.70E+00	4.50E+02	chlordane	1.5E-10	2.6E-06	0%	0%
Heptachlor epoxide	ND	3.30E-01	1.50E+01	EPA RSL	NA	NA	--	--
Methoxychlor	ND	NC	4.10E+03	EPA RSL	NA	NA	--	--
PCB-1254 (Aroclor 1254)	0.063	5.90E-01	8.40E+00	DTSC	1.1E-07	7.5E-03	0%	0%
PCB-1260 (Aroclor 1260)	1.07	6.00E-01	NA	DTSC	1.8E-06	NA	1%	--
TOTAL					**3E-04**	**2.7E+01**		

Notes and Abbreviations:

[1] Screening levels based first on DTSC Modified Screening Levels, April 2019 and supplemented by U.S. EPA Regional Screening Levels May 2019).

NC = Noncarcinogen NA = Not Available

DTSC = Department of Toxic Substances Control

RSL = Regional Screening Levels

TABLE 9

SUMMARY OF EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD
CHEMICALS IN SOIL - FUTURE RESIDENT

UPC OU-SM
Brisbane, California

Analyte	Exposure Point Concentration 0 - 2 ft bgs mg/kg	Screening Level Cancer mg/kg	Screening Level Noncancer mg/kg	Screening Level Reference	Excess Cancer Risk	Noncancer Hazard Index	Percent Contribution Cancer	Percent Contribution Noncancer
Metals								
Antimony	4.23	NC	3.10E+01	EPA RSL	NC	1.4E-01	--	0%
Arsenic	101.6	1.10E-01	4.00E-01	DTSC	9.2E-04	2.5E+02	97%	95%
Arsenic naturally-occurring background	*19*	*1.10E-01*	*4.00E-01*	*DTSC*	*1.7E-04*	*4.8E+01*	--	--
Barium	184.9	NC	1.50E+04	EPA RSL	NC	1.2E-02	--	0%
Beryllium	0.12	1.60E+03	1.50E+01	DTSC	7.4E-11	7.9E-03	0%	0%
Cadmium	2.09	2.10E+03	5.20E+00	DTSC	1.0E-09	4.0E-01	0%	0%
Chromium	58.22	NC	3.60E+04	DTSC	NC	1.6E-03	--	0%
Cobalt	13.25	4.20E+02	2.30E+01	EPA RSL	3.2E-08	5.8E-01	0%	0%
Copper	340.5	NC	3.10E+03	EPA RSL	NC	1.1E-01	--	0%
Lead	685.6	NC	8.00E+01	DTSC	NC	NA	--	--
Mercury	3.58	NC	1.00E+00	DTSC	NC	3.6E+00	--	1%
Molybdenum	2.35	NC	3.90E+02	EPA RSL	NC	6.0E-03	--	0%
Nickel	32.3	1.50E+04	4.90E+02	DTSC	2.2E-09	6.6E-02	0%	0%
Selenium	0.49	NC	3.90E+02	EPA RSL	NC	1.2E-03	--	0%
Silver	0.64	NC	3.90E+02	EPA RSL	NC	1.6E-03	--	0%
Thallium	0.72	NC	7.80E-01	EPA RSL	NC	9.2E-01	--	0%
Vanadium	86.72	NC	3.90E+02	DTSC	NC	2.2E-01	--	0%
Zinc	1119	NC	2.30E+04	EPA RSL	NC	4.9E-02	--	0%
Volatile Organic Compounds (VOCs) and Total Petroleum Hydrocarbons as Gasoline								
1,1-Dichloroethene	0.0018	NC	2.30E+02	EPA RSL	NC	7.8E-06	--	0%
1,2,3-Trichlorobenzene	0.00068	NC	6.30E+01	EPA RSL	NC	1.1E-05	--	0%
1,3,5-Trimethylbenzene	0.00059	NC	2.70E+02	EPA RSL	NC	2.2E-06	--	0%
2-Butanone	0.0157	NC	2.70E+04	EPA RSL	NC	5.8E-07	--	0%
2-Hexanone	0.016	NC	2.00E+02	EPA RSL	NC	8.0E-05	--	0%
Acetone	0.0518	NC	6.10E+04	EPA RSL	NC	8.5E-07	--	0%
Benzene	0.00032	3.30E-01	1.10E+01	DTSC	9.6E-10	2.9E-05	0%	0%
Carbon disulfide	0.00128	NC	7.70E+02	EPA RSL	NC	1.7E-06	--	0%
cis-1,2-Dichloroethene	0.00057	NC	1.80E+01	DTSC	NC	3.2E-05	--	0%
Isopropylbenzene	0.0019	NC	1.90E+03	EPA RSL	NC	1.0E-06	--	0%
n-Butylbenzene	0.00049	NC	3.90E+03	EPA RSL	NC	1.3E-07	--	0%
n-Propylbenzene	0.00037	NC	3.80E+03	EPA RSL	NC	9.7E-08	--	0%
sec-Butylbenzene	0.00033	NC	7.80E+03	EPA RSL	NC	4.2E-08	--	0%
tert-Butylbenzene	0.00067	NC	7.80E+03	EPA RSL	NC	8.6E-08	--	0%
Tetrachloroethene (PCE)	0.00084	5.90E-01	8.10E+01	DTSC	1.4E-09	1.0E-05	0%	0%
Toluene	0.00041	NC	1.10E+03	DTSC	NC	3.7E-07	--	0%
trans-1,2-Dichloroethene	0.0017	NC	1.30E+02	DTSC	NC	1.3E-05	--	0%
Trichloroethene (TCE)	0.0067	9.40E-01	4.10E+00	EPA RSL	7.1E-09	1.6E-03	0%	0%
Vinyl Chloride	0.00034	8.70E-03	7.00E+01	DTSC	3.9E-08	4.8E-06	0%	0%
Xylenes, Total	0.0011	NC	5.80E+02	EPA RSL	NC	1.9E-06	--	0%
TPH-g (C4-C12)	0.053	NC	8.20E+01	EPA RSL	NC	6.5E-04	--	0%
Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel								
2-Methylnaphthalene	2.15	NC	2.40E+02	EPA RSL	NC	9.0E-03	--	0%
Acenaphthene	2.91	NC	3.30E+03	DTSC	NC	8.8E-04	--	0%
Acenaphthylene	0.35	NC	3.30E+03	acenapthene	NC	1.1E-04	--	0%
Anthracene	0.98	NC	1.70E+04	DTSC	NC	5.8E-05	--	0%
Benzo(a)anthracene	0.95	1.10E+00	NA	DTSC	8.7E-07	NA	0%	--
Benzo(a)pyrene	1.15	1.10E-01	1.80E+01	DTSC	1.0E-05	6.4E-02	1%	0%
Benzo(b)fluoranthene	1.30	1.10E+00	NA	DTSC	1.2E-06	NA	0%	--
Benzo(g,h,i)perylene	0.59	NC	2.40E+03	DTSC	NC	2.5E-04	--	0%
Benzo(k)fluoranthene	0.56	1.10E+01	NA	DTSC	5.1E-08	NA	0%	--

TABLE 9

SUMMARY OF EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD
CHEMICALS IN SOIL - FUTURE RESIDENT

UPC OU-SM

Brisbane, California

Analyte	Exposure Point Concentration 0 - 2 ft bgs mg/kg	Screening Level Cancer mg/kg	Screening Level Noncancer mg/kg	Screening Level Reference	Excess Cancer Risk	Noncancer Hazard Index	Percent Contribution Cancer	Percent Contribution Noncancer
Chrysene	0.95	1.10E+02	NA	DTSC	8.7E-09	NA	0%	--
Dibenzo(a,h)anthracene	0.17	2.80E-02	NA	DTSC	6.2E-06	NA	1%	--
Fluoranthene	2.50	NC	2.40E+03	DTSC	NC	1.0E-03	--	0%
Fluorene	2.17	NC	2.30E+03	DTSC	NC	9.4E-04	--	0%
Indeno(1,2,3-cd)pyrene	0.45	1.10E+00	NA	DTSC	4.1E-07	NA	0%	--
Naphthalene	6.72	2.00E+00	1.30E+02	DTSC	3.4E-06	5.2E-02	0%	0%
Phenanthrene	4.71	NC	1.80E+03	pyrene	NC	2.6E-03	--	0%
Pyrene	2.27	NC	1.80E+03	DTSC	NC	1.3E-03	--	0%
TPH-Diesel (C10-C28)	655.8	NC	9.60E+01	DTSC	NC	6.8E+00	--	3%
B(a)P TEQ	1.6	1.10E-01	1.80E+01	DTSC	1.4E-05	8.9E-02	--	--
Benzo(a)pyrene naturally-occurring background	*0.90*	*1.10E-01*	*1.80E+01*	*DTSC*	*8.2E-06*	*5.0E-02*	--	--
Organochlorine Pesticides and Polychlorinated Biphenyls								
4,4'-DDD	0.00061	2.30E+00	1.90E+00	EPA RSL	2.7E-10	3.2E-04	0%	0%
4,4'-DDE	0.0031	2.00E+00	2.30E+01	EPA RSL	1.6E-09	1.4E-04	0%	0%
4,4'-DDT	0.0102	1.90E+00	3.70E+01	EPA RSL	5.4E-09	2.8E-04	0%	0%
alpha-Chlordane	0.00077	1.70E+00	3.50E+01	chlordane	4.5E-10	2.2E-05	0%	0%
Chlordane	0.0057	1.70E+00	3.50E+01	EPA RSL	3.4E-09	1.6E-04	0%	0%
delta-BHC	ND	3.00E-01	NA	beta-HCH	ND	ND	--	--
Dieldrin	ND	3.40E-02	3.20E+00	EPA RSL	ND	ND	--	--
gamma-Chlordane	0.0012	1.70E+00	3.50E+01	chlordane	7.0E-10	3.4E-05	0%	0%
Heptachlor epoxide	ND	7.00E-02	1.00E+00	EPA RSL	ND	ND	--	--
Methoxychlor	ND	NC	3.20E+02	EPA RSL	ND	ND	--	--
PCB-1254 (Aroclor 1254)	0.063	2.40E-01	1.20E+00	DTSC	2.6E-07	5.3E-02	0%	0%
PCB-1260 (Aroclor 1260)	1.07	2.40E-01	NA	DTSC	4.5E-06	NA	0%	--
TOTAL with Arsenic					**1E-03**	**2.7E+02**		

Notes and Abbreviations:

[1] Screening levels based first on DTSC Modified Screening Levels, April 2019 and supplemented by U.S. EPA Regional Screening Levels May 2019).

NC = Noncarcinogen NA = Not Available

DTSC = Department of Toxic Substances Control

RSL = Regional Screening Levels

TABLE 10

SUMMARY OF EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD
CHEMICALS IN SOIL - FUTURE CONSTRUCTION WORKER

UPC OU-SM
Brisbane, California

Analyte	Exposure Point Concentration 0 - 10 ft bgs mg/kg	Screening Level Cancer mg/kg	Screening Level Noncancer mg/kg	Screening Level Reference	Excess Cancer Risk	Noncancer Hazard Index	Percent Contribution Cancer	Percent Contribution Noncancer
Metals								
Antimony	10.6	NC	4.96E+01	WB ESL	NC	2.1E-01	--	0%
Arsenic	67.2	2.03E+00	9.76E-01	WB ESL	3.3E-05	6.9E+01	98%	97%
Arsenic naturally-occurring background	*19*	*2.03E+00*	*9.76E-01*	*WB ESL*	*9.3E-06*	*1.9E+01*	--	--
Barium	216.1	NC	3.02E+03	WB ESL	NC	7.2E-02	--	0%
Beryllium	0.23	1.84E+02	2.72E+01	WB ESL	1.3E-09	8.5E-03	0%	0%
Cadmium	2.16	1.05E+02	5.09E+01	WB ESL	2.1E-08	4.2E-02	0%	0%
Chromium	112.4	NC	5.31E+05	WB ESL	NC	2.1E-04	--	0%
Cobalt	13.5	4.91E+01	2.79E+01	WB ESL	2.8E-07	4.8E-01	1%	1%
Copper	207.7	NC	1.42E+04	WB ESL	NC	1.5E-02	--	0%
Lead	783.5	2.70E+03	1.60E+02	WB ESL	2.9E-07	NA	1%	--
Mercury	3.95	NC	4.36E+01	WB ESL	NC	9.1E-02	--	0%
Molybdenum	1.43	NC	1.77E+03	WB ESL	NC	8.1E-04	--	0%
Nickel	53.7	1.70E+03	8.63E+01	WB ESL	3.2E-08	6.2E-01	0%	1%
Selenium	0.58	NC	1.75E+03	WB ESL	NC	3.3E-04	--	0%
Silver	0.76	NC	1.77E+03	WB ESL	NC	4.3E-04	--	0%
Thallium	0.8	NC	3.54E+00	WB ESL	NC	2.3E-01	--	0%
Vanadium	72.9	NC	4.66E+02	WB ESL	NC	1.6E-01	--	0%
Zinc	725.7	NC	1.06E+05	WB ESL	NC	6.8E-03	--	0%
Volatile Organic Compounds (VOCs) and Total Petroleum Hydrocarbons as Gasoline								
1,1-Dichloroethene	0.0018	NC	3.48E+02	WB ESL	NC	5.2E-06	--	0%
1,2,3-Trichlorobenzene	0.00068	2.40E+01	5.89E+01	WB ESL	2.8E-11	1.2E-05	0%	0%
1,3,5-Trimethylbenzene	0.00059	NC	NA	WB ESL	NC	NA	--	--
2-Butanone	0.0157	NC	1.20E+05	WB ESL	NC	1.3E-07	--	0%
2-Hexanone	0.016	NC	NA	WB ESL	NC	NA	--	--
Acetone	0.0518	NC	2.72E+05	WB ESL	NC	1.9E-07	--	0%
Benzene	0.00032	3.28E+01	4.54E+01	WB ESL	9.8E-12	7.0E-06	0%	0%
Carbon disulfide	0.00128	NC	NA	WB ESL	NC	NA	--	--
cis-1,2-Dichloroethene	0.00057	NC	7.83E+01	WB ESL	NC	7.3E-06	--	0%
Isopropylbenzene	0.0019	NC	NA	WB ESL	NC	NA	--	--
n-Butylbenzene	0.00049	NC	NA	WB ESL	NC	NA	--	--
n-Propylbenzene	0.00037	NC	NA	WB ESL	NC	NA	--	--
sec-Butylbenzene	0.00033	NC	NA	WB ESL	NC	NA	--	--
tert-Butylbenzene	0.00067	NC	NA	WB ESL	NC	NA	--	--
Tetrachloroethene (PCE)	0.000842	3.32E+01	3.49E+02	WB ESL	2.5E-11	2.4E-06	0%	0%
Toluene	0.00041	NC	4.70E+03	WB ESL	NC	8.7E-08	--	0%
trans-1,2-Dichloroethene	0.0017	NC	5.70E+02	WB ESL	NC	3.0E-06	--	0%
Trichloroethene (TCE)	0.00672	1.27E+02	1.76E+01	WB ESL	5.3E-11	3.8E-04	0%	0%
Vinyl Chloride	0.00034	3.40E+00	3.02E+02	WB ESL	1.0E-10	1.1E-06	0%	0%
Xylenes, Total	0.0011	NC	2.40E+03	WB ESL	NC	4.6E-07	--	0%
TPH-g (C4-C12)	0.053	NC	1.80E+03	WB ESL	NC	2.9E-05	--	0%
Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel								
2-Methylnaphthalene	0.8951	NC	6.70E+02	WB ESL	NC	1.3E-03	--	0%
Acenaphthene	0.8772	NC	1.01E+04	WB ESL	NC	8.7E-05	--	0%
Acenaphthylene	0.1514	NC	NA	WB ESL	NC	NA	--	--
Anthracene	0.4244	NC	5.03E+04	WB ESL	NC	8.4E-06	--	0%
Benzo(a)anthracene	0.4311	1.13E+02	NA	WB ESL	3.8E-09	NA	0%	--
Benzo(a)pyrene	0.188	1.14E+01	1.01E+01	WB ESL	1.6E-08	1.9E-02	0%	0%
Benzo(b)fluoranthene	0.2581	1.14E+02	NA	WB ESL	2.3E-09	NA	0%	--

TABLE 10

SUMMARY OF EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD
CHEMICALS IN SOIL - FUTURE CONSTRUCTION WORKER

UPC OU-SM
Brisbane, California

Analyte	Exposure Point Concentration 0 - 10 ft bgs mg/kg	Screening Level Cancer mg/kg	Screening Level Noncancer mg/kg	Screening Level Reference	Excess Cancer Risk	Noncancer Hazard Index	Percent Contribution Cancer	Percent Contribution Noncancer
Benzo(g,h,i)perylene	0.2605	NC	NA	WB ESL	NC	NA	--	--
Benzo(k)fluoranthene	0.2464	9.08E+02	NA	WB ESL	2.7E-10	NA	0%	--
Chrysene	0.2149	9.08E+03	NA	WB ESL	2.4E-11	NA	0%	--
Dibenzo(a,h)anthracene	0.0771	1.14E+01	NA	WB ESL	6.8E-09	NA	0%	--
Fluoranthene	0.2417	NC	6.70E+03	WB ESL	NC	3.6E-05	--	0%
Fluorene	0.6471	NC	6.70E+03	WB ESL	NC	9.7E-05	--	0%
Indeno(1,2,3-cd)pyrene	0.199	1.14E+02	NA	WB ESL	1.7E-09	NA	0%	--
Naphthalene	2.725	4.04E+02	5.01E+02	WB ESL	6.7E-09	5.4E-03	0%	0%
Phenanthrene	0.2829	NC	NA	WB ESL	NC	NA	--	--
Pyrene	0.3726	NC	5.03E+03	WB ESL	NC	7.4E-05	--	0%
TPH-Diesel (C10-C28)	360.1	NC	1.10E+03	WB ESL	NC	3.3E-01	--	0%
B(a)P TEQ	0.3566	1.14E+01	1.01E+01	WB ESL	3.1E-08	3.5E-02	--	--
Benzo(a)pyrene naturally-occurring background	*0.90*	*1.14E+01*	*1.01E+01*	WB ESL	*7.9E-08*	*8.9E-02*	--	--
Organochlorine Pesticides and Polychlorinated Biphenyls								
4,4'-DDD	0.00125	8.11E+04	NA	WB ESL	1.5E-14	NA	0%	--
4,4'-DDE	0.00125	5.68E+04	NA	WB ESL	2.2E-14	NA	0%	--
4,4'-DDT	0.00062	5.73E+04	1.41E+05	WB ESL	1.1E-14	4.4E-09	0%	0%
alpha-Chlordane	0.00077	1.40E+04	1.30E+05	WB ESL	5.5E-14	5.9E-09	0%	0%
Chlordane	0.02136	1.40E+04	1.28E+05	WB ESL	1.5E-12	1.7E-07	0%	0%
delta-BHC	0.00096	NC	NA	WB ESL	NC	NA	--	--
Dieldrin	0.00140	1.06E+03	1.24E+04	WB ESL	1.3E-12	1.1E-07	0%	0%
gamma-Chlordane	0.00086	1.40E+04	1.30E+05	WB ESL	6.1E-14	6.6E-09	0%	0%
Heptachlor epoxide	0.01100	1.85E+03	3.22E+03	WB ESL	5.9E-12	3.4E-06	0%	0%
Methoxychlor	0.00075	NC	1.24E+06	WB ESL	NC	6.0E-10	--	0%
PCB-1254 (Aroclor 1254)	0.03750	5.49E+03	NA	WB ESL	6.8E-12	NA	0%	--
PCB-1260 (Aroclor 1260)	0.41660	5.49E+03	NA	WB ESL	7.6E-11	NA	0%	--
TOTAL with Arsenic					**3E-05**	**7.1E+01**		
TOTAL without Arsenic					**7E-07**	**2.3E+00**		

Notes and Abbreviations:

[1] Screening levels from California Regional Water Quality Control Board San Francisco Bay, Construction Worker, February 2019.

NC = Noncarcinogen NA = Not Available

TABLE 11
SUMMARY OF EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD
INHALATION OF CHEMICALS IN AIR FROM SOIL - OFF-SITE WORKER
UPC OU-SM
Brisbane, California

Analyte	Exposure Point Concentration 0 - 2 ft bgs mg/kg	Exposure Point Concentration in Air µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Screening Level Reference	Excess Cancer Risk	Noncancer Hazard Index	Percent Contribution Cancer	Percent Contribution Noncancer
Metals									
Antimony	4.23	5.4E-06	NC	NA	EPA RSL	NC	NA	--	--
Arsenic	101.6	1.3E-04	2.9E-03	6.6E-02	DTSC	4.4E-08	1.9E-03	73%	46%
Arsenic naturally-occurring background	*19*	2.4E-05	*2.9E-03*	*6.6E-02*	*DTSC*	8.3E-09	3.6E-04	--	--
Barium	184.9	2.3E-04	NC	2.2E+00	EPA RSL	NC	1.1E-04	--	2%
Beryllium	0.119	1.5E-07	5.1E-03	3.1E-02	DTSC	3.0E-11	4.9E-06	0%	0%
Cadmium	2.09	2.7E-06	NC	NA	DTSC	NC	NA	--	--
Chromium	58.22	7.4E-05	NC	NA	DTSC	NC	NA	--	--
Cobalt	13.25	1.7E-05	1.4E-03	2.6E-02	EPA RSL	1.2E-08	6.5E-04	20%	15%
Copper	340.5	4.3E-04	NC	NA	EPA RSL	NC	NA	--	--
Lead	685.6	8.7E-04	NC	NA	DTSC	NC	NA	--	--
Mercury	3.58	4.5E-06	NC	1.3E-01	DTSC	NC	3.5E-05	--	1%
Molybdenum	2.35	3.0E-06	NC	NA	EPA RSL	NC	NA	--	--
Nickel	32.3	4.1E-05	4.7E-02	6.1E-02	DTSC	8.7E-10	6.7E-04	1%	16%
Selenium	0.49	6.1E-07	NC	8.8E+01	EPA RSL	NC	7.0E-09	--	0%
Silver	0.64	8.1E-07	NC	NA	EPA RSL	NC	NA	--	--
Thallium	0.72	9.1E-07	NC	NA	EPA RSL	NC	NA	--	--
Vanadium	86.72	1.1E-04	NC	4.4E-01	DTSC	NC	2.5E-04	--	6%
Zinc	1119	1.4E-03	NC	NA	EPA RSL	NC	NA	--	--
Volatile Organic Compounds (VOCs) and Total Petroleum Hydrocarbons as Gasoline									
1,1-Dichloroethene	0.0018	1.6E-03	NC	8.8E+02	EPA RSL	NC	1.8E-06	--	0%
1,2,3-Trichlorobenzene	0.00068	2.1E-05	NC	NA	EPA RSL	NC	NA	--	--
1,3,5-Trimethylbenzene	0.00059	7.5E-10	NC	2.6E+02	EPA RSL	NC	2.9E-12	--	0%
2-Butanone	0.0157	1.3E-03	NC	2.2E+04	EPA RSL	NC	5.9E-08	--	0%
2-Hexanone	0.016	1.2E-03	NC	1.3E+02	EPA RSL	NC	9.3E-06	--	0%
Acetone	0.052	3.8E-03	NC	1.4E+05	EPA RSL	NC	2.7E-08	--	0%
Benzene	0.00032	8.9E-05	4.2E-01	1.3E+01	DTSC	2.1E-10	6.9E-06	0%	0%
Carbon disulfide	0.0013	1.1E-03	NC	3.1E+03	EPA RSL	NC	3.5E-07	--	0%
cis-1,2-Dichloroethene	0.00057	2.3E-04	NC	3.5E+01	DTSC	NC	6.5E-06	--	0%
Isopropylbenzene	0.0019	3.1E-04	NC	1.8E+03	EPA RSL	NC	1.7E-07	--	0%
n-Butylbenzene	0.00049	6.0E-05	NC	NA	EPA RSL	NC	NA	--	--
n-Propylbenzene	0.00037	5.3E-05	NC	4.4E+03	EPA RSL	NC	1.2E-08	--	0%
sec-Butylbenzene	0.00033	4.5E-05	NC	NA	EPA RSL	NC	NA	--	--
tert-Butylbenzene	0.00067	9.1E-05	NC	NA	EPA RSL	NC	NA	--	--
Tetrachloroethene (PCE)	0.00084	3.6E-04	2.0E+00	1.8E+02	DTSC	1.8E-10	2.0E-06	0%	0%
Toluene	0.00041	9.6E-05	NC	1.3E+03	DTSC	NC	7.4E-08	--	0%
trans-1,2-Dichloroethene	0.0017	9.7E-04	NC	3.5E+02	DTSC	NC	2.8E-06	--	0%
Trichloroethene (TCE)	0.0067	3.0E-03	3.0E+00	8.8E+00	EPA RSL	1.0E-09	3.5E-04	2%	8%
Vinyl Chloride	0.00034	3.5E-04	1.6E-01	4.4E+02	DTSC	2.2E-09	8.0E-07	4%	0%
Xylenes, Total	0.0011	1.9E-04	NC	4.4E+02	EPA RSL	NC	4.4E-07	--	0%
TPH-g (C4-C12)	0.053	1.0E-03	NC	1.3E+01	EPA RSL	NC	7.8E-05	--	2%
Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel									
2-Methylnaphthalene	2.15	2.7E-06	NC	NA	EPA RSL	NC	NA	--	--
Acenaphthene	2.91	3.7E-06	NC	1.1E+03	DTSC	NC	3.3E-09	--	0%
Acenaphthylene	0.35	4.4E-07	NC	1.1E+03	acenapthene	NC	4.0E-10	--	0%
Anthracene	0.98	1.2E-06	NC	5.3E+03	DTSC	NC	2.3E-10	--	0%
Benzo(a)anthracene	0.95	1.2E-06	1.1E-01	NA	DTSC	1.1E-11	NA	0%	--
Benzo(a)pyrene	1.15	1.4E-06	1.1E-02	8.8E-03	DTSC	1.3E-10	1.6E-04	0%	4%
Benzo(b)fluoranthene	1.30	1.6E-06	1.1E-01	NA	DTSC	1.5E-11	NA	0%	--
Benzo(g,h,i)perylene	0.59	7.5E-07	NC	7.0E+02	DTSC	NC	1.1E-09	--	0%
Benzo(k)fluoranthene	0.56	7.1E-07	1.1E-01	NA	DTSC	6.4E-12	NA	0%	--
Chrysene	0.95	1.2E-06	1.1E+00	NA	DTSC	1.1E-12	NA	0%	--
Dibenzo(a,h)anthracene	0.17	2.2E-07	1.0E-02	NA	DTSC	2.2E-11	NA	0%	--

TABLE 11
SUMMARY OF EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD
INHALATION OF CHEMICALS IN AIR FROM SOIL - OFF-SITE WORKER
UPC OU-SM
Brisbane, California

Analyte	Exposure Point Concentration 0 - 2 ft bgs mg/kg	Exposure Point Concentration in Air µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Screening Level Reference	Excess Cancer Risk	Noncancer Hazard Index	Percent Contribution Cancer	Percent Contribution Noncancer
Fluoranthene	2.50	3.2E-06	NC	7.0E+02	DTSC	NC	4.5E-09	--	0%
Fluorene	2.17	2.8E-06	NC	7.0E+02	DTSC	NC	3.9E-09	--	0%
Indeno(1,2,3-cd)pyrene	0.45	5.7E-07	1.1E-01	NA	DTSC	5.2E-12	NA	0%	--
Naphthalene	6.72	8.5E-06	3.6E-01	1.3E+01	DTSC	2.4E-11	6.5E-07	0%	0%
Phenanthrene	4.71	6.0E-06	NC	5.3E+02	pyrene	NC	1.1E-08	--	0%
Pyrene	2.27	2.9E-06	NC	5.3E+02	DTSC	NC	5.4E-09	--	0%
TPH-Diesel (C10-C28)	655.8	8.3E-04	NC	4.4E+02	DTSC	NC	1.9E-06	--	0%
B(a)P TEQ	1.6	2.0E-06	1.1E-02	8.8E-03	DTSC	1.8E-10	2.3E-04	0%	5%
Benzo(a)pyrene naturally-occurring background	*0.90*	1.1E-06	*1.1E-02*	*8.8E-03*	*DTSC*	1.0E-10	1.3E-04	--	--
Organochlorine Pesticides and Polychlorinated Biphenyls									
4,4'-DDD	0.00061	7.7E-10	1.8E-01	NA	EPA RSL	4.3E-15	NA	0%	--
4,4'-DDE	0.0031	3.9E-09	1.3E-01	NA	EPA RSL	3.0E-14	NA	0%	--
4,4'-DDT	0.010	1.3E-08	1.3E-01	NA	EPA RSL	9.9E-14	NA	0%	--
alpha-Chlordane	0.00077	9.8E-10	1.2E-01	3.1E+00	chlordane	8.1E-15	3.2E-10	0%	0%
Chlordane	0.0057	7.2E-09	1.2E-01	3.1E+00	EPA RSL	6.0E-14	2.3E-09	0%	0%
delta-BHC	ND	ND	2.3E-02	NA	beta-HCH	NA	NA	NA	--
Dieldrin	ND	ND	2.7E-03	NA	EPA RSL	NA	NA	NA	--
gamma-Chlordane	0.0012	1.5E-09	1.2E-01	3.1E+00	chlordane	1.3E-14	4.9E-10	0%	0%
Heptachlor epoxide	ND	ND	4.7E-03	NA	EPA RSL	NA	NA	NA	--
Methoxychlor	ND	ND	NC	NA	EPA RSL	NA	NA	NA	--
PCB-1254 (Aroclor 1254)	0.063	8.0E-08	2.1E-02	NA	DTSC	3.8E-12	NA	0%	--
PCB-1260 (Aroclor 1260)	1.07	1.4E-06	2.1E-02	NA	DTSC	6.5E-11	NA	0%	--
TOTAL						**6E-08**	**4.3E-03**		

Notes and Abbreviations:

[1] Screening levels for inhalation exposures based first on DTSC Modified Screening Levels, April 2019 and supplemented by U.S. EPA Regional Screening Levels May 2019).

NC = Noncarcinogen NA = Not Available

DTSC = Department of Toxic Substances Control

RSL = Regional Screening Levels

TABLE 12
SUMMARY OF EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD
INHALATION OF CHEMICALS IN AIR FROM SOIL - OFF-SITE RESIDENT
UPC OU-SM
Brisbane, California

Analyte	Exposure Point Concentration 0 - 2 ft bgs mg/kg	Exposure Point Concentration in Air µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Screening Level Reference	Excess Cancer Risk	Noncancer Hazard Index	Percent Contribution Cancer	Percent Contribution Noncancer
Metals									
Antimony	4.23	5.4E-06	NC	NA	EPA RSL	NC	NA	--	--
Arsenic	101.6	1.3E-04	6.5E-04	1.6E-02	DTSC	2.0E-07	8.0E-03	65%	45%
Arsenic naturally-occurring background	*19*	2.4E-05	*6.5E-04*	*1.6E-02*	*DTSC*	3.7E-08	1.5E-03	--	--
Barium	184.9	2.3E-04	NC	5.2E-01	EPA RSL	NC	4.5E-04	--	3%
Beryllium	0.119	1.5E-07	1.2E-03	7.3E-03	DTSC	1.3E-10	2.1E-05	0%	0%
Cadmium	2.09	2.7E-06	NC	NA	DTSC	NC	NA	--	--
Chromium	58.22	7.4E-05	NC	NA	DTSC	NC	NA	--	--
Cobalt	13.25	1.7E-05	3.1E-04	6.3E-03	EPA RSL	5.4E-08	2.7E-03	18%	15%
Copper	340.5	4.3E-04	NC	NA	EPA RSL	NC	NA	--	--
Lead	685.6	8.7E-04	NC	NA	DTSC	NC	NA	--	--
Mercury	3.58	4.5E-06	NC	3.1E-02	DTSC	NC	1.5E-04	--	1%
Molybdenum	2.35	3.0E-06	NC	NA	EPA RSL	NC	NA	--	--
Nickel	32.3	4.1E-05	1.1E-02	1.5E-02	DTSC	3.7E-09	2.7E-03	1%	15%
Selenium	0.49	6.1E-07	NC	2.1E+01	EPA RSL	NC	2.9E-08	--	0%
Silver	0.64	8.1E-07	NC	NA	EPA RSL	NC	NA	--	--
Thallium	0.72	9.1E-07	NC	NA	EPA RSL	NC	NA	--	--
Vanadium	86.72	1.1E-04	NC	1.0E-01	DTSC	NC	1.1E-03	--	6%
Zinc	1119	1.4E-03	NC	NA	EPA RSL	NC	NA	--	--
Volatile Organic Compounds (VOCs) and Total Petroleum Hydrocarbons as Gasoline									
1,1-Dichloroethene	0.0018	1.6E-03	NC	2.1E+02	EPA RSL	NC	7.4E-06	--	0%
1,2,3-Trichlorobenzene	0.00068	2.1E-05	NC	NA	EPA RSL	NC	NA	--	--
1,3,5-Trimethylbenzene	0.00059	7.5E-10	NC	6.3E+01	EPA RSL	NC	1.2E-11	--	0%
2-Butanone	0.0157	1.3E-03	NC	5.2E+03	EPA RSL	NC	2.5E-07	--	0%
2-Hexanone	0.016	1.2E-03	NC	3.1E+01	EPA RSL	NC	3.9E-05	--	0%
Acetone	0.052	3.8E-03	NC	3.2E+04	EPA RSL	NC	1.2E-07	--	0%
Benzene	0.00032	8.9E-05	9.7E-02	3.1E+00	DTSC	9.2E-10	2.9E-05	0%	0%
Carbon disulfide	0.0013	1.1E-03	NC	7.3E+02	EPA RSL	NC	1.5E-06	--	0%
cis-1,2-Dichloroethene	0.00057	2.3E-04	NC	8.3E+00	DTSC	NC	2.7E-05	--	0%
Isopropylbenzene	0.0019	3.1E-04	NC	4.2E+02	EPA RSL	NC	7.3E-07	--	0%
n-Butylbenzene	0.00049	6.0E-05	NC	NA	EPA RSL	NC	NA	--	--
n-Propylbenzene	0.00037	5.3E-05	NC	1.0E+03	EPA RSL	NC	5.3E-08	--	0%
sec-Butylbenzene	0.00033	4.5E-05	NC	NA	EPA RSL	NC	NA	--	--
tert-Butylbenzene	0.00067	9.1E-05	NC	NA	EPA RSL	NC	NA	--	--
Tetrachloroethene (PCE)	0.00084	3.6E-04	4.6E-01	4.2E+01	DTSC	7.8E-10	8.5E-06	0%	0%
Toluene	0.00041	9.6E-05	NC	3.1E+02	DTSC	NC	3.1E-07	--	0%
trans-1,2-Dichloroethene	0.0017	9.7E-04	NC	8.3E+01	DTSC	NC	1.2E-05	--	0%
Trichloroethene (TCE)	0.0067	3.0E-03	4.8E-01	2.1E+00	EPA RSL	6.3E-09	1.4E-03	2%	8%
Vinyl Chloride	0.00034	3.5E-04	9.5E-03	1.0E+02	DTSC	3.7E-08	3.5E-06	12%	0%
Xylenes, Total	0.0011	1.9E-04	NC	1.0E+02	EPA RSL	NC	1.9E-06	--	0%
TPH-g (C4-C12)	0.053	1.0E-03	NC	3.1E+00	EPA RSL	NC	3.3E-04	--	2%
Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel									
2-Methylnaphthalene	2.15	2.7E-06	NC	NA	EPA RSL	NC	NA	--	--
Acenaphthene	2.91	3.7E-06	NC	2.5E+02	DTSC	NC	1.5E-08	--	0%
Acenaphthylene	0.35	4.4E-07	NC	2.5E+02	acenapthene	NC	1.8E-09	--	0%
Anthracene	0.98	1.2E-06	NC	1.3E+03	DTSC	NC	9.6E-10	--	0%
Benzo(a)anthracene	0.95	1.2E-06	9.2E-03	NA	DTSC	1.3E-10	NA	0%	--
Benzo(a)pyrene	1.15	1.4E-06	9.2E-04	2.1E-03	DTSC	1.6E-09	6.9E-04	1%	4%
Benzo(b)fluoranthene	1.30	1.6E-06	9.2E-03	NA	DTSC	1.8E-10	NA	0%	--
Benzo(g,h,i)perylene	0.59	7.5E-07	NC	1.7E+02	DTSC	NC	4.4E-09	--	0%
Benzo(k)fluoranthene	0.56	7.1E-07	9.2E-03	NA	DTSC	7.7E-11	NA	0%	--
Chrysene	0.95	1.2E-06	9.2E-02	NA	DTSC	1.3E-11	NA	0%	--
Dibenzo(a,h)anthracene	0.17	2.2E-07	8.4E-04	NA	DTSC	2.6E-10	NA	0%	--

TABLE 12
SUMMARY OF EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD
INHALATION OF CHEMICALS IN AIR FROM SOIL - OFF-SITE RESIDENT
UPC OU-SM
Brisbane, California

Analyte	Exposure Point Concentration 0 - 2 ft bgs mg/kg	Exposure Point Concentration in Air µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Screening Level Reference	Excess Cancer Risk	Noncancer Hazard Index	Percent Contribution Cancer	Percent Contribution Noncancer
Fluoranthene	2.50	3.2E-06	NC	1.7E+02	DTSC	NC	1.9E-08	--	0%
Fluorene	2.17	2.8E-06	NC	1.7E+02	DTSC	NC	1.6E-08	--	0%
Indeno(1,2,3-cd)pyrene	0.45	5.7E-07	9.2E-03	NA	DTSC	6.2E-11	NA	0%	--
Naphthalene	6.72	8.5E-06	8.3E-02	3.1E+00	DTSC	1.0E-10	2.7E-06	0%	0%
Phenanthrene	4.71	6.0E-06	NC	1.3E+02	pyrene	NC	4.6E-08	--	0%
Pyrene	2.27	2.9E-06	NC	1.3E+02	DTSC	NC	2.2E-08	--	0%
TPH-Diesel (C10-C28)	655.8	8.3E-04	NC	1.0E+02	DTSC	NC	8.3E-06	--	0%
B(a)P TEQ	1.6	2.0E-06	9.2E-04	2.1E-03	DTSC	2.2E-09	9.6E-04	1%	5%
Benzo(a)pyrene naturally-occurring background	*0.90*	1.1E-06	*9.2E-04*	*2.1E-03*	*DTSC*	1.2E-09	5.4E-04	--	--
Organochlorine Pesticides and Polychlorinated Biphenyls									
4,4'-DDD	0.00061	7.7E-10	4.1E-02	NA	EPA RSL	1.9E-14	NA	0%	--
4,4'-DDE	0.0031	3.9E-09	2.9E-02	NA	EPA RSL	1.4E-13	NA	0%	--
4,4'-DDT	0.010	1.3E-08	2.9E-02	NA	EPA RSL	4.5E-13	NA	0%	--
alpha-Chlordane	0.00077	9.8E-10	2.8E-02	7.3E-01	chlordane	3.5E-14	1.3E-09	0%	0%
Chlordane	0.0057	7.2E-09	2.8E-02	7.3E-01	EPA RSL	2.6E-13	9.9E-09	0%	0%
delta-BHC	ND	ND	5.3E-03	NA	beta-HCH	NA	NA	NA	--
Dieldrin	ND	ND	6.1E-04	NA	EPA RSL	NA	NA	NA	--
gamma-Chlordane	0.0012	1.5E-09	2.8E-02	7.3E-01	chlordane	5.4E-14	2.1E-09	0%	0%
Heptachlor epoxide	ND	ND	1.1E-03	NA	EPA RSL	NA	NA	NA	--
Methoxychlor	ND	ND	NC	NA	EPA RSL	NA	NA	NA	--
PCB-1254 (Aroclor 1254)	0.063	8.0E-08	4.9E-03	NA	DTSC	1.6E-11	NA	0%	--
PCB-1260 (Aroclor 1260)	1.07	1.4E-06	4.9E-03	NA	DTSC	2.8E-10	NA	0%	--
TOTAL						**3E-07**	**1.8E-02**		

Notes and Abbreviations:

[1] Screening levels for inhalation exposures based first on DTSC Modified Screening Levels, April 2019 and supplemented by U.S. EPA Regional Screening Levels May 2019).

NC = Noncarcinogen NA = Not Available

DTSC = Department of Toxic Substances Control

RSL = Regional Screening Levels

TABLE 13a

SUMMARY OF CANCER RISK AND NONCANCER HAZARD FROM SOIL VAPOR
DEFAULT ATTENUATION FACTOR
FUTURE WORKER

UPC OU-SM
Brisbane, California

Analyte	95% UCL Soil Vapor Concentration µg/m^3	Attenuation Factor unitless	95% UCL Indoor Air Concentration µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Excess Cancer Risk	Noncancer Hazard
Soil Vapor - Chlorinated Volatile Organic Compounds							
Tetrachloroethylene	6.62E+03	0.0005	3.31E+00	2.0E+00	1.8E+02	2E-06	1.9E-02
Trichloroethylene	3.88E+04	0.0005	1.94E+01	3.0E+00	8.8E+00	6E-06	2.2E+00
cis-1,2-Dichloroethene	5.52E+04	0.0005	2.76E+01	NC	3.5E+01	NC	7.9E-01
trans-1,2-Dichloroethene	1.81E+01	0.0005	9.03E-03	NC	3.5E+02	NC	2.6E-05
Vinyl Chloride	2.49E+03	0.0005	1.24E+00	1.6E-01	4.4E+02	8E-06	2.8E-03
1,1-Dichloroethene	7.14E+02	0.0005	3.57E-01	NC	3.1E+02	NC	1.2E-03
TOTAL						2E-05	3.0E+00

Notes and Abbreviations:

Screening levels based on an excess cancer risk of 1x10^{-6} and a hazard quotient of 1.0 (DTSC modified screening levels supplemented by EPA Regional Screening Levels.

-- = Not Available

NC = Noncarcinogen

µg/m^3 = micrograms per cubic meter

UCL = upper confidence limit

TABLE 13a (continued)

SUMMARY OF CANCER RISK AND NONCANCER HAZARD FROM SOIL VAPOR
DEFAULT ATTENUATION FACTOR
FUTURE WORKER

UPC OU-SM
Brisbane, California

Analyte	Maximum Soil Vapor Concentration µg/m^3	Attenuation Factor unitless	Maximum Indoor Air Concentration µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Excess Cancer Risk	Noncancer Hazard
Soil Vapor - Volatile Organic Compounds							
Freon 12	4.2E+00	0.0005	2.1E-03	NC	4.4E+02	NC	4.8E-06
Freon 114	2.1E+00	0.0005	1.1E-03	NC	2.2E+04	NC	4.8E-08
Chloromethane	1.9E+00	0.0005	9.5E-04	NC	3.9E+02	NC	2.4E-06
Bromomethane	2.2E-01	0.0005	1.1E-04	NC	2.2E+01	NC	5.0E-06
Chloroethane	1.4E+00	0.0005	7.0E-04	NC	4.4E+04	NC	1.6E-08
Trichlorofluoromethane	5.2E+00	0.0005	2.6E-03	NC	5.3E+03	NC	4.9E-07
Freon 113	4.9E-01	0.0005	2.5E-04	NC	2.2E+04	NC	1.1E-08
Acetone	2.7E+02	0.0005	1.4E-01	NC	1.4E+05	NC	9.6E-07
Carbon Disulfide	3.7E+01	0.0005	1.9E-02	NC	3.1E+03	NC	6.0E-06
Methylene Chloride	2.8E+00	0.0005	1.4E-03	1.2E+01	1.8E+03	1E-10	7.8E-07
1,1-Dichloroethane	1.6E+00	0.0005	8.0E-04	7.7E+00	3.5E+03	1E-10	2.3E-07
2-Butanone	2.0E+03	0.0005	1.0E+00	NC	2.2E+04	NC	4.5E-05
Chloroform	1.8E+01	0.0005	9.0E-03	5.3E-01	4.3E+02	2E-08	2.1E-05
1,1,1-Trichloroethane	6.3E+01	0.0005	3.2E-02	NC	4.4E+03	NC	7.2E-06
Benzene	1.1E+02	0.0005	5.5E-02	4.2E-01	1.3E+01	1E-07	4.2E-03
4-Methyl-2-Pentanone	1.5E+01	0.0005	7.5E-03	NC	1.3E+04	NC	5.8E-07
Toluene	6.9E+01	0.0005	3.5E-02	NC	1.3E+03	NC	2.7E-05
2-Hexanone	2.2E+00	0.0005	1.1E-03	NC	1.3E+02	NC	8.5E-06
1,2-Dibromoethane	1.4E-01	0.0005	7.0E-05	2.0E-02	3.9E+01	4E-09	1.8E-06
Chlorobenzene	1.6E-01	0.0005	8.0E-05	NC	2.2E+02	NC	3.6E-07
Ethylbenzene	1.2E+01	0.0005	6.0E-03	4.9E+00	4.4E+03	1E-09	1.4E-06
m,p-Xylene	3.4E+01	0.0005	1.7E-02	NC	4.4E+02	NC	3.9E-05
o-Xylene	1.8E+01	0.0005	9.0E-03	NC	4.4E+02	NC	2.0E-05
Styrene	9.1E-01	0.0005	4.6E-04	NC	3.9E+03	NC	1.2E-07
4-Ethyltoluene	1.7E+00	0.0005	8.5E-04	NC	1.3E+03	NC	6.5E-07
1,3,5-Trimethylbenzene	3.5E+00	0.0005	1.8E-03	NC	2.6E+02	NC	6.7E-06
1,2,4-Trimethylbenzene	5.8E+00	0.0005	2.9E-03	NC	2.6E+02	NC	1.1E-05
1,3-Dichlorobenzene	1.6E+00	0.0005	8.0E-04	1.1E+00	3.5E+03	7E-10	2.3E-07
Benzyl chloride	5.6E-01	0.0005	2.8E-04	2.5E-01	4.4E+00	1E-09	6.4E-05
Xylene (total)	5.3E+01	0.0005	2.7E-02	NC	4.4E+02	NC	6.0E-05
TOTAL						2E-07	5E-03

Notes and Abbreviations:

Screening levels based on an excess cancer risk of $1x10^{-6}$ and a hazard quotient of 1.0 (DTSC modified screening levels supplemented by EPA Regional Screening Levels.

-- = Not Available

NC = Noncarcinogen

µg/m^3 = micrograms per cubic meter

TABLE 13b

SUMMARY OF CANCER RISK AND NONCANCER HAZARD FROM SOIL VAPOR
GENERIC ATTENUATION FACTOR
FUTURE WORKER

UPC OU-SM
Brisbane, California

Analyte	95% UCL Soil Vapor Concentration µg/m^3	Attenuation Factor unitless	95% UCL Indoor Air Concentration µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Excess Cancer Risk	Noncancer Hazard
Soil Vapor - Chlorinated Volatile Organic Compounds							
Tetrachloroethylene	6.62E+03	0.03	1.98E+02	2.0E+00	1.8E+02	1E-04	1.1E+00
Trichloroethylene	3.88E+04	0.03	1.16E+03	3.0E+00	8.8E+00	4E-04	1.3E+02
cis-1,2-Dichloroethene	5.52E+04	0.03	1.66E+03	NC	3.5E+01	NC	4.7E+01
trans-1,2-Dichloroethene	1.81E+01	0.03	5.42E-01	NC	3.5E+02	NC	1.5E-03
Vinyl Chloride	2.49E+03	0.03	7.46E+01	1.6E-01	4.4E+02	5E-04	1.7E-01
1,1-Dichloroethene	7.14E+02	0.03	2.14E+01	NC	3.1E+02	NC	7.0E-02
TOTAL						1E-03	1.8E+02

Notes and Abbreviations:

Screening levels based on an excess cancer risk of 1x10^{-6} and a hazard quotient of 1.0 (DTSC modified screening levels supplemented by EPA Regional Screening Levels.

-- = Not Available

NC = Noncarcinogen

µg/m^3 = micrograms per cubic meter

UCL = upper confidence limit

TABLE 13b (continued)

SUMMARY OF CANCER RISK AND NONCANCER HAZARD FROM SOIL VAPOR
GENERIC ATTENUATION FACTOR
FUTURE WORKER

UPC OU-SM
Brisbane, California

Analyte	Maximum Soil Vapor Concentration µg/m^3	Attenuation Factor unitless	Maximum Indoor Air Concentration µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Excess Cancer Risk	Noncancer Hazard
Soil Vapor - Volatile Organic Compounds							
Freon 12	4.2E+00	0.03	1.3E-01	NC	4.4E+02	NC	2.9E-04
Freon 114	2.1E+00	0.03	6.3E-02	NC	2.2E+04	NC	2.9E-06
Chloromethane	1.9E+00	0.03	5.7E-02	NC	3.9E+02	NC	1.5E-04
Bromomethane	2.2E-01	0.03	6.6E-03	NC	2.2E+01	NC	3.0E-04
Chloroethane	1.4E+00	0.03	4.2E-02	NC	4.4E+04	NC	9.5E-07
Trichlorofluoromethane	5.2E+00	0.03	1.6E-01	NC	5.3E+03	NC	2.9E-05
Freon 113	4.9E-01	0.03	1.5E-02	NC	2.2E+04	NC	6.7E-07
Acetone	2.7E+02	0.03	8.1E+00	NC	1.4E+05	NC	5.8E-05
Carbon Disulfide	3.7E+01	0.03	1.1E+00	NC	3.1E+03	NC	3.6E-04
Methylene Chloride	2.8E+00	0.03	8.4E-02	1.2E+01	1.8E+03	7E-09	4.7E-05
1,1-Dichloroethane	1.6E+00	0.03	4.8E-02	7.7E+00	3.5E+03	6E-09	1.4E-05
2-Butanone	2.0E+03	0.03	6.0E+01	NC	2.2E+04	NC	2.7E-03
Chloroform	1.8E+01	0.03	5.4E-01	5.3E-01	4.3E+02	1E-06	1.3E-03
1,1,1-Trichloroethane	6.3E+01	0.03	1.9E+00	NC	4.4E+03	NC	4.3E-04
Benzene	1.1E+02	0.03	3.3E+00	4.2E-01	1.3E+01	8E-06	2.5E-01
4-Methyl-2-Pentanone	1.5E+01	0.03	4.5E-01	NC	1.3E+04	NC	3.5E-05
Toluene	6.9E+01	0.03	2.1E+00	NC	1.3E+03	NC	1.6E-03
2-Hexanone	2.2E+00	0.03	6.6E-02	NC	1.3E+02	NC	5.1E-04
1,2-Dibromoethane	1.4E-01	0.03	4.2E-03	2.0E-02	3.9E+01	2E-07	1.1E-04
Chlorobenzene	1.6E-01	0.03	4.8E-03	NC	2.2E+02	NC	2.2E-05
Ethylbenzene	1.2E+01	0.03	3.6E-01	4.9E+00	4.4E+03	7E-08	8.2E-05
m,p-Xylene	3.4E+01	0.03	1.0E+00	NC	4.4E+02	NC	2.3E-03
o-Xylene	1.8E+01	0.03	5.4E-01	NC	4.4E+02	NC	1.2E-03
Styrene	9.1E-01	0.03	2.7E-02	NC	3.9E+03	NC	7.0E-06
4-Ethyltoluene	1.7E+00	0.03	5.1E-02	NC	1.3E+03	NC	3.9E-05
1,3,5-Trimethylbenzene	3.5E+00	0.03	1.1E-01	NC	2.6E+02	NC	4.0E-04
1,2,4-Trimethylbenzene	5.8E+00	0.03	1.7E-01	NC	2.6E+02	NC	6.7E-04
1,3-Dichlorobenzene	1.6E+00	0.03	4.8E-02	1.1E+00	3.5E+03	4E-08	1.4E-05
Benzyl chloride	5.6E-01	0.03	1.7E-02	2.5E-01	4.4E+00	7E-08	3.8E-03
Xylene (total)	5.3E+01	0.03	1.6E+00	NC	4.4E+02	NC	3.6E-03
TOTAL						9E-06	3E-01

Notes and Abbreviations:

Screening levels based on an excess cancer risk of $1x10^{-6}$ and a hazard quotient of 1.0 (DTSC modified screening levels supplemented by EPA Regional Screening Levels.

-- = Not Available

NC = Noncarcinogen

µg/m^3 = micrograms per cubic meter

TABLE 14a

SUMMARY OF CANCER RISK AND NONCANCER HAZARD FROM SOIL VAPOR
DEFAULT ATTENUATION FACTOR
FUTURE RESIDENT

UPC OU-SM
Brisbane, California

Analyte	95% UCL Soil Vapor Concentration µg/m^3	Attenuation Factor unitless	95% UCL Indoor Air Concentration µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Excess Cancer Risk	Noncancer Hazard
Soil Vapor - Chlorinated Volatile Organic Compounds							
Tetrachloroethylene	6.62E+03	0.001	6.62E+00	4.6E-01	4.2E+01	1E-05	1.6E-01
Trichloroethylene	3.88E+04	0.001	3.88E+01	4.8E-01	2.1E+00	8E-05	1.8E+01
cis-1,2-Dichloroethene	5.52E+04	0.001	5.52E+01	NC	8.3E+00	NC	6.6E+00
trans-1,2-Dichloroethene	1.81E+01	0.001	1.81E-02	NC	8.3E+01	NC	2.2E-04
Vinyl Chloride	2.49E+03	0.001	2.49E+00	9.5E-03	1.0E+02	3E-04	2.4E-02
1,1-Dichloroethene	7.14E+02	0.001	7.14E-01	NC	7.3E+01	NC	9.8E-03
TOTAL						4E-04	2.5E+01

Notes and Abbreviations:

Screening levels based on an excess cancer risk of 1x10^{-6} and a hazard quotient of 1.0 (DTSC modified screening levels supplemented by EPA Regional Screening Levels.

-- = Not Available

NC = Noncarcinogen

µg/m^3 = micrograms per cubic meter

UCL = upper confidence limit

TABLE 14a (continued)

SUMMARY OF CANCER RISK AND NONCANCER HAZARD FROM SOIL VAPOR
DEFAULT ATTENUATION FACTOR
FUTURE RESIDENT

UPC OU-SM
Brisbane, California

Analyte	Maximum Soil Vapor Concentration µg/m^3	Attenuation Factor unitless	Maximum Indoor Air Concentration µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Excess Cancer Risk	Noncancer Hazard
Soil Vapor - Volatile Organic Compounds							
Freon 12	4.2E+00	0.001	4.2E-03	NC	1.0E+02	NC	4.2E-05
Freon 114	2.1E+00	0.001	2.1E-03	NC	5.2E+03	NC	4.0E-07
Chloromethane	1.9E+00	0.001	1.9E-03	NC	9.4E+01	NC	2.0E-05
Bromomethane	2.2E-01	0.001	2.2E-04	NC	5.2E+00	NC	4.2E-05
Chloroethane	1.4E+00	0.001	1.4E-03	NC	1.0E+04	NC	1.4E-07
Trichlorofluoromethane	5.2E+00	0.001	5.2E-03	NC	1.3E+03	NC	4.0E-06
Freon 113	4.9E-01	0.001	4.9E-04	NC	5.2E+03	NC	9.4E-08
Acetone	2.7E+02	0.001	2.7E-01	NC	3.2E+04	NC	8.4E-06
Carbon Disulfide	3.7E+01	0.001	3.7E-02	NC	7.3E+02	NC	5.1E-05
Methylene Chloride	2.8E+00	0.001	2.8E-03	1.0E+00	4.2E+02	3E-09	6.7E-06
1,1-Dichloroethane	1.6E+00	0.001	1.6E-03	1.8E+00	8.3E+02	9E-10	1.9E-06
2-Butanone	2.0E+03	0.001	2.0E+00	NC	5.2E+03	NC	3.8E-04
Chloroform	1.8E+01	0.001	1.8E-02	1.2E-01	1.0E+02	2E-07	1.8E-04
1,1,1-Trichloroethane	6.3E+01	0.001	6.3E-02	NC	1.0E+03	NC	6.3E-05
Benzene	1.1E+02	0.001	1.1E-01	9.7E-02	3.1E+00	1E-06	3.5E-02
4-Methyl-2-Pentanone	1.5E+01	0.001	1.5E-02	NC	3.1E+03	NC	4.8E-06
Toluene	6.9E+01	0.001	6.9E-02	NC	3.1E+02	NC	2.2E-04
2-Hexanone	2.2E+00	0.001	2.2E-03	NC	3.1E+01	NC	7.1E-05
1,2-Dibromoethane	1.4E-01	0.001	1.4E-04	4.7E-03	9.4E+00	3E-08	1.5E-05
Chlorobenzene	1.6E-01	0.001	1.6E-04	NC	5.2E+01	NC	3.1E-06
Ethylbenzene	1.2E+01	0.001	1.2E-02	1.1E+00	1.0E+03	1E-08	1.2E-05
m,p-Xylene	3.4E+01	0.001	3.4E-02	NC	1.0E+02	NC	3.4E-04
o-Xylene	1.8E+01	0.001	1.8E-02	NC	1.0E+02	NC	1.8E-04
Styrene	9.1E-01	0.001	9.1E-04	NC	9.4E+02	NC	9.7E-07
4-Ethyltoluene	1.7E+00	0.001	1.7E-03	NC	3.1E+02	NC	5.5E-06
1,3,5-Trimethylbenzene	3.5E+00	0.001	3.5E-03	NC	6.3E+01	NC	5.6E-05
1,2,4-Trimethylbenzene	5.8E+00	0.001	5.8E-03	NC	6.3E+01	NC	9.2E-05
1,3-Dichlorobenzene	1.6E+00	0.001	1.6E-03	2.6E-01	8.3E+02	6E-09	1.9E-06
Benzyl chloride	5.6E-01	0.001	5.6E-04	5.7E-02	1.0E+00	1E-08	5.6E-04
Xylene (total)	5.3E+01	0.001	5.3E-02	NC	1.0E+02	NC	5.3E-04
TOTAL						1E-06	3.8E-02

Notes and Abbreviations:

Screening levels based on an excess cancer risk of 1x10^{-6} and a hazard quotient of 1.0 (DTSC modified screening levels supplemented by EPA Regional Screening Levels.

-- = Not Available

NC = Noncarcinogen

µg/m^3 = micrograms per cubic meter

TABLE 14b

SUMMARY OF CANCER RISK AND NONCANCER HAZARD FROM SOIL VAPOR
GENERIC ATTENUATION FACTOR
FUTURE RESIDENT

UPC OU-SM
Brisbane, California

Analyte	95% UCL Soil Vapor Concentration µg/m^3	Attenuation Factor unitless	95% UCL Indoor Air Concentration µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Excess Cancer Risk	Noncancer Hazard
Soil Vapor - Chlorinated Volatile Organic Compounds							
Tetrachloroethylene	6.62E+03	0.03	1.98E+02	4.6E-01	4.2E+01	4E-04	4.8E+00
Trichloroethylene	3.88E+04	0.03	1.16E+03	4.8E-01	2.1E+00	2E-03	5.5E+02
cis-1,2-Dichloroethene	5.52E+04	0.03	1.66E+03	NC	8.3E+00	NC	2.0E+02
trans-1,2-Dichloroethene	1.81E+01	0.03	5.42E-01	NC	8.3E+01	NC	6.5E-03
Vinyl Chloride	2.49E+03	0.03	7.46E+01	9.5E-03	1.0E+02	8E-03	7.2E-01
1,1-Dichloroethene	7.14E+02	0.03	2.14E+01	NC	7.3E+01	NC	2.9E-01
TOTAL						1E-02	7.6E+02

Notes and Abbreviations:

Screening levels based on an excess cancer risk of $1x10^{-6}$ and a hazard quotient of 1.0 (DTSC modified screening levels supplemented by EPA Regional Screening Levels.

-- = Not Available

NC = Noncarcinogen

µg/m^3 = micrograms per cubic meter

UCL = upper confidence limit

TABLE 14b (continued)

SUMMARY OF CANCER RISK AND NONCANCER HAZARD FROM SOIL VAPOR
GENERIC ATTENUATION FACTOR
FUTURE RESIDENT

UPC OU-SM
Brisbane, California

Analyte	Maximum Soil Vapor Concentration µg/m^3	Attenuation Factor unitless	Maximum Indoor Air Concentration µg/m^3	Screening Level Cancer µg/m^3	Screening Level Noncancer µg/m^3	Excess Cancer Risk	Noncancer Hazard
Soil Vapor - Volatile Organic Compounds							
Freon 12	4.2E+00	0.03	1.3E-01	NC	1.0E+02	NC	1.3E-03
Freon 114	2.1E+00	0.03	6.3E-02	NC	5.2E+03	NC	1.2E-05
Chloromethane	1.9E+00	0.03	5.7E-02	NC	9.4E+01	NC	6.1E-04
Bromomethane	2.2E-01	0.03	6.6E-03	NC	5.2E+00	NC	1.3E-03
Chloroethane	1.4E+00	0.03	4.2E-02	NC	1.0E+04	NC	4.2E-06
Trichlorofluoromethane	5.2E+00	0.03	1.6E-01	NC	1.3E+03	NC	1.2E-04
Freon 113	4.9E-01	0.03	1.5E-02	NC	5.2E+03	NC	2.8E-06
Acetone	2.7E+02	0.03	8.1E+00	NC	3.2E+04	NC	2.5E-04
Carbon Disulfide	3.7E+01	0.03	1.1E+00	NC	7.3E+02	NC	1.5E-03
Methylene Chloride	2.8E+00	0.03	8.4E-02	1.0E+00	4.2E+02	8E-08	2.0E-04
1,1-Dichloroethane	1.6E+00	0.03	4.8E-02	1.8E+00	8.3E+02	3E-08	5.8E-05
2-Butanone	2.0E+03	0.03	6.0E+01	NC	5.2E+03	NC	1.2E-02
Chloroform	1.8E+01	0.03	5.4E-01	1.2E-01	1.0E+02	5E-06	5.4E-03
1,1,1-Trichloroethane	6.3E+01	0.03	1.9E+00	NC	1.0E+03	NC	1.9E-03
Benzene	1.1E+02	0.03	3.3E+00	9.7E-02	3.1E+00	3E-05	1.1E+00
4-Methyl-2-Pentanone	1.5E+01	0.03	4.5E-01	NC	3.1E+03	NC	1.5E-04
Toluene	6.9E+01	0.03	2.1E+00	NC	3.1E+02	NC	6.7E-03
2-Hexanone	2.2E+00	0.03	6.6E-02	NC	3.1E+01	NC	2.1E-03
1,2-Dibromoethane	1.4E-01	0.03	4.2E-03	4.7E-03	9.4E+00	9E-07	4.5E-04
Chlorobenzene	1.6E-01	0.03	4.8E-03	NC	5.2E+01	NC	9.2E-05
Ethylbenzene	1.2E+01	0.03	3.6E-01	1.1E+00	1.0E+03	3E-07	3.6E-04
m,p-Xylene	3.4E+01	0.03	1.0E+00	NC	1.0E+02	NC	1.0E-02
o-Xylene	1.8E+01	0.03	5.4E-01	NC	1.0E+02	NC	5.4E-03
Styrene	9.1E-01	0.03	2.7E-02	NC	9.4E+02	NC	2.9E-05
4-Ethyltoluene	1.7E+00	0.03	5.1E-02	NC	3.1E+02	NC	1.6E-04
1,3,5-Trimethylbenzene	3.5E+00	0.03	1.1E-01	NC	6.3E+01	NC	1.7E-03
1,2,4-Trimethylbenzene	5.8E+00	0.03	1.7E-01	NC	6.3E+01	NC	2.8E-03
1,3-Dichlorobenzene	1.6E+00	0.03	4.8E-02	2.6E-01	8.3E+02	2E-07	5.8E-05
Benzyl chloride	5.6E-01	0.03	1.7E-02	5.7E-02	1.0E+00	3E-07	1.7E-02
Xylene (total)	5.3E+01	0.03	1.6E+00	NC	1.0E+02	NC	1.6E-02
TOTAL						4E-05	1.2E+00

Notes and Abbreviations:

Screening levels based on an excess cancer risk of $1x10^{-6}$ and a hazard quotient of 1.0 (DTSC modified screening levels supplemented by EPA Regional Screening Levels.

-- = Not Available

NC = Noncarcinogen

µg/m^3 = micrograms per cubic meter

TABLE 15

COMPARISON OF GROUNDWATER EXPOSURE POINT CONCENTRATIONS TO GROUNDWATER VAPOR INTRUSION SCREENING LEVELS

UPC OU-SM

Brisbane, California

Analyte	95% UCL[1] µg/L	Basis for 95% UCL	Residential Vapor Intrusion ESLs[2] µg/L	Commercial/Industrial Vapor Intrusion ESLs[2] µg/L	95% UCL > Residential Vapor Intrusion ESLs ?	95% UCL > Commercial?industrial Vapor Intrusion ESLs ?
Volatile Organic Compounds (micrograms per liter - µg/L)						
1,1-Dichloroethane	0.09	95% t UCL (Assumes normality)	7.6	33	No	No
1,3-Dichloropropene	8.80	Maximum	1.2	5.1	Yes	Yes
Benzene	0.27	Maximum	0.42	1.8	No	No
cis-1,2-Dichloroethene	54.91	99% KM (Chebyshev) UCL	49	210	Yes	No
Methyl-tert-butyl ether (MTBE)	0.09	95% t UCL (Assumes normality)	450	2000	No	No
Tetrachloroethene (PCE)	0.20	95% KM (t) UCL	0.64	2.8	No	No
trans-1,2-Dichloroethene	5.93	99% KM (Chebyshev) UCL	220	920	No	No
Trichloroethene (TCE)	48.54	99% KM (Chebyshev) UCL	1.2	7.5	Yes	Yes
Vinyl Chloride	112.80	99% KM (Chebyshev) UCL	0.0086	0.14	Yes	Yes
TPH-diesel (C10-C28)	192.40	KM H-UCL	NA	NA	No	No
TPH-gasoline (C4-C12)	123.80	99% KM (Chebyshev) UCL	NA	NA	No	No

Notes and Abbreviations:

1,1-Dichloroethane, 1,3-Dichloropropene, and MTBE were detected in groundwater but not in soil samples indicating that the chemical may not be site-related.

1. The 95% UCL or the maximum detected concentration is presented, whichever is lower.
2. California Regional Water Quality Control Board, San Francisco Bay Region, January 2019, Rev.1, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Table GW-3, Vapor Intrusion

UCL = upper confidence limit

NA = not available

TABLE 16

SUMMARY OF TRENCH AIR CONCENTRATIONS AND EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD FROM SOIL VAPOR INTO A TRENCH HYPOTHETICAL FUTURE CONSTRUCTION WORKER

UPC OU-SM

Brisbane, California

VOCs	Exposure Point Concentration (mg/m^3)	Shallow Volatilization Factor (VF_{trench}) (unitless)	Trench Air Exposure Point Concentration (EPC) (mg/m^3)	Exposure Concentration (ECc) in Trench Air Cancer Effects (mg/m^3)	Exposure Concentration (ECnc) in Trench Air Noncancer Effects (mg/m^3)	Unit Risk Factor $(mg/m^3)^{-1}$	Reference Concentration (mg/m^3)	Theoretical Excess Lifetime Cancer Risk (unitless)	Noncancer Hazard (unitless)
Tetrachloroethylene	6.6E+00	1.2E-02	7.7E-02	2.5E-06	1.7E-04	6.1E-03	3.7E-02	1.5E-08	4.7E-03
Trichloroethylene	3.9E+01	1.6E-02	6.2E-01	2.0E-05	1.4E-03	4.1E-03	2.0E-03	8.3E-08	7.1E-01
cis-1,2-Dichloroethene	5.5E+01	2.0E-02	1.1E+00	3.7E-05	2.6E-03	--	8.0E-03	--	3.2E-01
trans-1,2-Dichloroethene	1.8E-02	2.0E-02	3.7E-04	1.2E-08	8.4E-07	--	8.0E-02	--	1.1E-05
Vinyl Chloride	2.5E+00	2.5E-02	6.3E-02	2.1E-06	1.4E-04	7.8E-02	1.0E-01	1.6E-07	1.4E-03
1,1-Dichloroethene	7.1E-01	2.0E-02	1.4E-02	4.6E-07	3.2E-05	--	7.0E-02	--	4.6E-04
Freon 12	4.2E-03	1.8E-02	7.4E-05	2.4E-09	1.7E-07	--	1.0E-01	--	1.7E-06
Freon 114	2.1E-03	8.8E-03	1.8E-05	6.0E-10	4.2E-08	--	--	--	--
Chloromethane	1.9E-03	2.8E-02	5.3E-05	1.7E-09	1.2E-07	--	9.0E-02	--	1.3E-06
Bromomethane	2.2E-04	2.3E-02	5.1E-06	1.7E-10	1.2E-08	--	5.0E-03	--	2.3E-06
Chloroethane	1.4E-03	2.3E-02	3.2E-05	1.1E-09	7.4E-08	--	1.0E+01	--	7.4E-09
Trichlorofluoromethane	5.2E-03	1.5E-02	7.8E-05	2.6E-09	1.8E-07	--	--	--	--
Freon 113	4.9E-04	8.8E-03	4.3E-06	1.4E-10	9.9E-09	--	5.0E+00	--	2.0E-09
Acetone	2.7E-01	2.5E-02	6.9E-03	2.2E-07	1.6E-05	--	3.1E+01	--	5.1E-07
Carbon Disulfide	3.7E-02	2.5E-02	9.4E-04	3.1E-08	2.2E-06	--	7.0E-01	--	3.1E-06
Methylene Chloride	2.8E-03	2.3E-02	6.5E-05	2.1E-09	1.5E-07	1.0E-03	4.0E-01	2.1E-12	3.7E-07
1,1-Dichloroethane	1.6E-03	1.9E-02	3.1E-05	1.0E-09	7.1E-08	1.6E-03	--	1.6E-12	--
2-Butanone	2.0E+00	2.1E-02	4.2E-02	1.4E-06	9.6E-05	--	5.0E+00	--	1.9E-05
Chloroform	1.8E-02	1.8E-02	3.2E-04	1.0E-08	7.3E-07	2.3E-02	9.8E-02	2.4E-10	7.5E-06
1,1,1-Trichloroethane	6.3E-02	1.5E-02	9.5E-04	3.1E-08	2.2E-06	--	1.0E+00	--	2.2E-06
Benzene	1.3E+00	2.1E-02	2.7E-02	8.8E-07	6.2E-05	2.9E-02	3.0E-03	2.6E-08	2.1E-02
4-Methyl-2-Pentanone	1.5E-02	1.6E-02	2.4E-04	7.9E-09	5.6E-07	--	3.0E+00	--	1.9E-07
Toluene	6.9E-02	1.8E-02	1.2E-03	4.1E-08	2.8E-06	--	3.0E-01	--	9.5E-06
2-Hexanone	2.2E-03	1.6E-02	3.6E-05	1.2E-09	8.1E-08	--	3.0E-02	--	2.7E-06
1,2-Dibromoethane	1.4E-04	1.0E-02	1.4E-06	4.5E-11	3.2E-09	6.0E-01	8.0E-04	2.7E-11	4.0E-06
Chlorobenzene	1.6E-04	1.7E-02	2.7E-06	8.7E-11	6.1E-09	--	5.0E-02	--	1.2E-07
Ethylbenzene	1.2E-02	1.6E-02	1.9E-04	6.2E-09	4.3E-07	2.5E-03	1.0E+00	1.5E-11	4.3E-07
m,p-Xylene	3.4E-02	1.6E-02	5.4E-04	1.8E-08	1.2E-06	--	1.0E-01	--	1.2E-05

TABLE 16

SUMMARY OF TRENCH AIR CONCENTRATIONS AND EXCESS LIFETIME CANCER RISK AND NONCANCER HAZARD FROM SOIL VAPOR INTO A TRENCH HYPOTHETICAL FUTURE CONSTRUCTION WORKER

UPC OU-SM

Brisbane, California

VOCs	Exposure Point Concentration (mg/m^3)	Shallow Volatilization Factor (VF_{trench}) (unitless)	Trench Air Exposure Point Concentration (EPC) (mg/m^3)	Exposure Concentration (ECc) in Trench Air Cancer Effects (mg/m^3)	Exposure Concentration (ECnc) in Trench Air Noncancer Effects (mg/m^3)	Unit Risk Factor $(mg/m^3)^{-1}$	Reference Concentration (mg/m^3)	Theoretical Excess Lifetime Cancer Risk (unitless)	Noncancer Hazard (unitless)
o-Xylene	1.8E-02	1.6E-02	2.9E-04	9.4E-09	6.6E-07	--	1.0E-01	--	6.6E-06
Styrene	9.1E-04	1.6E-02	1.5E-05	4.9E-10	3.4E-08	--	9.0E-01	--	3.8E-08
4-Ethyltoluene	1.7E-03	1.8E-02	3.1E-05	1.0E-09	7.0E-08	--	3.0E-01	--	2.3E-07
1,3,5-Trimethylbenzene	3.5E-03	1.4E-02	4.9E-05	1.6E-09	1.1E-07	--	6.0E-02	--	1.9E-06
1,2,4-Trimethylbenzene	5.8E-03	1.4E-02	8.2E-05	2.7E-09	1.9E-07	--	6.0E-02	--	3.1E-06
1,3-Dichlorobenzene	1.6E-03	1.6E-02	2.6E-05	8.3E-10	5.8E-08	--	--	--	--
Benzyl chloride	5.6E-04	1.5E-02	8.2E-06	2.7E-10	1.9E-08	4.9E-02	1.0E-03	1.3E-11	1.9E-05
Xylene (total)	5.3E-02	1.6E-02	8.5E-04	2.8E-08	1.9E-06	--	1.0E-01	--	1.9E-05
TOTAL								3E-07	1.1E+00

ECc = EPC x ET x CF x EF x ED / ATc

ECnc = EPC x ET x CF x EF x ED / ATnc

EPC = Csv x VF trench

EPC = trench air exposure point concentration (calculated from soil vapor)
ECc = exposure concentration cancer (calculated)
ECnc = exposure concentration noncancer (calculated)
ET = exposure time (1 hours)
CF = time conversion factor (24 hrs/day)
EF = Exposure Frequency (20 days/year)
ED = Exposure Duration (1 year)
ATc = averaging time cancer (25550 days)
ATnc = averaging time noncancer (365 days)

TABLE 17

COMPARISON OF EXPOSURE POINT CONCENTRATIONS TO GROUNDWATER SCREENING LEVELS FOR THE PROTECTION OF AQUATIC RECEPTORS

UPC OU-SM

Brisbane, California

Analyte	95% UCL[1] µg/L	Marine Aquatic SL[2] µg/L	Basis	95% UCL > Marine Aquatic SL x AF 100 ?
Metals (micrograms per liter - µg/L)				
Antimony	7.37	500	US EPA SW CCC	No
Arsenic	40.78	36	CTR SW CCC	No
Barium	790.00	200	BC SQuiRTs	No
Beryllium	0.61	100	BC SQuiRTs	No
Chromium	4.38	1,000	10% US EPA SW Acute LOEL	No
Chromium, Hexavalent	4.04	50	CTR SW CCC	No
Cobalt	21.38	1	NZ SQuiRTs	No
Copper	40.02	3.1	CTR SW CCC	No
Lead	10.86	8.1	CTR SW CCC	No
Mercury	0.25	0.025	Basin Plan	No
Molybdenum	5.19	23	NZ SQuiRTs	No
Nickel	6.77	8.2	CTR SW CCC	No
Silver	3.71	0.19	10% US EPA SW CMC	No
Vanadium	3.12	50	BC SQuiRTs	No
Zinc	43.61	81	CTR SW CCC	No
Volatile Organic Compounds (micrograms per liter - µg/L)				
1,1-Dichloroethane	0.09	--	--	
1,3-Dichloropropene	8.80	79	10% US EPA SW Acute LOEL	No
Benzene	0.27	350	50% US EPA SW Chronic LOEL	No
cis-1,2-Dichloroethene	54.91	22,000	10% US EPA SW Acute LOEL	No
Methyl-tert-butyl ether (MTBE)	0.09	8,000	CTR SW CCC	No
Tetrachloroethene (PCE)	0.20	230	50% US EPA SW Chronic LOEL	No
trans-1,2-Dichloroethene	5.93	22,000	10% US EPA SW Acute LOEL	No
Trichloroethene (TCE)	48.54	200	10% US EPA SW Acute LOEL	No
Vinyl Chloride	112.80	--	--	--
TPH-diesel (C10-C28)	192.40	640	Basin Plan	No
TPH-gasoline (C4-C12)	123.80	3,700	Basin Plan	No

Notes and Abbreviations:

1,1-Dichloroethane, 1,3-Dichloropropene, and MTBE were detected in groundwater but not in soil samples indicating that the chemical may not be site-related.

1. The 95% UCL or the maximum detected concentration is presented, whichever is lower.

2. California Regional Water Quality Control Board, San Francisco Bay Region, January 2019, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Table GW-2, Aquatic Habitat Screening Levels (SLs; lowest marine aquatic habitat goal).

3. Comparison of the 95% UCL and the Marine Aquatic SL x AF of 100, used at Bay Area sites (e.g., Mission Bay and San Francisco Airport).

UCL = upper confidence limit

CCC = criterion for continuous concentration

CTR = California Toxics Rule (in RWQCBCV 2000 and Federal Register 2000)

LOEL = lowest observed effect level

BC SQuiRTs = British Columbia Water Quality Guidelines in Screening Quick Reference Table (SQuiRTs) for Invorganics in Water

NZ SQuiRTs = Australian and New Zealand ECLs and Trigger Values in Screening Quick Reference Table (SQuiRTs) for Invorganics in Water

SQuiRTs = Buchman, M.F., 2008. National Oceanic and Atmospheric Adminstration (NOAA) Screening Quick Reference Tables

SW = saltwater

US EPA = U.S Environmental Protection Agency

San Francisco Bay Region (Region 2) Water Quality Control Plan (Basin Plan), March 4, 2017

-- = not available

TABLE 18

COMPARISON OF EXPOSURE POINT CONCENTRATIONS TO SOIL SCREENING LEVELS FOR THE PROTECTION OF GROUNDWATER QUALITY

UPC OU-SM

Brisbane, California

Analyte[1]	Exposure Point Concentration 0 - 10 ft bgs mg/kg	Marine Aquatic SL[2] µg/L	Basis for Aquatic SL[2]	100 x Marine Aquatic SL µg/L	Protection of Aquatic Receptors SL[2] mg/kg	EPC > Protection of Aquatic Receptors SL?
Metals						
Antimony	10.61	500	US EPA SW CCC	50,000	2.3E+03	
Arsenic	67.16	36	CTR SW CCC	3,600	1.1E+02	
Barium	216.1	200	BC SQuiRTs	20,000	8.2E+02	
Beryllium	0.232	100	BC SQuiRTs	10,000	7.9E+03	
Cadmium	2.16	9.3	CTR SW CCC	930	7.1E+01	
Chromium	112.4	1,030	10% US EPA SW Acute LOEL	103,000	1.9E+08	
Cobalt	13.51	1	NZ SQuiRTs	100	4.5E+00	yes
Copper	207.7	3.1	CTR SW CCC	310	1.1E+01	yes
Lead	783.5	8.1	CTR SW CCC	810	7.3E+02	yes
Mercury	3.95	0.025	Basin Plan	2.5	1.3E-01	yes
Molybdenum	1.43	23	NZ SQuiRTs	2,300	4.6E+01	
Nickel	53.68	8.2	CTR SW CCC	820	1.2E+02	
Selenium	0.575	0.5	Basin Plan	50	2.6E-01	yes
Silver	0.76	0.19	10% US EPA SW CMC	19	1.6E-01	yes
Thallium	0.802	213	10% US EPA SW Acute LOEL	21,300	1.5E+03	
Vanadium	72.92	50	BC SQuiRTs	5,000	5.0E+03	
Zinc	725.7	81	CTR SW CCC	8,100	5.0E+02	yes
Volatile Organic Compounds (VOCs) and Total Petroleum Hydrocarbons as Gasoline						
1,1-Dichloroethene	0.0018	22,400	10% US EPA SW Acute LOEL	2,240,000	8.0E+02	
1,2,3-Trichlorobenzene	0.00068	64.5	50% US EPA SW Chronic LOEL	6,450	1.9E+01	
1,3,5-Trimethylbenzene	0.00059	--	--	--	--	
2-Butanone	0.0157	--	--	--	--	
2-Hexanone	0.016	--	--	--	--	
Acetone	0.0518	--	--	--	--	
Benzene	0.00032	350	50% US EPA SW Chronic LOEL	35,000	1.8E+01	
Carbon disulfide	0.00128	--	--	--	--	
cis-1,2-Dichloroethene	0.00057	22,400	10% US EPA SW Acute LOEL	2,240,000	6.6E+02	
Isopropylbenzene	0.0019	--	--	--	--	
n-Butylbenzene	0.00049	--	--	--	--	
n-Propylbenzene	0.00037	--	--	--	--	
sec-Butylbenzene	0.00033	--	--	--	--	
tert-Butylbenzene	0.00067	--	--	--	--	
Tetrachloroethene (PCE)	0.00084	225	50% US EPA SW Chronic LOEL	22,500	1.0E+01	
Toluene	0.00041	2,500	50% US EPA SW Chronic LOEL	250,000	1.7E+02	
trans-1,2-Dichloroethene	0.0017	22,400	10% US EPA SW Acute LOEL	2,240,000	7.0E+02	
Trichloroethene (TCE)	0.0067	200	10% US EPA SW Acute LOEL	20,000	7.2E+00	
Vinyl Chloride	0.00034	--	--	--	--	
Xylenes, Total	0.0011	100	5% acute SW LC 50	10,000	9.9E+00	
TPH-g (C4-C12)	0.053	3,700	Basin Plan	370,000	1.9E+02	
Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel						
2-Methylnaphthalene	0.895	30	10% US EPA SW Acute LOEL	3,000	1.5E+01	
Acenaphthene	0.877	15	Basin Plan	1,500	1.6E+01	
Acenaphthylene	0.151	15	Basin Plan	1,500	1.6E+01	
Anthracene	0.424	15	Basin Plan	1,500	4.8E+01	
Benzo(a)anthracene	0.431	15	Basin Plan	1,500	5.3E+02	
Benzo(a)pyrene	0.188	15	Basin Plan	1,500	1.8E+03	
Benzo(b)fluoranthene	0.258	15	Basin Plan	1,500	1.8E+03	

TABLE 18

COMPARISON OF EXPOSURE POINT CONCENTRATIONS TO SOIL SCREENING LEVELS FOR THE PROTECTION OF GROUNDWATER QUALITY

UPC OU-SM

Brisbane, California

Analyte[1]	Exposure Point Concentration 0 - 10 ft bgs mg/kg	Marine Aquatic SL[2] µg/L	Basis for Aquatic SL[2]	100 x Marine Aquatic SL µg/L	Protection of Aquatic Receptors SL[2] mg/kg	EPC > Protection of Aquatic Receptors SL?
Benzo(g,h,i)perylene	0.261	15	Basin Plan	1,500	1.1E+03	
Benzo(k)fluoranthene	0.246	15	Basin Plan	1,500	1.8E+03	
Chrysene	0.215	15	Basin Plan	1,500	5.4E+02	
Dibenzo(a,h)anthracene	0.0771	15	Basin Plan	1,500	5.7E+03	
Fluoranthene	0.242	8	50% US EPA SW Chronic LOEL	800	8.9E+01	
Fluorene	0.647	15	Basin Plan	1,500	2.8E+01	
Indeno(1,2,3-cd)pyrene	0.199	15	Basin Plan	1,500	5.9E+03	
Naphthalene	2.725	15	Basin Plan	1,500	4.8E+00	
Phenanthrene	0.283	4.6	US EPA SW CCC	460	5.1E+01	
Pyrene	0.373	15	Basin Plan	1,500	1.7E+02	
TPH-Diesel (C10-C28)	360.1	640	Basin Plan	64,000	2.7E+02	yes
Organochlorine Pesticides and Polychlorinated Biphenyls						
4,4'-DDD	0.00125	0.001	DDT SW USEPA CCC surrogate	0.1	2.3E-02	
4,4'-DDE	0.00125	0.001	DDT SW USEPA CCC surrogate	0.1	2.4E-02	
4,4'-DDT	0.00062	0.001	CTR SW CCC	0.1	3.4E-02	
alpha-Chlordane	0.000767	0.004	CTR SW CCC	0.4	5.4E-02	
Chlordane	0.021	0.004	CTR SW CCC	0.4	5.4E-02	
delta-BHC	0.00096	0.016	10% US EPA SW CMC	1.6	9.4E-03	
Dieldrin	0.0014	0.0019	CTR SW CCC	0.19	7.5E-03	
gamma-Chlordane	0.00086	0.004	CTR SW CCC	0.4	5.4E-02	
Heptachlor epoxide	0.011	3.6E-03	CTR SW CCC	0.36	6.0E-02	
Methoxychlor	0.00075	0.003	10% US EPA SW CMC	0.3	1.6E-02	
PCB-1254 (Aroclor 1254)	0.0375	0.03	CTR SW CCC	3	7.9E-01	
PCB-1260 (Aroclor 1260)	0.417	3.0E-02	CTR SW CCC	3	2.1E+00	

Notes and Abbreviations:

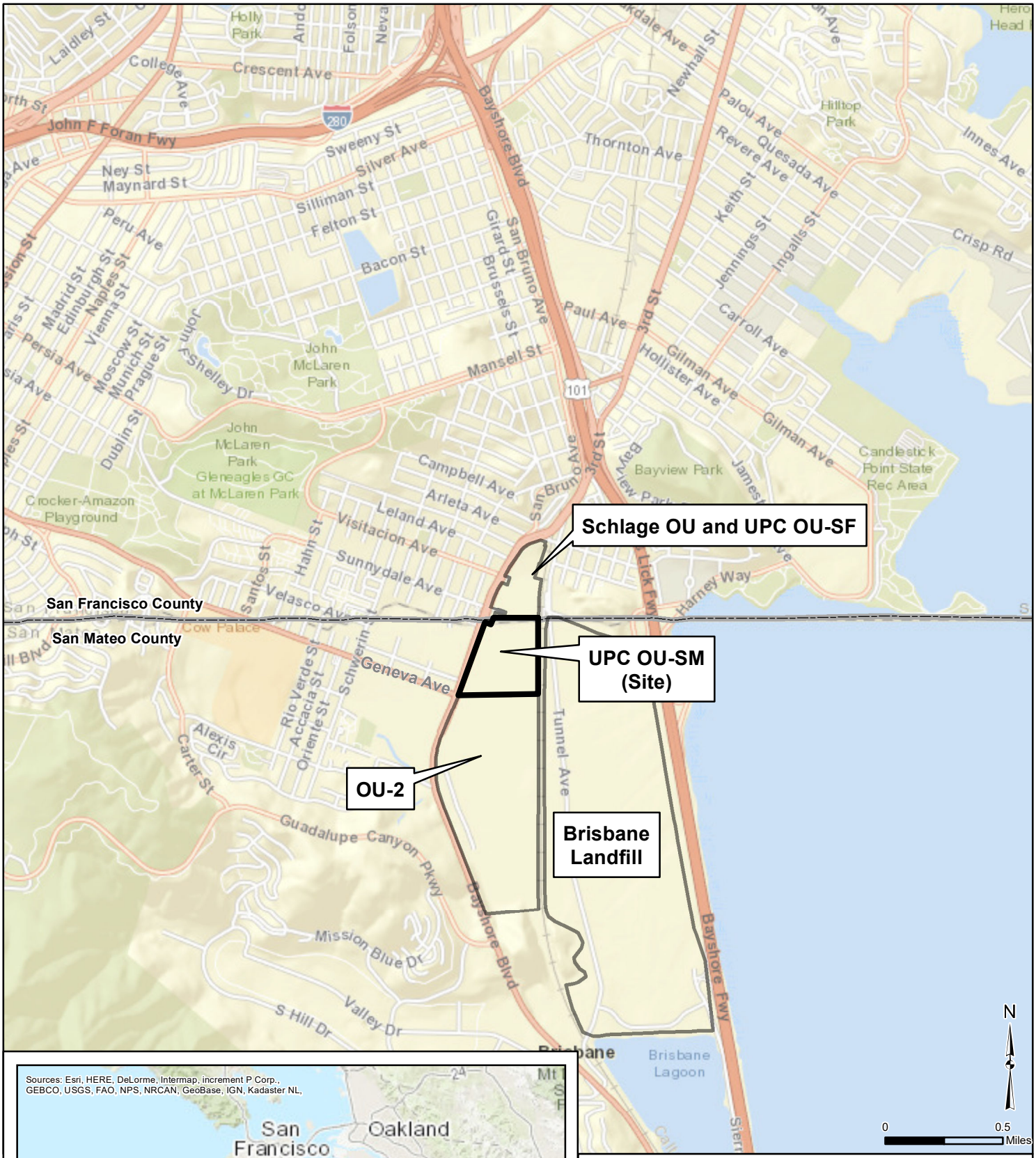
Italicized chemicals indicate compound was not identified as a chemical of potential concern in groundwater (no detections).

[1] California Regional Water Quality Control Board, San Francisco Bay Region, January 2019, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Table GW-2, Aquatic Habitat Screening Levels (lowest marine aquatic habitat goal). Refer to Table 12 for references.

[2] Calculated using the same methodologies to estimate the leaching factor in EPA'S RSLs and a lateral attenuation factor of 100.

-- = Not Available

FIGURES



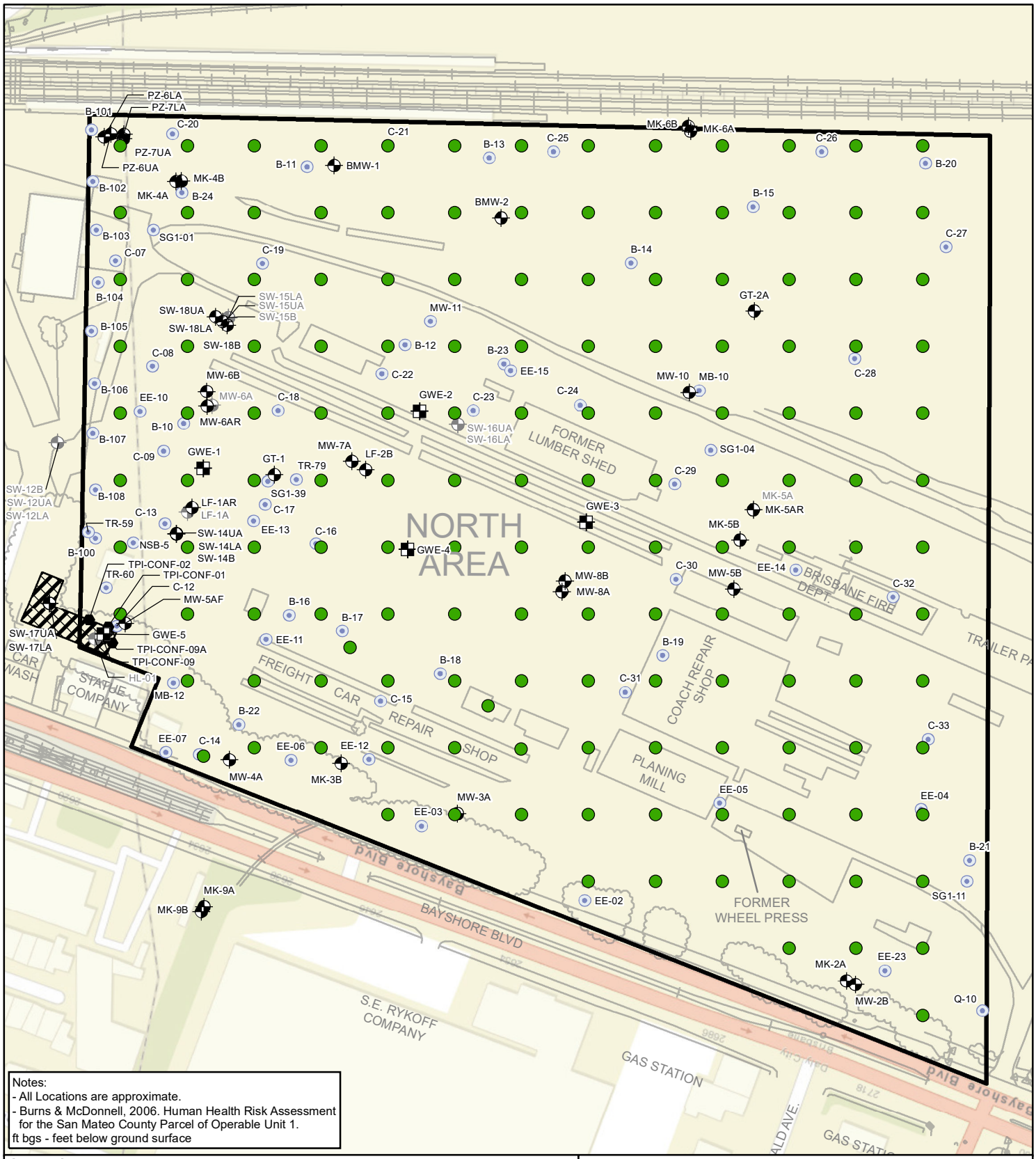
Site Location Map

UPC OU-SM
Brisbane, California

Geosyntec consultants

WG2445	July 2019	**Figure 1**

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Notes:
- All Locations are approximate.
- Burns & McDonnell, 2006. Human Health Risk Assessment for the San Mateo County Parcel of Operable Unit 1.

ft bgs - feet below ground surface

Legend

- Soil Sample Location
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Historical Soil Sample Location
- TPI Conf Samples
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

N

0 200 Feet

Soil Sample Locations

UPC OU-SM
Brisbane, California

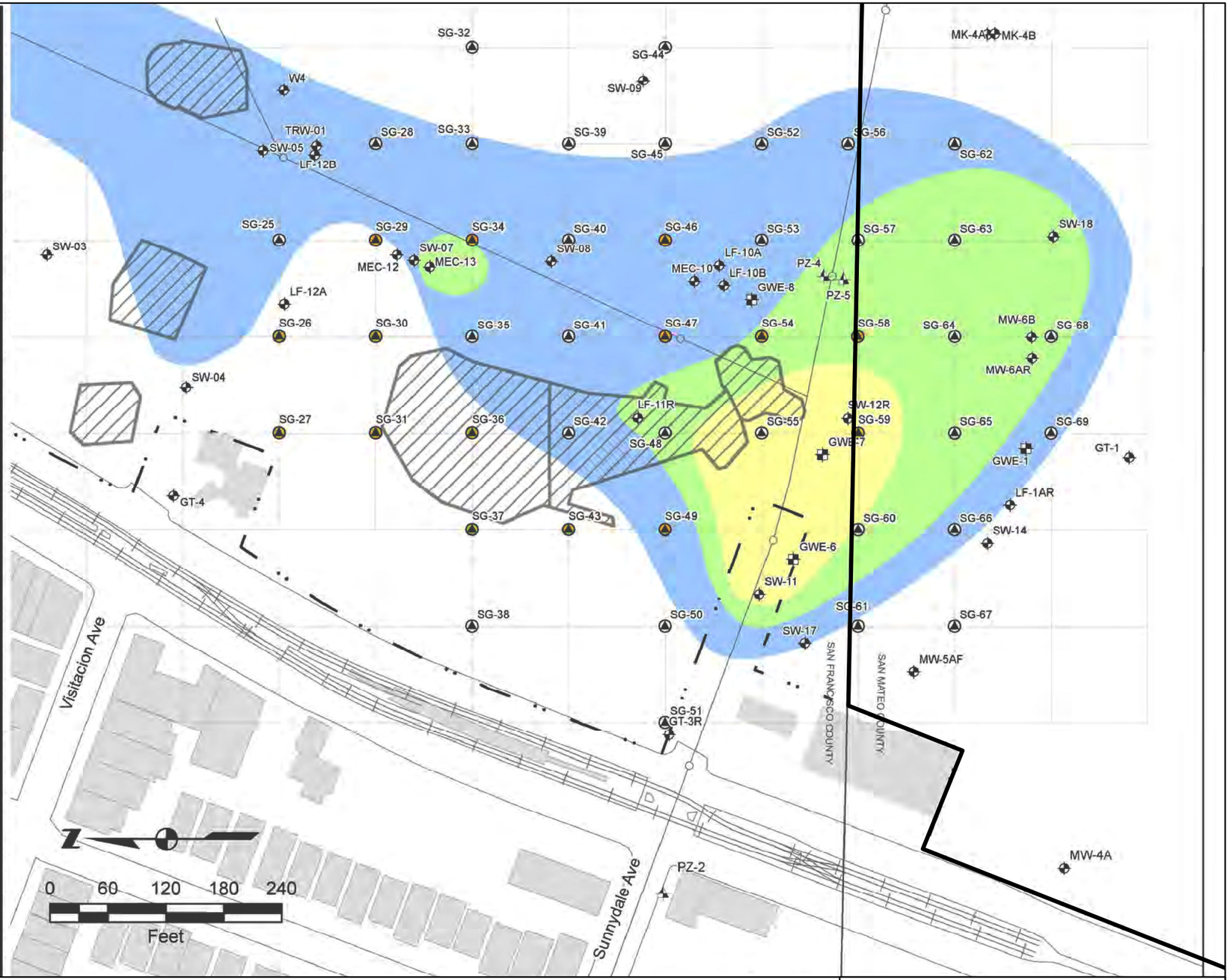
Geosyntec consultants

WG2445 | July 2019

Figure 2

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Sample Location	Sample Date	PCE µg/m³	TCE µg/m³	cDCE µg/m³	VC µg/m³
	CULs	*5,197*	*15,330*	*383,258*	*393*
SG-25	01/24/11	1,000	10,000	--	ND(43)
SG-26	09/11/12	**35,000**	5,100	(ND160)	ND(100)
SG-27	09/11/12	**33,000**	**120,000**	7,400	**1,000**
SG-28	01/24/11	760	470	--	ND(2.5)
SG-29	09/11/12	2,300	7,800	1,900	**730**
SG-30	09/11/12	**710,000**	**430,000**	**490,000**	**58,000**
SG-31	09/11/12	990	4,700	(ND460)	(ND300)
SG-32	01/24/11	140	91	--	ND(2.4)
SG-33	01/24/11	290	610	--	0.62 /J
SG-34	09/11/12	ND(7)	11	ND(4.1)	ND(2.6)
SG-35	01/28/11	1,300	600	--	230
SG-36	09/11/12	**44,000**	**28,000**	8,800	**2,000**
SG-37	09/11/12	**23,000**	**29,000**	7,400	**1,700**
SG-38	01/28/11	470	1,300	--	ND(2.4)
SG-39	02/05/11	21	3.0 /J	--	0.96 /J
SG-40	01/27/11	3,200	15,000	--	190
SG-41	01/27/11	760	4,100	--	150
SG-42	01/28/11	730	360	--	1.9 /J
SG-43	09/11/12	1,400	8,300	470	ND(14)
SG-44	01/28/11	2.1 /J	4.2 /J	--	ND(4.8)
SG-45	01/27/11	2.7 /J	4.2 /J	--	ND(2.5)
SG-46	09/13/12	**11,000**	**42,000**	2,500	**1,100**
SG-47	09/11/12	1,700	11,000	1,700	100
SG-48	01/28/11	4,300	7,700	--	4.9 /J
SG-49	09/13/12	3,400	4,800	110	ND(7.6)
SG-50	01/26/11	14. /J	300	--	1.2 /J
SG-51	01/26/11	100	540	--	1.1 /J
SG-52	01/26/11	2.3 /J	2.2 /J	--	ND(2.3)
SG-53	01/27/11	580	280	--	29
SG-54	09/12/12	**18,000**	**180,000**	ND(880)	**4,200**
SG-55	01/26/11	1,000	1,600	--	97
SG-56	01/26/11	3.4 /J	12	--	ND(2.2)
SG-57	01/26/11	600	5,700	--	ND(14)
SG-58	09/12/12	**9,900**	**43,000**	ND(280)	ND(180)
SG-59	09/12/12	ND(880)	6,900	72,000	**3,800**
SG-60	01/26/11	5.7 /J	4,000	--	ND(7.5)
SG-61	01/28/11	21	110	--	68
SG-62	01/27/11	2.8 /J	1.0 /J	--	ND(2.3)
SG-63	01/27/11	9.7	9.4	--	ND(2.2)
SG-64	01/27/11	250	5,000	--	ND(14)
SG-65	01/26/11	1,600	14,000	--	ND(52)
SG-66	01/26/11	52	21	--	ND(2.3)
SG-67	01/26/11	8.2	1,400	--	79
SG-68	01/27/11	97	1,400	--	ND(4.8)
SG-69	01/27/11	1,400	5,600	--	ND(15)



EXPLANATION

- Soil Gas Location Passed
- Soil Gas Resample Location
- Extraction Well
- Montoring Well
- Piezometer

Trichloroethene Plume as of Second Quarter 2013

Concentration (µg/L)

- 10 - 99
- 100 - 999
- 1,000 - 9,999

- Excavation Limits
- Soil Gas Grid
- **Site Boundary**
- UPC Property Boundary
- Former Schlage Lock / Southern Pacific Railroad Property Boundary
- Sewer Line and Storm Drain

Source: AMEC, 2013

Soil Vapor Sampling Locations and Results

UPC OU-SM
Brisbane, California

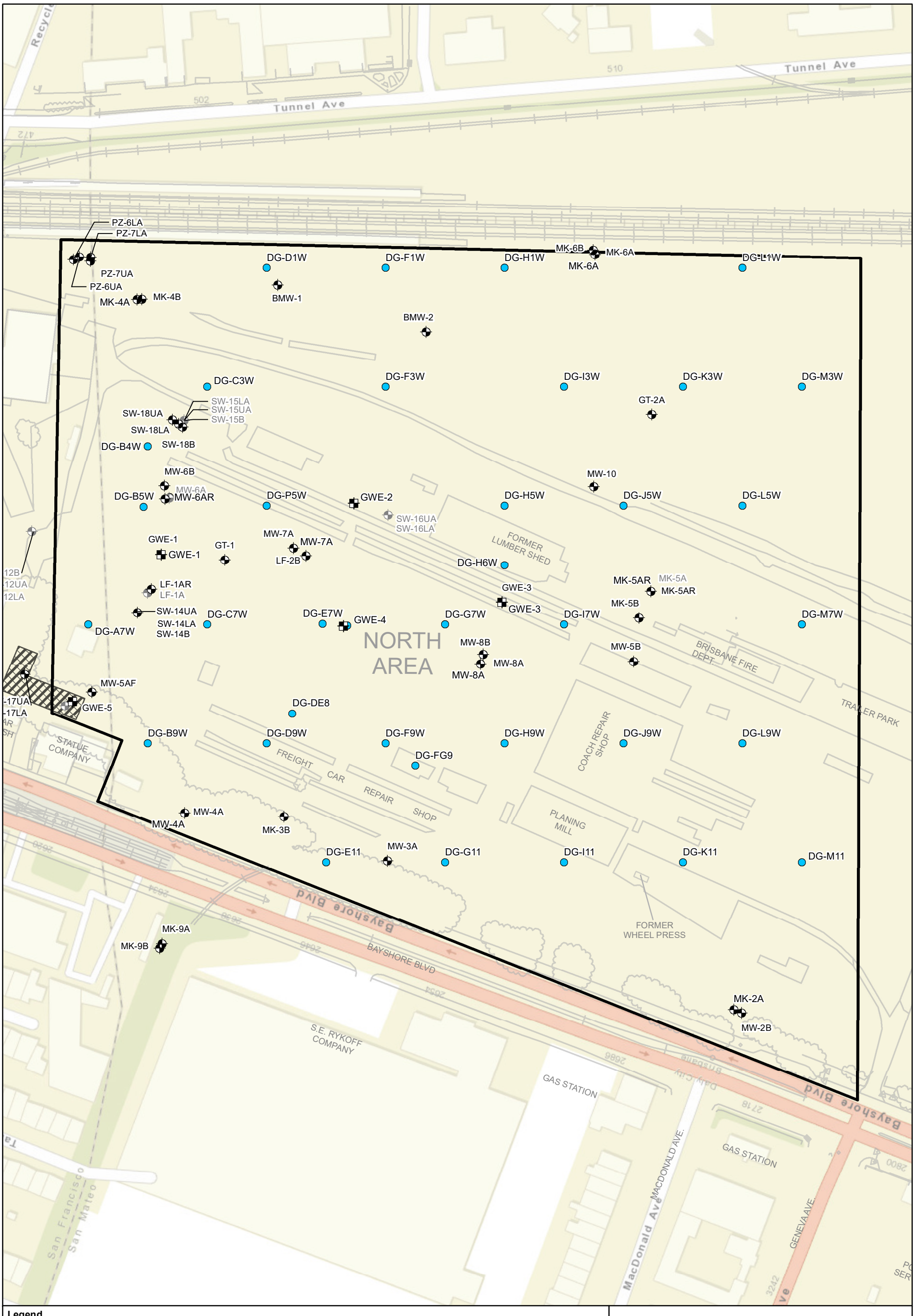
Geosyntec consultants

WG2445 | July 2019

Figure 3

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Legend

- Groundwater Sample Location
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Notes:
- Locations are approximate.
- Burns & McDonnell, 2006. Human Health Risk Assessment for the San Mateo County Parcel of Operable Unit 1.

N

0 150 Feet

Groundwater Sampling Locations

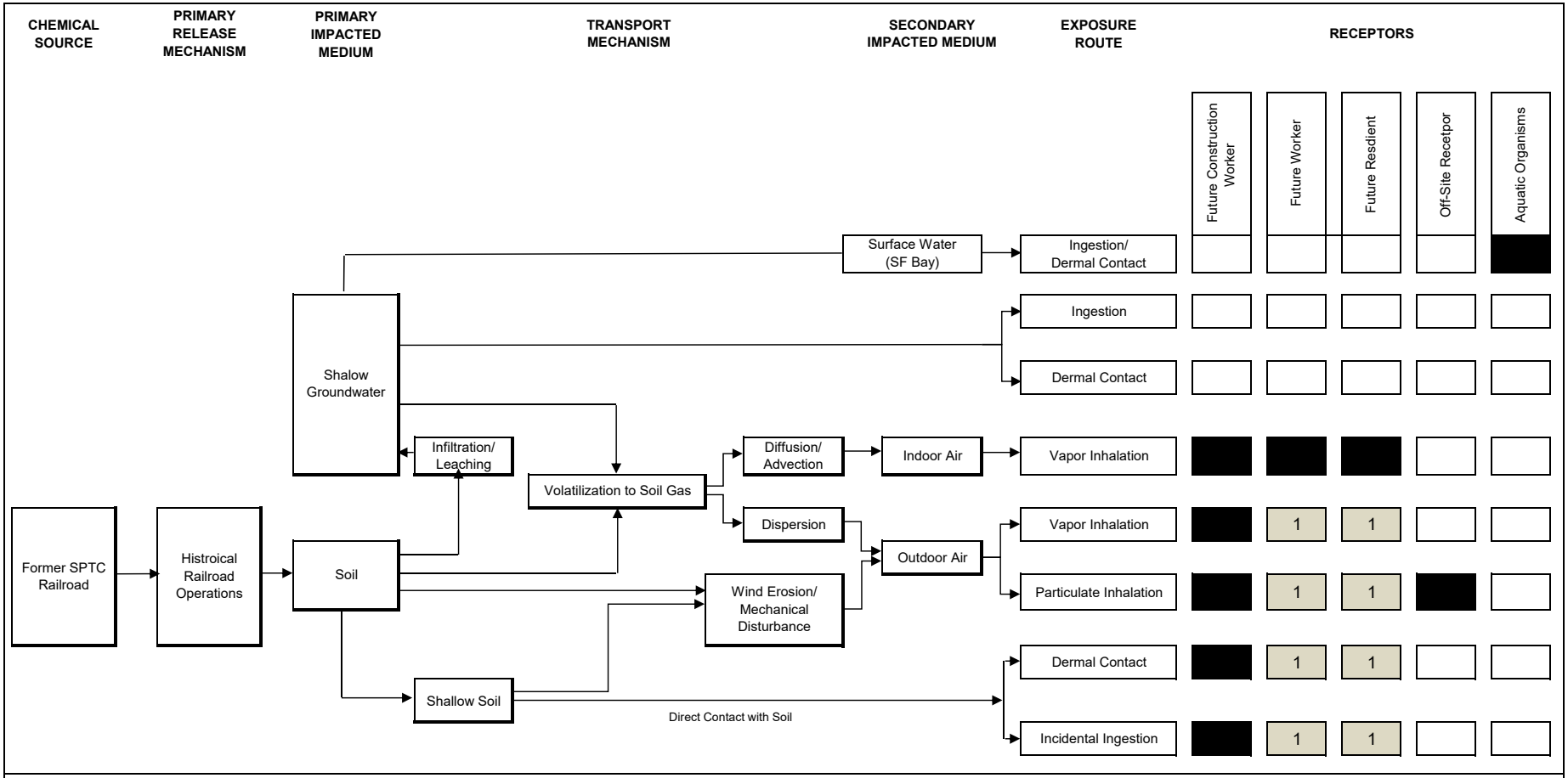
UPC OU-SM
Brisbane, California

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Figure 4

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NOTES:

Potentially complete exposure pathway

1 Under future conditions, the site will be paved and covered by buildings and pavement; therefore pathway is incomplete. However, pathway is evaluated in the HHRA.

Incomplete exposure pathway

Conceptual Site Model
UPC OU-SM
Brisbane, California

Geosyntec consultants

WG2445 | December 2019

Figure 5

APPENDIX A
Analytical Summary of Soil and Soil Vapor Data

Table A1: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
A1	DG-A1S-0.5-1	8/21/18	0.5-1	**3.5**	**160**	**85**	**0.18 J**	**0.14 J**	**63**	**13**	**77**	**100**	**0.73**	<0.19	**71**	**0.59 J**	<0.15	<0.43	**57**	**110**
A1	DG-A1S-3.5-4	8/21/18	3.5-4	**0.85 J**	**7.8**	**58**	**0.60**	<0.043	**31**	**17**	**19**	**9.9**	**0.041**	<0.22	**28**	<0.52	<0.17	<0.50	**42**	**58**
A2	DG-A2S-0.5-1	8/22/18	0.5-1	**17**	**190**	**250**	**0.095 J**	**11**	**51**	**11**	**740**	**2,400**	**0.52 F1**	**4.9**	**47**	<0.41	**2.7**	**1.2 J**	**58**	**1,100**
A2	DG-A2S-3.5-4	8/22/18	2.5-4	**3.1**	**110**	**210**	**0.27 J**	**0.24 J**	**120**	**22**	**74**	**150**	**1.4**	**0.98 J**	**150**	<0.59	<0.20	**1.5 J**	**92**	**140**
A2	DG-A2S-19.5-20	8/21/18	19.5-20	**0.27 J B**	<0.22	**21**	**0.29**	<0.032	**59**	**3.7**	**2.5 J**	**2.0**	**0.0068 J**	<0.17	**15**	<0.39	<0.13	<0.38	**29**	**8.3**
A3	DG-A3S-0.5-1	8/21/18	0.5-1	**1.8 J**	**41**	**74**	**0.30 J**	**0.19 J**	**65**	**13**	**43**	**59**	**0.044**	**0.35 J**	**71**	<0.57	<0.19	<0.55	**58**	**120**
A3	DG-A3S-3.5-4	8/21/18	2.5-4	**0.72 J**	**3.2 J**	**110**	**0.28 J**	<0.044	**43**	**5.2**	**12**	**5.3**	**0.17**	<0.23	**30**	**0.56 J**	<0.18	<0.52	**50**	**32**
A3	DG-A3S-9.5-10	8/21/18	9.5-10	**1.4 J**	**1.9 J**	**50**	**0.14 J**	<0.044	**130**	**4.4**	**3.9 J**	**1.1 J**	**0.013 J**	<0.22	**20**	<0.53	<0.18	<0.51	**58**	**15**
A4	DG-A4S-0.5-1	8/22/18	0.5-1	**8.8**	**20 B**	**240**	**0.18 J**	**24**	**42**	**14**	**400**	**690**	**0.62**	**3.3**	**37**	<0.57	<0.19	**1.2 J**	**93**	**690**
A4	DG-A4S-3.5-4	8/22/18	2.5-4	**1.6**	**11 B**	**68**	**0.22 J**	**0.20 J**	**30**	**7.8**	**140**	**130**	**0.18**	**0.22 J**	**25**	<0.48	<0.16	**0.55 J**	**42**	**250**
A4	DG-A4S-19.5-20	8/22/18	19.5-20	**0.58 J**	**0.73 J**	**40**	<0.079	<0.030	**72**	**2.5**	**4.7**	**1.6**	<0.0023	<0.16	**18**	<0.37	<0.12	<0.35	**23**	**16**
A5	DG-A5S-0.5-1	8/23/18	0.5-1	**1.4**	**8.9**	**71 B**	**0.10 J**	**0.34 J**	**33**	**15**	**170**	**220**	**0.38**	**0.47 J**	**16**	<0.43	**0.16 J**	**1.2 J**	**100**	**160**
A5	DG-A5S-3.5-4	8/23/18	2.5-4	**0.80 R**	**2.1 J B**	**83 F1**	**0.12 J**	<0.038	**96**	**30**	**45 F1**	**2.7**	**0.13**	**0.22 J**	**68**	<0.46	<0.15	**1.6**	**100 F1**	**68**
A5	DG-A5S-19.5-20	8/23/18	19.5-20	**0.68 J**	**2.1 J B**	**39**	<0.097	<0.037	**89**	**4.8**	**6.4**	**1.4 J**	**0.0067 J**	<0.19	**18**	**0.50 J**	<0.15	**0.81 J**	**80**	**18**
A6	DG-A6S-0.5-1	8/22/18	0.5-1	**23**	**16**	**130**	<0.11	**2.1**	**16**	**9.5**	**6,000**	**1,200**	**0.27**	**0.95 J**	**20**	**1.4 J**	**2.4**	**1.4 J**	**110**	**450**
A6	DG-A6S-3.5-4	8/22/18	2.5-4	**0.99 J**	**4.8**	**86**	**0.16 J**	<0.046	**51**	**12**	**42**	**19**	**0.041**	**0.36 J**	**70**	<0.55	<0.19	**0.72 J**	**32**	**56**
A6	DG-A6S-3.5-4 (D)	8/22/18	2.5-4	**0.78 J**	**8.3**	**160**	**0.32 J**	<0.042	**42**	**13**	**37**	**12**	**0.037**	**0.40 J**	**61**	<0.51	**0.20 J**	**0.75 J**	**32**	**66**
A6	DG-A6S-19.5-20	8/22/18	19.5-20	**0.61 J**	**0.76 J**	**29**	**0.14 J**	<0.041	**48**	**4.6**	**3.6 J**	**1.8**	**0.0052 J**	<0.21	**19**	<0.50	<0.17	**0.50 J**	**30**	**13**
A7	DG-A7S-0.5-1	8/23/18	0.5-1	**0.72 J B**	**2.3 J**	**53 B**	<0.12	**0.24 J**	**12**	**9.6**	**79**	**48**	**0.078**	**0.65 J**	**15**	<0.56	<0.19	<0.54	**83**	**79**
A7	DG-A7S-3.5-4	8/23/18	2.5-4	**0.60 J**	**14**	**62**	**0.16 J**	<0.037	**67 B**	**9.8**	**20**	**22**	**0.076**	**0.57 J**	**80**	**1.1 J**	<0.15	<0.43	**41**	**37**
A7	DG-A7S-10-10.5	8/23/18	10-10.5	**0.13 J**	**0.43 J**	**24**	**0.10**	<0.011	**34 B**	**2.3**	**4.2**	**2.1**	**0.012 J**	**0.51**	**12**	**0.68 J**	<0.046	<0.13	**24**	**13**
A7	(D)	8/23/18	10-10.5	<0.29	**0.83 J**	**32**	<0.11	<0.043	**46**	**1.7**	<2.5	**2.0**	**0.0047 J**	<0.22	**6.5**	<0.52	<0.17	<0.50	**45**	**5.9**
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<0.28	**1.3 J**	**52**	<0.11	<0.042	**8.7**	**9.7**	**110**	**2.1**	**0.049**	**0.36 J**	**16**	<0.51	<0.17	**0.97 J**	**98**	**33**
A8	DG-A8S-3.5-4	8/27/18	2.5-4	**2.7**	**230**	**120**	**0.28 J**	**1.5**	**49**	**11**	**160**	**220**	**1.4**	**0.72 J**	**65**	**0.69 J**	<0.19	**0.85 J**	**36**	**190**
A8	DG-A8S-17-17.5	8/27/18	17-17.5	**0.48 J**	**2.8 J**	**41**	**0.16 J**	<0.044	**53**	**8.3**	**5.0 J**	**1.1 J**	**0.0040 J**	<0.22	**28**	<0.53	<0.18	<0.51	**47**	**18**
A8	(D)	8/27/18	17-17.5	**0.39 J**	**2.3 J**	**25**	<0.087	<0.033	**44**	**4.7**	**4.1**	**0.87 J**	<0.0022	<0.17	**17**	<0.40	<0.13	<0.39	**37**	**14**
B1	DG-B1S-0.5-1	8/21/18	0.5-1	**0.89 J F1**	**110**	**48**	<0.11	**0.26 J**	**23**	**6.1**	**56**	**66**	**0.045**	**0.33 J**	**18**	<0.50	<0.17	<0.48	**36**	**73**
B1	DG-B1S-3.5-4	8/21/18	3.5-4	**1.3 J**	**94**	**100**	**0.12 J**	**0.077 J**	**85**	**18**	**33**	**3.5**	**0.48**	<0.24	**120**	<0.56	<0.19	<0.54	**71**	**53**
B2	DG-B2S-0.5-1	8/22/18	0.5-1	**5.9**	**130**	**240**	<0.10	**2.8**	**90**	**16**	**310**	**510**	**0.57**	**4.1**	**55**	<0.48	**0.74 J**	**1.3 J**	**78**	**580**
B2	DG-B2S-3.5-4	8/22/18	2.5-4	**2.6**	**280**	**250**	**0.20 J**	**0.21 J**	**34**	**6.0**	**49**	**250**	**0.063**	**0.51 J**	**37**	<0.54	**0.41 J**	<0.52	**26**	**170**
B2	DG-B2S-19.5-20	8/21/18	19.5-20	**0.31 J B**	**5.0**	**31**	**0.18 J**	<0.042	**14**	**6.3**	**4.8 J**	**0.83 J**	**0.011 J**	**0.43 J**	**15**	**3.4**	<0.17	<0.50	**72**	**3.0 J**
B3	DG-B3S-0.5-1	8/21/18	0.5-1	**24**	**67**	**630**	<0.098	**5.7**	**210**	**14**	**870**	**5,300**	**0.81**	**1.5**	**43**	<1.1	**4.4**	**1.9 J**	**56**	**1,900**
B3	DG-B3S-3.5-4	8/21/18	2.5-4	**10**	**9.7**	**640**	<0.088	**2.2**	**19 B**	**3.8**	**2,100**	**2,300**	**1.3**	<0.17	**16**	<0.41	**1.2**	**0.53 J**	**7.5**	**2,100**
B4	DG-B4S-0.5-1	8/23/18	0.5-1	**1.5 B**	**4.1**	**74 B**	<0.084	**1.4**	**17**	**11**	**200**	**130**	**0.19**	**1.3**	**10**	<0.39	**0.47 J**	**0.66 J**	**88**	**240**
B4	DG-B4S-0.5-1 (D)	8/23/18	0.5-1	**1.1 J**	**3.9**	**80**	<0.089	**1.3**	**21**	**12**	**200**	**130**	**0.21**	**1.4**	**11**	<0.41	**0.27 J**	**1.0 J**	**100**	**240**
B4	DG-B4S-3.5-4	8/23/18	1-2.5	**0.75 J B**	**1.6 J**	**47 B**	<0.069	**0.41**	**13**	**11**	**120**	**48**	**0.31**	**0.30 J**	**10**	<0.32	**0.19 J**	**0.84 J**	**78**	**130**
B5	DG-B5S-0.5-1	8/23/18	0.5-1	**1.5**	**16 B**	**82**	**0.18 J**	**0.71**	**34**	**13**	**190**	**95**	**0.41**	**2.4**	**39**	**1.1 J**	<0.10	<0.29	**88**	**190**
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.22	**4.1 B**	**160**	**0.24 J**	**0.27 J**	**210**	**28**	**230**	**170**	**0.12**	**0.81 J**	**230**	**1.2 J**	**0.25 J**	<0.38	**92**	**280**
B6	DG-B6S-0.5-1	8/22/18	0.5-1	**7.4**	**13**	**150**	**0.095 J**	**2.1**	**26**	**9.6**	**190**	**500**	**0.25**	**1.2**	**25**	**0.67 J**	**1.1**	**0.99 J**	**60**	**380**
B6	DG-B6S-3.5-4	8/22/18	2.5-4	**2.2**	**3.0 J**	**120**	<0.11	**0.043 J**	**150**	**32**	**59**	**27**	**0.063**	**0.52 J**	**130**	**0.53 J**	**0.94**	**3.1**	**140**	**84**
B7	DG-B7S-0.5-1	8/23/18	0.5-1	**0.42 J**	**4.4**	**68**	**0.24 J**	**0.22 J**	**32 B**	**8.9**	**99**	**62**	**0.11**	**2.1**	**23**	**0.51 J**	<0.16	<0.46	**69**	**77**
B7	DG-B7S-3.5-4	8/23/18	2.5-4	**1.4 J F1**	**4.3**	**90**	<0.12	**0.20 J**	**45 F1**	**9.1**	**31 F1**	**100 F1 F2**	**0.12**	**0.36 J**	**60 F1**	<0.57	<0.19	<0.55	**26 F1**	**86 F1**

Table A1: Metals Concentrations in Soil

UPC OU-SM

Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.32	**0.61 J**	**34**	<0.13	<0.048	**29**	**0.81**	<2.8	**1.5 J**	**0.018**	<0.25	**4.6**	<0.58	<0.20	<0.56	**23**	**3.2 J**
B8	DG-B8S-0.5-1	8/23/18	0.5-1	**4.6**	**7.0**	**100**	**0.19 J**	**0.21 J**	**43**	**11**	**110**	**260**	**0.046**	**0.87 J**	**48**	<0.55	<0.18	**1.1 J**	**52**	**120**
B8	DG-B8S-3.5-4	8/23/18	2.5-4	**2.2**	**4.8**	**160**	**0.15 J**	<0.039	**180**	**18**	**22**	**2.0**	**0.024**	<0.20	**160**	<0.47	<0.16	**1.5 J**	**120**	**48**
B9	DG-B9S-0.5-1	8/24/18	0.5-1	**10 B**	**24**	**50 B**	<0.25	**3.0**	**21**	**17**	**590**	**2,600**	**0.76**	**5.8**	**21**	<1.2	**4.1**	<1.1	**62**	**640**
B9	DG-B9S-3.5-4	8/24/18	2.5-4	**1.6 J B**	**3.8**	**75 B**	<0.12	**0.12 J**	**83**	**11**	**34**	**36**	**0.54**	**0.39 J**	**73**	<0.53	<0.18	<0.51	**38**	**61**
B9	DG-B9S-9.5-10	8/24/18	9.5-10	**0.39 J**	**1.8 J**	**56**	**0.075 J**	<0.027	**34**	**5.5**	**7.4**	**5.5**	**0.072**	<0.14	**20**	<0.33	<0.11	<0.32	**26**	**23**
B10	DG-B10S-0.5-1	8/24/18	0.5-1	**7.4**	**28**	**150**	<0.13	**0.72**	**72**	**14**	**140**	**610**	**0.34**	**0.83 J**	**72**	<0.58	**0.50 J**	**1.2 J**	**60**	**250**
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	**9.1**	**39**	**370**	<0.12	**1.4**	**68**	**8.4**	**210**	**13,000**	**0.49**	**1.8 J**	**41**	<0.57	**0.58 J**	**1.2 J**	**45**	**450**
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.26	**1.3 J**	**36 B**	**0.13 J**	<0.038	**28**	**4.2**	**6.1**	**6.9**	**0.048**	<0.20	**16**	<0.46	<0.16	<0.45	**22**	**22**
C1	DG-C1S-0.5-1	8/21/18	0.5-1	**3.0**	**270**	**63**	**0.13 J**	**0.63**	**17**	**10**	**110**	**250**	**0.12**	**0.37 J**	**15**	<0.50	**0.17 J**	<0.48	**59**	**180**
C1	DG-C1S-3.5-4	8/21/18	3.5-4	**100**	**30**	**75**	**0.12 J**	**0.16 J**	**35**	**9.8**	**92**	**220**	**0.050**	**0.24 J**	**46**	<0.48	<0.16	<0.46	**43**	**83**
C2	DG-C2S-0.5-1	8/21/18	0.5-1	**2.7 B**	**15**	**110**	**0.15 J**	**1.9**	**52**	**9.2**	**100**	**420**	**0.45**	**2.4**	**49**	**0.64 J**	<0.18	<0.51	**32**	**310**
C2	DG-C2S-3.5-4	8/21/18	2.5-4	**1.6 B**	**16**	**180**	**0.32**	**0.33**	**29**	**6.0**	**58**	**300**	**0.13**	**0.68 J**	**29**	<0.38	**0.24 J**	<0.37	**28**	**320**
C3	DG-C3S-0.5-1	8/21/18	0.5-1	**16**	**5.2**	**110**	<0.10	**0.40**	**13 B**	**15**	**240**	**670**	**0.21**	**0.56 J**	**26**	<0.48	**0.36 J**	<0.46	**120**	**300**
C3	DG-C3S-3.5-4	8/21/18	2.5-4	**38**	**49**	**1,100**	**0.28 J**	**9.2**	**38 B**	**12**	**10,000**	**5,200**	**6.0**	**3.6**	**39**	<2.4	**3.9**	**2.5 J**	**28**	**5,700**
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.30	**4.4**	**21**	**0.34 J**	**0.10 J**	**51**	**9.0**	**23**	**8.0**	**0.037**	**1.0 J**	**48**	<0.54	<0.18	<0.52	**41**	**49**
C4	DG-C4S-0.5-1	8/23/18	0.5-1	**10 B**	**24**	**89 B**	<0.10	**1.1**	**17**	**11**	**310**	**1,000**	**0.20**	**0.34 J**	**13**	<0.48	**0.64 J**	**0.87 J**	**74**	**320**
C4	DG-C4S-3.5-4	8/23/18	2.5-4	**4.1 B**	**5.0**	**110 B**	**0.21 J**	**0.50**	**62**	**11**	**35**	**1,100**	**0.21**	**0.41 J**	**41**	<0.50	**0.19 J**	<0.48	**54**	**180**
C5	DG-C5S-0.5-1	8/23/18	0.5-1	<0.19 R	**3.1 B**	**53 F1**	**0.11 J**	**0.51 F1**	**15 F1**	**11 F1**	**140**	**130 F1**	**0.28**	**1.1**	**9.4 F1**	**0.72 J**	<0.12	<0.33	**94 F1**	**130 F1**
C5	DG-C5S-3.5-4	8/23/18	1-2.5	**3.1**	**9.3 B**	**210**	**0.32**	**0.68**	**44**	**10**	**260**	**410**	**0.47**	**1.2 J**	**41**	**0.72 J**	<0.16	<0.46	**46**	**530**
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.33	**10 B**	**370**	**0.58**	**0.12 J**	**48**	**18**	**39**	**15**	**0.28**	**0.85 J**	**51**	**2.5 J**	<0.20	<0.58	**70**	**85**
C6	DG-C6S-0.5-1	8/23/18	0.5-1	**1.9 F1**	**4.2**	**44 F1**	<0.13	**0.54**	**19**	**12**	**150 F1**	**140 F1**	**0.12**	**1.5 J**	**15**	<0.58	**0.66 J**	**1.4 J**	**88 F1**	**120 F1**
C6	DG-C6S-3.5-4	8/23/18	2.5-4	**4.2**	**6.0**	**98**	<0.098	**0.27 J**	**35**	**12**	**3,400**	**230**	**1.7**	**1.1 J**	**33**	**0.67 J**	**0.81**	**0.84 J**	**51**	**140**
C7	DG-C7S-0.5-1	8/24/18	0.5-1	**24**	**9.4**	**120**	<0.098	**0.56**	**17**	**12**	**220**	**910**	**0.20**	**1.7**	**10**	<0.45	**0.60 J**	**0.72 J**	**89**	**190**
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	**2.8**	**5.2**	**60**	<0.12	**0.98**	**16**	**11**	**210**	**310**	**0.17**	**2.5**	**9.4**	<0.57	**0.30 J**	**1.2 J**	**93**	**150**
C7	DG-C7S-3.5-4	8/24/18	3.5-4	**4.4**	**7.1**	**68**	<0.073	**0.41**	**32**	**7.1**	**82**	**170**	**0.042**	**0.40 J**	**34**	<0.34	**0.20 J**	**0.56 J**	**39**	**92**
C7	DG-C7S-9.5-10	8/24/18	9.5-10	**1.1 J**	**6.8**	**73**	**0.14 J**	<0.040	**66**	**14**	**25**	**8.6**	**0.049**	**0.42 J**	**83**	<0.49	<0.16	**0.82 J**	**43**	**59**
C8	DG-C8S-0.5-1	8/23/18	0.5-1	**1.4 J**	**5.1**	**55**	<0.11	**0.60**	**17**	**13**	**190**	**89**	**0.077**	**0.39 J**	**11**	<0.53	<0.18	**1.5 J**	**100**	**380**
C8	DG-C8S-3.5-4	8/23/18	2.5-4	**1.7**	**4.1 B**	**90**	**0.26 J**	**0.067 J**	**130**	**15**	**37**	**150**	**0.35**	**0.31 J**	**130**	<0.42	<0.14	**0.78 J**	**52**	**88**
C9	DG-C9S-0.5-1	8/27/18	0.5-1	**1.6**	**10**	**140**	**0.12 J**	**1.1**	**40**	**12**	**220**	**270**	**0.14**	**2.3**	**31**	**1.0 J**	**0.31 J**	**0.77 J**	**94**	**250**
C9	DG-C9S-3.5-4	8/27/18	1-2.5	**6.1 F1**	**19**	**110 F1**	<0.10	**4.0**	**13 F1**	**15 F1**	**420**	**1,400**	**0.029**	**0.70 J**	**9.5 F1**	**1.4 J**	**4.0**	**1.0 J**	**92 F1**	**780**
C10	DG-C10S-0.5-1	8/23/18	0.5-1	**1.1 J**	**11**	**34**	<0.13	**0.060 J**	**13**	**19**	**150**	**58**	**0.084**	**0.47 J**	**11**	<0.59	<0.20	**1.9 J**	**130**	**88**
C10	DG-C10S-3.5-4	8/23/18	2.5-4	**2.6**	**190**	**120**	**0.42**	<0.048	**180**	**24**	**45**	**16**	**2.3**	**0.56 J**	**200**	<0.58	<0.20	**1.1 J**	**89**	**81**
D1	DG-D1S-0.5-1	8/20/18	0.5-1	**2.3**	**92**	**95 B**	<0.094	**0.44**	**13 B**	**11**	**100**	**95**	**0.12**	**0.22 J**	**11**	<0.43	**0.24 J**	**0.86 J**	**75**	**130**
D1	DG-D1S-3.5-4	8/20/18	2.5-4	**1.3 J**	**75**	**100 B**	**0.16 J**	<0.036	**64 B**	**14**	**22**	**11**	**0.054**	<0.19	**110**	<0.44	**0.18 J**	**0.44 J**	**27**	**40**
D1	DG-D1S-9.5-10	8/20/18	9.5-10	**2.2**	**12**	**95 B**	**0.66**	<0.040	**120 B**	**28**	**44**	**7.9**	**2.7**	**0.40 J**	**250**	**0.83 J**	**0.29 J**	**0.74 J**	**55**	**78**
D2	DG-D2S-0.5-1	8/20/18	0.5-1	<0.31	**2.2 J**	**48 B**	<0.12	<0.046	**12 B**	**10**	**140**	**7.3**	**0.075**	<0.24	**4.5**	**0.83 J**	**0.20 J**	**1.2 J**	**120**	**41**
D2	DG-D2S-3.5-4	8/20/18	1-2.5	**2.1**	**62**	**230 B**	**0.35**	**0.24 J**	**56 B**	**14**	**58**	**180**	**0.12**	**0.37 J**	**80**	<0.41	**0.45 J**	**0.57 J**	**43**	**170**
D3	DG-D3S-0.5-1	8/21/18	0.5-1	**3.9**	**210**	**44**	<0.12	**0.74**	**15**	**13**	**180**	**190**	**0.11**	**0.34 J**	**33**	<0.55	**0.35 J**	<0.53	**56**	**160**
D3	DG-D3S-3.5-4	8/21/18	2.5-4	**3.5**	**300**	**86**	**0.080 J**	**0.38**	**40**	**10**	**440**	**230**	**0.10**	**0.29 J**	**40**	<0.32	**0.22 J**	<0.31	**44**	**350**
D3	DG-D3S-9.5-10	8/21/18	9.5-10	**0.86 J**	**29**	**67**	<0.10	**0.19 J**	**35**	**9.1**	**56**	**270**	**0.76**	**0.34 J**	**33**	<0.48	<0.16	<0.47	**32**	**160**
D4	DG-D4S-0.5-1	8/21/18	0.5-1	**6.8**	**6.2**	**43**	<0.11	**0.23 J**	**22**	**8.9**	**140**	**890**	**0.22**	**0.24 J**	**9.3**	<0.52	<0.18	<0.50	**64**	**110**

Table A1: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
D4	DG-D4S-0.5-1 (D)	8/21/18	0.5-1	**1.4**	**3.2**	**44**	<0.069	**0.12 J**	**20**	**8.7**	**97**	**450**	**0.11**	**0.47 J**	**9.5**	<0.32	**0.14 J**	<0.31	**64**	**71**
D4	DG-D4S-3.5-4	8/21/18	2.5-4	**3.5**	**130**	**110**	<0.11	**0.33 J**	**16**	**12**	**150**	**340**	**0.17**	<0.22	**16**	<0.53	**0.27 J**	<0.51	**95**	**130**
D5	DG-D5S-0.5-1	8/22/18	0.5-1	**6.9**	**12 B**	**180**	<0.099	**5.2**	**78**	**18**	**330**	**620**	**0.19**	**3.9**	**45**	**1.1 J**	**0.24 J**	<0.44	**77**	**850**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.22	**2.9 B**	**48**	<0.087	**0.49**	**12**	**14**	**110**	**58**	**0.32**	**0.71 J**	**6.7**	**1.1 J**	<0.13	<0.39	**110**	**97**
D6	DG-D6S-0.5-1	8/22/18	0.5-1	**0.54 J**	**2.2 J**	**33**	<0.11	<0.044	**12**	**15**	**150**	**47**	**0.12**	**0.52 J**	**6.3**	<0.53	<0.18	**1.5 J**	**130**	**77**
D6	DG-D6S-3.5-4	8/22/18	2.5-4	**1.2 J**	**4.4**	**53**	**0.094 J**	**0.098 J**	**13**	**11**	**99**	**78**	**0.10**	**0.40 J**	**6.9**	<0.41	<0.14	**1.1 J**	**79**	**77**
D7	DG-D7S-1.5-2	8/27/18	1.5-2	<0.21	**3.0**	**53**	<0.084	**0.12 J**	**10**	**8.6**	**110**	**98**	**0.052**	<0.17	**5.3**	**0.47 J**	<0.13	**0.63 J**	**83**	**78**
D7	DG-D7S-3.5-4	8/27/18	2.5-4	**1.6 J**	**2.4 J**	**66**	<0.12	**0.21 J**	**21**	**8.8**	**78**	**87**	**0.15**	<0.23	**16**	**1.2 J**	<0.18	<0.51	**73**	**77**
D8	DG-D8S-0.5-1	8/23/18	0.5-1	<0.28	**0.41 J**	**35**	<0.11	<0.042	**10**	**12**	**140**	**9.9**	**0.036**	**0.34 J**	**5.3**	<0.51	<0.17	**0.94 J**	**100**	**42**
D8	DG-D8S-3.5-4	8/23/18	2.5-4	**1.2 J**	**2.5 J**	**58**	<0.11	<0.042	**5.7**	**6.0**	**15**	**32**	**0.18**	<0.22	**3.4**	<0.51	<0.17	<0.49	**36**	**59**
D8	DG-D8S-3.5-4 (D)	8/23/18	2.5-4	**1.8**	**2.3 J**	**48**	<0.11	**0.053 J**	**4.6**	**6.6**	**25**	**36**	**0.14**	<0.21	**3.0**	<0.50	<0.17	<0.48	**42**	**59**
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.25	**0.74 J**	**36**	<0.098	<0.037	**11**	**11**	**130**	**23**	**0.099**	**0.33 J**	**3.6**	<0.45	<0.15	**0.78 J**	**110**	**49**
D9	DG-D9S-3.5-4	8/24/18	1-2.5	**3.3**	**5.8**	**60**	<0.11	**0.14 J**	**16**	**12**	**150**	**150**	**0.061**	**0.38 J**	**13**	<0.50	**0.37 J**	**0.78 J**	**86**	**81**
D9	DG-D9S-9.5-10	8/24/18	9.5-10	**0.37 J**	**1.7 J**	**28**	<0.069	<0.026	**30**	**5.3**	**5.4**	**3.2**	<0.0024	**0.17 J**	**34**	<0.32	<0.11	<0.31	**19**	**16**
D10	DG-D10S-0.5-1	8/23/18	0.5-1	**8.9**	**64**	**110**	<0.10	**0.36 J**	**32**	**16**	**640**	**1,200**	**0.29**	**3.4**	**29**	<1.2	**1.0 J**	<1.1	**96**	**460**
D10	DG-D10S-3.5-4	8/23/18	2.5-4	**8.1**	**7.2**	**68**	<0.10	**0.41**	**28**	**14**	**140**	**270**	**0.064**	**0.42 J**	**27**	<0.48	**0.50 J**	**1.3 J**	**93**	**140**
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	**0.57 J B**	**0.25 J**	**8.2 B**	<0.083	**0.070 J**	**8.3**	**15**	**120**	**13**	**0.047**	**0.41 J**	**4.5**	<0.38	**0.36 J**	**0.70 J**	**110**	**71**
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	**21 B**	**34**	**430 B**	<0.23	**5.9**	**61**	**12**	**750**	**6,100**	**0.15**	**0.54 J**	**30**	<1.1	**2.9**	<1.0	**51**	**2,100**
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	**1.9 B**	**6.8**	**160 B**	**0.42**	**0.059 J**	**180**	**20**	**44**	**8.2**	**0.096**	**0.35 J**	**230**	<0.37	**0.31 J**	<0.35	**63**	**78**
E1	DG-E1S-0.5-1	8/20/18	0.5-1	<0.29	**22**	**62 B**	<0.11	<0.043	**16 B**	**11**	**160**	**40**	**0.085**	<0.22	**4.9**	<0.52	**0.27 J**	**0.90 J**	**130**	**67**
E1	DG-E1S-3.5-4	8/20/18	2.5-4	**1.3 J**	**160**	**90 B**	**0.11 J**	**0.11 J**	**32 B**	**5.8**	**29**	**68**	**0.054**	<0.20	**29**	<0.48	**0.20 J**	<0.46	**25**	**83**
E2	DG-E2S-0.5-1	8/20/18	0.5-1	**3.2**	**11**	**94 B**	<0.12	**1.5**	**22 B**	**12**	**180**	**430**	**0.36**	**1.1 J**	**18**	**0.58 J**	**0.53 J**	**0.78 J**	**98**	**490**
E2	DG-E2S-3.5-4	8/20/18	2.5-4	**2.7**	**120**	**470 B**	**0.12 J**	**0.45**	**21 B**	**10**	**330**	**620**	**0.074**	**0.39 J**	**19**	<0.35	**1.4**	**1.0 J**	**87**	**400**
E3	DG-E3S-0.5-1	8/21/18	0.5-1	**4.7**	**14**	**120**	<0.13	**6.8**	**340**	**15**	**190**	**200**	**0.28**	**2.5**	**130**	<0.60	**0.22 J**	<0.58	**56**	**260**
E3	DG-E3S-3.5-4	8/21/18	2.5-4	**9.7**	**44**	**240**	<0.12	**2.1**	**33**	**11**	**530**	**1,800**	**1.0**	**0.71 J**	**49**	<0.53	**1.1**	<0.51	**48**	**730**
E3	DG-E3S-9.5-10	8/21/18	9.5-10	**20**	**50**	**700**	**0.17 J**	<0.11	**110**	**24**	**330**	**160**	**0.060**	**2.0**	**76**	<1.4	<0.47	**2.3 J**	**80**	**230**
E4	DG-E4S-0.5-1	8/21/18	0.5-1	**0.60 J F1**	**2.9 J**	**36 F1**	<0.12	**0.063 J**	**8.2 F1**	**13**	**110 F1**	**45 F1**	**0.068**	<0.23	**4.2**	<0.53	<0.18	<0.51	**98 F1**	**63 F1**
E4	DG-E4S-3.5-4	8/21/18	1-2.5	<0.22	**0.85 J**	**39**	<0.085	<0.032	**8.9**	**11**	**110**	**13**	**0.032**	**0.17 J**	**2.9**	<0.39	**0.26 J**	<0.38	**120**	**41**
E5	DG-E5S-0.5-1	8/22/18	0.5-1	<0.29	**2.4 J B**	**80**	<0.12	**0.14 J**	**10**	**10**	**130**	**76**	**0.14**	**0.48 J**	**5.3**	<0.53	<0.18	**1.0 J**	**97**	**100**
E5	DG-E5S-3.5-4	8/22/18	2.5-4	**71**	**22 B**	**150**	<0.10	**0.44**	**18**	**9.8**	**300**	**3,300**	**0.070**	**0.42 J**	**13**	<0.47	**0.72 J**	**1.1 J**	**71**	**350**
E5	DG-E5S-9-9.5	8/22/18	9-9.5	**1.8**	**3.2**	**73**	**0.34**	<0.027	**60**	**9.1**	**20**	**30**	**0.057**	<0.14	**40**	**0.84 J**	**0.16 J**	**0.43 J**	**60**	**41**
E6	DG-E6S-0.5-1	8/22/18	0.5-1	**2.2**	**4.0**	**84**	<0.11	**0.52**	**19**	**13**	**190**	**140**	**0.15**	**1.1 J**	**14**	<0.50	<0.17	**1.3 J**	**94**	**170**
E6	DG-E6S-3.5-4	8/22/18	1-2.5	**1.4 J**	**4.6**	**67**	**0.12 J**	**1.1**	**11**	**13**	**170**	**170**	**0.089**	**0.34 J**	**7.4**	<0.45	**0.62 J**	**1.8**	**110**	**230**
E6	DG-E6S-3.5-4 (D)	8/22/18	1-2.5	**0.29 J**	**1.8 J**	**51**	<0.078	**0.34**	**11**	**12**	**130**	**58**	**0.061**	**0.28 J**	**5.7**	<0.36	**0.14 J**	**1.2**	**110**	**96**
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.27	**3.5**	**58**	<0.11	**0.36 J**	**14**	**11**	**170**	**110**	**0.070**	<0.21	**8.5**	<0.50	**0.35 J**	**0.98 J**	**110**	**150**
E7	DG-E7S-3.5-4	8/24/18	2.5-4	**0.98 J**	**2.8 J**	**110**	**0.13 J**	**0.17 J**	**52**	**9.1**	**20**	**28**	**0.042**	**0.29 J**	**44**	<0.45	<0.15	<0.44	**42**	**57**
E7	DG-E7S-9.5-10	8/24/18	9.5-10	**1.3 J**	**1.2 J**	**97**	**0.20 J**	<0.038	**60**	**29**	**47**	**0.75 J**	**0.19**	**0.36 J**	**53**	<0.45	**0.46 J**	**1.6**	**140**	**65**
E8	DG-E8S-0.5-1	8/23/18	0.5-1	<0.26	**0.87 J**	**63**	<0.10	<0.038	**11**	**10**	**130**	**15**	**0.085**	**0.21 J**	**4.1**	**0.54 J**	**0.20 J**	**1.1 J**	**110**	**45**
E8	DG-E8S-3.5-4	8/23/18	2.5-4	**60**	**7.3**	**84**	<0.12	**0.073 J**	**17**	**10**	**380**	**170**	**0.13**	**0.64 J**	**16**	<0.57	<0.19	**1.1 J**	**79**	**95**
E9	DG-E9S-0.5-1	8/24/18	0.5-1	<0.31	**0.40 J**	**47**	<0.12	<0.046	**14**	**13**	**260**	**6.7**	**0.32**	<0.24	**4.6**	<0.56	**0.72 J**	**0.63 J**	**130**	**43**
E9	DG-E9S-3.5-4	8/24/18	1-2.5	**14**	**45**	**62**	<0.12	<0.23	**110**	**26**	**470**	**400**	**0.11**	**3.5**	**120**	<2.8	<0.94	**4.8 J**	**57**	**280**
E10	DG-E10S-0.5-1	8/23/18	0.5-1	**3.6**	**13**	**68**	<0.085	**0.68**	**28**	**13**	**220**	**400**	**0.12**	**1.0 J**	**24**	**0.86 J**	**0.42 J**	**1.6**	**94**	**190**

Table A1: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
E10	DG-E10S-0.5-1 (D)	8/23/18	0.5-1	**2.5**	**9.8**	**68**	<0.067	**0.72**	**25**	**13**	**200**	**310**	**0.18**	**0.83 J**	**21**	**1.2 J**	**0.42 J**	**1.4**	**90**	**160**
E10	DG-E10S-3.5-4	8/23/18	2.5-4	**1.0 J**	**2.1 J**	**68**	<0.087	**0.054 J**	**19**	**13**	**120**	**76**	**0.039**	<0.17	**13**	**0.62 J**	**0.24 J**	**1.0 J**	**120**	**91**
E11	DG-E11S-0.5-1	8/27/18	0.5-1	**0.33 J F1**	**2.6 J**	**36 F1**	<0.090	**0.077 J**	**12 F1**	**12 F1**	**130 F1 F2**	**32 F1**	**0.073**	<0.18	**6.2**	<0.42	**0.20 J F1**	**1.0 J**	**110 F1**	**55 F1**
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.22	**2.5 J**	**40**	<0.086	<0.033	**16**	**13**	**120**	**26**	**0.15**	<0.17	**10**	<0.40	**0.17 J**	**1.2 J**	**130**	**57**
E11	DG-E11S-3.5-4	8/27/18	2.5-4	**8.0**	**19**	**110**	<0.10	**0.32 J**	**34**	**13**	**110**	**140**	**0.32**	**0.31 J**	**34**	<0.48	**0.36 J**	**1.0 J**	**73**	**160**
E11	DG-E11S-9.5-10	8/27/18	9.5-10	**0.37 J**	**1.9 J**	**55**	**0.24 J**	<0.049	**28**	**6.0**	**5.7 J**	**4.3**	**0.030**	<0.25	**22**	<0.59	<0.20	<0.57	**23**	**15**
F1	DG-F1S-0.5-1	8/20/18	0.5-1	**16**	**47**	**80 B**	<0.12	**0.75**	**21 B**	**11**	**180**	**460**	**0.18**	**0.37 J**	**12**	**1.2 J**	**0.42 J**	**1.0 J**	**97**	**240**
F1	DG-F1S-3.5-4	8/20/18	2.5-4	**2.0**	**110**	**81 B**	<0.10	**0.19 J**	**24 B**	**10**	**72**	**180**	**0.065**	<0.20	**21**	<0.47	**0.38 J**	<0.46	**63**	**110**
F1	DG-F1S-9.5-10	8/20/18	9.5-10	**6.4**	**180**	**85 B**	**0.40**	<0.039	**66 B**	**21**	**100**	**36**	**0.49**	**0.62 J**	**94**	**2.0 J**	**1.0**	**0.85 J**	**51**	**73**
F2	DG-F2S-0.5-1	8/20/18	0.5-1	**2.0**	**18**	**66 B**	<0.11	**0.82**	**15 B**	**13**	**170**	**130**	**0.27**	**0.84 J**	**13**	**0.85 J**	**0.43 J**	**0.92 J**	**110**	**170**
F2	DG-F2S-3.5-4	8/20/18	2.5-4	**0.44 J**	**82**	**79 B**	<0.12	<0.046	**14 B**	**13**	**98**	**20**	**0.060**	**0.30 J**	**11**	<0.55	**0.21 J**	**0.98 J**	**93**	**58**
F3	DG-F3S-0.5-1	8/21/18	0.5-1	**2.4**	**170**	**290**	<0.11	**1.0**	**25**	**11**	**150**	**370**	**0.24**	**0.84 J**	**25**	<0.50	**0.53 J**	<0.48	**72**	**260**
F3	DG-F3S-3.5-4	8/21/18	1-2.5	**2.1**	**140**	**140**	**0.11 J**	**0.27 J**	**33**	**5.5**	**48**	**320**	**0.050**	**0.34 J**	**26**	<0.49	**0.63 J**	<0.48	**26**	**260**
F3	DG-F3S-9.5-10	8/21/18	9.5-10	**3.1**	**140**	**130**	**0.12 J**	**0.31 J**	**33**	**6.0**	**59**	**300**	**0.070**	**0.46 J**	**28**	<0.38	**0.26 J**	<0.37	**27**	**210**
F4	DG-F4S-0.5-1	8/21/18	0-0.5	<0.24	**27**	**200**	**0.16 J**	**3.8**	**11**	**7.9**	**130**	**86**	**0.88**	**0.50 J**	**8.5**	<2.1	**1.9**	<2.1	**65**	**4,400**
F4	DG-F4S-3.5-4	8/21/18	0.5-1	<7.4	**280**	**820**	**0.64 J**	**80**	**32**	**11**	**220**	**1,600**	**36**	**4.8 J**	**22**	<13	**1.8 J**	<13	**85**	**26,000**
F5	DG-F5S-0.5-1	8/22/18	0.5-1	**8.8**	**1.7 J B**	**33**	**0.11 J**	<0.042	**8.1**	**11**	**150**	**270**	**0.049**	<0.22	**6.9**	<0.51	<0.17	**1.3 J**	**73**	**46**
F5	DG-F5S-3.5-4	8/22/18	2.5-4	**13**	**18 B**	**1,400**	**0.57**	**2.8**	**43**	**7.4**	**800**	**2,600**	**0.31**	**0.67 J**	**29**	**1.4 J**	**6.0**	**1.3 J**	**45**	**2,300**
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	**1.8**	**22**	**85 B**	**0.12 J**	**0.43**	**10**	**11**	**130**	**300**	**0.095**	**0.26 J**	**7.1**	<0.44	<0.15	**1.2 J**	**78**	**240**
F6	DG-F6S-0.5-1	8/23/18	0.5-1	**3.0**	**6.6**	**100**	<0.11	**1.2**	**42**	**16**	**620**	**370**	**0.29**	**3.1**	**29**	**0.86 J**	**1.4**	**1.3 J**	**98**	**400**
F6	DG-F6S-3.5-4	8/23/18	2.5-4	**0.54 J**	**5.9**	**21**	<0.11	<0.044	**14**	**15**	**130**	**37**	**0.026**	**1.4 J**	**6.5**	**0.88 J**	**0.46 J**	**1.1 J**	**100**	**74**
F7	DG-F7S-0.5-1	8/27/18	0.5-1	**2.1**	**9.8**	**73**	<0.092	**0.66**	**18**	**12**	**140**	**290**	**0.97**	**0.52 J**	**16**	**0.99 J**	**0.27 J**	**0.87 J**	**82**	**220**
F7	DG-F7S-3.5-4	8/27/18	2.5-4	**2.3**	**7.0**	**180**	**0.27 J**	**0.63**	**120**	**18**	**260**	**220**	**0.52**	<0.25	**82**	**0.92 J**	**0.38 J**	**0.71 J**	**77**	**500**
F8	DG-F8S-0.5-1	8/23/18	0.5-1	**3.2**	**14**	**69**	<0.070	**0.94**	**12**	**8.4**	**110**	**290**	**0.10**	**0.98 J**	**13**	**0.69 J**	**0.31 J**	**0.31 J**	**45**	**210**
F8	DG-F8S-3.5-4	8/23/18	2.5-4	**2.1**	**7.0**	**78**	**0.15 J**	**0.21 J**	**48**	**8.0**	**32**	**42**	**0.039**	**0.44 J**	**39**	**0.70 J**	<0.13	**0.55 J**	**39**	**57**
F9	DG-F9S-0.5-1	8/24/18	0.5-1	**0.35 J**	**1.4 J**	**47**	<0.11	**0.045 J**	**10**	**11**	**120**	**48**	**0.083**	<0.21	**9.6**	<0.49	<0.17	<0.48	**81**	**59**
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.31	**2.4 J**	**61**	<0.12	**0.26 J**	**35**	**5.1**	**13**	**23**	**0.025**	<0.24	**27**	<0.56	<0.19	<0.54	**24**	**81**
F9	DG-F9S-9.5-10	8/24/18	9.5-10	**0.94 J**	**6.2**	**210**	**0.46**	**0.074 J**	**110**	**15**	**29**	**18**	**0.14**	**0.54 J**	**78**	<0.54	**0.22 J**	<0.52	**71**	**84**
F10	DG-F10S-0.5-1	8/23/18	0.5-1	**1.3 J**	**2.6 J B**	**52**	<0.11	**0.073 J**	**14**	**15**	**120**	**85**	**0.070**	**0.51 J**	**12**	<0.52	<0.18	**1.3 J**	**110**	**80**
F10	DG-F10S-3.5-4	8/23/18	2.5-4	**0.63 J**	**6.2 B**	**160**	**0.47**	<0.046	**72**	**23**	**49**	**14**	**0.13**	**0.33 J**	**87**	<0.55	<0.19	**1.5 J**	**67**	**93**
F11	DG-F11S-0.5-1	8/24/18	0.5-1	**8.6**	**130**	**110**	<0.11	**2.6**	**240**	**11**	**250**	**650**	**0.38**	**2.5**	**42**	**0.62 J**	**1.8**	**1.4 J**	**44**	**390**
F11	DG-F11S-3.5-4	8/24/18	2.5-4	**2.5**	**120**	**100**	**0.35 J**	**0.22 J**	**68**	**10**	**63**	**140**	**0.28 B**	**2.0**	**38**	**0.73 J**	**0.29 J**	**0.91 J**	**39**	**200**
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	**1.1 J**	**8.9**	**71**	**0.79**	**0.063 J**	**47**	**26**	**56**	**22**	**0.27**	<0.25	**52**	**0.62 J**	**0.93 J**	**0.58 J**	**49**	**99**
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	**1.7**	**3.6**	**250**	<0.10	**0.43**	**40**	**11**	**360**	**160**	**0.070**	**0.88 J**	**69**	<0.47	**0.98**	**0.60 J**	**90**	**190**
G1	DG-G1S-0.5-1	8/20/18	0.5-1	**3.2 F1**	**270**	**120 F1 B**	<0.13	**0.58**	**19 F1 B**	**8.0**	**110 F1**	**250**	**0.19**	**0.32 J**	**16**	<0.58	**0.30 J**	<0.56	**52 F1**	**150**
G1	DG-G1S-3.5-4	8/20/18	2.5-4	**2.1**	**44**	**120 B**	<0.13	<0.049	**130 B**	**18**	**30**	**3.8**	**4.3**	<0.25	**160**	<0.59	**0.39 J**	**1.2 J**	**81**	**57**
G2	DG-G2S-0.5-1	8/20/18	0.5-1	**4.8**	**320**	**130 B**	<0.13	**1.6**	**22 B**	**12**	**210**	**440**	**0.42**	**0.67 J**	**23**	**0.60 J**	**0.90 J**	**1.6 J**	**68**	**360**
G2	DG-G2S-3.5-4	8/20/18	2.5-4	**110**	**39**	**1,700 B**	**0.82**	**1.7**	**52 B**	**9.0**	**620**	**8,800**	**0.69**	**2.8**	**45**	**2.3 J**	**5.2**	**1.8 J**	**38**	**2,600**
G3	DG-G3S-0.5-1	8/21/18	0.5-1	**1.4 J**	**230**	**76**	<0.13	**0.16 J**	**35**	**4.9**	**21**	**73**	**0.069**	<0.25	**25**	<0.59	<0.20	<0.57	**27**	**84**
G3	DG-G3S-3.5-4	8/21/18	2.5-4	**2.0**	**340**	**110**	**0.26 J**	**0.13 J**	**45**	**7.9**	**11**	**14**	**0.036**	<0.23	**37**	<0.54	<0.18	<0.52	**32**	**43**
G3	DG-G3S-9.5-10	8/21/18	9.5-10	**1.5**	**67**	**52**	**0.73**	<0.035	**39**	**16**	**51**	**10**	**0.053**	**0.36 J**	**42**	<0.42	**0.14 J**	<0.41	**46**	**96**
G4	DG-G4S-0.5-1	8/21/18	0.5-1	**22 B**	**20**	**460**	**0.20 J**	**16**	**160**	**21**	**1,200**	**1,500**	**10**	**22**	**170**	**2.6 J**	**1.0**	**2.3**	**34**	**3,800**

Table A1: Metals Concentrations in Soil

UPC OU-SM

Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
G4	DG-G4S-3.5-4	8/21/18	1-2.5	**4.4 B**	**18**	**300**	**0.18 J**	**6.0**	**50**	**6.2**	**300**	**590**	**0.71**	**2.3**	**37**	**0.48 J**	**0.31 J**	<0.33	**25**	**630**
G5	DG-G5S-0.5-1	8/22/18	0.5-1	<0.27	**17 B**	**50**	<0.11	**0.13 J**	**25**	**14**	**110**	**48**	**0.095**	**2.3**	**12**	<0.49	<0.16	**1.3 J**	**110**	**100**
G5	DG-G5S-3.5-4	8/22/18	1-2.5	**2.2**	**5.3 B**	**110**	**0.24**	**0.76**	**72**	**9.7**	**74**	**200**	**0.33**	<0.13	**51**	<0.31	<0.10	**0.61 J**	**55**	**260**
G6	DG-G6S-0.5-1	8/22/18	0.5-1	**0.58 J**	**2.2 J**	**38**	<0.11	**0.15 J**	**17**	**15**	**130**	**55**	**0.063**	**1.1 J**	**13**	<0.53	<0.18	**1.5 J**	**99**	**84**
G6	DG-G6S-0.5-1 (D)	8/22/18	0.5-1	**0.68 J**	**1.8 J**	**33**	<0.095	**0.12 J**	**20**	**15**	**130**	**37**	**0.067**	**0.93 J**	**12**	<0.44	<0.15	**1.0 J**	**97**	**82**
G6	DG-G6S-1-2	8/22/18	1-2	<0.30 R	**1.2 J**	**42 F1**	<0.12	<0.045	**11**	**8.2**	**120 F1**	**6.9**	**0.029**	<0.23	**5.0**	<0.54	<0.18	**0.83 J**	**81 F1**	**32**
G6	DG-G6S-3.5-4	8/22/18	2.5-4	**3.0**	**64**	**71**	<0.12	**0.079 J**	**190**	**22**	**32**	**83**	**0.20**	**0.26 J**	**320**	<0.53	<0.18	**0.57 J**	**40**	**83**
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.26	**2.8 J**	**85**	<0.10	**0.11 J**	**26**	**11**	**110**	**510**	**0.078**	**0.24 J**	**18**	<0.47	**0.20 J**	**0.88 J**	**85**	**110**
G7	DG-G7S-3.5-4	8/24/18	2.5-4	**3.0**	**5.8**	**200**	<0.098	<0.037	**390**	**28**	**81**	**61**	**0.89**	<0.19	**400**	<0.45	**0.41 J**	**1.4 J**	**86**	**170**
G8	DG-G8S-0.5-1	8/23/18	0.5-1	**0.39 J**	**6.3**	**51**	<0.10	**0.14 J**	**12**	**12**	**110**	**95**	**0.090**	**0.81 J**	**6.6**	<0.47	**0.47 J**	**1.3 J**	**100**	**80**
G8	DG-G8S-0.5-1 (D)	8/23/18	0.5-1	**1.2 J**	**2.9 J**	**50**	<0.12	**0.25 J**	**16**	**13**	**120**	**120**	**0.090**	**0.56 J**	**7.6**	<0.55	**0.23 J**	**0.81 J**	**98**	**99**
G8	DG-G8S-3.5-4	8/23/18	2.5-4	**1.8**	**11**	**130**	<0.097	**0.28 J**	**28**	**9.1**	**66**	**150**	**0.062**	**0.35 J**	**82**	<0.45	**0.62 J**	**0.78 J**	**41**	**190**
G9	DG-G9S-0.5-1	8/27/18	0.5-1	**1.0 J**	**2.2 J**	**49**	**0.21 J**	<0.041	**15**	**14**	**150**	**91**	**0.078**	**0.75 J**	**8.2**	<0.50	<0.17	<0.48	**110**	**130**
G9	DG-G9S-3.5-4	8/27/18	2.5-4	**4.6**	**0.97 J**	**45**	**0.14 J**	**0.22 J**	**30**	**4.7**	**14**	**22**	**0.024**	<0.20	**23**	<0.46	<0.16	<0.45	**23**	**97**
G10	DG-G10S-0.5-1	9/26/18	0.5-1	**2.0 F1**	**6.2**	**72 F1**	**0.34 F1**	**0.60**	**51 F1**	**13 F1**	**86 F1**	**260 F2**	**0.84**	**0.92 J**	**47 F1**	**0.79 J**	**0.33 J F1**	**0.81 J**	**67 F1**	**190 F2**
G10	DG-G10S-3.5-4	9/26/18	3.5-4	**1.7 J**	**8.1**	**96**	**0.54**	**0.22 J**	**87**	**18**	**85**	**110**	**0.73**	**1.6 J**	**99**	**1.3 J**	**0.27 J**	**1.2 J**	**69**	**130**
G11	DG-G11S-0.5-1	8/27/18	0.5-1	**0.91 J**	**2.9 J**	**49**	<0.098	**0.16 J**	**31**	**14**	**130**	**83**	**0.057**	<0.19	**15**	<0.45	**0.30 J**	**0.94 J**	**110**	**130**
G11	DG-G11S-3.5-4	8/27/18	2.5-4	**0.39 J**	**2.6 J**	**51**	**0.17 J**	<0.042	**52**	**6.5**	**9.4**	**5.7**	**0.015**	<0.22	**27**	<0.51	**0.19 J**	<0.49	**44**	**25**
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.28	**2.4 J**	**75**	<0.11	**0.047 J**	**43**	**7.9**	**12**	**7.5**	**0.044**	<0.21	**33**	**0.50 J**	**0.23 J**	<0.48	**33**	**32**
H1	DG-H1S-0.5-1	8/20/18	0.5-1	**1.5 J**	**81**	**73 B**	<0.12	**0.17 J**	**54 B**	**12**	**67**	**47**	**1.6**	<0.23	**64**	<0.53	**0.23 J**	**1.2 J**	**59**	**73**
H1	DG-H1S-3.5-4	8/20/18	2.5-4	**3.3**	**96**	**130 B**	**0.14 J**	<0.044	**150 B**	**23**	**38**	**14**	**5.6**	**0.25 J**	**230**	**0.56 J**	**0.23 J**	**1.2 J**	**77**	**65**
H2	DG-H2S-0.5-1	8/20/18	0.5-1	**1.3 J B**	**180**	**140**	**0.39**	**0.11 J**	**41**	**9.5**	**120**	**140**	**0.10**	**0.51 J**	**33**	**0.66 J**	<0.16	<0.47	**37**	**110**
H2	DG-H2S-3.5-4	8/20/18	2.5-4	**9.4**	**49**	**590**	**0.24 J**	**1.8**	**170**	**17**	**270**	**1,300**	**2.9**	**1.5 J**	**110**	<0.51	**4.6**	<0.50	**59**	**1,100**
H3	DG-H3S-0.5-1	8/21/18	0.5-1	**0.99 J**	**200**	**66**	<0.11	**0.15 J**	**31**	**5.0**	**24**	**69**	**0.066**	<0.22	**23**	<0.50	<0.17	<0.49	**24**	**78**
H3	DG-H3S-3.5-4	8/21/18	2.5-4	**1.3 J**	**220**	**110**	<0.11	**0.18 J**	**33**	**5.2**	**36**	**130**	**0.039**	**0.25 J**	**26**	<0.51	<0.17	<0.50	**24**	**150**
H3	DG-H3S-9.5-10	8/21/18	9.5-10	**0.44 J**	**8.2**	**24**	**0.24 J**	**0.23 J**	**51**	**10**	**21**	**4.1**	**0.058**	**1.1 J**	**49**	**0.60 J**	<0.15	<0.42	**40**	**50**
H4	DG-H4S-0.5-1	8/21/18	0.5-1	**9.7**	**11**	**120**	<0.12	**4.2**	**49**	**11**	**1,000**	**700**	**1.3**	**5.6**	**43**	<0.57	**0.97**	<0.55	**48**	**870**
H4	DG-H4S-3.5-4	8/21/18	2.5-4	**20**	**86**	**1,100**	**0.22 J**	**3.5**	**46**	**11**	**490**	**1,600**	**1.6**	**1.1 J**	**59**	<0.51	**2.1**	**1.3 J**	**46**	**1,300**
H5	DG-H5S-0.5-1	8/22/18	0.5-1	**8.6**	**67 B**	**300**	**0.26 J**	**2.9**	**40**	**15**	**310**	**990**	**0.27**	**1.8 J**	**31**	<0.58	**0.44 J**	**1.4 J**	**110**	**850**
H5	DG-H5S-3.5-4	8/22/18	2.5-4	**4.4**	**160 B**	**200**	**0.47**	**0.097 J**	**74**	**15**	**100**	**400**	**0.27**	**0.41 J**	**50**	<0.37	**0.42 J**	**1.0 J**	**61**	**310**
H6	DG-H6S-0.5-1	8/23/18	0.5-1	**1.6**	**8.5**	**100**	**0.15 J**	**0.16 J**	**88**	**13**	**48**	**110**	**0.34**	**0.22 J**	**51**	**0.66 J**	**0.39 J**	**0.89 J**	**64**	**120**
H6	DG-H6S-3.5-4	8/23/18	1-2.5	**1.1 J**	**4.5**	**87**	**0.11 J**	**0.17 J**	**74**	**8.7**	**43**	**820**	**0.15**	<0.19	**44**	<0.45	**0.37 J**	**0.95 J**	**62**	**130**
H7	DG-H7S-0.5-1	8/27/18	0.5-1	**2.8**	**12**	**210**	**0.35**	<0.044	**140**	**22**	**230**	**720**	**0.56**	**2.0**	**87**	**1.1 J**	<0.18	<0.51	**100**	**450**
H7	DG-H7S-3.5-4	8/27/18	1-2.5	**2.0**	**27**	**130**	**0.55**	<0.043	**130**	**27**	**310**	**120**	**0.39**	**2.1**	**200**	**1.8 J**	<0.17	<0.50	**67**	**220**
H8	DG-H8S-0.5-1	8/23/18	0.5-1	**0.48 J**	**7.8**	**56**	<0.12	<0.044	**17 B**	**11**	**140**	**180**	**0.15**	**1.1 J**	**11**	**1.4 J**	<0.18	<0.52	**83**	**140**
H8	DG-H8S-3.5-4	8/23/18	1-2.5	**0.69 J**	**2.2**	**29**	<0.067	**0.027 J**	**19**	**5.7**	**29**	**29**	**0.024**	<0.13	**12**	<0.31	<0.10	**0.34 J**	**37**	**31**
H9	DG-H9S-0.5-1	8/27/18	0.5-1	**0.83 J**	**4.2**	**58**	<0.11	**0.24 J**	**11**	**8.5**	**100**	**110**	**0.18**	**0.33 J**	**7.6**	<0.53	**0.38 J**	<0.51	**63**	**120**
H9	DG-H9S-3.5-4	8/27/18	2.5-4	**1.7 J**	**3.6 J**	**61**	<0.12	**0.12 J**	**30**	**5.8**	**24**	**120**	**0.036**	**0.36 J**	**25**	**0.63 J**	**0.44 J**	<0.55	**29**	**49**
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	**0.34 J**	**1.3 J**	**42**	**0.19 J**	<0.048	**23**	**4.1**	**4.6 J**	**4.4**	**0.037**	<0.25	**18**	<0.58	<0.19	<0.56	**17**	**17**
H9	DG-H9S-9.5-10	8/27/18	9.5-10	**1.7**	**1.5 J**	**95**	<0.075	<0.029	**120**	**24**	**43**	**5.4**	**0.14**	**0.42 J**	**69**	<0.35	**0.50 J**	**1.8**	**120**	**51**
H10	DG-H10S-0.5-1	8/23/18	0.5-1	<0.19	**0.50 J**	**40**	<0.073	<0.028	**12**	**9.2**	**120**	**23**	**0.056**	**0.16 J**	**4.3**	**0.67 J**	**0.12 J**	**0.73 J**	**100**	**40**
H10	DG-H10S-0.5-1 (D)	8/23/18	0.5-1	<0.28	**0.34 J**	**36**	<0.11	<0.042	**11**	**8.3**	**110**	**23**	**0.068**	<0.22	**3.7**	<0.51	<0.17	**0.79 J**	**88**	**38**

Table A1: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
H10	DG-H10S-3.5-4	8/23/18	1-2.5	**0.51 J**	**1.8 J**	**33**	<0.087	<0.033	**8.2**	**11**	**68**	**45**	**0.030**	**0.32 J**	**3.9**	**0.80 J**	**0.26 J**	**0.69 J**	**82**	**62**
H11	DG-H11S-0.5-1	8/24/18	0.5-1	**1.2 J F1**	**1.6 J**	**27 F1**	<0.13	**0.19 J**	**9.9**	**17**	**120 F1**	**120 F1**	**0.15 B**	<0.25	**5.8**	<0.59	**0.24 J F1**	**1.1 J**	**120 F1**	**100 F1**
H11	DG-H11S-3.5-4	8/24/18	2.5-4	**0.46 J**	**2.4 J**	**40**	<0.13	<0.048	**53**	**6.0**	**6.8**	**5.9**	**0.023 B**	<0.25	**22**	<0.58	<0.20	<0.56	**44**	**22**
H12	DG-H12S-0.5-1	8/24/18	0.5-1	**2.3**	**340**	**27**	**0.17 J**	**5.5**	**15 B**	**12**	**84**	**190**	**0.42**	**0.96 J**	**14**	**1.5 J**	<0.18	<0.50	**92**	**100**
H12	DG-H12S-3.5-4	8/24/18	2.5-4	**2.1**	**72**	**30**	**0.26 J**	<0.041	**500 B**	**32**	**44**	**6.5**	**0.087**	**0.79 J**	**360**	**1.4 J**	<0.17	<0.48	**79**	**65**
I1	DG-I1S-0.5-1	8/20/18	0.5-1	**5.1**	**130**	**79**	**0.12 J**	**0.34 J**	**34**	**11**	**78**	**140**	**0.092**	**0.44 J**	**34**	<0.49	<0.16	<0.47	**53**	**110**
I1	DG-I1S-3.5-4	8/20/18	1-2.5	**2.5**	**43**	**130**	**0.38**	<0.036	**140**	**23**	**39**	**10**	**2.9**	**1.2 J**	**170**	<0.43	<0.15	<0.42	**86**	**66**
I2	DG-I2S-0.5-1	8/21/18	0.5-1	**2.6 F1**	**230**	**210**	<0.13	**0.79**	**20**	**9.5**	**120 F1**	**2,300**	**0.19**	**0.35 J**	**19**	<0.59	**0.95 J**	<0.57	**46 F1**	**490 F2**
I2	DG-I2S-3.5-4	8/21/18	2.5-4	**1.4 J**	**3.7**	**82**	<0.12	**0.053 J**	**120**	**19**	**24**	**3.3**	**1.7**	<0.23	**160**	<0.55	<0.19	<0.53	**66**	**48**
I3	DG-I3S-0.5-1	8/22/18	0.5-1	**1.3 J**	**55**	**68**	**0.14 J**	**0.40**	**22**	**13**	**98**	**170**	**0.088**	**0.85 J**	**18**	**0.99 J**	**0.18 J B**	<0.44	**73**	**150**
I3	DG-I3S-3.5-4	8/22/18	1-2.5	**2.9**	**180**	**140**	**0.18 J**	**0.39**	**27**	**7.1**	**64**	**290**	**0.077**	**1.2 J**	**24**	**0.59 J**	<0.13	<0.37	**30**	**280**
I4	DG-I4S-0.5-1	8/21/18	0.5-1	**3.7**	**15**	**130**	<0.099	**2.8**	**37**	**11**	**170**	**250**	**0.23**	**3.3**	**33**	**0.64 J**	<0.15	<0.44	**55**	**420**
I4	DG-I4S-3.5-4	8/21/18	2.5-4	**1.1 J**	**110**	**100**	**0.15 J**	**0.24 J**	**22**	**3.6**	**33**	**140**	**0.15**	**0.26 J**	**20**	<0.37	**0.25 J B**	<0.36	**14**	**140**
I5	DG-I5S-0.5-1	8/22/18	0.5-1	**3.3**	**14 B**	**170**	**0.097 J**	**2.5**	**42**	**17**	**240**	**380**	**0.57**	**3.6**	**25**	<0.43	**0.55 J**	**1.3 J**	**110**	**580**
I5	DG-I5S-3.5-4	8/22/18	2.5-4	**35**	**740 B**	**1,200**	**0.82**	**2.3**	**35**	**5.6**	**380**	**2,600**	**0.31**	**0.74 J**	**30**	<0.34	**6.7**	**0.79 J**	**36**	**1,400**
I5	DG-I5S-3.5-4 (D)	8/22/18	2.5-4	**2.6**	**120**	**88 B**	**0.22 J**	**0.13 J**	**41**	**5.2**	**25**	**79**	**0.085**	<0.17	**29**	<0.39	<0.13	**0.39 J**	**28**	**160**
I6	DG-I6S-0.5-1	8/22/18	0.5-1	**1.2 J**	**3.1 J**	**61**	<0.13	<0.049	**68**	**9.6**	**22**	**37**	**0.099**	<0.25	**48**	<0.59	<0.20	<0.57	**57**	**56**
I6	DG-I6S-0.5-1 (D)	8/22/18	0.5-1	**0.60 J**	**3.5**	**70 B**	**0.25 J**	<0.039	**72**	**9.5**	**13**	**15**	**0.13**	<0.20	**52**	<0.48	<0.16	**0.52 J**	**53**	**46**
I6	DG-I6S-3.5-4	8/22/18	1-2.5	**1.3**	**4.3**	**100**	**0.26**	**0.039 J**	**80**	**11**	**24**	**28**	**0.23**	**0.22 J**	**48**	<0.34	<0.11	**0.61 J**	**63**	**79**
I7	DG-I7S-0.5-1	8/24/18	0.5-1	**0.44 J B**	**2.5**	**35 B**	**0.10 J**	**0.15 J**	**11**	**8.0**	**130**	**49**	**0.14**	**0.30 J**	**4.8**	<0.35	**0.19 J**	**0.48 J**	**69**	**65**
I7	DG-I7S-3.5-4	8/24/18	2.5-4	**1.3 B**	**21**	**30 B**	<0.078	**0.20 J**	**11**	**11**	**140**	**170**	**0.050**	<0.15	**8.8**	<0.36	**0.35 J**	**0.95 J**	**86**	**120**
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	**1.6**	**71**	**33**	<0.084	**0.34**	**10**	**11**	**210**	**230**	**0.21**	**0.27 J**	**7.6**	<0.39	**0.23 J**	**0.58 J**	**79**	**140**
I8	DG-I8S-0.5-1	8/23/18	0.5-1	**0.55 J**	**3.4**	**39**	<0.096	**0.047 J**	**13**	**14**	**99**	**96**	**0.068**	**0.27 J**	**6.6**	**0.88 J**	**0.40 J**	**1.6**	**120**	**88**
I8	DG-I8S-3.5-4	8/23/18	2.5-4	**0.36 J**	**1.6 J**	**49**	<0.11	<0.041	**14**	**8.3**	**67**	**18**	**0.049**	<0.21	**8.2**	<0.50	**0.27 J**	**0.85 J**	**71**	**51**
I8	DG-I8S-3.5-4 (D)	8/23/18	2.5-4	**0.71 J**	**1.5 J**	**25**	<0.084	**0.12 J**	**10**	**15**	**120**	**49**	**0.042**	<0.17	**5.5**	**0.69 J**	**0.45 J**	**1.4**	**120**	**72**
I9	DG-I9S-0.5-1	8/24/18	0.5-1	**0.90 J**	**5.4**	**130**	<0.10	**0.48**	**24**	**9.5**	**51**	**190**	**0.057**	**0.70 J**	**36**	<0.47	<0.16	<0.46	**32**	**120**
I9	DG-I9S-3.5-4	8/24/18	1-2.5	<0.30	**0.44 J**	**21**	<0.12	**0.081 J**	**13**	**16**	**120**	**22**	**0.056**	**0.24 J**	**6.0**	<0.55	**0.68 J**	**0.98 J**	**120**	**55**
I10	DG-I10S-0.5-1	8/23/18	0.5-1	<0.28	**3.7**	**500 F2**	<0.11	**2.2**	**22 F1**	**3.9**	**43 F1**	**500 F2**	**0.092**	**0.40 J**	**19 F1**	<0.51	**0.18 J**	**0.58 J**	**20 F1**	**520 F2**
I10	DG-I10S-3.5-4	8/23/18	1-2.5	**2.9**	**5.1**	**82**	**0.23 J**	<0.037	**350**	**36**	**34**	**8.1**	**0.087**	**0.20 J**	**500**	**0.49 J**	**0.24 J**	**0.82 J**	**61**	**67**
I11	DG-I11S-0.5-1	8/27/18	0.5-1	**4.5**	**4.2**	**71**	<0.10	**0.45**	**35**	**13**	**120**	**160**	**0.094**	**0.34 J**	**18**	<0.46	**0.29 J**	**0.61 J**	**90**	**140**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	**0.76 J**	**2.9 J**	**48**	<0.11	<0.043	**51**	**8.2**	**8.6**	**6.1**	**0.010 J**	**1.8**	**38**	<0.52	<0.17	<0.50	**45**	**23**
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	**0.48 J**	**2.1 J**	**50**	<0.11	<0.043	**56**	**6.8**	**8.6**	**5.4**	**0.016**	<0.22	**32**	<0.52	<0.17	**0.55 J**	**44**	**23**
I11	DG-I11S-9.5-10	8/27/18	9.5-10	**1.1 J**	**3.9**	**95**	**0.24 J**	<0.039	**130**	**12**	**18**	**6.7**	**0.025**	**1.3 J**	**160**	<0.48	**0.18 J**	<0.46	**40**	**38**
I12	DG-I12S-0.5-1	8/24/18	0.5-1	**0.58 J**	**33**	**32**	<0.093	**0.41**	**29 B**	**15**	**260**	**160**	**0.099**	**1.6**	**25**	**1.4 J**	<0.14	<0.41	**100**	**230**
I12	DG-I12S-3.5-4	8/24/18	2.5-4	<0.20	**44**	**63**	**0.18 J**	<0.030	**50 B**	**6.8**	**14**	**19**	**0.072**	**0.56 J**	**34**	**0.38 J**	<0.12	<0.35	**46**	**35**
I12	DG-I12S-3.5-4 (D)	8/24/18	2.5-4	**1.4**	**230**	**120**	<0.085	**0.096 J**	**110**	**15**	**24**	**43**	**0.12**	**0.18 J**	**120**	<0.39	**0.23 J**	**0.88 J**	**79**	**49**
J1	DG-J1S-0.5-1	8/20/18	0.5-1	**1.0 J**	**150**	**110**	**0.12 J**	**0.17 J**	**30**	**13**	**110**	**120**	**0.17**	**0.61 J**	**27**	<0.47	**0.26 J**	<0.46	**92**	**110**
J1	DG-J1S-3.5-4	8/20/18	2.5-4	**1.8**	**20**	**120**	**0.51**	<0.045	**110**	**22**	**57**	**51**	**3.8**	**0.37 J**	**140**	<0.55	<0.18	<0.53	**76**	**80**
J2	DG-J2S-0.5-1	8/21/18	0.5-1	**0.80 J**	**57**	**820**	**0.087 J**	**0.17 J**	**14**	**20**	**95**	**49**	**0.14**	**1.7**	**64**	<1.6	**0.33 J**	<1.6	**52**	**63**
J2	DG-J2S-3.5-4	8/21/18	2.5-4	**1.5 J**	**65**	**99**	**0.13 J**	**0.060 J**	**90**	**16**	**28**	**12**	**1.9**	**0.34 J**	**110**	<0.54	<0.18	<0.52	**59**	**52**
J3	DG-J3S-0.5-1	8/22/18	0.5-1	**1.7**	**58**	**150**	**0.26**	**0.68**	**16**	**10**	**110**	**380**	**0.10**	**0.91 J**	**15**	**0.48 J**	**0.21 J B**	<0.36	**67**	**200**
J3	DG-J3S-3.5-4	8/22/18	2.5-4	**2.6**	**46**	**61**	**0.17 J**	**0.27 J**	**27**	**4.8**	**49**	**790**	**0.031**	**0.21 J**	**24**	<0.48	**0.23 J B**	<0.46	**19**	**84**

Table A1: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
J4	DG-J4S-0.5-1	8/21/18	0.5-1	**2.7**	**19**	**110**	<0.13	**1.0**	**46**	**9.3**	**120**	**170**	**0.14**	**3.6**	**50**	<0.58	<0.19	<0.56	**39**	**180**
J4	DG-J4S-3.5-4	8/21/18	2.5-4	**0.68 J**	**83**	**26**	<0.11	**0.061 J**	**20**	**3.5**	**3.6 J**	**8.4**	**0.015 J**	<0.21	**16**	<0.49	<0.16	<0.47	**15**	**14**
J5	DG-J5S-0.5-1	8/22/18	0.5-1	**8.1**	**7.4 B**	**640**	<0.090	**4.8**	**45**	**15**	**470**	**2,000**	**0.23**	**13**	**33**	<0.41	**0.67 J**	**1.5**	**97**	**1,500**
J5	DG-J5S-3.5-4	8/22/18	2.5-4	**15**	**65 B**	**390**	**0.24 J**	**2.3**	**57**	**12**	**360**	**1,100**	**0.36**	**1.4 J**	**54**	<0.46	**1.1**	**1.0 J**	**48**	**770**
J5	DG-J5S-7-7.5	8/22/18	7-7.5	**1.9**	**12 B**	**150**	**0.89**	**0.12 J**	**32**	**13**	**65**	**210**	**0.081**	**0.30 J**	**34**	<0.38	**0.60 J**	**0.82 J**	**40**	**240**
J6	DG-J6S-0.5-1	8/22/18	0.5-1	**1.9**	**8.2**	**180 B**	**0.17 J**	**1.6**	**52**	**10**	**160**	**270**	**0.24**	**12**	**88**	<0.39	<0.13	**1.1 J**	**58**	**350**
J6	DG-J6S-3.5-4	8/22/18	2.5-4	<0.29	**3.0 J**	**53 B**	**0.13 J**	<0.044	**7.0**	**2.3**	**7.6**	**22**	**0.052**	<0.22	**4.1**	<0.53	<0.18	<0.51	**14**	**39**
J7	DG-J7S-0.5-1	8/27/18	0.5-1	<0.31	**1.2 J**	**45**	**0.12 J**	<0.047	**7.9**	**8.7**	**110**	**66**	**0.077**	**0.37 J**	**6.7**	**0.88 J**	<0.19	<0.55	**87**	**44**
J7	DG-J7S-3.5-4	8/27/18	1-2.5	**340**	**81**	**67**	**0.16 J**	<0.038	**36**	**17**	**110**	**7,900**	**0.13**	**1.0 J**	**20**	**0.78 J**	**0.61 J**	<0.45	**110**	**83**
J8	DG-J8S-0.5-1	8/22/18	0.5-1	<0.23	**4.4**	**110 B**	**0.43**	**1.3**	**24**	**12**	**51**	**27**	**0.033**	**0.54 J**	**35**	<0.41	<0.14	**0.62 J**	**50**	**81**
J8	DG-J8S-3.5-4	8/22/18	2.5-4	**0.37 J**	**0.50 J**	**17 B**	<0.093	<0.035	**25**	**17**	**100**	**2.8**	**0.040**	<0.18	**14**	<0.43	<0.14	**0.50 J**	**110**	**53**
J9	DG-J9S-0.5-1	9/26/18	0.5-1	**0.89 J**	**3.7 J**	**97**	**0.21 J**	**0.12 J**	**41**	**8.3**	**38**	**150**	**0.034**	**0.67 J**	**34**	**0.63 J**	<0.20	<0.57	**51**	**55**
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	**1.1 J**	**3.2 J**	**72**	**0.14 J**	**0.068 J**	**29**	**8.6**	**49**	**220**	**0.043**	**0.51 J**	**29**	**0.97 J**	<0.19	<0.54	**60**	**58**
J9	DG-J9S-3.5-4	9/26/18	3.5-4	**1.7**	**5.7**	**87**	**0.37**	<0.041	**110**	**14**	**26**	**30**	**0.037**	**0.54 J**	**120**	**0.99 J**	<0.17	<0.48	**45**	**52**
J10	DG-J10S-0.5-1	8/23/18	0.5-1	**1.0 J B**	**3.1**	**78 B**	<0.081	**0.23 J**	**110**	**10**	**100**	**130**	**0.042**	**15**	**30**	<0.37	<0.13	**0.65 J**	**81**	**65**
J10	DG-J10S-0.5-1 (D)	8/23/18	0.5-1	<0.26	**3.5**	**190**	<0.10	**0.44**	**40**	**9.2**	**69**	**250**	**0.037**	**0.70 J**	**35**	<0.46	**0.25 J**	**1.6**	**93**	**130**
J10	DG-J10S-3.5-4	8/23/18	1-2.5	**0.98 J B**	**5.0**	**120 B**	**0.41**	**0.042 J**	**95**	**21**	**32**	**7.2**	**0.088**	**0.31 J**	**110**	<0.44	**0.22 J**	**0.70 J**	**63**	**54**
J11	DG-J11S-0.5-1	8/24/18	0.5-1	**2.1**	**2.7 J**	**53**	<0.10	<0.039	**33**	**11**	**63**	**52**	**0.055**	<0.20	**26**	<0.47	**0.42 J**	**0.46 J**	**70**	**45**
J11	DG-J11S-3.5-4	8/24/18	2.5-4	**1.4 J**	**4.6**	**60**	<0.12	**0.045 J**	**65**	**9.8**	**26**	**49**	**0.023**	<0.23	**41**	<0.55	**0.42 J**	**0.67 J**	**70**	**39**
J12	DG-J12S-0.5-1	8/24/18	0.5-1	**21**	**11**	**140**	**0.20 J**	**0.36 J**	**39 B**	**16**	**270**	**1,500**	**0.16**	**1.6**	**33**	**2.3 J**	<0.17	<0.48	**90**	**330**
J12	DG-J12S-3.5-4	8/24/18	1-2.5	**1.5**	**2.3 J**	**52**	**0.15 J**	<0.032	**57 B**	**6.9**	**24**	**52**	**0.053**	**0.58 J**	**33**	**0.74 J**	<0.13	<0.37	**50**	**36**
K1	DG-K1S-0.5-1	8/20/18	0.5-1	**1.6 F1**	**380**	**130 F1 F2**	**0.15 J F1**	**0.35 J**	**25 F1**	**9.3 F1**	**71 F1**	**310**	**3.6**	<0.20	**26 F1**	<0.47	<0.16	<0.45	**40 F1**	**220**
K1	DG-K1S-3.5-4	8/20/18	3.5-4	**1.1 J**	**29**	**65**	**0.20 J**	**0.061 J**	**66**	**7.3**	**12**	**8.0**	**0.055**	<0.22	**47**	<0.50	<0.17	<0.49	**49**	**33**
K2	DG-K2S-0.5-1	8/21/18	0.5-1	**2.5**	**150**	**72**	<0.12	**1.3**	**25**	**14**	**140**	**200**	**0.18**	**1.1 J**	**22**	<0.55	**0.26 J**	<0.53	**77**	**230**
K2	DG-K2S-3.5-4	8/21/18	2.5-4	**0.73 J**	**37**	**73**	<0.097	<0.037	**26**	**7.9**	**17**	**5.2**	**0.14**	<0.19	**42**	<0.45	<0.15	<0.43	**19**	**35**
K3	DG-K3S-0.5-1	8/22/18	0.5-1	**3.5**	**28**	**46**	**0.11 J**	**0.40 J**	**13**	**13**	**88**	**110**	**0.059**	**0.59 J**	**12**	<0.50	<0.17	<0.49	**74**	**130**
K3	DG-K3S-3.5-4	8/22/18	2.5-4	**54**	**90**	**140**	**0.20 J**	**0.43**	**33**	**4.9**	**64**	**12,000**	**0.030**	**0.24 J**	**26**	<0.49	**0.72 J**	**0.61 J**	**25**	**140**
K4	DG-K4S-0.5-1	8/21/18	0.5-1	**1.4 J B F1**	**120 F1**	**140 F1 F2**	**0.21 J**	**0.50**	**15**	**8.5**	**92 F1**	**160 F1 F2**	**0.32**	**0.78 J**	**13**	**0.87 J**	<0.18	<0.50	**59**	**170 F1 F2**
K4	DG-K4S-3.5-4	8/21/18	1.0-2.5	<0.29	**95**	**22**	**0.18 J**	**0.091 J**	**18**	**3.1**	**15**	**6.8**	**0.023**	**0.22 J**	**14**	**0.64 J**	<0.17	<0.50	**14**	**76**
K5	DG-K5S-0.5-1	8/22/18	0.5-1	<0.32	**2.7 J**	**63**	<0.12	**0.43 J**	**14**	**12**	**180**	**90**	**0.099**	**1.1 J**	**11**	<0.57	<0.19	**1.0 J**	**99**	**120**
K5	DG-K5S-3.5-4	8/22/18	2.5-4	<0.29	**0.49 J**	**33**	<0.11	<0.044	**21**	**12**	**130**	**5.8**	**0.057**	<0.22	**5.4**	<0.53	<0.18	**1.4 J**	**110**	**36**
K6	DG-K6S-0.5-1	8/23/18	0.5-1	**3.2**	**19**	**51**	<0.12	**0.38 J**	**23**	**15**	**160**	**170**	**0.21**	**0.79 J**	**35**	**0.74 J**	**0.49 J**	**1.5 J**	**85**	**110**
K6	DG-K6S-3.5-4	8/23/18	1.0-2.5	**2.7**	**440**	**69**	<0.11	**0.37 J**	**41**	**11**	**84**	**130**	**0.38**	**0.95 J**	**38**	**0.73 J**	**0.35 J**	**1.6 J**	**54**	**92**
K7	DG-K7S-0.5-1	8/24/18	0.5-1	**12**	**6.0**	**630**	<0.13	**8.4**	**130 B**	**16**	**590**	**3,100**	**0.11**	**1.1 J**	**18**	**1.6 J**	<0.20	<0.57	**120**	**830**
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.21	<0.21	**130**	**0.26**	<0.031	**80 B**	**25**	**24**	**11**	**0.27**	**1.3**	**41**	**0.86 J**	<0.13	<0.36	**130**	**54**
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.21	**3.2**	**120**	<0.084	<0.032	**86**	**22**	**32**	**12**	**0.37**	<0.17	**38**	<0.39	**0.45 J**	**2.2**	**150**	**53**
K8	DG-K8S-0.5-1	8/22/18	0.5-1	**1.5 J**	**8.3**	**270 B**	**0.17 J**	**1.9**	**48**	**9.9**	**100**	**690**	**0.16**	**0.56 J**	**28**	<0.57	<0.19	**0.86 J**	**72**	**410**
K8	DG-K8S-1-2	8/22/18	1-2	**1.1 J**	**2.5 J**	**83 B**	<0.094	<0.036	**88**	**17**	**37**	**19**	**0.061**	<0.19	**42**	<0.43	<0.15	**1.7**	**100**	**48**
K8	DG-K8S-3.5-4	8/22/18	3.5-4	**1.2 J**	**6.9**	**70 B**	**0.72**	<0.043	**39**	**13**	**39**	**29**	**0.081**	**0.28 J**	**36**	<0.52	<0.18	**0.80 J**	**52**	**120**
K9	DG-K9S-0.5-1	8/24/18	0.5-1	<0.27	**0.31 J**	**43**	<0.11	<0.041	**12**	**12**	**130**	**35**	**0.084**	<0.21	**4.0**	<0.50	**0.48 J**	**0.54 J**	**110**	**56**
K9	DG-K9S-3.5-4	8/24/18	2.5-4	**0.69 J**	**4.3**	**97**	<0.12	**0.10 J**	**26**	**9.1**	**61**	**38**	**0.053**	**0.89 J**	**28**	<0.54	**0.48 J**	**0.67 J**	**58**	**75**
K10	DG-K10S-0.5-1	8/23/18	0.5-1	**5.5**	**12**	**490**	**0.098 J**	**2.0**	**62**	**11**	**240**	**440**	**1.0**	**4.7**	**41**	<0.38	**0.29 J**	**0.75 J**	**67**	**510**

Table A1: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
K10	DG-K10S-3.5-4	8/23/18	1.0-2.5	**1.9**	**4.4**	**120**	<0.12	**0.29 J**	**88**	**17**	**98**	**330**	**0.28**	<0.23	**150**	**0.74 J**	**0.67 J**	**1.3 J**	**88**	**160**
K11	DG-K11S-0.5-1	8/27/18	0.5-1	**3.2**	**5.7**	**120**	<0.095	**0.32 J**	**25**	**16**	**150**	**420**	**0.073**	**0.56 J**	**15**	<0.44	**0.25 J**	**1.4 J**	**120**	**160**
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	**2.1**	**2.1 J**	**110**	<0.12	<0.047	**110**	**34**	**46**	**7.0**	**0.16**	<0.24	**52**	<0.57	**0.70 J**	**2.8**	**190**	**77**
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	**2.1**	**5.0**	**140**	**0.22 J**	<0.046	**150**	**24**	**42**	**45**	**0.16**	**0.28 J**	**160**	<0.55	**0.53 J**	**1.7 J**	**100**	**87**
K11	DG-K11S-9.5-10	8/27/18	9.5-10	**1.2 J**	**11**	**130**	**0.49**	**0.057 J**	**48**	**14**	**41**	**15**	**0.24**	**0.29 J**	**70**	<0.41	**0.27 J**	**0.92 J**	**52**	**78**
K12	DG-K12S-0.5-1	8/24/18	0.5-1	**0.36 J**	**170**	**170**	**0.34 J**	<0.046	**130 B**	**37**	**97**	**74**	**0.064**	**1.4 J**	**57**	**2.0 J**	<0.19	<0.54	**240**	**160**
K12	DG-K12S-0.5-1 (D)	8/24/18	0.5-1	**4.4**	**210**	**170**	<0.11	**0.54**	**130**	**38**	**120**	**86**	**0.042**	**0.31 J**	**58**	<0.50	**1.4**	**3.9**	**250**	**190**
K12	DG-K12S-3.5-4	8/24/18	1.0-2.5	<0.24	**40**	**430**	**0.51**	<0.035	**68 B**	**24**	**43**	**21**	**0.10**	**1.8**	**170**	**1.8 J**	<0.14	<0.41	**70**	**82**
K13	DG-K13S-0.5-1	8/24/18	0.5-1	<0.32	**6.4**	**140**	**0.31 J**	<0.048	**100 B**	**19**	**68**	**100**	**0.35**	**0.97 J**	**120**	**2.0 J**	<0.19	<0.56	**94**	**140**
K13	DG-K13S-3.5-4	8/24/18	2.5-4	**1.0 J**	**2.1 J**	**78**	**0.27**	**0.50**	**280 B**	**24**	**26**	**11**	**0.073**	**0.63 J**	**310**	**0.97 J**	<0.12	<0.36	**65**	**710**
L1	DG-L1S-0.5-1	8/20/18	0.5-1	**5.0**	**220**	**130**	**0.21 J**	**1.0**	**35**	**11**	**150**	**270**	**0.48**	**1.0 J**	**27**	<0.54	**0.47 J**	<0.52	**53**	**350**
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	**1.6 J**	**59**	**74**	**0.25 J**	**0.075 J**	**41**	**8.8**	**24**	**21**	**2.6**	**0.58 J**	**39**	<0.51	**0.18 J**	<0.50	**44**	**46**
L1	DG-L1S-10-10.5	8/20/18	10-10.5	**2.4**	**29**	**69**	**0.52**	<0.040	**35**	**11**	**51**	**29**	**0.040**	**0.69 J**	**31**	<0.49	**0.19 J**	<0.47	**50**	**65**
L2	DG-L2S-0.5-1	8/21/18	0.5-1	**2.0**	**190**	**71**	<0.12	**0.34 J**	**25**	**11**	**86**	**97**	**0.074**	**0.23 J**	**26**	<0.54	<0.18	<0.52	**61**	**95**
L2	DG-L2S-3.5-4	8/21/18	2.5-4	**1.3 J**	**37**	**97**	**0.22 J**	**0.047 J**	**89**	**18**	**27**	**3.3**	**17**	<0.22	**170**	<0.52	<0.17	<0.50	**62**	**52**
L3	DG-L3S-0.5-1	8/22/18	0.5-1	**2.3 F1**	**12**	**75 F1**	**0.14 J F1**	**1.0**	**26 F1**	**11**	**140 F1**	**170 F1**	**0.096**	**1.4 J**	**20 F1**	<0.49	<0.17	**0.95 J**	**76 F1**	**290**
L3	DG-L3S-3.5-4	8/22/18	2.5-4	**17**	**150**	**720**	**0.76**	**1.9**	**23**	**9.9**	**450**	**1,800**	**1.2**	**1.1 J**	**21**	<0.50	**3.1**	**1.2 J**	**68**	**1,300**
L3	DG-L3S-3.5-4 (D)	8/22/18	2.5-4	**0.91 J**	**39**	**100**	**0.11 J**	**0.39**	**13**	**9.0**	**97**	**130**	**0.10**	**0.23 J**	**11**	<0.34	**0.19 J**	**0.87 J**	**78**	**180**
L4	DG-L4S-0.5-1	8/21/18	0.5-1	**0.45 J**	**100**	**33**	<0.10	**0.32 J**	**18**	**7.7**	**73**	**30**	**0.062**	<0.20	**11**	**0.55 J**	<0.16	<0.45	**60**	**95**
L4	DG-L4S-3.5-4	8/21/18	2.5-4	**1.7**	**5.0**	**68**	**0.11 J**	**0.19 J**	**33**	**5.4**	**16**	**310**	**0.023**	**0.70 J**	**28**	<0.42	<0.14	<0.41	**23**	**94**
L5	DG-L5S-0.5-1	8/22/18	0.5-1	**4.7**	**14**	**150**	**0.19 J**	**1.6**	**49**	**9.4**	**170**	**250**	**0.19**	**3.5**	**51**	**0.64 J**	**0.50 J**	**0.99 J**	**37**	**350**
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	**4.1**	**9.5**	**140**	**0.12 J**	**1.7**	**37**	**12**	**190**	**260**	**0.37**	**3.5**	**39**	<0.46	**0.22 J**	**1.2 J**	**61**	**350**
L5	DG-L5S-3.5-4	8/22/18	2.5-4	**13**	**55**	**850**	**0.48**	**5.4**	**38**	**11**	**500**	**1,900**	**0.67**	**1.9**	**35**	**2.1 J**	**3.7**	**2.6 J**	**59**	**2,300**
L6	DG-L6S-0.5-1	8/22/18	0.5-1	**0.38 J**	**0.84 J**	**34 B**	<0.10	<0.038	**9.4**	**14**	**85**	**0.74 J**	**0.040**	**0.28 J**	**5.4**	<0.46	<0.16	**1.4 J**	**140**	**51**
L6	DG-L6S-0.5-1 (D)	8/22/18	0.5-1	<0.27	**0.97 J**	**33 B**	<0.10	<0.040	**9.9**	**13**	**86**	**2.2**	**0.044**	**0.31 J**	**5.8**	<0.48	<0.16	**1.1 J**	**110**	**53**
L6	DG-L6S-3.5-4	8/22/18	2.5-4	**2.2**	**61**	**72 B**	**0.16 J**	**0.17 J**	**24**	**7.6**	**120**	**300**	**0.14**	**0.36 J**	**15**	<0.44	<0.15	**0.62 J**	**61**	**170**
L7	DG-L7S-0.5-1	8/27/18	0.5-1	**1.0 J**	**2.0 J**	**39**	**0.16 J**	<0.047	**12**	**11**	**120**	**64**	**0.095**	**0.56 J**	**6.2**	**0.66 J**	<0.19	<0.55	**93**	**60**
L7	DG-L7S-3.5-4	8/27/18	1.0-2.5	**2.5**	**94**	**50**	<0.12	<0.045	**26**	**14**	**140**	**230**	**0.12**	**0.80 J**	**30**	**0.73 J**	**0.21 J**	<0.53	**85**	**170**
L8	DG-L8S-0.5-1	8/22/18	0.5-1	**1.7**	**97**	**150**	**0.26 J**	**0.090 J**	**97**	**21**	**130**	**680**	**1.2**	**0.99 J**	**110**	**0.96 J**	**0.74 J**	<0.47	**94**	**230**
L8	DG-L8S-3.5-4	8/22/18	2.5-4	**1.0 J**	**59**	**45**	<0.12	<0.046	**70**	**9.4**	**15**	**8.1**	**0.049**	<0.24	**33**	<0.56	<0.19	<0.54	**44**	**36**
L8	DG-L8S-3.5-4 (D)	8/22/18	2.5-4	**1.0 J**	**84**	**59 B**	**0.28 J**	<0.038	**86**	**8.5**	**12**	**24**	**0.036**	<0.20	**37**	<0.46	<0.15	**0.80 J**	**56**	**29**
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.31	**4.9**	**88**	<0.12	**0.064 J**	**19**	**10**	**67**	**170**	**0.11**	**0.25 J**	**12**	<0.56	**0.27 J**	<0.54	**65**	**81**
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	**2.2**	**7.0**	**100**	**0.30 J**	**0.15 J**	**21**	**8.7**	**41**	**640**	**0.099**	<0.24	**8.1**	<0.57	<0.19	**0.64 J**	**55**	**120**
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	**0.91 J**	**10**	**120**	**0.53**	**0.10 J**	**45**	**13**	**26**	**15**	**0.056**	**0.49 J**	**26**	<0.38	**0.45 J**	<0.37	**42**	**71**
L10	DG-L10S-0.5-1	8/23/18	0.5-1	**1.8 B**	**4.2**	**83 B**	<0.082	**0.47**	**27**	**8.7**	**95**	**400**	**1.1**	**0.20 J**	**5.9**	<0.38	**0.21 J**	**0.62 J**	**68**	**120**
L10	DG-L10S-3.5-4	8/23/18	2.5-4	**1.4 J B**	**11**	**97 B**	**0.61**	**0.050 J**	**31**	**17**	**62**	**14**	**0.065**	**0.47 J**	**45**	<0.47	**0.32 J**	<0.46	**35**	**95**
L11	DG-L11S-0.5-1	8/24/18	0.5-1	**0.63 J**	**2.5 J**	**42**	<0.12	**0.16 J**	**13**	**17**	**120**	**31**	**0.051**	<0.24	**9.8**	<0.56	**0.63 J**	**1.0 J**	**110**	**130**
L11	DG-L11S-3.5-4	8/24/18	2.5-4	**1.2 J**	**7.3**	**140**	**0.54**	**0.18 J**	**36**	**16**	**54**	**76**	**0.077**	**0.88 J**	**38**	<0.54	**0.55 J**	<0.52	**54**	**100**
L12	DG-L12S-0.5-1	8/27/18	0.5-1	<0.33	**1.6 J**	**130**	**0.39 J**	<0.049	**83**	**35**	**52**	**25**	**0.027**	**1.4 J**	**54**	**1.2 J**	<0.20	<0.57	**200**	**78**
L12	DG-L12S-3.5-4	8/27/18	1.0-2.5	<0.24	**6.8**	**110**	**0.49**	<0.035	**95**	**21**	**49**	**14**	**0.23**	**1.1 J**	**110**	**0.82 J**	<0.14	<0.41	**85**	**75**
L13	DG-L13S-0.5-1	8/24/18	0.5-1	**1.4 J F1**	**38 F2 F1**	**90 F2 F1**	<0.12	**0.12 J**	**51 F1 B**	**9.5**	**55 F1**	**120 F1**	**0.066**	**0.90 J**	**52 F1**	**1.6 J**	<0.19	<0.55	**43 F1**	**130 F2 F1**
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	**0.59 J**	**33**	**210**	**0.52**	<0.044	**180 B**	**23**	**37**	**11**	**0.085**	**1.1 J**	**140**	**1.5 J**	<0.18	<0.51	**99**	**71**

Table A1: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	**5.2**	**61**	**110**	<0.090	**0.052 J**	**600**	**40**	**50**	**2.2**	**0.055**	**0.21 J**	**360**	<0.42	**0.59 J**	**1.8**	**130**	**92**
M1	DG-M1S-0.5-1	8/20/18	0.5-1	**2.2**	**350**	**110**	<0.12	**3.4**	**39**	**12**	**130**	**280**	**0.14**	**1.7 J**	**28**	<0.54	**0.40 J**	<0.52	**79**	**1,900**
M1	DG-M1S-3.5-4	8/20/18	2.5-4	**1.3 J**	**16**	**39**	**0.48**	**0.055 J**	**35**	**12**	**26**	**8.0**	**0.10**	**0.48 J**	**36**	<0.51	<0.17	<0.50	**48**	**80**
M2	DG-M2S-0.5-1	8/21/18	0.5-1	**0.94 J**	**120**	**61**	<0.098	**0.37 J**	**16**	**12**	**80**	**82**	**0.065**	<0.19	**18**	<0.45	**0.18 J**	<0.44	**82**	**140**
M2	DG-M2S-3.5-4	8/21/18	2.5-4	**0.78 J**	**50**	**78**	**0.23**	**0.11 J**	**71**	**15**	**27**	**3.9**	**0.53**	<0.14	**100**	<0.34	**0.17 J**	<0.33	**61**	**49**
M3	DG-M3S-0.5-1	8/22/18	0.5-1	**0.33 J**	**21**	**76**	**0.19 J**	<0.040	**15**	**12**	**110**	**33**	**0.035**	<0.20	**7.5**	<0.48	<0.16	**1.2 J**	**120**	**71**
M3	DG-M3S-3.5-4	8/22/18	2.5-4	**15**	**140**	**1,200**	**0.94**	**1.3**	**46**	**7.2**	**590**	**2,300**	**1.2**	**1.8**	**33**	**1.7 J**	**4.9**	**1.2 J**	**41**	**1,300**
M3	DG-M3S-7.5-8	8/22/18	7.5-8	**0.98 J**	**37**	**82**	**0.70**	**0.086 J**	**32**	**17**	**25**	**9.8**	**0.020**	**0.65 J**	**33**	<0.46	<0.15	<0.44	**48**	**68**
M4	DG-M4S-0.5-1	8/21/18	0.5-1	**4.3**	**310**	**170**	<0.088	**3.4**	**21**	**7.1**	**120**	**700**	**0.24**	<0.17	**25**	<0.41	**0.29 J**	<0.39	**42**	**2,800**
M4	DG-M4S-3.5-4	8/21/18	2.5-4	**1.1**	**58**	**190**	**0.092 J**	**0.34**	**40**	**5.5**	**310**	**340**	**0.043**	<0.14	**29**	<0.34	**1.9**	<0.33	**22**	**220**
M5	DG-M5S-0.5-1	8/22/18	0.5-1	**1.2 J**	**28**	**100**	**0.11 J**	**0.86**	**23**	**13**	**170**	**150**	**0.15**	**1.5 J**	**18**	<0.51	**0.27 J**	**1.3 J**	**100**	**230**
M5	DG-M5S-3.5-4	8/22/18	1-2.5	**16**	**330**	**1,700**	**0.70**	**10**	**57**	**7.8**	**1,100**	**8,300**	**0.69**	**0.49 J**	**38**	<0.37	**9.5**	**0.84 J**	**35**	**5,600**
M6	DG-M6S-0.5-1	8/22/18	0.5-1	**3.3**	**16**	**160 B**	**0.12 J**	**3.1**	**53**	**10**	**200**	**360**	**0.29**	**9.8**	**49**	<0.38	**0.19 J**	**0.98 J**	**53**	**400**
M6	DG-M6S-3.5-4	8/22/18	2.5-4	**4.7**	**83**	**100 B**	<0.096	**0.89**	**18**	**12**	**300**	**340**	**0.18**	**0.35 J**	**15**	<0.44	**3.3**	**1.5**	**90**	**460**
M7	DG-M7S-0.5-1	8/24/18	0.5-1	**0.82 J B**	**270**	**55 B**	<0.12	**0.18 J**	**66**	**4.8**	**8.2**	**7.4**	**0.020**	<0.23	**32**	<0.53	<0.18	<0.51	**55**	**650**
M7	DG-M7S-3.5-4	8/24/18	3.5-4	**1.0 J B**	**1.8 J**	**44 B**	<0.11	<0.041	**51**	**5.7**	**6.7**	**1.3 J**	**0.030**	<0.21	**30**	<0.50	<0.17	<0.48	**37**	**17**
M8	DG-M8S-0.5-1	8/22/18	0.5-1	**0.56 J**	**1.4 J**	**19 B**	<0.079	<0.030	**12**	**12**	**98**	**17**	**0.055**	**0.29 J**	**13**	<0.36	<0.12	**1.1 J**	**88**	**48**
M8	DG-M8S-3.5-4	8/22/18	1.0-2.5	**6.3**	**32**	**130 B**	**0.89**	<0.048	**67**	**19**	**42**	**100**	**0.023**	**0.58 J**	**36**	<0.58	<0.19	**0.93 J**	77	**53**
M9	DG-M9S-0.5-1	8/24/18	0.5-1	**4.8 F1**	**25**	**77 F1**	**0.24 J F1**	**0.28 J**	**34 F1**	**21**	**240**	**120 F1 F2**	**0.10**	**1.5 J**	**58**	**0.66 J**	**0.57 J F1**	**0.89 J**	**44 F1 F2**	**83 F1**
M9	DG-M9S-3.5-4	8/24/18	2.5-4	**2.2**	**16**	**67**	**0.55**	**0.16 J**	**36**	**18**	**52**	**26**	**0.042**	**0.48 J**	**44**	<0.58	**0.64 J**	<0.56	**46**	**120**
M9	DG-M9S-3.5-4 (D)	8/24/18	2.5-4	**1.9**	**9.8**	**56**	**0.51**	**0.084 J**	**35**	**16**	**48**	**19**	**0.044 B**	**0.26 J**	**37**	<0.52	**0.54 J**	<0.50	**43**	**100**
M10	DG-M10S-0.5-1	8/24/18	0.5-1	**1.8**	**39**	**110**	<0.11	**0.50**	**26**	**12**	**110**	**320**	**0.24**	**0.31 J**	**21**	<0.50	**0.51 J**	**0.86 J**	**72**	**150**
M10	DG-M10S-0.5-1 (D)	8/24/18	0.5-1	**4.5**	**44**	**120**	<0.12	**0.76**	**45**	**13**	**130**	**510**	**0.19 B**	**0.71 J**	**38**	<0.57	**0.79 J**	**0.62 J**	**67**	**200**
M10	DG-M10S-3.5-4	8/24/18	1.0-2.5	**0.81 J**	**16**	**46**	**0.56**	**0.13 J**	**33**	**17**	**47**	**20**	**0.063**	**0.26 J**	**35**	<0.56	<0.19	<0.54	**53**	**88**
M11	DG-M11S-0.5-1	8/27/18	0.5-1	**0.90 J**	**2.3 J**	**42**	<0.078	**0.077 J**	**13**	**15**	**110**	**85**	**0.099**	**0.15 J**	**7.8**	<0.36	**0.33 J**	**1.0 J**	**110**	**80**
M11	DG-M11S-3.5-4	8/27/18	2.5-4	**1.1 J**	**12**	**63**	**0.78**	**0.078 J**	**44**	**20**	**76**	**47**	**0.072**	**0.27 J**	**46**	<0.52	**0.24 J**	<0.50	**68**	**110**
M12	DG-M12S-0.5-1	8/27/18	0.5-1	**0.84 J**	**7.1**	**170**	**0.65**	<0.033	**49**	**17**	**43**	**65**	**0.19**	**0.85 J**	**58**	**0.87 J**	<0.13	<0.38	**47**	**89**
M12	DG-M12S-3.5-4	8/27/18	2.5-4	<0.24	**4.7**	**76**	**0.60**	<0.036	**150**	**33**	**52**	**12**	**0.14**	**1.7**	**160**	**1.1 J**	<0.15	<0.43	**130**	**93**
M12	DG-M12S-3.5-4 (D)	8/27/18	2.5-4	**1.2 J**	**8.9**	**140**	**0.28 J**	<0.035	**140**	**30**	**53**	**8.2**	**0.17**	**0.39 J**	**160**	**0.77 J**	**0.48 J**	**1.8**	**130**	**94**
M13	DG-M13S-0.5-1	8/27/18	0.5-1	**2.6 J**	**1.7 J**	**230**	**0.53**	**0.097 J**	**64**	**34**	**38**	**43**	**0.034**	**1.7**	**54**	**1.4 J**	**0.70 J**	**2.9 J**	**150**	**77**
M13	DG-M13S-3.5-4	8/27/18	1.0-2.5	**2.2 F1**	**110 B F1**	**140 B F1 F2**	**0.13 J**	**0.079 J**	**230**	**29 F1**	**55 F1 F2**	**6.9**	**0.14**	<0.19	**300**	<0.44	**0.41 J**	**1.1 J**	**68**	**68 B**
M14	DG-M14S-0.5-1	8/24/18	0.5-1	**4.2**	**94**	**200**	**0.24 J**	**1.5**	**590 B**	**28**	**120**	**1,200**	**0.56**	**1.8 J**	**96**	**2.0 J**	<0.20	<0.58	**74**	**1,100**
M14	DG-M14S-3.5-4	8/24/18	1.0-2.5	**1.2**	**25**	**100**	**0.25**	**0.37**	**220 B**	**21**	**56**	**270**	**0.22**	**0.70 J**	**230**	**1.4 J**	<0.12	<0.34	**61**	**190**
Historical Sample Results																				
B-10	B-10	12/13/05	1-2	--	**8.4**	**73**	--	**1.2**	**17**	--	--	**460**	**0.36**	--	--	<2	<1	--	--	--
B-10	B-10	1/5/06	1-2	--	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	--
B-11	B-11	12/12/05	1-2	--	**590**	**1,200**	--	**14**	**45**	--	--	**2,000**	**0.25**	--	--	<2	**4.1**	--	--	--
B-12	B-12	12/12/05	1-2	--	**21**	**60**	--	<1	**9.1**	--	--	**15**	<0.05	--	--	<2	<1	--	--	--
B-12	B-12	1/5/06	1-2	--	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	--
B-13	B-13	12/12/05	1-2	--	**790**	**70**	--	**21**	**9.7**	--	--	**1,200**	**0.22**	--	--	<2	**1.9**	--	--	--
B-14	B-14	12/12/05	1-2	--	**28**	**1,500**	--	**3.2**	**34**	--	--	**3,500**	**0.35**	--	--	<2	**1.5**	--	--	--
B-15	B-15	12/12/05	1-2	--	**23**	**150**	--	**1.3**	**30**	--	--	**170**	**0.11**	--	--	<2	<1	--	--	--

Table A1: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B-16	B-16	12/13/05	1-2	--	<1.0	**26**	--	<1	**9.3**	--	--	<1	**0.12**	--	--	<2	<1	--	--	--
B-17	B-17	12/13/05	1-2	--	<1.0	**19**	--	<1	**5.2**	--	--	**13**	**0.21**	--	--	<2	<1	--	--	--
B-17	B-17 (D)	12/13/05	1-2	--	<1.0	**40**	--	<1	**12**	--	--	**90**	**0.14**	--	--	<2	<1	--	--	--
B-18	B-18	12/13/05	1-2	--	<1.0	**23**	--	<1	**4.2**	--	--	**6.5**	**0.054**	--	--	<2	<1	--	--	--
B-20	B-20	12/25/05	1-2	--	**40**	**69**	--	<1	**50**	--	--	**5.3**	**5**	--	--	<2	<1	--	--	--
C-1	C-1	9/1/06	2-3	--	**1.4**	**61**	--	<1.0	**37**	--	**20**	**27**	**0.86**	--	--	<2.0 J	<1.0	--	--	--
C-8	C-8	8/31/06	1.5-2	--	**7.1**	**55 J**	--	<1.0	**14**	--	**180**	**170**	**0.13**	--	--	<2.0 J	<1.0	--	--	--
C-13	C-13	8/31/06	1-2	--	**41**	**62 J**	--	<1.0	**15**	--	**120**	**450**	**0.48**	--	--	<2.0 J	<1.0	--	--	--
C-15	C-15	8/29/06	1-2.5	--	**5.7**	**63**	--	**1.2**	**30**	--	**170**	**220**	**0.11 J**	--	--	<2.0	<1.0	--	--	--
C-21	C-21	8/28/06	1.5-2	--	**61**	**34**	--	<1.0	**3.4 J**	--	**6.9 J**	**6.9**	**0.12**	--	--	<2.0 J	<1.0	--	--	--
C-26	C-26	8/28/06	1.5-2	--	**350**	**200**	--	**1.4**	**39 J**	--	**160 J**	**1,100**	**100**	--	--	<2.0 J	<1.0	--	--	--
EE-2	EE-2	3/1/84	1.5-3	--	**19.1**	**48.3**	--	--	**189**	--	**39.7**	**18**	--	--	--	--	--	--	--	**61.3**
EE-3	EE-3	3/1/84	1.5-3	--	**13.7**	**93**	--	--	**47.8**	--	**42.8**	**73.1**	--	--	--	--	--	--	--	**109**
EE-4	EE-4	3/1/84	1.5-3	--	**15**	**113**	--	--	**30.6**	--	**578**	**1,100**	--	--	--	--	--	--	--	**276**
EE-5	EE-5	3/1/84	1.5-3	--	<5	**50.8**	--	--	**23.1**	--	**1270**	**456**	--	--	--	--	--	--	--	**204**
EE-6	EE-6	3/1/84	1.5-3	--	**17.8**	**32.7**	--	--	<10	--	**111**	**1.31**	--	--	--	--	--	--	--	**61.9**
EE-7	EE-7	3/1/84	1.5-3	--	**23.8**	**154**	--	--	**14.6**	--	**1,930**	**3,910**	--	--	--	--	--	--	--	**2,680**
EE-10	EE-10	3/1/84	1.5-3	--	**14.2**	**87.5**	--	--	**21.3**	--	**139**	**319**	--	--	--	--	--	--	--	**200**
EE-11	EE-11	3/1/84	1.5-3	--	**4.75**	**37.8**	--	--	**11.4**	--	**123**	**0.48**	--	--	--	--	--	--	--	**44.8**
EE-12	EE-12	3/1/84	1.5-3	--	**8.19**	**181**	--	--	**16.8**	--	**143**	**133**	--	--	--	--	--	--	--	**154**
EE-13	EE-13	3/1/84	1.5-3	--	**7.94**	**50.5**	--	--	<10	--	**289**	**79.2**	--	--	--	--	--	--	--	**212**
EE-14	EE-14	3/1/84	1.5-3	--	**17.5**	<20	--	--	<5	--	**87.9**	**1.53**	--	--	--	--	--	--	--	**39.5**
EE-15	EE-15	3/1/84	1.5-3	--	**23.1**	**568**	--	--	**201**	--	**1,350**	**1,240**	--	--	--	--	--	--	--	**5,260**
EE-23	EE-23	3/1/84	1.5-3	--	**14**	**2,530**	--	--	**37.6**	--	**1,860**	**6,265**	--	--	--	--	--	--	--	**1,040**
MB-10	MB-10	1/1/86	2	--	<0.1	**50**	--	--	--	--	**100**	**340**	--	--	--	--	--	--	--	**1,500**
MB-11	MB-11	1/1/86	2	--	**3.1**	**170**	--	--	--	--	**92**	**85**	--	--	--	--	--	--	--	**75**
MB-12	MB-12	1/1/86	2	--	**0.37**	**38**	--	--	--	--	**5.8**	**3.4**	--	--	--	--	--	--	--	**9.1**
MK-2A	MK-2A	1/1/86	0.5-2	--	<0.1	**46**	--	--	--	--	**15**	**6**	--	--	--	--	--	--	--	**70**
MK-3B	MK-3B	1/1/86	0.5	--	**24**	<1	--	--	--	--	**85**	**3.8**	--	--	--	--	--	--	--	**40**
MK-4B	MK-4B	1/1/86	2	--	**120**	**220**	--	--	--	--	**220**	**900**	--	--	--	--	--	--	--	**480**
MK-5B	MK-5B	1/1/86	0.5	--	**2.1**	<1	--	--	--	--	**45**	**75**	--	--	--	--	--	--	--	**120**
MK-6B	MK-6B	1/1/86	2	--	**20**	**35**	--	--	--	--	**25**	**6.9**	--	--	--	--	--	--	--	**50**
MW-3A	MW-3A	3/1/84	0.5	--	<1.0	**45.8**	--	--	**21.1**	--	**122**	<10	--	--	--	--	--	--	--	**64**
MW-4A	MW-4A	3/1/84	0.5	--	**19.8**	**27.5**	--	--	**26.4**	--	**47.2**	**405**	--	--	--	--	--	--	--	**57.2**
MW-6A	MW-6A	3/1/84	1.5	--	**11**	**96.4**	--	--	**23.5**	--	**126**	**331**	--	--	--	--	--	--	--	**87.7**
MW-6B	MW-6B	3/1/84	0.5	--	**1.6**	<20	--	--	**14**	--	**102**	**173**	--	--	--	--	--	--	--	**56**
MW-7A	MW-7A	3/1/84	0.5	--	**1.82**	**53.6**	--	--	<5	--	**224**	**249**	--	--	--	--	--	--	--	**139**
MW-8A	MW-8A	3/1/84	0.5	--	**25.1**	**46.5**	--	--	**13**	--	**114**	**24.7**	--	--	--	--	--	--	--	**62.8**
MW-8B	MW-8B	3/1/84	0.5	--	**3.2**	**21.1**	--	--	<5	--	**295**	**14.7**	--	--	--	--	--	--	--	**179**
NSB-5	NSB-5	4/1/90	2	--	**1**	**34**	<0.1	<0.1	**11**	**8**	**86**	**49**	<0.1	--	**16**	**0.3**	<0.5	--	--	**42**
B-10	B-10	12/13/05	4-5	--	**2.3**	**170**	--	**1**	**130**	--	--	**32**	**0.12**	--	--	<2	<1	--	--	--
B-11	B-11	1/5/06	4.5-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-13	B-13	1/5/06	4-4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A1: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.5E+00	3.6E+04	4.9E+01	3.1E+03	5.6E+02	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B-14	B-14	1/5/06	4-4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-15	B-15	1/5/06	4.5-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-15	B-15 (D)	1/5/06	4.5-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-16	B-16	12/13/05	4-5	--	**3.2**	**100**	--	<1	**33**	--	--	**14**	**0.9**	--	--	<2	<1	--	--	--
B-19	B-19	12/13/05	4-5	--	**8**	**78**	--	<1	**33**	--	--	**110**	**0.064**	--	--	<2	<1	--	--	--
B-19-A	B-19-A	12/25/05	4-5	--	**6.3**	**50**	--	<1	**36**	--	--	**41**	**0.11**	--	--	<2	<1	--	--	--
B-19-A	B-19-A (D)	12/25/05	4-5	--	**7.5**	**71**	--	<1	**36**	--	--	**24**	**0.11**	--	--	<2	<1	--	--	--
B-23	B-23	12/13/05	4-5	--	**24**	**37**	--	<1	**9.3**	--	--	<1	**0.083**	--	--	<2	<1	--	--	--
B-24	B-24	12/14/05	4-5	--	**9.4**	**39**	--	<1	**96**	--	--	**34**	**0.89**	--	--	<2	<1	--	--	--
C-5	C-5	9/1/06	2.5-3.5	--	**7.8**	**77**	--	<1.0	**56**	--	**39**	**70**	**0.28**	--	--	<2.0 J	<1.0	--	--	--
C-14	C-14	8/29/06	3-4	--	**39**	**110**	--	<1.0	**41**	--	**130**	**360**	**0.09 J**	--	--	<2.0	<1.0	--	--	--
C-19	C-19	8/28/06	2.5-3	--	**180**	**180**	--	<1.0	**41 J**	--	**88 J**	**990**	**1.3**	--	--	<2.0 J	<1.0	--	--	--
C-24	C-24	8/29/06	2.5-3	--	**17**	**51**	--	<1.0	**12**	--	**100**	**670**	**0.13 J**	--	--	<2.0	<1.0	--	--	--
C-24	C-24	8/29/06	3.5-4	--	**57**	**3,300**	--	**4**	**49**	--	**360**	**8,000**	**0.47 J**	--	--	<2.0	**4.3**	--	--	--
C-29	C-29	8/29/06	3-3.5	--	**7.6**	**25**	--	<1.0	**6.3**	--	**87**	**29**	<0.050	--	--	<2.0	<1.0	--	--	--
C-31	C-31	8/29/06	3.5-4	--	<1.0	**340**	--	<1.0	**15**	--	**120**	**77**	**0.22 J**	--	--	<2.0	<1.0	--	--	--
C-33	C-33	8/29/06	4-4.5	--	**180**	**68**	--	<1.0	**37**	--	**52**	**23**	**0.08 J**	--	--	<2.0	<1.0	--	--	--
B-11	B-11	12/12/05	5-6	--	**29**	**39**	--	<1	**30**	--	--	**12**	<0.05	--	--	<2	<1	--	--	--
B-12	B-12	12/12/05	5-6	--	**4**	**19**	--	<1	**23**	--	--	**10**	<0.05	--	--	<2	<1	--	--	--
B-13	B-13	12/12/05	5-6	--	**120**	**120**	--	**2.8**	**170**	--	--	**2.4**	**37**	--	--	<2	<1	--	--	--
B-14	B-14	12/12/05	5-6	--	**37**	**37**	--	<1	**28**	--	--	**2.8**	**0.063**	--	--	<2	<1	--	--	--
B-15	B-15	12/12/05	5-6	--	**13**	**180**	--	<1	**60**	--	--	**38**	**0.25**	--	--	<2	<1	--	--	--
B-17	B-17	12/13/05	5-6	--	**4.8**	**100**	--	<1	**74**	--	--	**660**	**1.8**	--	--	<2	<1	--	--	--
B-18	B-18	12/13/05	5-6	--	**4.7**	**29**	--	<1	**30**	--	--	**91**	**0.12**	--	--	<2	<1	--	--	--
B-19-B	B-19-B	12/25/05	9-10	--	**6.9**	**74**	--	<1	**38**	--	--	**54**	**0.11**	--	--	<2	<1	--	--	--
B-19-B	B-19-B (D)	12/25/05	9-10	--	**7.5**	**71**	--	<1	**36**	--	--	**24**	**0.11**	--	--	<2	<1	--	--	--
B-20	B-20	12/25/05	5-6	--	**17**	**41**	--	<1	**34**	--	--	**19**	**0.053**	--	--	<2	<1	--	--	--
B-21	B-21	12/13/05	5-6	--	<1.0	**62**	--	<1	**84**	--	--	<1	**1.1**	--	--	<2	<1	--	--	--
B-22	B-22	12/14/05	5-6	--	**27**	**86**	--	<1	**110**	--	--	**41**	**15**	--	--	<2	<1	--	--	--
C-3	C-3	9/1/06	9-10	--	**1.1**	**72**	--	<1.0	**6.3**	--	**9.7**	**54**	**0.055**	--	--	<2.0 J	<1.0	--	--	--
C-10	C-10	8/31/06	6-7	--	**1.8**	**78 J**	--	<1.0	**60**	--	**13**	**2.6**	<0.050	--	--	<2.0 J	<1.0	--	--	--
C-16	C-16	8/30/06	6-6.5	--	**2.4**	**34**	--	<1.0	**26**	--	**7.6**	**3**	<0.050 J	--	--	<2.0	<1.0	--	--	--
C-20	C-20	8/28/06	10.5-11	--	**160**	**220**	--	**1.7**	**42 J**	--	**220 J**	**730**	**0.64**	--	--	<2.0 J	<1.0	--	--	--
C-22	C-22	8/28/06	7-7.5	--	**20**	**760**	--	**2.6**	**4,400 J**	--	**1,100 J**	**2,700**	**0.29**	--	--	<2.0 J	**6.8**	--	--	--
C-25	C-25	8/28/06	10.5-11	--	**61**	**73**	--	<1.0	**37 J**	--	**69 J**	**71**	**0.78**	--	--	<2.0 J	<1.0	--	--	--
MK-2A	MK-2A	1/1/86	5-6.5	--	**17**	**31**	--	--	--	--	**1.4**	**1**	--	--	--	--	--	--	--	**13**
TPI-CONF-01	TPI-CONF-01	12/1/93	Sidewall	--	**2**	**140**	--	<0.3	**62**	<2	**20**	<10	**0.5**	--	**47**	<0.5	<0.5	--	**51**	**36**
TPI-CONF-02	TPI-CONF-02	12/1/93	Sidewall	--	**1**	**22**	--	<0.3	**48**	**4**	<2	<10	<0.2	--	**8**	<0.5	<0.5	--	**28**	**9**
TPI-CONF-09A	TPI-CONF-09A	12/1/93	Sidewall	--	**4**	**61**	--	<0.3	**13**	<3	**16**	<10	<0.2	--	**10**	<0.5	<0.5	--	<30	**32**

Table A2: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				2.3E+03	2.0E+03	1.9E+03	3.9E-01	8.6E+01	--	3.0E+02	2.7E-01	--	3.4E+01	--	--	--	1.9E+04	--	--	5.7E+02	--
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<2.9	<2.0	<2.0	<2.4	<2.7	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.4	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.59	<0.40	<0.39	<0.48	<0.53	<0.39	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<12	<8.4	<8.2	<9.9	<11	<8.0	<7.2	<64	<8.8	<12	<6.4	<9.7	<7.6	<9.2	<13	<6.6	<13	<9.2
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	**0.52 J p**	<0.35	**14 J**	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<1.2	<0.83	<0.81	<0.99	<1.1	<0.79	<0.71	<6.3	<0.87	<1.2	<0.63	<0.97	<0.75	<0.91	<1.2	<0.65	<1.2	<0.91
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<1.2	<0.81	<0.79	<0.97	<1.1	**12**	<0.70	**82**	<0.85	<1.1	<0.62	<0.95	<0.74	<0.89	<1.2	<0.64	<1.2	**8.4 p**
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<0.60	<0.42	<0.41	<0.49	<0.54	<0.40	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44

Table A2: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				2.3E+03	2.0E+03	1.9E+03	3.9E+01	8.6E+01	--	3.0E+02	2.7E-01	--	3.4E+01	--	--	--	1.9E+04	--	--	5.7E+02	--
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<1.2	**1.5 J**	**2.1 J p**	<0.97	<1.1	<0.78	<0.70	<6.2	<0.85	<1.1	<0.62	<0.95	<0.74	<0.89	<1.2	<0.64	<1.2	**0.93 J**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.61	<0.42	<0.41	<0.50	<0.55	**0.59 J p**	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.60	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<1.2	<0.80	<0.78	<0.96	<1.1	<0.77	<0.69	<6.1	<0.84	<1.1	<0.61	<0.94	<0.73	<0.88	<1.2	<0.63	<1.2	<0.88
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<1.2	<0.82	<0.80	<0.98	<1.1	<0.78	<0.70	<6.3	<0.86	<1.2	<0.63	<0.96	<0.74	<0.90	<1.2	<0.65	<1.2	<0.90
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<1.2	<0.81	<0.79	<0.97	<1.1	<0.77	<0.70	<6.2	<0.85	**1.4 J**	<0.62	<0.95	<0.74	<0.89	<1.2	<0.64	<1.2	<0.89
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<1.2	<0.83	<0.81	<0.99	<1.1	<0.79	<0.71	<6.3	<0.87	<1.2	<0.63	<0.97	<0.75	<0.91	<1.2	<0.65	<1.2	<0.91
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.59	**0.72 J**	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<3.0	<2.1	<2.0	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.57	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.41	<0.56	<0.30	<0.46	<0.36	<0.43	<0.59	<0.31	<0.59	<0.43
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
F11	DG-F11S-3.5-4	8/24/18	2.5-4	**38**	<4.1	<4.0	<4.9	<5.4	**780 p**	<3.5	**3,900**	<4.3	<5.8	<3.1	<4.8	<3.7	<4.5	<6.2	<3.2	<6.2	**940**
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
G6	DG-G6S-1-2[a]	8/22/18	1-2	**0.90 J p**	**0.76 J**	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44

Table A2: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				2.3E+03	2.0E+03	1.9E+03	3.9E-01	8.6E+01	--	3.0E+02	2.7E-01	--	3.4E+01	--	--	--	1.9E+04	--	--	5.7E+02	--
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	**0.41 J p**	<0.35	**6.5 J**	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.43	<0.59	<0.31	<0.59	<0.43
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.43	<0.60	<0.31	<0.60	<0.43
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.59	**24**	**73**	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.58	<0.40	**1.2 J**	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
H6	DG-H6S-0.5-1	8/23/18	0.5-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H6	DG-H6S-3.5-4	8/23/18	1-2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.58	<0.40	<0.39	<0.47	<0.52	**0.77 J p**	<0.34	**14 J**	<0.41	<0.56	<0.30	<0.46	<0.36	<0.43	<0.59	<0.31	<0.59	**1.9 p**
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.43	<0.60	<0.31	<0.60	<0.43
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.59	<0.41	<0.40	<0.49	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
I7	DG-I7S-0.5-1	8/24/18	0.5-1	**0.65 J p**	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<5.9	<4.1	<4.0	<4.8	<5.3	<3.9	<3.5	<31	<4.3	<5.7	<3.1	<4.7	<3.7	<4.5	<6.1	<3.2	<6.1	<4.5
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	**1.8 J p**	<0.35	**16 J**	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	**1.8 J**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<1.2	<0.83	<0.81	<0.98	<1.1	<0.79	<0.71	<6.3	<0.87	<1.2	<0.63	<0.96	<0.75	<0.91	<1.2	<0.65	<1.2	**1.3 J**
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<2.9	<2.0	<2.0	<2.4	<2.6	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.3	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<5.8	<4.0	<3.9	<4.7	<5.2	<3.8	<3.4	<30	<4.2	<5.6	<3.0	<4.6	<3.6	<4.4	<6.0	<3.1	<6.0	<4.4
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.59	<0.41	<0.40	<0.49	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<1.2	<0.82	<0.80	<0.97	<1.1	<0.78	<0.70	<6.2	<0.86	<1.2	<0.62	<0.96	<0.74	<0.90	<1.2	<0.64	<1.2	<0.90
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<3.0	**2.8 J**	**3.0 J**	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<3.0	<2.0	<2.0	<2.4	<2.7	<1.9	<1.7	<16	<2.1	<2.9	<1.6	<2.4	<1.8	<2.2	<3.1	<1.6	<3.1	<2.2
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45

Table A2: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				2.3E+03	2.0E+03	1.9E+03	3.9E+01	8.6E+01	--	3.0E+02	2.7E-01	--	3.4E+01	--	--	--	1.9E+04	--	--	5.7E+02	--
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<3.0	<2.1	**5.1 J**	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
K8	DG-K8S-1-2	8/22/18	1-2	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.60	<0.42	**2.2 p**	<0.49	<0.54	**0.94 J**	<0.36	<3.2	<0.44	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	**1.0 J p**
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	**0.96 J**	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.59	<0.41	<0.40	<0.48	<0.53	**0.57 J p**	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<5.9	<4.0	<3.9	<4.8	<5.3	<3.8	<3.5	<31	<4.2	<5.7	<3.1	<4.7	<3.6	<4.4	<6.0	<3.2	<6.0	<4.4
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.59	<0.40	**0.41 J**	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L13	DG-L13S-0.5-1	8/24/18	0.5-1	<1.2	<0.80	<0.78	<0.96	<1.1	**3.5 J p**	<0.69	<6.1	<0.84	<1.1	<0.61	<0.94	<0.73	<0.88	<1.2	<0.63	<1.2	**3.6 J**
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<3.0	<2.1	<2.0	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	<2.9	<2.0	<1.9	<2.4	<2.6	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.3	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<2.9	<2.0	<1.9	<2.4	<2.6	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.3	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.59	<0.40	**0.41 J p**	<0.48	<0.53	<0.39	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.59	<0.41	<0.40	<0.49	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45

Table A2: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<23	<25	<24	<19	<25	<24	**87 p**
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.44	<0.33	<0.64	<6.5	<21	<23	<22	<19	<23	<22	<21
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.44	<0.33	<0.64	<6.4	<21	<23	<22	<18	<23	<22	<21
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.44	<0.34	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<2.2	<1.7	<3.3	<33	<22	<24	<23	<19	<24	**32 J**	**42 J**
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.44	<0.33	<0.64	<6.5	<21	<23	<22	<19	<23	<22	<21
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<9.2	<7.0	<14	<140	<21	<23	<22	<18	<23	<22	<21
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.46	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	<22
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	<22
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<0.91	<0.69	<1.3	<14	<21	<23	<22	<18	<23	<22	<21
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<19	<23	<22	<21
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.46	<0.35	<0.68	<6.8	<23	<25	<24	<20	<25	<24	<23
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.89	<0.68	<1.3	<13	<21	<23	<22	<19	<23	<22	<21
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.44	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.44	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.45	<0.35	<0.67	<6.7	<23	<25	<24	<20	<25	<24	<23
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<19	<23	<22	<21
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<25	<23	<19	<25	<23	<22
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22

Table A2: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<19	<23	<22	<21
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<0.89	<0.68	<1.3	<13	<22	<24	<23	<19	<24	**60**	**37 J**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.46	<0.35	<0.68	<6.8	<220	<240	<230	<190	<240	<230	<220
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	<22
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<19	<23	<22	<21
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	--	--	--	--	<23	<25	<24	<20	<25	<24	<23
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.45	<0.34	<0.67	<6.7	<21	<23	<22	<19	<23	<22	<21
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.44	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.46	<0.35	<0.67	<6.8	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<0.88	<0.67	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.90	<0.68	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<0.89	<0.68	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.46	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<0.91	<0.69	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.45	<0.34	<0.67	<6.7	<22	<23	<23	<19	<23	<23	<22
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<2.3	<1.7	<3.4	<34	<23	<25	<24	<20	<25	<24	<23
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.46	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.46	<0.35	<0.67	<6.7	<330	<360	<340	<280	<360	<340	<330
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.45	<0.34	<0.67	<6.7	<23	<25	<24	<20	<25	<24	<23
F11	DG-F11S-3.5-4	8/24/18	2.5-4	<4.5	<3.4	<6.6	<66	<110	<120	<120	<97	<120	<120	<110
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.46	<0.35	<0.68	<6.8	<22	<24	<23	<19	<24	<23	<22
G6	DG-G6S-1-2[a]	8/22/18	1-2	<0.44	<0.34	<0.65	<6.5	<22	<25	<23	<19	<25	<23	<22
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.44	<0.34	<0.65	<6.5	<450	<490	<470	<390	<490	<470	<450

Table A2: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<110	<120	<120	<97	<120	<120	<110
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<21	<23	<22	<19	<23	<22	<21
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.43	<0.33	<0.64	<6.4	<21	<23	<22	<18	<23	<22	<21
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	**24 J**
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
H6	DG-H6S-0.5-1	8/23/18	0.5-1	--	--	--	--	<23	<25	<24	<20	<25	<24	<23
H6	DG-H6S-3.5-4	8/23/18	1-2.5	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<0.46	<0.35	<0.68	<6.8	<21	<23	<22	<18	<23	<22	<21
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.44	<0.33	<0.64	<6.4	<21	<23	<22	<18	<23	<22	<21
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<4.5	<3.4	<6.6	<66	<22	<24	<23	<19	<24	<23	<22
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	**42 J p**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.91	<0.69	<1.3	<13	<23	<25	<24	<20	<25	<24	<23
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<2.2	<1.7	<3.3	<33	<22	<24	<23	<19	<24	<23	<22
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<4.4	**11 J**	<6.4	<64	<23	<25	<24	<20	<25	<24	<23
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<0.90	<0.68	<1.3	<13	<22	<24	<23	<19	<24	**590**	**420**
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<23	<25	<24	<20	<25	<24	**38 J**
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<2.3	<1.7	<3.4	<34	<21	<23	<22	<18	<23	<22	<21
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<2.2	<1.7	<3.3	<33	<22	<24	<23	<19	<24	<23	<22
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22

Table A2: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<2.3	<1.7	<3.4	<34	<22	<24	<23	<19	<24	<23	**38 J**
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.46	<0.35	<0.68	<6.8	<21	<23	<22	<19	<23	<22	<21
K8	DG-K8S-1-2	8/22/18	1-2	<0.46	<0.35	<0.68	<6.8	<22	<24	<23	<19	<24	<23	<22
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.45	<0.34	<0.66	<6.6	<23	<25	<24	<20	<25	<24	<23
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.45	<0.35	<0.67	<6.7	<23	<25	<24	<20	<25	<24	<23
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<4.4	<3.4	<6.5	<65	<420	<460	<440	<370	<460	<440	**13,000**
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.44	<0.34	<0.65	<6.6	<110	<120	<110	<93	<120	<110	**3,000**
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	**44 J**
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L13	DG-L13S-0.5-1	8/24/18	0.5-1	<0.88	<0.67	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<2.3	<1.7	<3.3	<34	<22	<24	<23	<19	<24	<23	<22
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	<2.2	<1.7	<3.2	<32	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<2.2	<1.7	<3.2	<32	<22	<24	<23	<19	<24	<23	<22
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.44	<0.34	**0.75 J**	<6.6	<23	<25	<24	<20	<25	<24	<23
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.1E+02	4.0E+07	1.1E+03	3.6E+03	1.0E+03	--	6.3E+04	1.5E+00	2.4E+04	5.8E+04	5.3E+00	3.7E+01	1.8E+06	4.6E+02	1.0E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.57	<0.46	<0.56	<1.6	<0.52	<0.51	<0.46	<0.52	<0.55	<0.57	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.66	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.67	<0.56
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.52	<0.41	<0.51	<1.4	<0.48	<0.46	<0.42	<0.47	<0.50	<0.52	<0.48	<1.1	<1.2	<0.97	<0.46	<0.52	<0.43
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.55	<0.44	<0.54	<1.5	<0.51	<0.49	<0.45	<0.50	<0.54	<0.56	<0.51	<1.2	<1.2	<1.0	<0.49	<0.55	<0.46
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.52	<0.41	<0.51	<1.4	<0.47	<0.46	<0.42	<0.47	<0.50	<0.52	<0.48	<1.1	<1.2	<0.97	<0.46	<0.52	<0.43
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.60	<0.49	<0.60	<1.7	<0.56	<0.54	**1.8 J ***	<0.55	<0.59	<0.61	<0.57	<1.3	<1.4	<1.1	<0.54	<0.60	<0.50
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.52	<0.42	<0.52	<1.4	<0.48	<0.47	<0.43	<0.48	<0.51	<0.53	<0.49	<1.1	<1.2	<0.98	<0.47	<0.52	<0.43
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<0.62	<0.50	<0.61	<1.7	<0.57	<0.56	<0.51	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.62	<0.51
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.56	<0.45	<0.55	<1.5	<0.51	<0.50	<0.45	<0.50	<0.54	<0.56	<0.52	<1.2	<1.2	<1.0	<0.50	<0.56	<0.46
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.60	<0.48	<0.60	<1.7	<0.56	<0.54	<0.49	<0.55	<0.59	<0.61	<0.56	<1.3	<1.4	<1.1	<0.54	<0.60	<0.50
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.56	<0.45	<0.56	<1.5	<0.52	<0.50	<0.46	<0.51	<0.55	<0.57	<0.53	<1.2	<1.3	<1.1	<0.50	<0.56	<0.47
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.60	<0.48	<0.60	<1.7	<0.56	<0.54	<0.49	<0.55	<0.59	<0.61	<0.56	<1.3	<1.4	<1.1	<0.54	<0.60	<0.50
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<0.78	<0.62	<0.77	<2.1	<0.72	<0.70	<0.63	<0.71	<0.76	<0.79	<0.73	<1.7	<1.7	<1.5	<0.70	<0.78	<0.64
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.65	<0.52	<0.64	<1.8	<0.59	<0.58	<0.53	<0.59	<0.63	<0.65	<0.60	<1.4	<1.4	<1.2	<0.58	<0.65	<0.53
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.49	<0.39	<0.48	<1.3	<0.45	<0.43	<0.40	<0.44	<0.47	<0.49	<0.45	<1.0	<1.1	<0.91	<0.43	<0.49	<0.40
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.52	<0.41	<0.51	<1.4	<0.48	<0.46	<0.42	<0.47	<0.50	<0.52	<0.48	<1.1	<1.2	<0.97	<0.46	<0.52	<0.43
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.52	<0.41	<0.51	<1.4	<0.48	<0.46	<0.42	<0.47	<0.50	<0.52	<0.48	<1.1	<1.2	<0.97	<0.46	<0.52	<0.43
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.59	<0.47	<0.58	<1.6	<0.54	<0.53	<0.48	<0.53	<0.57	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.71	<0.57	<0.70	<2.0	<0.66	<0.64	<0.58	<0.65	<0.69	<0.72	<0.67	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.58 J	<0.47	<0.58	<1.6	<0.54	<0.52	<0.48	<0.53	<0.57 J	<0.59 J	<0.55 J	<1.3 J	<1.3 J	<1.1	<0.52 J	<0.58	<0.48
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.55	**0.68 J**	<0.62	<0.57	<1.3	<1.4	<1.1	<0.55	<0.61	<0.51
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.57	<0.46	<0.57	<1.6	<0.53	<0.51	<0.47	<0.52	<0.56	<0.58	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.53	<0.43	<0.53	<1.5	<0.49	<0.48	<0.44	<0.48	<0.52	<0.54	<0.50	<1.2	<1.2	<1.0	<0.48	<0.53	<0.44
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<0.72	<0.58	<0.71	<2.0	<0.67	<0.65	<0.59	<0.66	<0.70	<0.73	<0.68	<1.6	<1.6	<1.4	<0.65	<0.72	<0.60
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.75	<0.60	<0.74	<2.0	<0.69	<0.67	<0.61	<0.68	<0.73	<0.75	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.61	<0.51
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.71	<0.57	<0.70	<1.9	<0.66	<0.64	<0.58	<0.65	<0.69	<0.72	<0.66	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.76	<0.61	<0.75	<2.1	<0.70	<0.68	<0.62	<0.69	<0.74	<0.77	<0.71	<1.6	<1.7	<1.4	<0.68	<0.76	<0.63
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.76	<0.61	<0.75	<2.1	<0.70	<0.68	<0.62	<0.69	<0.74	<0.77	<0.71	<1.6	<1.7	<1.4	<0.68	<0.76	<0.63
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.61	<0.49	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.61	<0.51
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.81 R	<0.65 R	<0.80 R	<2.2 R	<0.74 R	<0.72 R	<0.66 R	<0.73 R	<0.79 R	<0.82 R	<0.75 R	<1.7 R	<1.8 R	<1.5	<0.72 R	<0.81 R	<0.67 R
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.83	<0.66	<0.82 R	<2.3	<0.76	<0.74	<0.67	<0.75	<0.80 R	<0.84 R	<0.77 R	<1.8 R	<1.8 R	<1.6	<0.74 R	<0.83	<0.68
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.57	<0.45	<0.56	<1.5	<0.52	<0.51	<0.46	<0.51	<0.55	<0.57	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.53	<0.42	<0.52	<1.4	<0.49	<0.47	<0.46	<0.48	<0.52	<0.54	<0.49	<1.1	<1.2	<1.0	<0.47	<0.53	<0.44

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.1E+02	4.0E+07	1.1E+03	3.6E+03	1.0E+03	--	6.3E+04	1.5E+00	2.4E+04	5.8E+04	5.3E+00	3.7E+01	1.8E+06	4.6E+02	1.0E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.65	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.67	<0.56
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.2	<0.99	<1.2	<3.4	<1.1	<1.1	<1.0	<1.1	<1.2	<1.3	<1.2	<2.7	<2.8	<2.3	<1.1	<1.2	<1.0
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.2	<0.99	<1.2	<3.4	<1.1	<1.1	<1.0	<1.1	<1.2	<1.3	<1.2	<2.7	<2.8	<2.3	<1.1	<1.2	<1.0
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.54	<0.43	<0.53	<1.5	<0.50	<0.48	<0.44	<0.49	<0.53	<0.55	<0.50	<1.2	<1.2	<1.0	<0.48	<0.54	<0.45
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.72	<0.58	<0.71	<2.0	<0.66	<0.64	<0.58	<0.65	<0.70	<0.73	<0.67	<1.5	<1.6	<1.3	<0.64	<0.72	<0.59
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.61	<0.49	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.61	<0.51
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.67	<0.53	<0.66	<1.8	<0.61	<0.60	<0.54	<0.60	<0.65	<0.67	<0.62	<1.4	<1.5	<1.3	<0.60	<0.67	<0.55
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.64	<0.52	<0.63	<1.8	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.73	<0.58	<0.72	<2.0	<0.67	<0.65	<0.59	<0.66	<0.71	<0.73	<0.68	<1.6	<1.6	<1.4	<0.65	<0.73	<0.60
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<0.68	<0.55	<0.67	<1.9	<0.63	<0.61	<0.55	<0.62	<0.66	<0.69	<0.63	<1.5	<1.5	<1.3	<0.61	<0.68	<0.56
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.72	<0.58	<0.71	<2.0	<0.66	<0.64	<0.59	<0.65	<0.70	<0.73	<0.67	<1.6	<1.6	<1.4	<0.64	<0.72	<0.60
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.58	<0.46	<0.57	<1.6	<0.53	<0.52	<0.47	<0.52	<0.56	<0.58	<0.54	<1.2	<1.3	<1.1	<0.52	<0.58	<0.48
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.62	<0.50	<0.61	<1.7	<0.57	<0.56	<0.51	<0.56	<0.61	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.62	<0.52
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<0.52	<0.42	<0.52	<1.4	<0.48	<0.47	<0.43	<0.48	<0.51	<0.53	<0.49	<1.1	<1.2	<0.99	<0.47	<0.52	<0.43
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	<0.71	<0.57	<0.70	<1.9	<0.65	<0.63	<0.58	<0.64	<0.69	<0.71	<0.66	<1.5	<1.6	<1.3	<0.63	<0.71	<0.58
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	<0.55 R	<0.45	<0.55 R	<1.5	<0.51	<0.50	<0.45	<0.50	<0.54 R	<0.56 R	<0.52 R	<1.2 R	<1.2 R	<1.0	<0.50 R	<0.55	<0.46
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.61	<0.49	<0.60	<1.7	<0.56	<0.54	<0.50	<0.55	<0.59	<0.62	<0.57	<1.3	<1.4	<1.1	<0.54	<0.61	<0.50
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.56	<0.45	<0.55	<1.5	<0.52	<0.50	<0.46	<0.51	<0.54	<0.57	<0.52	<1.2	<1.3	<1.1	<0.50	<0.56	<0.46
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.81	<0.65	<0.80	<2.2	<0.75	<0.73	<0.66	<0.74	<0.79	<0.82	<0.76	<1.8	<1.8	<1.5	<0.73	<0.81	<0.67
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.72	<0.58	<0.71	<2.0	<0.66	<0.65	<0.59	<0.65	<0.70	<0.73	<0.67	<1.6	<1.6	<1.4	<0.65	<0.72	<0.60
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.57	<0.63	<0.67	<0.70	<0.65	<1.5	<1.6	<1.3	<0.62	<0.69	<0.57
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<0.62	<0.50	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.62	<0.49	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.62	<0.50	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<0.91	<0.73	<0.90	<2.5	<0.84	<0.82	<0.74	<0.83	<0.89	<0.92	<0.85	<2.0	<2.0	<1.7	<0.82	<0.91	<0.76
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.71	<0.57	<0.70	<2.0	<0.66	<0.64	<0.58	<0.65	<0.70	<0.72	<0.67	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.58	<0.46	<0.57	<1.6	<0.53	<0.52	<0.47	<0.53	<0.56	<0.59	<0.54	<1.2	<1.3	<1.1	<0.52	<0.58	<0.48
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<0.59	<0.47	<0.58	<1.6	<0.54	<0.53	<0.48	<0.53	<0.57	<0.59	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.59	<0.47	<0.58 R	<1.6	<0.54	<0.53	<0.48	<0.53	<0.57 R	<0.59 R	<0.55 R	<1.3 R	<1.3 R	<1.1	<0.53 R	<0.59	<0.49
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.56	<0.45	<0.55	<1.5	<0.51	<0.50	<0.45	<0.51	<0.54	<0.56	<0.52	<1.2	<1.2	<1.0	<0.50	<0.56	<0.46
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.62	<0.50	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.62	<0.52
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.76	<0.61	<0.75	<2.1	<0.70	<0.68	<0.62	<0.69	<0.74	<0.77	<0.71	<1.6	<1.7	<1.4	<0.68	<0.76	<0.63
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<0.81	<0.65	<0.80	<2.2	<0.75	<0.73	<0.66	<0.74	<0.79	<0.83	<0.76	<1.8	<1.8	<1.5	<0.73	<0.81	<0.68

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.1E+02	4.0E+07	1.1E+03	3.6E+03	1.0E+03	--	6.3E+04	1.5E+00	2.4E+04	5.8E+04	5.3E+00	3.7E+01	1.8E+06	4.6E+02	1.0E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.88	<0.71	<0.87	<2.4	<0.81	<0.79	<0.72	<0.80	<0.86	<0.90	<0.83	<1.9	<2.0	<1.7	<0.79	<0.88	<0.73
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.52	<0.42	<0.51	<1.4	<0.48	<0.47	<0.42	<0.47	<0.51	<0.53	<0.49	<1.1	<1.2	<0.98	<0.47	<0.52	<0.43
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.88	<0.71	<0.87	<2.4	<0.81	<0.79	<0.72	<0.80	<0.86	<0.90	<0.83	<1.9	<2.0	<1.7	<0.79	<0.88	<0.73
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.61	<0.49	<0.60	<1.7	<0.56	<0.54	<0.49	<0.55	<0.59	<0.61	<0.57	<1.3	<1.4	<1.1	<0.54	<0.61	<0.50
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.68	<0.55	<0.67	<1.9	<0.63	<0.61	<0.56	<0.62	<0.66	<0.69	<0.64	<1.5	<1.5	<1.3	<0.61	<0.68	<0.57
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.78	<0.63	<0.77	<2.1	<0.72	<0.70	<0.64	<0.71	<0.76	<0.79	<0.73	<1.7	<1.8	<1.5	<0.70	<0.78	<0.65
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	<0.59	<0.48	<0.59	<1.6	<0.55	<0.53	<0.48	<0.54	<0.58	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.54	<0.61	<0.65	<0.68	<0.62	<1.4	<1.5	<1.3	<0.60	<0.67	<0.55
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.68	<0.54	<0.67	<1.8	<0.62	<0.60	<0.55	<0.61	<0.66	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.68	<0.56
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<0.70	<0.56	<0.69	<1.9	<0.65	<0.63	<0.57	<0.64	<0.69	<0.71	<0.66	<1.5	<1.6	<1.3	<0.63	<0.70	<0.58
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.64	<0.59	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.53	<0.43	<0.52	<1.5	<0.49	<0.48	<0.43	<0.48	<0.52	<0.54	<0.50	<1.1	<1.2	<1.0	<0.48	<0.53	<0.44
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.72	<0.58	<0.71	<2.0	<0.66	<0.64	<0.59	<0.65	<0.70	<0.73	<0.67	<1.5	<1.6	<1.4	<0.64	<0.72	<0.60
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.56	<0.63	<0.67	<0.70	<0.65	<1.5	<1.5	<1.3	<0.62	<0.69	<0.57
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.55	<0.59	<0.62	<0.57	<1.3	<1.4	<1.1	<0.55	<0.61	<0.50
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.60	<0.48	<0.59	<1.6	<0.55	<0.54	<0.49	<0.55	<0.58	<0.61	<0.56	<1.3	<1.3	<1.1	<0.54	<0.60	<0.50
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.65	<0.52	<0.64	<1.8	<0.60	<0.58	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.58	<0.65	<0.54
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.55	<0.59	<0.62	<0.57	<1.3	<1.4	<1.1	<0.55	<0.61	<0.51
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.54	<0.43	<0.53	<1.5	<0.49	<0.48	<0.44	<0.49	<0.52	<0.54	<0.50	<1.2	<1.2	<1.0	<0.48	<0.54	<0.44
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.62	<0.50	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.48	<0.38	<0.47	<1.3	<0.44	<0.43	<0.39	<0.43	<0.46	<0.48	<0.44	<1.0	<1.1	<0.89	<0.43	<0.48	<0.39
H6	DG-H6S-0.5-1	8/23/18	0.5-1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.65	<0.68	<0.63	<1.4	<1.5	<1.3	<0.60	<0.67	<0.56
H6	DG-H6S-3.5-4	8/23/18	1-2.5	<0.58	<0.47	<0.57	<1.6	<0.54	<0.52	<0.47	<0.53	<0.57	<0.59	<0.54	<1.3	<1.3	<1.1	<0.52	<0.58	<0.48
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.59	<0.47	<0.58	<1.6	<0.54	<0.53	<0.48	<0.54	<0.57	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.60	<0.48	<0.59	<1.6	<0.55	<0.54	<0.49	<0.54	<0.58	<0.61	<0.56	<1.3	<1.3	<1.1	<0.54	<0.60	<0.50
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.60	<0.48	<0.59	<1.6	<0.55	<0.54	<0.49	<0.54	<0.58	<0.61	<0.56	<1.3	<1.3	<1.1	<0.54	<0.60	<0.50
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.59	<0.48	<0.59	<1.6	<0.55	<0.53	<0.48	<0.54	<0.58	<0.60	<0.56	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.71	<0.57	<0.70	<1.9	<0.65	<0.64	<0.58	<0.64	<0.69	<0.72	<0.66	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.63	<0.51	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.64	<0.59	<1.4	<1.4	<1.2	<0.56	<0.63	<0.52
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.66	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.67	<0.56
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.62	<0.50	<0.61	<1.7	<0.57	<0.55	<0.51	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.57	<0.63	<0.68	<0.70	<0.65	<1.5	<1.6	<1.3	<0.62	<0.69	<0.57

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.1E+02	4.0E+07	1.1E+03	3.6E+03	1.0E+03	--	6.3E+04	1.5E+00	2.4E+04	5.8E+04	5.3E+00	3.7E+01	1.8E+06	4.6E+02	1.0E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.57	<0.63	<0.68	<0.70	<0.65	<1.5	<1.6	<1.3	<0.62	<0.69	<0.57
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<390	<620	<560	<2,400	<420	<390	<410	<390	<850	<590	<630	<1,800	<690	<1,600	<690	<390	<390
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.65	<0.52	<0.64	<1.8	<0.60	<0.58	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.58	<0.65	<0.54
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.65	<0.68	<0.62	<1.4	<1.5	<1.3	<0.60	<0.67	<0.55
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<0.58	<0.47	<0.58	<1.6	<0.54	<0.52	<0.48	<0.53	<0.57	<0.59	<0.55	<1.3	<1.3	<1.1	<0.52	<0.58	<0.48
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.65	<0.68	<0.62	<1.4	<1.5	<1.3	<0.60	<0.67	<0.55
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<0.95	<0.76	<0.94	<2.6	<0.87	<0.85	<0.77	<0.86	<0.92	<0.96	<0.89	<2.0	<2.1	<1.8	<0.85	<0.95	<0.79
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.73	<0.59	<0.72	<2.0	<0.67	<0.65	<0.60	<0.66	<0.71	<0.74	<0.68	<1.6	<1.6	<1.4	<0.65	<0.73	<0.60
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.66	<0.53	<0.65	<1.8	<0.60	<0.59	<0.54	<0.60	<0.64	<0.67	<0.61	<1.4	<1.5	<1.2	<0.59	<0.66	<0.54
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<0.54	<0.43	<0.53	<1.5	<0.49	<0.48	<0.44	<0.49	<0.52	<0.54	<0.50	<1.2	<1.2	<1.0	<0.48	<0.54	<0.44
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.59	<0.48	<0.58	<1.6	<0.55	<0.53	<0.48	<0.54	<0.58	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.52	<0.42	<0.51	<1.4	<0.48	<0.47	<0.43	<0.47	<0.51	<0.53	<0.49	<1.1	<1.2	<0.98	<0.47	<0.52	<0.43
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<0.85	<0.68	<0.84	<2.3	<0.78	<0.76	<0.69	<0.77	<0.83	<0.86	<0.79	<1.8	<1.9	<1.6	<0.76	<0.85	<0.71
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<0.73	<0.59	<0.72	<2.0	<0.68	<0.66	<0.60	<0.67	<0.71	<0.74	<0.68	<1.6	<1.6	<1.4	<0.66	<0.73	<0.61
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<0.85	<0.68	<0.84	<2.3	<0.78	<0.76	<0.69	<0.77	<0.83	<0.86	<0.79	<1.8	<1.9	<1.6	<0.76	<0.85	<0.71
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.71	<0.57	<0.70	<1.9	<0.65	<0.63	<0.58	<0.64	<0.69	<0.72	<0.66	<1.5	<1.6	<1.3	<0.63	<0.71	<0.59
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.61	<0.49	<0.60	<1.7	<0.56	<0.54	<0.49	<0.55	<0.59	<0.61	<0.57	<1.3	<1.4	<1.1	<0.54	<0.61	<0.50
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.58	<0.46	<0.57	<1.6	<0.53	<0.52	<0.47	<0.52	<0.56	<0.58	<0.54	<1.2	<1.3	<1.1	<0.52	<0.58	<0.48
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<0.66	<0.53	<0.65	<1.8	<0.61	<0.59	<0.54	<0.60	<0.64	<0.67	<0.62	<1.4	<1.5	<1.2	<0.59	<0.66	<0.55
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.54	<0.44	<0.54	<1.5	<0.50	<0.49	<0.44	<0.49	<0.53	<0.55	<0.51	<1.2	<1.2	<1.0	<0.49	<0.54	<0.45
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.55	<0.44	<0.54	<1.5	<0.50	<0.49	<0.45	<0.50	<0.53	<0.55	<0.51	<1.2	<1.2	<1.0	<0.49	<0.55	<0.45
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.55	<0.44	<0.54	<1.5	<0.50	<0.49	<0.45	<0.50	<0.53	<0.55	<0.51	<1.2	<1.2	<1.0	<0.49	<0.55	<0.45
K8	DG-K8S-1-2[b,c]	8/22/18	1-2	<0.74	<0.59	<0.73	<2.0	<0.68	<0.66	<0.60	<0.67	<0.72	<0.75	<0.69	<1.6	<1.7	<1.4	<0.66	<0.74	<0.61
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.65	<0.52	<0.65	<1.8	<0.60	<0.58	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.58	<0.65	<0.54
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.66	<0.53	<0.65	<1.8	<0.61	<0.59	<0.54	<0.60	<0.64	<0.67	<0.62	<1.4	<1.5	<1.2	<0.59	<0.66	<0.55
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.75	<0.60	<0.74	<2.0	<0.69	<0.67	<0.61	<0.68	<0.73	<0.76	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.75	<0.60	<0.74	<2.0	<0.69	<0.67	<0.61	<0.68	<0.73	<0.76	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.64	<0.51	<0.63	<1.8	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.32	<0.26	<0.31	<0.87	<0.29	<0.29	<0.26	<0.29	<0.31	<0.32	<0.30	<0.69	<0.71	<0.60	<0.29	<0.32	<0.26
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.34	<0.28	<0.34	<0.94	<0.32	<0.31	<0.28	<0.31	<0.33	<0.35	<0.32	<0.74	<0.77	<0.65	<0.31	<0.34	<0.28
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<0.63	<0.50	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.63	<0.52
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.60	<0.48	<0.59	<1.6	<0.55	<0.53	<0.49	<0.54	<0.58	<0.61	<0.56	<1.3	<1.3	<1.1	<0.53	<0.60	<0.50
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<0.63	<0.50	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.63	<0.52
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.64	<0.52	<0.64	<1.8	<0.59	<0.58	<0.53	<0.59	<0.63	<0.65	<0.60	<1.4	<1.4	<1.2	<0.58	<0.64	<0.53

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.1E+02	4.0E+07	1.1E+03	3.6E+03	1.0E+03	--	6.3E+04	1.5E+00	2.4E+04	5.8E+04	5.3E+00	3.7E+01	1.8E+06	4.6E+02	1.0E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.91	<0.73	<0.89	<2.5	<0.83	<0.81	<0.74	<0.82	<0.88	<0.92	<0.85	<2.0	<2.0	<1.7	<0.81	<0.91	<0.75
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.68	<0.55	<0.67	<1.9	<0.63	<0.61	<0.56	<0.62	<0.67	<0.69	<0.64	<1.5	<1.5	<1.3	<0.61	<0.68	<0.57
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.91	<0.73	<0.89	<2.5	<0.83	<0.81	<0.74	<0.82	<0.88	<0.92	<0.85	<2.0	<2.0	<1.7	<0.81	<0.91	<0.75
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.73	<0.59	<0.72	<2.0	<0.67	<0.66	<0.60	<0.66	<0.71	<0.74	<0.68	<1.6	<1.6	<1.4	<0.66	<0.73	<0.61
L13	DG-L13S-0.5-1[c]	8/24/18	0.5-1	<0.75	<0.61	<0.74	<2.1	<0.69	<0.67	<0.62	<0.68	<0.73	<0.76	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<0.63	<0.51	<0.62	<1.7	<0.58	<0.57	<0.52	<0.57	<0.62	<0.64	<0.59	<1.4	<1.4	<1.2	<0.57	<0.63	<0.52
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.56	<0.63	<0.67	<0.70	<0.65	<1.5	<1.5	<1.3	<0.62	<0.69	<0.57
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.56	<0.63	<0.67	<0.70	<0.65	<1.5	<1.5	<1.3	<0.62	<0.69	<0.57
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.65	<0.53	<0.65	<1.8	<0.60	<0.59	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.59	<0.65	<0.54
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.89	<0.71	<0.88	<2.4	<0.82	<0.80	<0.73	<0.81	<0.87	<0.90	<0.83	<1.9	<2.0	<1.7	<0.80	<0.89	<0.74
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.68	<0.54	<0.67	<1.9	<0.62	<0.61	<0.55	<0.61	<0.66	<0.69	<0.63	<1.5	<1.5	<1.3	<0.61	<0.68	<0.56
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<0.63	<0.51	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.64	<0.59	<1.4	<1.4	<1.2	<0.56	<0.63	<0.52
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.57	<0.46	<0.56	<1.6	<0.52	<0.51	<0.46	<0.52	<0.55	<0.58	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.75	<0.60	<0.74	<2.0	<0.69	<0.67	<0.61	<0.68	<0.73	<0.76	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Soil Screening Levels (SSL)				2.1E+05	2.4E+05	4.2E+05	2.6E+03	--	2.7E+07	4.8E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	3.0E+02	2.0E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.49	<0.54	<0.54	<0.53	<1.5	<16	<0.49	<7.5	<0.51	<1.9	<7.5	**42**	<0.49	<0.59	<0.54	<0.54	<1.5
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.60	<2.2	<8.9	<34	<0.58	<0.70	<0.64	<0.64	<1.8
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.44	<0.49	<0.50	<0.48	<1.4	<14	<0.44	<6.8	<0.46	<1.7	<6.8	<26	<0.44	<0.54	<0.49	<0.49	<1.4
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.47	<0.52	<0.53	<0.51	<1.4	<15	<0.47	<7.2	<0.49	<1.8	<7.2	**39**	<0.47	<0.57	<0.52	<0.52	<1.4
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.44	<0.49	<0.50	<0.48	<1.4	<14	<0.44	<6.8	<0.46	<1.7	<6.8	<26	<0.44	<0.54	<0.49	<0.49	<1.4
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.52	<0.57	<0.58	<0.57	<1.6	<17	<0.52	<8.0	<0.54	<2.0	<8.0	**55 ***	<0.52	<0.63	<0.57	<0.57	<1.6
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.45	<0.50	<0.50	<0.49	<1.4	<14	<0.45	<6.9	<0.47	<1.7	<6.9	**31 J**	<0.45	<0.54	<0.50	<0.50	<1.4
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<0.53	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.0	<8.2	<31	<0.53	<0.65	<0.59	<0.59	<1.6
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.47	<0.53	<0.53	<0.52	<1.5	<15	<0.47	<7.3	<0.50	<1.8	<7.3	**28 J**	<0.47	<0.58	<0.53	<0.53	<1.5
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.52	<0.57	<0.58	<0.56	<1.6	<17	<0.52	<7.9	<0.54	<2.0	<7.9	**33 J**	<0.52	<0.63	<0.57	<0.57	<1.6
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.48	<0.53	<0.54	<0.53	<1.5	<16	<0.48	<7.4	<0.50	<1.9	<7.4	**52**	<0.48	<0.59	<0.53	<0.53	<1.5
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.52	<0.57	<0.58	<0.56	<1.6	<17	<0.52	<7.9	<0.54	<2.0	<7.9	**42.5**	<0.52	<0.63	<0.57	<0.57	<1.6
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<0.66	<0.74	<0.75	<0.73	<2.0	<21	<0.66	<10	<0.70	<2.6	<10	**80**	<0.66	<0.81	<0.74	<0.74	<2.0
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.55	<0.61	<0.62	<0.60	<1.7	<18	<0.55	<8.5	<0.58	<2.1	<8.5	**43**	<0.55	<0.67	<0.61	<0.61	<1.7
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.42	<0.46	<0.47	<0.45	<1.3	<13	<0.42	<6.4	<0.43	<1.6	<6.4	**46**	<0.42	<0.50	<0.46	<0.46	<1.3
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.44	<0.49	<0.50	<0.48	<1.4	<14	<0.44	<6.8	<0.46	<1.7	<6.8	**35**	<0.44	<0.54	<0.49	<0.49	<1.4
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.44	<0.49	<0.50	<0.48	<1.4	<14	<0.44	<6.8	<0.46	<1.7	<6.8	**40.5**	<0.44	<0.54	<0.49	<0.49	<1.4
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.50	<0.56	<0.57	<0.55	<1.5	<16	<0.50	<7.7	<0.53	<1.9	<7.7	<29	<0.50	<0.61	<0.56	<0.56	<1.5
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.61	<0.68	<0.69	<0.67	<1.9	<20	<0.61	<9.4	<0.64	<2.3	<9.4	<36	<0.61	<0.74	<0.68	<0.68	<1.9
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.50 J	<0.55 J	<0.56	<0.55 J	<1.5	<16	<0.50 J	<7.7	<0.52 J	<1.9 J	<7.7	**52**	<0.50	<0.61 J	<0.55	<0.55	<1.5
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.52	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	**35 J**	<0.52	<0.63	<0.58	<0.58	<1.6
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.49	<0.54	<0.55	<0.53	<1.5	<16	<0.49	<7.5	<0.51	<1.9	<7.5	**40**	<0.49	<0.60	<0.54	<0.54	<1.5
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.46	<0.51	<0.51	<0.50	<1.4	<15	<0.46	<7.0	<0.48	<1.8	<7.0	**52 ***	<0.46	<0.55	<0.51	<0.51	<1.4
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<0.62	<0.69	<0.70	<0.68	<1.9	<20	<0.62	<9.5	<0.65	<2.4	<9.5	<36	<0.62	<0.75	<0.69	<0.69	<1.9
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.64	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.8	<0.67	<2.5	<9.8	<37	<0.64	<0.77	<0.71	<0.71	<2.0
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.52	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	**79**	<0.52	<0.64	<0.58	<0.58	<1.6
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.61	<0.67	<0.68	<0.66	<1.9	<20	<0.61	<9.4	<0.64	<2.3	<9.4	<36	<0.61	<0.74	<0.67	<0.67	<1.9
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.65	<0.72	<0.73	<0.71	<2.0	<21	<0.65	<10	<0.68	<2.5	<10	<38	<0.65	<0.79	<0.72	<0.72	<2.0
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.65	<0.72	<0.73	<0.71	<2.0	<21	<0.65	<10	<0.68	<2.5	<10	<38	<0.65	<0.79	<0.72	<0.72	<2.0
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.53	<0.58	<0.59	<0.57	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**52**	<0.53	<0.64	<0.58	<0.58	<1.6
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.69 R	<0.77 R	<0.78 R	<0.75 R	<2.1 R	<22 R	<0.69 R	<11 R	<0.72 R	<2.7 R	<11 R	**76 ***	**0.86 J ***	<0.84 R	<0.77	<0.77	<2.1 R
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.71 R	<0.78 R	<0.79	<0.77 R	<2.2	<23	<0.71 R	<11	<0.74 R	<2.7 R	<11	**44 J ***	**1.6 J ***	<0.86 R	<0.78	<0.78	<2.2
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.48	<0.54	<0.54	<0.53	<1.5	<16	<0.48	<7.4	<0.51	<1.9	<7.4	<28	<0.48	<0.59	<0.54	<0.54	<1.5
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.45	<0.50	<0.51	<0.49	<1.4	<15	<0.45	<7.0	<0.47	<1.7	<7.0	<26	<0.45	<0.55	<0.50	<0.50	<1.4

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Soil Screening Levels (SSL)				2.1E+05	2.4E+05	4.2E+05	2.6E+03	--	2.7E+07	4.8E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	3.0E+02	2.0E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.8	<0.60	<2.2	<8.8	<34	<0.58	<0.70	<0.64	<0.64	<1.8
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.1	<1.2	<1.2	<1.2	<3.2	<34	<1.1	<16	<1.1	<4.1	<16	<62	<1.1	<1.3	<1.2	<1.2	<3.2
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.1	<1.2	<1.2	<1.2	<3.2	<34	<1.1	<16	<1.1	<4.1	<16	<62	<1.1	<1.3	<1.2	<1.2	<3.2
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.46	<0.51	<0.52	<0.50	<1.4	<15	<0.46	<7.1	<0.48	<1.8	<7.1	**43**	<0.46	<0.56	<0.51	<0.51	<1.4
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.61	<0.68	<0.69	<0.67	<1.9	<20	<0.61	<9.4	<0.64	<2.4	<9.4	<36	<0.61	<0.75	<0.68	<0.68	<1.9
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.53	<0.58	<0.59	<0.57	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	<31	<0.53	<0.64	<0.58	<0.58	<1.6
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.57	<0.63	<0.64	<0.62	<1.8	<18	<0.57	<8.8	<0.60	<2.2	<8.8	<33	<0.57	<0.69	<0.63	<0.63	<1.8
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.55	<0.61	<0.62	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.67	<0.61	<0.61	<1.7
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.62	<0.69	<0.70	<0.68	<1.9	<20	<0.62	<9.5	<0.65	<2.4	<9.5	<36	<0.62	<0.75	<0.69	<0.69	<1.9
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.61	<2.2	<8.9	**39 J**	<0.58	<0.71	<0.64	<0.64	<1.8
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.62	<0.68	<0.69	<0.67	<1.9	<20	<0.62	<9.5	<0.64	<2.4	<9.5	<36	<0.62	<0.75	<0.68	<0.68	<1.9
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.49	<0.55	<0.55	<0.54	<1.5	<16	<0.49	<7.6	<0.52	<1.9	<7.6	**49**	<0.49	<0.60	<0.55	<0.55	<1.5
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.55	<0.61	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	**55**	<0.55	<0.66	<0.61	<0.61	<1.7
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.53	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.0	<8.2	**40 J**	<0.53	<0.65	<0.59	<0.59	<1.6
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<0.45	<0.50	<0.50	<0.49	<1.4	<14	<0.45	<6.9	<0.47	<1.7	<6.9	**29 J**	<0.45	<0.55	<0.50	<0.50	<1.4
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	<0.60	<0.67	<0.68	<0.66	<1.9	<19	<0.60	<9.3	<0.63	<2.3	<9.3	<35	<0.60	<0.73	<0.67	<0.67	<1.9
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	<0.47 R	<0.53 R	<0.53	<0.52 R	<1.5	<15	<0.47 R	<7.3	<0.50 R	<1.8 R	<7.3	<28	<0.47	<0.58 R	<0.53	<0.53	<1.5
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.52	<0.58	<0.58	<0.57	<1.6	<17	<0.52	<8.0	<0.54	<2.0	<8.0	<30	<0.52	<0.63	<0.58	<0.58	<1.6
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.48	<0.53	<0.54	<0.52	<1.5	<15	<0.48	<7.4	<0.50	<1.8	<7.4	**64**	<0.48	<0.58	<0.53	<0.53	<1.5
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.70	<0.77	<0.78	<0.76	<2.1	<22	<0.70	<11	<0.73	<2.7	<11	<41	<0.70	<0.85	<0.77	<0.77	<2.1
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.62	<0.68	<0.69	<0.67	<1.9	<20	<0.62	<9.5	<0.65	<2.4	<9.5	<36	<0.62	<0.75	<0.68	<0.68	<1.9
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.59	<0.66	<0.67	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	<35	<0.59	<0.72	<0.66	<0.66	<1.8
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<0.53	<0.59	<0.59	<0.58	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**57**	<0.53	<0.64	<0.59	<0.59	<1.6
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.53	<0.58	<0.59	<0.57	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**45**	<0.53	<0.64	<0.58	<0.58	<1.6
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.53	<0.58	<0.59	<0.57	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**51**	<0.53	<0.64	<0.58	<0.58	<1.6
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<0.78	<0.86	<0.88	<0.85	<2.4	**79**	<0.78	**16 J**	<0.82	<3.0	<12	**490**	<0.78	<0.95	<0.86	<0.86	<2.4
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.61	<0.68	<0.69	<0.67	<1.9	**34 J**	<0.61	<9.4	<0.64	<2.3	<9.4	**140**	<0.61	<0.74	<0.68	<0.68	<1.9
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.50	<0.55	<0.56	<0.54	<1.5	<16	<0.50	<7.6	<0.52	<1.9	<7.6	<29	<0.50	<0.60	<0.55	<0.55	<1.5
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<0.50	<0.56	<0.56	<0.55	<1.5	<16	<0.50	<7.7	<0.53	<1.9	<7.7	**29 J**	<0.50	<0.61	<0.56	<0.56	<1.5
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.50 R	<0.56 R	<0.56	<0.55 R	<1.5	<16	<0.50 R	<7.7	<0.53 R	<1.9 R	<7.7	**33 J**	<0.50	<0.61 R	<0.56	<0.56	<1.5
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.48	<0.53	<0.53	<0.52	<1.5	<15	<0.48	<7.3	<0.50	<1.8	<7.3	<28	<0.48	<0.58	<0.53	<0.53	<1.5
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.53	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.1	<8.2	<31	<0.53	<0.65	<0.59	<0.59	<1.6
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.65	<0.72	<0.73	<0.71	<2.0	<21	<0.65	<10	<0.68	<2.5	<10	<38	<0.65	<0.79	<0.72	<0.72	<2.0
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<0.70	<0.77	<0.78	<0.76	<2.1	<23	<0.70	<11	<0.73	<2.7	<11	<41	<0.70	<0.85	<0.77	<0.77	<2.1

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Soil Screening Levels (SSL)				2.1E+05	2.4E+05	4.2E+05	2.6E+03	--	2.7E+07	4.8E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	3.0E+02	2.0E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.76	<0.84	<0.85	<0.83	<2.3	<24	<0.76	<12	<0.79	<2.9	<12	**58 ***	<0.76	<0.92	<0.84	<0.84	<2.3
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.44	<0.49	<0.50	<0.49	<1.4	<14	<0.44	<6.8	<0.47	<1.7	<6.8	**85**	<0.44	<0.54	<0.49	<0.49	<1.4
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.76	<0.84	<0.85	<0.83	<2.3	<24	<0.76	<12	<0.79	<2.9	<12	**71.5**	<0.76	<0.92	<0.84	<0.84	<2.3
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.52	<0.57	<0.58	<0.57	<1.6	<17	<0.52	<8.0	<0.54	<2.0	<8.0	<30	<0.52	<0.63	<0.57	<0.57	<1.6
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.58	<0.65	<0.66	<0.64	<1.8	<19	<0.58	<9.0	<0.61	<2.2	<9.0	<34	<0.58	<0.71	<0.65	<0.65	<1.8
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.67	<0.74	<0.75	<0.73	<2.1	**29 J**	<0.67	<10	<0.70	<2.6	<10	**160**	<0.67	<0.81	<0.74	<0.74	<2.1
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	<0.51	<0.56	<0.57	<0.55	<1.6	<16	<0.51	<7.8	<0.53	<2.0	<7.8	<30	<0.51	<0.62	<0.56	<0.56	<1.6
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	<0.57	<0.63	<0.64	<0.62	<1.8	<18	<0.57	<8.8	<0.60	<2.2	<8.8	<33	<0.57	<0.69	<0.63	<0.63	<1.8
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.60	<2.2	<8.9	**61**	<0.58	<0.70	<0.64	<0.64	<1.8
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<0.60	<0.67	<0.68	<0.66	<1.9	<19	<0.60	<9.3	<0.63	<2.3	<9.3	<35	<0.60	<0.73	<0.67	<0.67	<1.9
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.54	<0.60	<0.61	<0.59	<1.7	<18	<0.54	<8.4	<0.57	<2.1	<8.4	<32	<0.54	<0.66	<0.60	<0.60	<1.7
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.45	<0.50	<0.51	<0.50	<1.4	<15	<0.45	<7.0	<0.48	<1.7	<7.0	<27	<0.45	<0.55	<0.50	<0.50	<1.4
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.61	<0.68	<0.69	<0.67	<1.9	<20	<0.61	<9.5	<0.64	<2.4	<9.5	<36	<0.61	<0.75	<0.68	<0.68	<1.9
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.59	<0.66	<0.66	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	**52**	<0.59	<0.72	<0.66	<0.66	<1.8
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.52	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	**59**	<0.52	<0.63	<0.58	<0.58	<1.6
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.51	<0.57	<0.58	<0.56	<1.6	<17	<0.51	<7.9	<0.54	<2.0	<7.9	<30	<0.51	<0.62	<0.57	<0.57	<1.6
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.55	<0.60	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.66	<0.60	<0.60	<1.7
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.56	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.58	<2.1	<8.6	**57**	<0.56	<0.68	<0.62	<0.62	<1.7
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.52	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	<31	<0.52	<0.63	<0.58	<0.58	<1.6
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.46	<0.51	<0.51	<0.50	<1.4	<15	<0.46	<7.1	<0.48	<1.8	<7.1	**66**	<0.46	<0.56	<0.51	<0.51	<1.4
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.53	<0.59	<0.59	<0.58	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**36 J**	<0.53	<0.64	<0.59	<0.59	<1.6
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.41	<0.45	<0.46	<0.44	<1.3	<13	<0.41	<6.3	<0.43	<1.6	<6.3	**24 J**	<0.41	<0.49	<0.45	<0.45	<1.3
H6	DG-H6S-0.5-1	8/23/18	0.5-1	<0.57	<0.64	<0.64	<0.63	<1.8	<19	<0.57	<8.8	<0.60	<2.2	<8.8	<34	<0.57	<0.70	<0.64	<0.64	<1.8
H6	DG-H6S-3.5-4	8/23/18	1-2.5	<0.50	<0.55	<0.56	<0.54	<1.5	<16	<0.50	<7.7	<0.52	<1.9	<7.7	**43 H**	<0.50	<0.60	<0.55	<0.55	<1.5
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.55	<0.60	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.66	<0.60	<0.60	<1.7
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.50	<0.56	<0.57	<0.55	<1.6	<16	<0.50	<7.8	<0.53	<1.9	<7.8	<30	<0.50	<0.61	<0.56	<0.56	<1.6
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.51	<0.57	<0.58	<0.56	<1.6	<17	<0.51	<7.9	<0.54	<2.0	<7.9	**32 J ***	<0.51	<0.62	<0.57	<0.57	<1.6
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.51	<0.57	<0.58	<0.56	<1.6	<17	<0.51	<7.9	<0.54	<2.0	<7.9	**32 J ***	<0.51	<0.62	<0.57	<0.57	<1.6
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.51	<0.56	<0.57	<0.56	<1.6	<16	<0.51	<7.8	<0.53	<2.0	<7.8	**38 J**	<0.51	<0.62	<0.56	<0.56	<1.6
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.61	<0.67	<0.68	<0.66	<1.9	**35 J**	<0.61	<9.3	<0.64	<2.3	<9.3	**70**	<0.61	<0.74	<0.67	<0.67	<1.9
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.54	<0.60	<0.61	<0.59	<1.7	<17	<0.54	<8.3	<0.56	<2.1	<8.3	**48**	<0.54	<0.66	<0.60	<0.60	<1.7
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.60	<2.2	<8.9	**37 J**	<0.58	<0.70	<0.64	<0.64	<1.8
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.53	<0.59	<0.59	<0.58	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	<31	<0.53	<0.64	<0.59	<0.59	<1.6
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.59	<0.66	<0.67	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	<35	<0.59	<0.72	<0.66	<0.66	<1.8

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Soil Screening Levels (SSL)				2.1E+05	2.4E+05	4.2E+05	2.6E+03	--	2.7E+07	4.8E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	3.0E+02	2.0E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.59	<0.66	<0.67	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	<35	<0.59	<0.72	<0.66	<0.66	<1.8
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<390	<400	<450	<810	<390	<24,000	<390	<11,000	<390	<2,900	<11,000	<28,000	<390	<460	<440	<440	<410
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.56	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.58	<2.1	<8.6	<33	<0.56	<0.68	<0.62	<0.62	<1.7
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.57	<0.63	<0.64	<0.62	<1.8	<18	<0.57	<8.8	<0.60	<2.2	<8.8	<33	<0.57	<0.69	<0.63	<0.63	<1.8
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<0.50	<0.55	<0.56	<0.55	<1.5	<16	<0.50	<7.7	<0.52	<1.9	<7.7	**30 J**	<0.50	<0.61	<0.55	<0.55	<1.5
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.57	<0.63	<0.64	<0.62	<1.8	<18	<0.57	<8.8	<0.60	<2.2	<8.8	**30**	<0.57	<0.69	<0.63	<0.63	<1.8
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<0.81	<0.90	<0.91	<0.89	<2.5	<26	<0.81	<12	<0.85	<3.1	<12	**160 ***	<0.81	<0.99	<0.90	<0.90	<2.5
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.62	<0.69	<0.70	<0.68	<1.9	<20	<0.62	<9.6	<0.65	<2.4	<9.6	<36	<0.62	<0.76	<0.69	<0.69	<1.9
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.56	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.59	<2.2	<8.6	<33	<0.56	<0.68	<0.62	<0.62	<1.7
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<0.46	<0.51	<0.52	<0.50	<1.4	<15	<0.46	<7.1	<0.48	<1.8	<7.1	**56**	<0.46	<0.56	<0.51	<0.51	<1.4
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.51	<0.56	<0.57	<0.55	<1.6	<16	<0.51	<7.8	<0.53	<1.9	<7.8	<30	<0.51	<0.62	<0.56	<0.56	<1.6
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.45	<0.49	<0.50	<0.49	<1.4	<14	<0.45	<6.9	<0.47	<1.7	<6.9	<26	<0.45	<0.54	<0.49	<0.49	<1.4
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<0.73	<0.81	<0.82	<0.79	<2.2	<24	<0.73	<11	<0.76	<2.8	<11	**49 J**	<0.73	<0.88	<0.81	<0.81	<2.2
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<0.63	<0.69	<0.70	<0.68	<1.9	<20	<0.63	<9.6	<0.66	<2.4	<9.6	<37	<0.63	<0.76	<0.69	<0.69	<1.9
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<0.73	<0.81	<0.82	<0.79	<2.2	<24	<0.73	<11	<0.76	<2.8	<11	**49 J**	<0.73	<0.88	<0.81	<0.81	<2.2
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.60	<0.67	<0.68	<0.66	<1.9	<20	<0.60	<9.3	<0.63	<2.3	<9.3	<35	<0.60	<0.74	<0.67	<0.67	<1.9
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.52	<0.57	<0.58	<0.57	<1.6	**28 J**	<0.52	<8.0	<0.54	<2.0	<8.0	<30	<0.52	<0.63	<0.57	<0.57	<1.6
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.49	<0.55	<0.55	<0.54	<1.5	<16	<0.49	<7.6	<0.52	<1.9	<7.6	**42 ***	<0.49	<0.60	<0.55	<0.55	<1.5
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<0.57	<0.63	<0.64	<0.62	<1.7	<18	<0.57	<8.7	<0.59	<2.2	<8.7	<33	<0.57	<0.69	<0.63	<0.63	<1.7
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.46	<0.51	<0.52	<0.51	<1.4	<15	<0.46	<7.1	<0.49	<1.8	<7.1	**80**	<0.46	<0.56	<0.51	<0.51	<1.4
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	**0.59 J**	<0.52	<0.52	<0.51	<1.4	<15	<0.47	<7.2	<0.49	**5.0**	<7.2	**68**	<0.47	<0.57	<0.52	<0.52	<1.4
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	**0.59 J**	<0.52	<0.52	<0.51	<1.4	<15	<0.47	<7.2	<0.49	**5.0**	<7.2	**74**	<0.47	<0.57	<0.52	<0.52	<1.4
K8	DG-K8S-1-2[b,c]	8/22/18	1-2	<0.63	<0.70	<0.71	<0.69	<1.9	<20	<0.63	<9.7	<0.66	<2.4	<9.7	<37	<0.63	<0.77	<0.70	<0.70	<1.9
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.56	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.58	<2.2	<8.6	<33	<0.56	<0.68	<0.62	<0.62	<1.7
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.57	<0.63	<0.63	<0.62	<1.7	<18	<0.57	<8.7	<0.59	<2.2	<8.7	<33	<0.57	<0.69	<0.63	<0.63	<1.7
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.64	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.8	<0.67	<2.5	<9.8	<37	<0.64	<0.78	<0.71	<0.71	<2.0
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.64	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.8	<0.67	<2.5	<9.8	<37	<0.64	<0.78	<0.71	<0.71	<2.0
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.55	<0.61	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	**44**	<0.55	<0.66	<0.61	<0.61	<1.7
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.27	<0.30	<0.31	<0.30	<0.84	<8.8	<0.27	<4.2	<0.29	<1.0	<4.2	<16	<0.27	<0.33	<0.30	<0.30	<0.84
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.29	<0.33	<0.33	<0.32	<0.90	<9.5	<0.29	<4.5	<0.31	<1.1	<4.5	<17	<0.29	<0.36	<0.33	<0.33	<0.90
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<0.53	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.1	<8.2	**33 J**	<0.53	<0.65	<0.59	<0.59	<1.6
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.51	<0.57	<0.57	<0.56	<1.6	<17	<0.51	<7.9	<0.53	<2.0	<7.9	**56**	<0.51	<0.62	<0.57	<0.57	<1.6
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<0.53	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.1	<8.2	**44.5**	<0.53	<0.65	<0.59	<0.59	<1.6
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.55	<0.61	<0.62	<0.60	<1.7	<18	<0.55	<8.5	<0.58	<2.1	<8.5	**46**	<0.55	<0.67	<0.61	<0.61	<1.7

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
Soil Screening Levels (SSL)				2.1E+05	2.4E+05	4.2E+05	2.6E+03	--	2.7E+07	4.8E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	3.0E+02	2.0E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.78	<0.86	<0.87	<0.85	<2.4	<25	<0.78	<12	<0.81	<3.0	<12	<45	<0.78	<0.94	<0.86	<0.86	<2.4
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.58	<0.65	<0.66	<0.64	<1.8	<19	<0.58	<9.0	<0.61	<2.2	<9.0	**54**	<0.58	<0.71	<0.65	<0.65	<1.8
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.78	<0.86	<0.87	<0.85	<2.4	<25	<0.78	<12	<0.81	<3.0	<12	**54**	<0.78	<0.94	<0.86	<0.86	<2.4
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.63	<0.69	<0.70	<0.68	<1.9	<20	<0.63	<9.6	<0.66	<2.4	<9.6	<37	<0.63	<0.76	<0.69	<0.69	<1.9
L13	DG-L13S-0.5-1[c]	8/24/18	0.5-1	<0.64	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.9	<0.67	<2.5	<9.9	<38	<0.64	<0.78	<0.71	<0.71	<2.0
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<0.54	<0.60	<0.61	<0.59	<1.7	<17	<0.54	<8.3	<0.57	<2.1	<8.3	<32	<0.54	<0.66	<0.60	<0.60	<1.7
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<0.59	<0.66	<0.66	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	**50**	<0.59	<0.72	<0.66	<0.66	<1.8
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<0.59	<0.66	<0.66	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	**50**	<0.59	<0.72	<0.66	<0.66	<1.8
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.56	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.59	<2.2	<8.6	**68**	<0.56	<0.68	<0.62	<0.62	<1.7
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.76	<0.84	<0.86	<0.83	<2.3	<25	<0.76	<12	<0.80	<2.9	<12	**63**	<0.76	<0.93	<0.84	<0.84	<2.3
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.58	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.61	<2.2	<8.9	**49**	<0.58	<0.70	<0.64	<0.64	<1.8
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<0.54	<0.60	<0.60	<0.59	<1.7	<17	<0.54	<8.3	<0.56	<2.1	<8.3	<31	<0.54	<0.65	<0.60	<0.60	<1.7
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.49	<0.54	<0.55	<0.53	<1.5	<16	<0.49	<7.5	<0.51	<1.9	<7.5	**45**	<0.49	<0.59	<0.54	<0.54	<1.5
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.55	<0.60	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.66	<0.60	<0.60	<1.7
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.64	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.8	<0.67	<2.5	<9.8	**45 J**	<0.64	<0.78	<0.71	<0.71	<2.0

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)
Soil Screening Levels (SSL)				6.8E+03	7.7E+05	9.9E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.9E+04	--	9.5E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.9E+03	4.7E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.59	<1.5	<0.46	<0.52	<0.42	<0.49	<0.59	<0.51	<0.52	<0.53	<0.64	<0.59	<0.56	<0.67	<0.51	<4.2	<0.90
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.70	<1.8	<0.55	<0.61	<0.50	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.80	<0.60	<5.0	<1.1
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.54	<1.4	<0.42	<0.47	<0.38	<0.45	<0.54	<0.46	<0.47	<0.48	<0.58	<0.54	<0.51	<0.61	<0.46	<3.8	<0.82
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.57	<1.4	<0.45	<0.50	<0.41	<0.48	<0.57	<0.49	<0.50	<0.51	<0.62	<0.57	<0.54	<0.65	<0.49	<4.1	<0.87
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.54	<1.4	<0.42	<0.47	<0.38	<0.45	<0.54	<0.46	<0.47	<0.48	<0.58	<0.54	<0.51	<0.61	<0.46	<3.8	<0.81
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.63	<1.6	<0.49	<0.55	<0.45	<0.53	<0.63	**120 ***	<0.55	<0.57	<0.68	<0.63	<0.60	<0.72	<0.54	<4.5	<0.95
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.54	<1.4	<0.43	<0.48	<0.39	<0.45	<0.54	**35**	<0.48	<0.49	<0.59	<0.54	<0.52	<0.62	<0.47	<3.9	<0.83
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<0.65	<1.6	<0.51	<0.56	<0.46	<0.54	<0.65	<0.56	<0.56	<0.58	<0.70	<0.65	<0.61	<0.73	<0.56	<4.6	<0.98
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.58	<1.5	<0.45	<0.50	<0.41	<0.48	<0.58	<0.50	<0.50	<0.52	<0.63	<0.58	<0.55	<0.66	<0.50	<4.1	<0.88
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.63	**3.0 J ***	<0.49	<0.55	<0.44	<0.52	<0.63	**18**	<0.55	<0.56	<0.68	<0.63	<0.60	<0.71	<0.54	<4.4	<0.95
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.59	**2.0 J**	<0.46	<0.51	<0.42	<0.49	<0.59	**12**	<0.51	<0.53	<0.64	<0.59	<0.56	<0.67	<0.50	<4.2	<0.89
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.63	**2.5**	<0.49	<0.55	<0.44	<0.52	<0.63	**15**	<0.55	<0.56	<0.68	<0.63	<0.60	<0.71	<0.54	<4.4	<0.95
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<0.81	<2.0	<0.63	<0.71	<0.57	<0.67	<0.81	<0.70	<0.71	<0.73	<0.88	<0.81	<0.77	<0.92	<0.70	<5.7	<1.2
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.67	<1.7	<0.53	<0.59	<0.48	<0.56	<0.67	<0.58	<0.59	<0.60	<0.73	<0.67	<0.64	<0.76	<0.58	<4.8	<1.0
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.50	<1.3	<0.40	<0.44	<0.36	<0.42	<0.50	**2.1 J**	<0.44	<0.45	<0.55	<0.50	<0.48	<0.58	<0.43	<3.6	<0.77
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.54	<1.4	<0.42	<0.47	<0.38	<0.45	<0.54	**1.4 J**	<0.47	<0.48	<0.58	<0.54	<0.51	<0.61	<0.46	<3.8	<0.81
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.54	<1.4	<0.42	<0.47	<0.38	<0.45	<0.54	**1.7**	<0.47	<0.48	<0.58	<0.54	<0.51	<0.61	<0.46	<3.8	<0.81
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.61	<1.5	<0.48	<0.53	<0.43	<0.51	<0.61	<0.53	<0.53	<0.55	<0.67	<0.61	<0.58	<0.70	<0.53	<4.3	<0.93
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.74	<1.9	<0.58	<0.65	<0.53	<0.62	<0.74	<0.64	<0.65	<0.67	<0.81	<0.74	<0.70	<0.84	<0.64	<5.3	<1.1
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.61	<1.5	<0.48	<0.53	<0.43	<0.51	<0.61	<0.52	<0.53	<0.55	<0.66	<0.61	<0.58	<0.69	<0.52	<4.3	<0.92
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.63	<1.6	<0.50	<0.55	<0.45	<0.53	<0.63	<0.55	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.55	<4.5	<0.96
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.60	<1.5	<0.47	<0.52	<0.42	<0.50	<0.60	**2.3 J**	<0.52	<0.53	<0.65	<0.60	<0.57	<0.68	<0.51	<4.2	<0.90
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.55	<1.4	<0.44	<0.48	<0.39	<0.46	<0.55	<0.48	<0.48	<0.50	<0.60	<0.55	<0.53	<0.63	<0.48	<3.9	<0.84
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<0.75	<1.9	<0.59	<0.66	<0.53	<0.63	<0.75	<0.65	<0.66	<0.68	<0.82	<0.75	<0.71	<0.86	<0.65	<5.3	<1.1
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.77	<2.0	<0.61	<0.68	<0.55	<0.65	<0.77	<0.67	<0.68	<0.70	<0.84	<0.77	<0.74	<0.88	<0.67	<5.5	<1.2
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.64	<1.6	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.69	<0.64	<0.60	<0.72	<0.55	<4.5	<0.97
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.74	<1.9	<0.58	<0.65	<0.52	<0.62	<0.74	<0.64	<0.65	<0.66	<0.81	<0.74	<0.70	<0.84	<0.64	<5.2	<1.1
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.79	<2.0	<0.62	<0.69	<0.56	<0.66	<0.79	<0.68	<0.69	<0.71	<0.86	<0.79	<0.75	<0.90	<0.68	<5.6	<1.2
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.79	<2.0	<0.62	<0.69	<0.56	<0.66	<0.79	<0.68	<0.69	<0.71	<0.86	<0.79	<0.75	<0.90	<0.68	<5.6	<1.2
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.64	<1.6	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.70	<0.64	<0.61	<0.73	**1.9 J**	<4.5	<0.97
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.84 R	<2.1 R	<0.66 R	<0.73 R	<0.60 R	<0.70 R	<0.84 R	<0.72 R	<0.73 R	<0.75 R	<0.91 R	<0.84 R	<0.80 R	<0.96 R	<0.72 R	<6.0 R	<1.3 R
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.86	<2.2	<0.67	<0.75	<0.61	<0.72	<0.86	**1.4 J ***	<0.75	<0.77	<0.93	<0.86	<0.82	<0.98 R	<0.74	<6.1	<1.3
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.59	**5.7**	<0.46	<0.51	<0.42	<0.49	<0.59	<0.51	<0.51	<0.53	<0.64	<0.59	<0.56	<0.67	<0.51	<4.2	<0.89
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.55	<1.4	<0.43	<0.48	<0.39	<0.46	<0.55	**87**	<0.48	<0.49	<0.60	<0.55	<0.52	<0.63	<0.47	<3.9	<0.84

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)
Soil Screening Levels (SSL)				6.8E+03	7.7E+05	9.9E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.9E+04	--	9.5E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.9E+03	4.7E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.70	<1.8	<0.55	<0.61	<0.50	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.80	<0.60	<5.0	<1.1
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.3	<3.2	<1.0	<1.1	<0.91	<1.1	<1.3	<1.1	<1.1	<1.2	<1.4	<1.3	<1.2	<1.5	<1.1	<9.1	<1.9
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.3	<3.2	<1.0	<1.1	<0.91	<1.1	<1.3	<1.1	<1.1	<1.2	<1.4	<1.3	<1.2	<1.5	<1.1	<9.1	<1.9
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.56	<1.4	<0.44	<0.49	<0.40	<0.47	<0.56	<0.48	<0.49	<0.50	<0.61	<0.56	<0.53	<0.64	<0.48	<4.0	<0.85
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.75	<1.9	<0.58	<0.65	<0.53	<0.62	<0.75	<0.64	<0.65	<0.67	<0.81	<0.75	<0.71	<0.85	<0.64	<5.3	<1.1
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.64	<1.6	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.70	<0.64	<0.61	<0.73	<0.55	<4.5	<0.97
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.69	<1.8	<0.54	<0.60	<0.49	<0.58	<0.69	<0.60	<0.60	<0.62	<0.75	<0.69	<0.66	<0.79	<0.60	<4.9	<1.1
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.67	<1.7	<0.52	<0.58	<0.47	<0.56	<0.67	<0.57	<0.58	<0.60	<0.73	<0.67	<0.63	<0.76	<0.57	<4.7	<1.0
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.75	<1.9	<0.59	<0.66	<0.53	<0.63	<0.75	<0.65	<0.66	<0.68	<0.82	<0.75	<0.72	<0.86	<0.65	<5.3	<1.1
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<0.71	<1.8	<0.55	<0.62	<0.50	<0.59	<0.71	<0.61	<0.62	<0.63	<0.77	<0.71	<0.67	<0.80	<0.61	<5.0	<1.1
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.75	<1.9	<0.59	<0.65	<0.53	<0.62	<0.75	<0.64	<0.65	<0.67	<0.81	<0.75	<0.71	<0.85	<0.64	<5.3	<1.1
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.60	<1.5	<0.47	<0.52	<0.43	<0.50	<0.60	<0.52	<0.52	<0.54	<0.65	<0.60	<0.57	<0.68	<0.52	<4.3	<0.91
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.66	<1.7	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.65	<1.6	<0.51	<0.56	<0.46	<0.54	<0.65	<0.56	<0.56	<0.58	<0.70	<0.65	<0.61	<0.74	<0.56	<4.6	<0.98
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<0.55	<1.4	<0.43	<0.48	<0.39	<0.46	<0.55	<0.47	<0.48	<0.49	<0.59	<0.55	<0.52	<0.62	<0.47	<3.9	<0.83
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	<0.73	<1.9	<0.58	<0.64	<0.52	<0.61	<0.73	<0.63	<0.64	<0.66	<0.80	<0.73	<0.70	<0.83	<0.63	<5.2	<1.1
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	<0.58	<1.5	<0.45	<0.50	<0.41	<0.48	<0.58	<0.50	<0.50	<0.52	<0.63	<0.58	<0.55	<0.66 R	<0.50	<4.1	<0.88
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.63	<1.6	<0.50	<0.55	<0.45	<0.53	<0.63	**1.9 J**	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.54	<4.5	<0.96
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.58	<1.5	<0.46	<0.51	<0.41	<0.49	<0.58	**5.7**	<0.51	<0.52	<0.63	<0.58	<0.55	<0.66	<0.50	<4.1	<0.88
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.85	<2.1	<0.66	<0.74	<0.60	<0.71	<0.85	<0.73	<0.74	<0.76	<0.92	<0.85	<0.80	<0.96	<0.73	<6.0	<1.3
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.75	<1.9	<0.59	<0.65	<0.53	<0.63	<0.75	<0.65	<0.65	<0.67	<0.82	<0.75	<0.71	<0.85	<0.65	<5.3	<1.1
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.72	<1.8	<0.57	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<0.64	<1.6	<0.50	<0.56	<0.46	<0.54	<0.64	<0.55	<0.56	<0.58	<0.70	<0.64	<0.61	<0.73	<0.55	<4.6	<0.98
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.64	<1.6	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.70	<0.64	<0.61	<0.73	<0.55	<4.5	<0.97
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.64	<1.6	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.70	<0.64	<0.61	<0.73	<0.55	<4.5	<0.97
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<0.95	<2.4	<0.74	<0.83	<0.67	<0.79	<0.95	<0.82	<0.83	<0.85	<1.0	<0.95	<0.90	<1.1	<0.82	<6.7	<1.4
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.74	<1.9	<0.58	<0.65	<0.53	<0.62	<0.74	<0.64	<0.65	<0.67	<0.81	<0.74	<0.70	<0.85	<0.64	<5.3	<1.1
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.60	<1.5	<0.47	<0.53	<0.43	<0.50	<0.60	<0.52	<0.53	<0.54	<0.66	<0.60	<0.57	<0.69	<0.52	<4.3	<0.91
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<0.61	<1.5	<0.48	<0.53	<0.43	<0.51	<0.61	<0.53	<0.53	<0.55	<0.66	<0.61	<0.58	<0.69	<0.53	<4.3	<0.93
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.61	<1.5	<0.48	<0.53	<0.43	<0.51	<0.61	<0.53	<0.53	<0.55	<0.66	<0.61	<0.58	<0.70 R	<0.53	<4.3	<0.93
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.58	<1.5	<0.45	<0.51	<0.41	<0.48	<0.58	<0.50	<0.51	<0.52	<0.63	<0.58	<0.55	<0.66	<0.50	<4.1	<0.88
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.65	<1.6	<0.51	<0.57	<0.46	<0.54	<0.65	<0.56	<0.57	<0.58	<0.71	<0.65	<0.62	<0.74	<0.56	<4.6	<0.99
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.79	<2.0	<0.62	<0.69	<0.56	<0.66	<0.79	<0.68	<0.69	<0.71	<0.86	<0.79	<0.75	<0.90	<0.68	<5.6	<1.2
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<0.85	<2.1	<0.66	<0.74	<0.60	<0.71	<0.85	<0.73	<0.74	<0.76	<0.92	<0.85	<0.80	<0.96	<0.73	<6.0	<1.3

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)
Soil Screening Levels (SSL)				6.8E+03	7.7E+05	9.9E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.9E+04	--	9.5E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.9E+03	4.7E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.92	<2.3	<0.72	<0.80	<0.65	<0.77	<0.92	<0.79	<0.80	<0.83	<1.0	<0.92	<0.87	<1.0	<0.79	<6.5	<1.4
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.54	<1.4	<0.42	<0.47	<0.38	<0.45	<0.54	**0.76 J**	<0.47	<0.49	<0.59	<0.54	<0.51	<0.62	<0.47	<3.8	<0.82
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.92	<2.3	<0.72	<0.80	<0.65	<0.77	<0.92	**0.76**	<0.80	<0.83	<1.0	<0.92	<0.87	<1.0	<0.79	<6.5	<1.4
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.63	<1.6	<0.49	<0.55	<0.45	<0.53	<0.63	<0.54	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.54	<4.5	<0.96
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.71	<1.8	<0.56	<0.62	<0.50	<0.59	<0.71	<0.61	<0.62	<0.64	<0.77	<0.71	<0.67	<0.81	<0.61	<5.0	<1.1
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.81	<2.1	<0.64	<0.71	<0.58	<0.68	<0.81	<0.70	<0.71	<0.73	<0.89	<0.81	<0.77	<0.93	<0.70	<5.8	<1.2
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	<0.62	<1.6	<0.48	<0.54	<0.44	<0.52	<0.62	<0.53	<0.54	<0.55	<0.67	<0.62	<0.59	<0.70	<0.53	<4.4	<0.94
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	<0.69	<1.8	<0.54	<0.61	<0.49	<0.58	<0.69	<0.60	<0.61	<0.62	<0.76	<0.69	<0.66	<0.79	<0.60	<4.9	<1.1
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.70	<1.8	<0.55	<0.61	<0.50	<0.59	<0.70	**3.0 J**	<0.61	<0.63	<0.76	<0.70	<0.67	<0.80	<0.60	<5.0	<1.1
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<0.73	<1.9	<0.57	<0.64	<0.52	<0.61	<0.73	<0.63	<0.64	<0.66	<0.80	<0.73	<0.69	<0.83	<0.63	<5.2	<1.1
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.66	<1.7	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.59	<0.72	<0.66	<0.63	<0.75	<0.57	<4.7	<1.0
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.55	<1.4	<0.43	<0.48	<0.39	<0.46	<0.55	**2.8 J**	<0.48	<0.50	<0.60	<0.55	<0.52	<0.63	<0.48	<3.9	<0.84
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.75	<1.9	<0.59	<0.65	<0.53	<0.62	<0.75	<0.64	<0.65	<0.67	<0.81	<0.75	<0.71	<0.85	<0.64	<5.3	<1.1
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.72	<1.8	<0.56	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.63	<1.6	<0.50	<0.55	<0.45	<0.53	<0.63	<0.55	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.55	<4.5	<0.96
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.62	<1.6	<0.49	<0.55	<0.44	<0.52	<0.62	<0.54	<0.55	<0.56	<0.68	<0.62	<0.59	<0.71	<0.54	<4.4	<0.95
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.66	<1.7	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.75	<0.57	<4.7	<1.0
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.68	<1.7	<0.53	<0.59	<0.48	<0.57	<0.68	<0.58	<0.59	<0.61	<0.74	<0.68	<0.64	<0.77	<0.58	<4.8	<1.0
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.63	<1.6	<0.50	<0.55	<0.45	<0.53	<0.63	<0.55	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.55	<4.5	<0.96
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.56	**14**	<0.44	<0.49	<0.39	<0.47	<0.56	<0.48	<0.49	<0.50	<0.61	<0.56	<0.53	<0.63	<0.48	<3.9	<0.85
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.64	<1.6	<0.50	<0.56	<0.46	<0.54	<0.64	<0.55	<0.56	<0.58	<0.70	<0.64	<0.61	<0.73	<0.55	<4.6	<0.98
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.49	<1.3	<0.39	<0.43	<0.35	<0.41	<0.49	<0.43	<0.43	<0.44	<0.54	<0.49	<0.47	<0.56	<0.43	<3.5	<0.75
H6	DG-H6S-0.5-1	8/23/18	0.5-1	<0.70	<1.8	<0.55	<0.61	<0.49	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.79	<0.60	<4.9	<1.1
H6	DG-H6S-3.5-4	8/23/18	1-2.5	<0.60	<1.5	<0.47	<0.53	<0.43	<0.51	<0.60	<0.52	<0.53	<0.54	<0.66	<0.60	<0.57	<0.69	<0.52	<4.3	<0.92
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.66	<1.7	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.61	<1.6	<0.48	<0.54	<0.44	<0.51	<0.61	<0.53	<0.54	<0.55	<0.67	<0.61	<0.58	<0.70	<0.53	<4.4	<0.93
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.62	<1.6	<0.49	<0.54	<0.44	<0.52	<0.62	<0.54	<0.54	<0.56	<0.68	<0.62	<0.59	<0.71	<0.54	<4.4	<0.95
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.62	<1.6	<0.49	<0.54	<0.44	<0.52	<0.62	<0.54	<0.54	<0.56	<0.68	<0.62	<0.59	<0.71	<0.54	<4.4	<0.95
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.62	<1.6	<0.48	<0.54	<0.44	<0.52	<0.62	<0.53	<0.54	<0.56	<0.67	<0.62	<0.59	<0.70	<0.53	<4.4	<0.94
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.74	<1.9	<0.58	<0.64	<0.52	<0.62	<0.74	<0.64	<0.64	<0.66	<0.80	<0.74	<0.70	<0.84	<0.64	<5.2	<1.1
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.66	<1.7	<0.51	<0.57	<0.46	<0.55	<0.66	<0.56	<0.57	<0.59	<0.71	<0.66	<0.62	<0.75	<0.56	<4.6	<1.0
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<0.70	<1.8	<0.55	<0.61	<0.50	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.80	<0.60	<5.0	<1.1
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.64	<1.6	<0.51	<0.56	<0.46	<0.54	<0.64	<0.55	<0.56	<0.58	<0.70	<0.64	<0.61	<0.73	<0.55	<4.6	<0.98
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.72	<1.8	<0.57	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)
Soil Screening Levels (SSL)				6.8E+03	7.7E+05	9.9E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.9E+04	--	9.5E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.9E+03	4.7E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.72	<1.8	<0.57	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<560	<530	<520	<400	<520	<390	<560	<420	<390	<390	<400	<910	<860	<680	<600	<3,400	<1,400
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.68	<1.7	<0.53	<0.59	<0.48	<0.57	<0.68	<0.58	<0.59	<0.61	<0.74	<0.68	<0.64	<0.77	<0.58	<4.8	<1.0
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.69	<1.8	<0.55	<0.61	<0.49	<0.58	<0.69	<0.60	<0.61	<0.62	<0.76	<0.69	<0.66	<0.79	<0.60	<4.9	<1.1
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<0.61	<1.5	<0.48	<0.53	<0.43	<0.51	<0.61	<0.52	<0.53	<0.55	<0.66	<0.61	<0.58	<0.69	<0.52	<4.3	<0.92
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.69	<1.8	<0.55	<0.61	<0.49	<0.58	<0.69	<0.60	<0.61	<0.62	<0.76	<0.69	<0.66	<0.79	<0.60	<4.9	<1.1
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<0.99	**4.3 J ***	<0.77	<0.86	<0.70	<0.82	<0.99	<0.85	<0.86	<0.89	<1.1	<0.99	<0.94	<1.1	<0.85	<7.0	<1.5
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.76	<1.9	<0.60	<0.66	<0.54	<0.63	<0.76	<0.65	<0.66	<0.68	<0.83	<0.76	<0.72	<0.86	<0.65	<5.4	<1.2
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.68	<1.7	<0.54	<0.60	<0.48	<0.57	<0.68	<0.59	<0.60	<0.61	<0.74	<0.68	<0.65	<0.78	<0.59	<4.8	<1.0
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<0.56	<1.4	<0.44	<0.49	<0.40	<0.47	<0.56	<0.48	<0.49	<0.50	<0.61	<0.56	<0.53	<0.64	<0.48	<4.0	<0.85
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.62	<1.6	<0.48	<0.54	<0.44	<0.51	<0.62	<0.53	<0.54	<0.55	<0.67	<0.62	<0.58	<0.70	<0.53	<4.4	<0.94
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.54	<1.4	<0.43	<0.47	<0.38	<0.45	<0.54	**5.4**	<0.47	<0.49	<0.59	<0.54	<0.51	<0.62	<0.47	<3.8	<0.82
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<0.88	<2.2	<0.69	<0.77	<0.63	<0.74	<0.88	<0.76	<0.77	<0.79	<0.96	<0.88	<0.84	<1.0	<0.76	<6.3	<1.3
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<0.76	<1.9	<0.60	<0.67	<0.54	<0.64	<0.76	<0.66	<0.67	<0.68	<0.83	<0.76	<0.72	<0.87	<0.66	<5.4	<1.2
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<0.88	<2.2	<0.69	<0.77	<0.63	<0.74	<0.88	<0.76	<0.77	<0.79	<0.96	<0.88	<0.84	<1.0	<0.76	<6.3	<1.3
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.74	<1.9	<0.58	<0.64	<0.52	<0.61	<0.74	<0.63	<0.64	<0.66	<0.80	<0.74	<0.70	<0.84	<0.63	<5.2	<1.1
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.63	<1.6	<0.49	<0.55	<0.45	<0.53	<0.63	<0.54	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.54	<4.5	<0.96
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.60	<1.5	<0.47	<0.52	<0.43	<0.50	<0.60	<0.52	<0.52	<0.54	<0.65	<0.60	<0.57	<0.68	<0.52	<4.3	<0.91
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<0.69	<1.7	<0.54	<0.60	<0.49	<0.57	<0.69	<0.59	<0.60	<0.62	<0.75	<0.69	<0.65	<0.78	<0.59	<4.9	<1.0
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.56	<1.4	<0.44	<0.49	<0.40	<0.47	<0.56	<0.49	<0.49	<0.51	<0.61	<0.56	<0.54	<0.64	<0.49	<4.0	<0.86
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.57	<1.4	<0.45	<0.50	<0.40	<0.47	<0.57	<0.49	<0.50	<0.51	<0.62	<0.57	<0.54	<0.65	<0.49	<4.0	<0.86
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.57	<1.4	<0.45	<0.50	<0.40	<0.47	<0.57	<0.49	<0.50	<0.51	<0.62	<0.57	<0.54	<0.65	<0.49	<4.0	<0.86
K8	DG-K8S-1-2[b,c]	8/22/18	1-2	<0.77	<1.9	<0.60	<0.67	<0.54	<0.64	<0.77	<0.66	<0.67	<0.69	<0.84	<0.77	<0.73	<0.88	<0.66	<5.4	<1.2
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.68	<1.7	<0.53	<0.59	<0.48	<0.57	<0.68	<0.58	<0.59	<0.61	<0.74	<0.68	<0.65	<0.77	<0.58	<4.8	<1.0
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.69	<1.7	<0.54	<0.60	<0.49	<0.57	<0.69	<0.59	<0.60	<0.62	<0.75	<0.69	<0.65	<0.78	<0.59	<4.9	<1.0
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.78	<2.0	<0.61	<0.68	<0.55	<0.65	<0.78	<0.67	<0.68	<0.70	<0.85	<0.78	<0.74	<0.88	<0.67	<5.5	<1.2
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.78	<2.0	<0.61	<0.68	<0.55	<0.65	<0.78	<0.67	<0.68	<0.70	<0.85	<0.78	<0.74	<0.88	<0.67	<5.5	<1.2
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.66	<1.7	<0.52	<0.58	<0.47	<0.56	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.33	<0.84	<0.26	<0.29	<0.23	<0.28	<0.33	<0.29	<0.29	<0.30	<0.36	<0.33	<0.31	<0.38	<0.29	<2.3	<0.50
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.36	<0.90	<0.28	<0.31	<0.25	<0.30	<0.36	<0.31	<0.31	<0.32	<0.39	<0.36	<0.34	<0.41	<0.31	<2.5	<0.54
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<0.65	<1.6	<0.51	<0.57	<0.46	<0.54	<0.65	<0.56	<0.57	<0.58	<0.71	<0.65	<0.62	<0.74	<0.56	<4.6	<0.99
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.62	<1.6	<0.49	<0.54	<0.44	<0.52	<0.62	<0.53	<0.54	<0.56	<0.68	<0.62	<0.59	<0.71	<0.53	<4.4	<0.94
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<0.65	<1.6	<0.51	<0.57	<0.46	<0.54	<0.65	<0.56	<0.57	<0.58	<0.71	<0.65	<0.62	<0.74	<0.56	<4.6	<0.99
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.67	<1.7	<0.53	<0.59	<0.47	<0.56	<0.67	<0.58	<0.59	<0.60	<0.73	<0.67	<0.64	<0.76	<0.58	<4.7	<1.0

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)
Soil Screening Levels (SSL)				6.8E+03	7.7E+05	9.9E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.9E+04	--	9.5E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.9E+03	4.7E+04
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.94	<2.4	<0.74	<0.82	<0.67	<0.79	<0.94	<0.81	<0.82	<0.85	<1.0	<0.94	<0.89	<1.1	<0.81	<6.7	<1.4
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.71	<1.8	<0.56	<0.62	<0.50	<0.59	<0.71	<0.61	<0.62	<0.64	<0.77	<0.71	<0.67	<0.81	<0.61	<5.0	<1.1
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.94	<2.4	<0.74	<0.82	<0.67	<0.79	<0.94	<0.81	<0.82	<0.85	<1.0	<0.94	<0.89	<1.1	<0.81	<6.7	<1.4
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.76	<1.9	<0.60	<0.66	<0.54	<0.64	<0.76	<0.66	<0.66	<0.68	<0.83	<0.76	<0.72	<0.87	<0.66	<5.4	<1.2
L13	DG-L13S-0.5-1[c]	8/24/18	0.5-1	<0.78	<2.0	<0.62	<0.68	<0.56	<0.65	<0.78	<0.67	<0.68	<0.70	<0.85	<0.78	<0.74	<0.89	<0.67	<5.6	<1.2
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<0.66	<1.7	<0.52	<0.57	<0.47	<0.55	<0.66	<0.57	<0.57	<0.59	<0.71	<0.66	<0.62	<0.75	<0.57	<4.7	<1.0
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<0.72	<1.8	<0.56	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<0.72	<1.8	<0.56	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.68	<1.7	<0.53	<0.59	<0.48	<0.57	<0.68	<0.59	<0.59	<0.61	<0.74	<0.68	<0.65	<0.77	<0.59	<4.8	<1.0
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.93	<2.3	<0.73	<0.81	<0.66	<0.77	<0.93	<0.80	<0.81	<0.83	<1.0	<0.93	<0.88	<1.1	<0.80	<6.6	<1.4
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.70	<1.8	<0.55	<0.61	<0.50	<0.59	<0.70	**2.7 J**	<0.61	<0.63	<0.77	<0.70	<0.67	<0.80	<0.61	<5.0	<1.1
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<0.65	<1.7	<0.51	<0.57	<0.46	<0.55	<0.65	<0.56	<0.57	<0.59	<0.71	<0.65	<0.62	<0.75	<0.56	<4.6	<0.99
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.59	<1.5	<0.46	<0.52	<0.42	<0.49	<0.59	<0.51	<0.52	<0.53	<0.64	<0.59	<0.56	<0.67	<0.51	<4.2	<0.90
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.66	<1.7	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.78	<2.0	<0.61	<0.68	<0.55	<0.65	<0.78	<0.67	<0.68	<0.70	<0.85	<0.78	<0.74	<0.89	<0.67	<5.5	<1.2

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-g (C4-C12)
Soil Screening Levels (SSL)				3.8E+03	1.2E+06	3.8E+06	2.2E+06	6.0E+06	2.2E+06	7.0E+02	1.1E+06	6.7E+02	--	4.6E+02	1.2E+06	9.1E+05	5.0E+01	5.8E+05	7.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<1.1	<0.75	<0.49	<0.54	<0.47	<0.54	<0.50	<0.53	<0.56	<0.50	<0.47	<0.42	<3.7	<0.54	<0.91	<0.075
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<1.3	<0.89	<0.58	<0.64	<0.56	<0.65	<0.59	<0.63	<0.66	<0.59	<0.56	<0.50	<4.4	<0.65	<1.1	<0.089
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<1.0	<0.68	<0.45	<0.49	<0.43	<0.50	<0.46	<0.48	<0.51	<0.46	<0.43	<0.38	<3.4	<0.50	<0.83	<0.068
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<1.1	<0.72	<0.48	<0.52	<0.46	<0.53	<0.49	<0.51	<0.54	<0.49	<0.46	<0.41	<3.6	<0.53	<0.88	<0.072
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<1.0	<0.68	<0.45	<0.49	<0.43	<0.50	<0.45	<0.48	<0.51	<0.45	<0.43	<0.38	<3.4	<0.50	<0.83	<0.068
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<1.2	<0.80	<0.53	<0.57	<0.50	<0.58	<0.53	<0.57	**15 ***	<0.53	**38 ***	<0.45	<4.0	<0.58	<0.97	**0.14 J ***
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<1.0	<0.69	<0.45	<0.50	<0.43	<0.50	<0.46	<0.49	**0.96 J**	<0.46	**0.53 J**	<0.39	<3.4	<0.50	<0.84	<0.069
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<1.3	<0.82	<0.54	<0.59	<0.51	<0.60	<0.55	<0.58	<0.61	<0.55	<0.51	<0.46	<4.1	<0.60	<1.0	<0.082
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<1.1	<0.73	<0.48	<0.53	<0.46	<0.53	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.7	<0.53	<0.89	<0.073
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<1.2	<0.79	<0.52	<0.57	<0.50	<0.58	<0.53	<0.56	**1.9 J**	<0.53	<0.50	<0.44	<4.0	**1.1 J**	<0.97	<0.079
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<1.1	<0.74	<0.49	<0.53	<0.47	<0.54	<0.50	<0.53	**1.1 J**	<0.50	<0.47	<0.42	<3.7	<0.54	<0.90	<0.074
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<1.2	<0.79	<0.52	<0.57	<0.50	<0.58	<0.53	<0.56	**1.5**	<0.53	<0.50	<0.44	<4.0	**1.1 J**	<0.97	<0.079
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<1.5	<1.0	<0.67	<0.74	<0.64	<0.75	<0.68	<0.73	<0.77	<0.68	<0.64	<0.57	<5.1	<0.75	<1.2	<0.10
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<1.3	<0.85	<0.56	<0.61	<0.53	<0.62	<0.57	<0.60	<0.64	<0.57	<0.53	<0.48	<4.2	<0.62	<1.0	<0.085
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.96	<0.64	<0.42	<0.46	<0.40	<0.47	<0.43	<0.45	<0.48	<0.43	**10**	<0.36	<3.2	<0.47	<0.78	<0.064
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<1.0	<0.68	<0.45	<0.49	<0.43	<0.50	<0.45	<0.48	<0.51	<0.45	**6.7**	<0.38	<3.4	<0.50	<0.83	<0.068
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<1.0	<0.68	<0.45	<0.49	<0.43	<0.50	<0.45	<0.48	<0.51	<0.45	**8.35**	<0.38	<3.4	<0.50	<0.83	<0.068
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<1.2	<0.77	<0.51	<0.56	<0.49	<0.57	<0.52	<0.55	<0.58	<0.52	<0.49	<0.43	<3.9	<0.57	<0.94	<0.077
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<1.4	<0.94	<0.62	<0.68	<0.59	<0.69	<0.63	<0.67	<0.70	<0.63	<0.59	<0.53	<4.7	<0.69	<1.1	<0.094
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<1.2 J	<0.77 J	<0.51 J	<0.55 J	<0.48	<0.56 J	<0.51	<0.55	<0.58	<0.51	<0.48	<0.43	<3.8	<0.56	<0.94	<0.077
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<1.2	<0.80	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.60	<0.54	**1.1 J**	<0.45	<4.0	<0.59	<0.98	<0.08
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<1.1	<0.75	<0.50	<0.54	<0.47	<0.55	**9.1**	<0.53	<0.57	<0.50	**76**	<0.42	<3.8	<0.55	<0.92	**0.076 J**
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<1.1	<0.70	<0.46	<0.51	<0.44	<0.51	<0.47	<0.50	<0.53	<0.47	<0.44	<0.39	<3.5	<0.51	<0.86	<0.07
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<1.4	<0.95	<0.63	<0.69	<0.60	<0.70	<0.64	<0.68	<0.71	<0.64	<0.60	<0.53	<4.8	<0.70	<1.2	<0.095
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<1.5	<0.98	<0.65	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.55	<4.9	<0.72	<1.2	<0.098
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<1.2	<0.80	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.60	<0.54	<0.51	<0.45	<4.0	<0.59	<0.98	<0.08
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<1.4	<0.94	<0.62	<0.67	<0.59	<0.68	<0.63	<0.66	<0.70	<0.63	<0.59	<0.52	<4.7	<0.68	<1.1	<0.094
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<1.5	<1.0	<0.66	<0.72	<0.63	<0.73	<0.67	<0.71	<0.75	<0.67	<0.63	<0.56	<5.0	<0.73	<1.2	<0.10
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<1.5	<1.0	<0.66	<0.72	<0.63	<0.73	<0.67	<0.71	<0.75	<0.67	<0.63	<0.56	<5.0	<0.73	<1.2	<0.10
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<1.2	**0.86 J**	**1.6 J**	**1.1 J**	<0.51	<0.59	<0.54	<0.57	<0.61	<0.54	<0.51	<0.45	<4.0	<0.59	**1.1 J**	**0.88**
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<1.6 R	<1.1 R	<0.70 R	<0.77 R	<0.67 R	<0.78 R	<0.71 R	**1.7 J ***	<0.80 R	<0.71 R	**18 ***	<0.60 R	<5.3 R	<0.78 R	<1.3 R	<0.11
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<1.6 R	<1.1 R	<0.72 R	<0.78 R	<0.68	<0.79 R	<0.73	**1.6 J ***	<0.82	<0.73	**22 ***	<0.61	<5.4	<0.79	<1.3	<0.11
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<1.1	<0.74	<0.49	<0.54	<0.47	<0.54	<0.50	<0.53	<0.56	<0.50	<0.47	<0.42	<3.7	<0.54	<0.91	<0.074
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<1.0	<0.70	<0.46	<0.50	<0.44	<0.51	<0.47	<0.49	**1.7 J**	<0.47	**120**	<0.39	<3.5	<0.51	<0.85	**0.15 J**

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-g (C4-C12)
Soil Screening Levels (SSL)				3.8E+03	1.2E+06	3.8E+06	2.2E+06	6.0E+06	2.2E+06	7.0E+02	1.1E+06	6.7E+02	--	4.6E+02	1.2E+06	9.1E+05	5.0E+01	5.8E+05	7.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<1.3	<0.88	<0.58	<0.64	<0.56	<0.65	<0.59	<0.63	<0.66	<0.59	<0.56	<0.50	<4.4	<0.65	<1.1	<0.088
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<2.4	<1.6	<1.1	<1.2	<1.0	<1.2	<1.1	<1.2	<1.2	<1.1	<1.0	<0.91	<8.1	<1.2	<2.0	<0.16
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<2.4	<1.6	<1.1	<1.2	<1.0	<1.2	<1.1	<1.2	<1.2	<1.1	<1.0	<0.91	<8.1	<1.2	<2.0	<0.16
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<1.1	<0.71	<0.47	<0.51	<0.45	<0.52	<0.48	<0.50	<0.53	<0.48	<0.45	<0.40	<3.6	<0.52	<0.87	<0.071
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<1.4	<0.94	<0.62	<0.68	<0.59	<0.69	<0.63	<0.67	<0.71	<0.63	<0.59	<0.53	<4.7	<0.69	<1.2	<0.094
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<1.2	<0.81	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.61	<0.54	<0.51	<0.45	<4.0	<0.59	<0.99	<0.081
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<1.3	<0.88	<0.58	<0.63	<0.55	<0.64	<0.59	<0.62	<0.66	<0.59	<0.55	<0.49	<4.4	<0.64	<1.1	<0.088
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<1.3	<0.84	<0.56	<0.61	<0.53	<0.62	<0.57	<0.60	<0.63	<0.57	<0.53	<0.47	<4.2	<0.62	<1.0	<0.084
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<1.4	<0.95	<0.63	<0.69	<0.60	<0.70	<0.64	<0.68	<0.72	<0.64	<0.60	<0.53	<4.8	<0.70	<1.2	<0.095
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<1.3	<0.89	<0.59	<0.64	<0.56	<0.65	<0.60	<0.63	<0.67	<0.60	**0.57 J**	<0.50	<4.5	<0.65	<1.1	<0.089
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<1.4	<0.95	<0.62	<0.68	<0.60	<0.69	<0.63	<0.67	<0.71	<0.63	<0.60	<0.53	<4.7 R	<0.69	<1.2	<0.095
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<1.1	<0.76	<0.50	<0.55	<0.48	<0.55	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.55	<0.93	<0.076
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<1.3	<0.84	<0.55	<0.61	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	**0.19 J**
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<1.2	<0.82	<0.54	<0.59	<0.52	<0.60	<0.55	<0.58	<0.61	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0	<0.082
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<1.0	<0.69	<0.46	<0.50	<0.43	<0.50	<0.46	**0.49 J**	<0.52	<0.46	<0.43	<0.39	<3.5	<0.50	<0.84	<0.069
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	<1.4	<0.93	<0.61	<0.67	<0.58	<0.68	<0.62	<0.66	<0.70	<0.62	<0.58	<0.52	<4.6	<0.68	<1.1	<0.093
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	<1.1 R	<0.73 R	<0.48 R	<0.53 R	<0.46	<0.53 R	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.6	<0.53	<0.89	<0.073
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<1.2	<0.80	<0.53	<0.58	<0.50	<0.58	<0.54	<0.57	<0.60	<0.54	**0.52 J**	<0.45	<4.0	<0.58	<0.98	<0.08
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<1.1	<0.74	<0.49	<0.53	<0.46	<0.54	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.7	**0.85 J**	<0.90	<0.074
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<1.6	<1.1	<0.71	<0.77	<0.67	<0.78	<0.72	<0.76	<0.80	<0.72	<0.67	<0.60	<5.3	<0.78	<1.3	<0.11
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<1.4	<0.95	<0.63	<0.68	<0.60	<0.69	<0.64	<0.67	<0.71	<0.64	<0.60	<0.53	<4.7	<0.69	<1.2	<0.095
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<1.4	<0.91	<0.60	<0.66	<0.57	<0.67	<0.61	**0.75 J**	<0.68	<0.61	<0.57	<0.51	<4.6	<0.67	<1.1	<0.091
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<1.2	<0.81	<0.54	<0.59	<0.51	<0.59	<0.55	<0.58	<0.61	<0.55	<0.51	<0.46	<4.1	<0.59	<0.99	<0.081
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<1.2	<0.81	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.61	<0.54	<0.51	<0.45	<4.0	<0.59	<0.99	**0.12 J**
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<1.2	<0.81	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.61	<0.54	<0.51	<0.45	<4.0	<0.59	<0.99	**0.12 J**
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<1.8	<1.2	<0.79	<0.86	<0.76	<0.88	<0.80	<0.85	<0.90	<0.80	<0.76	<0.67	<6.0	<0.88	<1.5	<0.12
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<1.4	<0.94	<0.62	<0.68	<0.59	<0.69	<0.63	<0.67	<0.70	<0.63	<0.59	<0.53	<4.7	<0.69	<1.1	<0.094
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<1.1	<0.76	<0.50	<0.55	<0.48	<0.56	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.56	<0.93	<0.076
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<1.2	<0.77	<0.51	<0.56	<0.49	<0.56	<0.52	<0.55	<0.58	<0.52	<0.49	<0.43	<3.9	<0.56	<0.94	<0.077
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<1.2 R	<0.77 R	<0.51 R	<0.56 R	<0.49	<0.56 R	<0.52	<0.55	<0.58	<0.52	**0.96 J**	<0.43	<3.9	<0.56	<0.94	<0.077
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<1.1	<0.73	<0.48	<0.53	<0.46	<0.53	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.7	<0.53	<0.89	<0.073
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<1.2	<0.82	<0.54	<0.59	<0.52	<0.60	<0.55	<0.58	<0.62	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0	<0.082
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<1.5	<1.0	<0.66	<0.72	<0.63	<0.73	<0.67	<0.71	<0.75	<0.67	<0.63	<0.56	<5.0	<0.73	<1.2	<0.10
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<1.6	<1.1	<0.71	<0.77	<0.68	<0.78	<0.72	<0.76	<0.80	<0.72	<0.68	<0.60	<5.4	<0.78	<1.3	<0.11

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-g (C4-C12)
Soil Screening Levels (SSL)				3.8E+03	1.2E+06	3.8E+06	2.2E+06	6.0E+06	2.2E+06	7.0E+02	1.1E+06	6.7E+02	--	4.6E+02	1.2E+06	9.1E+05	5.0E+01	5.8E+05	7.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<1.7	<1.2	<0.77	<0.84	<0.73	<0.85	<0.78	<0.83	<0.87	<0.78	<0.73	<0.65	<5.8	<0.85	<1.4	<0.12
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<1.0	<0.68	<0.45	<0.49	<0.43	<0.50	<0.46	<0.49	<0.51	<0.46	<0.43	<0.38	<3.4	**0.88 J**	<0.84	<0.068
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<1.7	<1.2	<0.77	<0.84	<0.73	<0.85	<0.78	<0.83	<0.87	<0.78	<0.73	<0.65	<5.8	**0.88**	<1.4	<0.12
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<1.2	<0.80	<0.53	<0.57	<0.50	<0.58	<0.53	<0.57	<0.60	<0.53	<0.50	<0.45	<4.0	<0.58	<0.97	<0.08
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<1.3	<0.90	<0.59	<0.65	<0.57	<0.66	<0.60	<0.64	<0.67	<0.60	<0.57	<0.50	<4.5	<0.66	<1.1	<0.09
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<1.5	<1.0	<0.68	<0.74	<0.65	<0.75	<0.69	<0.73	<0.77	<0.69	<0.65	<0.58	<5.2	<0.75	<1.3	<0.10
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	<1.2	<0.78	<0.52	<0.56	<0.49	<0.57	<0.52	<0.55	<0.59	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95	<0.078
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	<1.3	<0.88	<0.58	<0.63	<0.55	<0.64	<0.59	<0.62	<0.66	<0.59	<0.55	<0.49	<4.4	<0.64	<1.1	<0.088
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<1.3	<0.89	<0.59	<0.64	<0.56	<0.65	<0.60	<0.63	<0.67	<0.60	<0.56	<0.50	<4.4	<0.65	<1.1	<0.089
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<1.4	<0.93	<0.61	<0.67	<0.58	<0.68	<0.62	<0.66	<0.69	<0.62	<0.58	<0.52	<4.6	<0.68	<1.1	<0.093
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<1.3	<0.84	<0.55	<0.60	<0.53	<0.61	<0.56	**0.81 J**	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	<0.084
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<1.0	<0.70	<0.46	<0.50	<0.44	<0.51	**1.8 J**	<0.50	<0.52	<0.47	**31**	<0.39	<3.5	<0.51	<0.85	<0.07
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<1.4	<0.95	<0.62	<0.68	<0.60	<0.69	<0.63	<0.67	<0.71	<0.63	<0.60	<0.53	<4.7	<0.69	<1.2	<0.095
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<1.4	<0.91	<0.60	<0.66	<0.57	<0.66	<0.61	<0.65	<0.68	<0.61	<0.57	<0.51	<4.6	<0.66	<1.1	<0.091
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<1.2	<0.80	<0.53	<0.58	<0.50	<0.59	<0.54	<0.57	<0.60	<0.54	<0.50	<0.45	<4.0	<0.59	<0.98	<0.08
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<1.2	<0.79	<0.52	<0.57	<0.50	<0.58	<0.53	<0.56	<0.59	<0.53	<0.50	<0.44	<4.0	<0.58	<0.96	<0.079
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<1.3	<0.84	<0.55	<0.60	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	<0.084
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<1.3	<0.86	<0.57	<0.62	<0.54	<0.63	<0.58	<0.61	<0.64	<0.58	<0.54	<0.48	<4.3	<0.63	<1.0	<0.086
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<1.2	<0.80	<0.53	<0.58	<0.51	<0.59	<0.54	<0.57	<0.60	<0.54	<0.51	<0.45	<4.0	<0.59	<0.98	<0.08
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<1.1	<0.71	<0.47	<0.51	<0.44	<0.51	<0.47	<0.50	<0.53	<0.47	<0.44	<0.39	<3.5	<0.51	<0.86	<0.071
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<1.2	<0.81	<0.54	<0.59	<0.51	<0.59	<0.55	<0.58	<0.61	<0.55	<0.51	<0.46	<4.1	<0.59	<0.99	<0.081
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.94	<0.63	<0.41	<0.45	<0.39	<0.46	<0.42	<0.44	<0.47	<0.42	<0.39	<0.35	<3.1	<0.46	<0.76	<0.063
H6	DG-H6S-0.5-1	8/23/18	0.5-1	<1.3	<0.88	<0.58	<0.64	<0.56	<0.64	<0.59	<0.63	<0.66	<0.59	<0.56	<0.49	<4.4	<0.64	<1.1	<0.088
H6	DG-H6S-3.5-4	8/23/18	1-2.5	<1.1	<0.77	<0.51	<0.55	<0.48	<0.56	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.56	<0.93	<0.077
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<1.3	<0.84	<0.55	<0.60	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	<0.084
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<1.2	<0.78	<0.51	<0.56	<0.49	<0.57	<0.52	<0.55	<0.58	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95	<0.078
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<1.2	<0.79	<0.52	<0.57	<0.50	<0.58	<0.53	<0.56	<0.59	<0.53	<0.50	<0.44	<3.9	<0.58	<0.96	<0.079
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<1.2	<0.79	<0.52	<0.57	<0.50	<0.58	<0.53	<0.56	<0.59	<0.53	<0.50	<0.44	<3.9	<0.58	<0.96	<0.079
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<1.2	<0.78	<0.52	<0.56	<0.49	<0.57	<0.52	<0.56	<0.59	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95	<0.078
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<1.4	<0.93	<0.62	<0.67	<0.59	<0.68	<0.63	<0.66	<0.70	<0.63	<0.59	<0.52	<4.7	<0.68	<1.1	<0.093
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<1.2	<0.83	<0.55	<0.60	<0.52	<0.61	<0.56	<0.59	<0.62	<0.56	<0.52	<0.46	<4.1	<0.61	<1.0	<0.083
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<1.3	<0.89	<0.58	<0.64	<0.56	<0.65	<0.59	<0.63	<0.66	<0.59	<0.56	<0.50	<4.4	<0.65	<1.1	<0.089
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<1.2	<0.81	<0.54	<0.59	<0.51	<0.59	<0.55	<0.58	<0.61	<0.55	**0.97 J**	<0.46	<4.1	<0.59	<0.99	<0.081
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<1.4	<0.91	<0.60	<0.66	<0.57	<0.67	<0.61	**0.69 J**	<0.68	<0.61	**2.5 J**	<0.51	<4.6	<0.67	<1.1	<0.091

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-g (C4-C12)
Soil Screening Levels (SSL)				3.8E+03	1.2E+06	3.8E+06	2.2E+06	6.0E+06	2.2E+06	7.0E+02	1.1E+06	6.7E+02	--	4.6E+02	1.2E+06	9.1E+05	5.0E+01	5.8E+05	7.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<1.4	<0.91	<0.60	<0.66	<0.57	<0.67	<0.61	**0.69 J**	<0.68	<0.61	**1.735**	<0.51	<4.6	<0.67	<1.1	<0.091
I9	DG-I9S-0.5-1	8/24/18	0.5-1	**26,000**	<1,100	<420	<490	<390	<390	<500	<810	<620	<390	<390	<640	<1,300	<610	<1,400	<110
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<1.3	<0.86	<0.57	<0.62	<0.54	<0.63	<0.58	<0.61	<0.64	<0.58	<0.54	<0.48	<4.3	<0.63	<1.0	<0.086
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<1.3	<0.88	<0.58	<0.63	<0.55	<0.64	<0.59	<0.62	<0.66	<0.59	<0.55	<0.49	<4.4	<0.64	<1.1	<0.088
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<1.2	<0.77	<0.51	<0.55	<0.48	<0.56	<0.52	<0.55	<0.58	<0.52	<0.48	<0.43	<3.8	<0.56	<0.94	<0.077
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<1.3	<0.88	<0.58	<0.63	<0.55	<0.64	<0.59	<0.62	<0.66	<0.59	<0.55	<0.49	<4.4	<0.64	<1.1	<0.088
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<1.9	<1.2	<0.82	<0.90	<0.79	<0.91	<0.84	<0.89	<0.94	<0.84	<0.79	<0.70	<6.2	<0.91	<1.5	<0.12
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<1.4	<0.96	<0.63	<0.69	<0.60	<0.70	<0.64	<0.68	<0.72	<0.64	<0.60	<0.54	<4.8	<0.70	<1.2	<0.096
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<1.3	<0.86	<0.57	<0.62	<0.54	<0.63	<0.58	<0.61	<0.65	<0.58	<0.54	<0.48	<4.3	<0.63	<1.1	<0.086
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<1.1	<0.71	<0.47	<0.51	<0.44	<0.52	<0.47	<0.50	<0.53	<0.47	<0.44	<0.40	<3.5	<0.52	<0.86	<0.071
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<1.2	<0.78	<0.51	<0.56	<0.49	<0.57	<0.52	<0.55	<0.58	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95	<0.078
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<1.0	<0.69	<0.45	<0.49	<0.43	<0.50	<0.46	<0.49	<0.51	<0.46	<0.43	<0.38	<3.4	<0.50	<0.84	<0.069
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<1.7	<1.1	<0.74	<0.81	<0.71	<0.82	<0.75	<0.79	<0.84	<0.75	<0.71	<0.63	<5.6	<0.82	<1.4	<0.11
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<1.4	<0.96	<0.64	<0.69	<0.61	<0.70	<0.65	<0.68	<0.72	<0.65	<0.61	<0.54	<4.8	<0.70	<1.2	<0.096
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<1.7	<1.1	<0.74	<0.81	<0.71	<0.82	<0.75	<0.79	<0.84	<0.75	<0.71	<0.63	<5.6	<0.82	<1.4	<0.11
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<1.4	<0.93	<0.61	<0.67	<0.59	<0.68	<0.62	<0.66	<0.70	<0.62	<0.59	<0.52	<4.7	<0.68	<1.1	<0.093
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<1.2	<0.80	<0.53	<0.57	<0.50	<0.58	<0.53	<0.57	<0.60	<0.53	<0.50	<0.45	<4.0	<0.58	<0.97	<0.08
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<1.1	<0.76	<0.50	<0.55	<0.48	<0.55	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.55	<0.93	<0.076
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<1.3	<0.87	<0.57	<0.63	<0.55	<0.64	<0.58	<0.62	<0.65	<0.58	<0.55	<0.49	<4.4	<0.64	<1.1	<0.087
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<1.1	<0.71	<0.47	<0.51	<0.45	<0.52	<0.55	<0.51	<0.54	<0.48	<0.45	<0.40	<3.6	<0.52	<0.87	<0.071
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<1.1	**0.73 J**	**0.63 J**	**0.80 J**	<0.45	**0.67 J**	<0.48	**0.52 J**	<0.54	<0.48	<0.45	<0.40	<3.6	<0.52	<0.88	<0.072
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<1.1	**0.73 J**	**0.63 J**	**0.80 J**	<0.45	**0.67 J**	<0.48	**0.52 J**	<0.54	<0.48	<0.45	<0.40	<3.6	<0.52	<0.88	<0.072
K8	DG-K8S-1-2[b,c]	8/22/18	1-2	<1.5	<0.97	<0.64	<0.70	<0.61	<0.71	<0.65	<0.69	<0.73	<0.65	<0.61	<0.54	<4.9	<0.71	<1.2	<0.097
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<1.3	<0.86	<0.57	<0.62	<0.54	<0.63	<0.58	<0.61	<0.65	<0.58	<0.54	<0.48	<4.3	<0.63	<1.0	<0.086
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<1.3	<0.87	<0.57	<0.63	<0.55	<0.63	<0.58	<0.62	<0.65	<0.58	<0.55	<0.49	<4.3	<0.63	<1.1	<0.087
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<1.5	<0.98	<0.65	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.55	<4.9	<0.72	<1.2	<0.098
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<1.5	<0.98	<0.65	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.55	<4.9	<0.72	<1.2	<0.098
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<1.3	<0.84	<0.56	<0.61	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	<0.084
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.63	<0.42	<0.28	<0.30	<0.26	<0.31	<0.28	<0.30	<0.31	<0.28	<0.26	<0.23	<2.1	<0.31	<0.51	<0.042
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.68	<0.45	<0.30	<0.33	<0.28	<0.33	<0.30	<0.32	<0.34	<0.30	<0.28	<0.25	<2.3	<0.33	<0.55	<0.045
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<1.2	<0.82	<0.54	<0.59	<0.52	<0.60	<0.55	<0.58	<0.62	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0	<0.082
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<1.2	<0.79	<0.52	<0.57	<0.50	<0.57	<0.53	<0.56	<0.59	<0.53	<0.50	<0.44	<3.9	<0.57	<0.96	<0.079
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<1.2	<0.82	<0.54	<0.59	<0.52	<0.60	<0.55	<0.58	<0.62	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0	<0.082
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<1.3	<0.85	<0.56	<0.61	<0.53	<0.62	<0.57	<0.60	<0.64	<0.57	<0.53	<0.47	<4.2	<0.62	<1.0	<0.085

Table A3: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-g (C4-C12)
Soil Screening Levels (SSL)				3.8E+03	1.2E+06	3.8E+06	2.2E+06	6.0E+06	2.2E+06	7.0E+02	1.1E+06	6.7E+02	--	4.6E+02	1.2E+06	9.1E+05	5.0E+01	5.8E+05	7.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<1.8	<1.2	<0.79	<0.86	<0.75	<0.87	<0.80	<0.85	<0.89	<0.80	<0.75	<0.67	<6.0	<0.87	<1.5	<0.12
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<1.3	<0.90	<0.59	<0.65	<0.57	<0.66	<0.60	<0.64	<0.67	<0.60	<0.57	<0.50	<4.5	<0.66	<1.1	<0.09
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<1.8	<1.2	<0.79	<0.86	<0.75	<0.87	<0.80	<0.85	<0.89	<0.80	<0.75	<0.67	<6.0	<0.87	<1.5	<0.12
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<1.5	<0.96	<0.64	<0.69	<0.61	<0.70	<0.65	<0.68	<0.72	<0.65	<0.61	<0.54	<4.8	<0.70	<1.2	<0.10
L13	DG-L13S-0.5-1[c]	8/24/18	0.5-1	<1.5	<0.99	<0.65	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.56	<5.0	<0.72	<1.2	<0.099
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<1.2	<0.83	<0.55	<0.60	<0.52	<0.61	<0.56	<0.59	<0.62	<0.56	<0.52	<0.47	<4.2	<0.61	<1.0	<0.083
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<1.4	<0.91	<0.60	<0.66	<0.57	<0.66	<0.66	<0.65	<0.68	<0.61	<0.57	<0.51	<4.5	<0.66	<1.1	**0.18 J**
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<1.4	<0.91	<0.60	<0.66	<0.57	<0.66	<0.66	<0.65	<0.68	<0.61	<0.57	<0.51	<4.5	<0.66	<1.1	**0.18 J**
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<1.3	<0.86	<0.57	<0.62	<0.54	<0.63	<0.58	<0.61	<0.65	<0.58	<0.54	<0.48	<4.3	<0.63	<1.1	<0.086
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<1.8	<1.2	<0.77	<0.84	<0.74	<0.86	<0.78	<0.83	<0.88	<0.78	<0.74	<0.66	<5.9	<0.86	<1.4	<0.12
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<1.3	<0.89	<0.59	<0.64	<0.56	<0.65	<0.60	<0.63	<0.67	<0.60	<0.56	<0.50	<4.4	<0.65	<1.1	<0.089
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<1.2	<0.83	<0.55	<0.60	<0.52	<0.60	<0.55	**0.71 J**	<0.62	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0	<0.083
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<1.1	<0.75	<0.49	<0.54	<0.47	<0.55	<0.50	<0.53	<0.56	<0.50	<0.47	<0.42	<3.7	<0.55	<0.91	<0.075
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<1.3	<0.84	<0.55	<0.60	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	<0.084
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<1.5	<0.98	<0.65	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.55	<4.9	<0.72	<1.2	<0.098

Table A4: Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	TPH-Diesel (C10-C28)
Soil Screening Levels (SSL)				2.4E+05	3.6E+06	--	1.8E+07	1.6E+02	1.6E+01	1.6E+02	--	1.6E+03	1.6E+04	1.6E+01	2.4E+06	2.4E+06	1.6E+02	3.8E+03	--	1.8E+06	2.3E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<4.7	<2.6	<2.3	<1.9	<1.4	<1.8	**2.3 J**	<4.1	<2.0	<1.3	<3.3	<1.3	<2.1	<4.0	<3.3	<1.7	<1.6	**3.5**
A3	DG-A3S-0.5-1	8/21/18	0.5-1	**28 J**	<11	**9.4 J**	**14 J**	**26**	**32**	**51**	**20**	**16 J**	**40**	<14	**47**	<8.6	<16	**15 J**	**60**	**63**	**620**
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<4.8	<2.7	<2.3	<1.9	<1.4	**2.8 J**	**6.6**	<4.1	**2.1 J**	**4.4 J**	<3.4	**4.5 J**	<2.1	<4.0	**3.5 J**	**13**	**4.7 J**	**6.9**
A3	DG-A3S-9.5-10	8/21/18	9.5-10	**19**	<5.4	**5.7 J**	**6.3 J**	**15**	**16**	**28**	**13**	**9.6**	**21**	<6.7	**27**	<4.2	<8.1	**13**	**26**	**33**	**6.3**
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<4.9	<2.7	<2.3	<1.9	<1.5	<1.9	<2.0	<4.2	<2.0	<1.4	<3.4	<1.4	<2.1	<4.1	<3.4	<1.8	<1.7	**0.89 J**
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<4.8	<2.7	<2.3	<1.9	<1.4	<1.8	<2.0	<4.1	<2.0	<1.3	<3.3	<1.3	<2.1	<4.0	<3.3	<1.7	<1.6	**7.9 B**
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<4.8	<2.7	<2.3	<1.9	<1.4	<1.8	<2.0	<4.1	<2.0	<1.3	<3.4	<1.3	<2.1	<4.0	<3.4	<1.7	<1.6	**2.0**
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<95	<53	<46	<38	**110**	**220**	**400**	**150**	**120**	**140**	<67	**140**	<42	**100**	<67	**66 J**	**190**	**280**
A7	DG-A7S-3.5-4	8/23/18	2.5-4	**34**	<2.7	<2.3	**3.6 J**	**8.8**	**5.9**	**9.1**	**6.9**	**2.4 J**	**13**	**3.4 J**	**4.6 J**	**15**	<4.1	**15**	**54**	**12**	**5.6**
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<4.9	<2.7	<2.4	<2.0	<1.5	**2.2 J**	**15**	<4.2	**4.1 J**	**8.0**	<3.4	**11**	<2.2	<4.1	<3.4	**2.9 J**	**6.1**	**33**
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<4.9	<2.7	<2.3	<1.9	<1.5	**2.0 J**	**7.2**	<4.2	**2.1 J**	**4.2 J**	<3.4	**6.0**	<2.1	<4.1	**4.3 J**	**3.4 J**	**5.4**	**24**
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<480	<270	<230	<190	<150	**440 J**	**430 J**	<420	**210 J**	**330 J**	<340	**330 J**	<210	<410	<340	**210 J**	**460 J**	**700**
A8	DG-A8S-3.5-4	8/27/18	2.5-4	**200**	<11	**35**	**48**	**80**	**100**	**140**	**77**	**46**	**120**	**23**	**160**	**11 J**	**57**	**250**	**200**	**200**	**460**
A8	DG-A8S-17-17.5	8/27/18	17-17.5	**24**	<2.6	<2.3	<1.9	<1.4	<1.8	<2.0	<4.1	<2.0	<1.3	<3.3	<1.3	<2.1	<4.0	**46**	**2.6 J**	<1.6	**1.2 J**
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<4.7	<2.6	<2.3	<1.9	<1.4	<1.8	<2.0	<4.0	<2.0	<1.3	<3.3	<1.3	<2.1	<4.0	<3.3	**2.1 J**	<1.6	**2.8**
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<39	<22	<19	**19 J**	**30 J**	**32 J**	**36 J**	<33	**20 J**	**21 J**	<27	**40**	<17	<33	<27	**29 J**	**49**	**160**
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<5.0	<2.8	<2.4	<2.0	<1.5	**2.2 J**	**4.6 J**	<4.3	<2.1	**2.3 J**	<3.5	**2.2 J**	<2.2	<4.2	<3.5	**6.7**	**3.2 J**	**9.1**
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<4.9	<2.7	<2.4	**3.7 J**	**15**	**9.8**	**27**	**8.1**	**8.0**	**19**	<3.4	**23**	<2.2	**5.2**	<3.4	**6.5**	**55**	**44**
B5	DG-B5S-0.5-1	8/23/18	0.5-1	**13 J**	<5.4	**14**	**17**	**35**	**51**	**98**	**31**	<4.0	**50**	**9.2 J**	**53 B**	<4.2	**22**	**13**	**41**	**94 B**	**130**
B5	DG-B5S-3.5-4	8/23/18	1-2.5	**70**	**66**	**230**	**220**	**690**	**770**	**960**	**210**	**410**	**770**	**91**	**850**	**88**	**200**	**69**	**1,000**	**1,500**	**180**
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<4.7	<2.6	<2.3	**2.1 J**	<1.4	**1.9 J**	**12**	<4.1	**2.8 J**	**5.6**	<3.3	**20**	**3.0 J**	<4.0	<3.3	**9.9**	**24**	**20**
B9	DG-B9S-0.5-1	8/24/18	0.5-1	**150 J**	<53	<45	**89 J**	**220**	**270**	**360**	**100**	**140**	**220**	<66	**370**	<41	**82 J**	**99**	**340**	**350**	**440**
B9	DG-B9S-3.5-4	8/24/18	2.5-4	**5.9 J**	<2.7	**2.9 J**	**2.8 J**	**10**	**14**	**19**	**5.0**	**9.3**	**12**	<3.4	**14**	<2.1	**5.0**	**4.5 J**	**12**	**17**	**14**
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<4.8	<2.7	<2.3	<1.9	<1.4	**4.5 J**	**7.9**	<4.1	**3.3 J**	**3.9 J**	<3.3	**6.8**	<2.1	<4.0	<3.3	**4.2 J**	**7.3**	**5.6**
B10	DG-B10S-0.5-1	8/24/18	0.5-1	**27**	<5.4	**29**	**44**	**45**	**45**	**66**	**28**	**32**	**53**	**7.1 J**	**59**	**5.6 J**	**19**	**22**	**67**	**81**	**100**
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	**59 J**	<27	**89**	**430**	**110**	**220**	**210**	**280**	**91**	**82**	<34	**120**	<22	**170**	**62**	**130**	**220**	**570**
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<4.7	**4.8**	**4.0 J**	**9.2**	<1.4	**5.9**	**4.1 J**	**21**	**2.0 J**	**2.8 J**	<3.3	**3.5 J**	<2.1	**14**	**5.9**	**4.3 J**	**4.9**	**16**
C3	DG-C3S-0.5-1	8/21/18	0.5-1	**7.1 J**	<2.7	**12**	**7.7**	**43**	**51**	**71**	**35**	**26**	**59**	**9.3**	**71**	<2.1	**26**	**18**	**57**	**120**	**41**
C3	DG-C3S-3.5-4	8/21/18	2.5-4	**12 J**	<5.5	**39**	**21**	**100**	**100**	**170**	**41**	**50**	**110**	**17**	**120**	<4.3	**32**	**23**	**58**	**170**	**64**
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<19	<11	<9.2	**16 J**	**20**	**19**	**25**	<16	**8.9 J**	**35**	<13	**49**	**13 J**	<16	<13	**29**	**75**	**31**
C5	DG-C5S-9-9.5	8/23/18	9-9.5	**35**	<2.7	<2.3	**7.3**	**14**	**8.9**	**18**	**6.2**	<2.0	**17 B**	<3.4	**12**	**19**	**4.7 J**	**20**	**70**	**20**	**14**
C7	DG-C7S-0.5-1	8/24/18	0.5-1	**12**	<2.7	**5.6**	**12**	**12**	**15**	**29**	**13**	**7.3**	**20**	<3.4	**22**	<2.1	**7.8**	**8.0**	**20**	**31**	**130**
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<4.7	<2.7	<2.3	**2.2 J**	<1.4	**2.1 J**	**2.5 J**	<4.1	<2.0	**1.8 J**	<3.3	**2.9 J**	<2.1	<4.0	<3.3	**3.1 J**	**2.7 J**	**13**
C7	DG-C7S-3.5-4	8/24/18	3.5-4	**12**	<2.6	**4.7**	**9.8**	**25**	**27**	**38**	**10**	**13**	**29**	**3.9 J**	**54**	**2.9 J**	**9.7**	**8.4**	**47**	**67**	**12**
C7	DG-C7S-9.5-10	8/24/18	9.5-10	**130**	**5.6**	<2.3	**8.5**	**9.5**	**10**	**14**	**5.6**	**3.7 J**	**25**	**3.7 J**	**13**	**52**	<4.0	**49**	**120**	**30**	**8.2**
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<4.7	<2.6	<2.3	<1.9	<1.4	**3.3 J**	**4.5 J**	<4.1	**2.3 J**	**2.0 J**	<3.3	**4.0 J**	<2.1	<4.0	<3.3	**3.3 J**	**4.5 J**	**260**
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<4.7	<2.6	<2.3	<1.9	<1.4	**2.8 J**	**4.3 J**	<4.1	<2.0	**1.7 J**	<3.3	**2.3 J**	<2.1	<4.0	<3.3	**1.8 J**	**3.0 J**	**3.5**
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<4.9	<2.8	<2.4	<2.0	<1.5	**2.8 J**	**39**	**6.8**	**3.0 J**	**27**	**4.8 J**	**11**	<2.2	<4.1	**8.3**	**70**	**8.1**	**11**
D3	DG-D3S-9.5-10	8/21/18	9.5-10	**22 J**	**26**	**45**	**190**	**260**	**270**	**350**	**100**	**140**	**270**	**35**	**440**	**25**	**87**	**24 B**	**300**	**560**	**64**

Table A4: Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	TPH-Diesel (C10-C28)
Soil Screening Levels (SSL)				2.4E+05	3.6E+06	--	1.8E+07	1.6E+02	1.6E+01	1.6E+02	--	1.6E+03	1.6E+04	1.6E+01	2.4E+06	2.4E+06	1.6E+02	3.8E+03	--	1.8E+06	2.3E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<25	<14	**13 J**	**14 J**	**38**	**60**	**60**	**29**	**33**	**58 B**	<17	**55**	<11	<21	<17	**33**	**98**	**370 B**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<4.8	<2.7	**3.5 J**	**6.2**	**35**	**35**	**54**	**14**	<2.0	**41 B**	**4.2 J**	**44**	<2.1	**13**	**3.6 J**	**37**	**74**	**11**
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<4.8	<2.7	<2.3	**3.2 J**	**8.5**	**8.5**	**11**	**4.3 J**	**5.3**	**7.2**	<3.4	**12 B**	<2.1	**4.4 J**	<3.4	**6.3 B**	**11**	**14**
D9	DG-D9S-3.5-4	8/24/18	1-2.5	**15**	**8.5**	**6.8**	**49**	**150**	**160**	**210**	**54**	**77**	**170**	**19**	**280**	**9.2**	**50**	**12**	**220**	**350**	**53**
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<4.8	<2.7	<2.3	<1.9	<1.4	<1.8	<2.0	<4.1	<2.0	**1.3 J**	<3.4	**1.5 J B**	<2.1	<4.0	<3.4	**3.0 J B**	**1.7 J**	**0.84 J**
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<4.8	<2.7	<2.3	<1.9	<1.4	**2.1 J**	**2.6 J**	<4.1	<2.0	**1.7 J**	<3.4	**2.8 J**	<2.1	<4.0	<3.4	**2.2 J**	**2.6 J**	**12**
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	**320**	**23 J**	**23 J**	**93**	**120**	**140**	**240**	**51**	**66**	**240**	**26**	**190**	**68**	**39**	**240**	**440**	**240**	**910**
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	**190**	**5.7**	<2.3	**6.0**	**14**	**11**	**19**	**10**	**3.7 J**	**38**	**6.1**	**13**	**92**	**4.6 J**	**51**	**150**	**37**	**17**
E3	DG-E3S-9.5-10	8/21/18	9.5-10	**6.4 J**	<2.7	**2.5 J**	**3.3 J**	**21**	**16**	**33**	**12**	**7.2**	**54**	**5.3**	**22**	<2.1	**7.5**	**13 B**	**44**	**36**	**58**
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<5.0	<2.8	**6.2**	**3.5 J**	**17**	**26**	**35**	**8.8**	**6.8**	**20**	<3.5	**25**	<2.2	**8.4**	**4.6 J**	**15**	**46**	**1.8 J**
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<4.9	<2.7	<2.3	**2.8 J**	**6.7**	**8.3**	**12**	**22**	**5.3**	**8.2**	<3.4	**9.9**	<2.1	**6.1**	<3.4	**7.9**	**14**	**28**
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<5.0	<2.8	<2.4	<2.0	<1.5	**2.0 J**	**2.9 J**	<4.3	<2.1	**2.3 J**	<3.5	**3.7 J**	<2.2	<4.2	**4.0 J**	**3.8 J**	**3.6 J**	**6.1**
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<4.8	<2.7	<2.3	<1.9	<1.4	<1.8	<2.0	<4.2	<2.0	<1.4	<3.4	**1.4 J**	<2.1	<4.1	<3.4	**2.7 J**	<1.6	**1.7 J**
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<49	<27	<23	**140**	<15	**37 J**	**57**	**51**	**29 J**	**33 J**	<34	**27 J**	<21	<41	<34	**57**	**36 J**	**130**
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<49	<27	**27 J**	**450**	<15	**48 J**	**66**	**76**	**33 J**	**38 J**	<34	**38 J**	<22	<41	**41 J**	**64**	**57**	**850 F2**
E11	DG-E11S-3.5-4	8/27/18	2.5-4	**180 J**	<53	**63 J**	**82 J**	**37 J**	**72 J**	**110**	**120**	**41 J**	**82 J**	<66	**56 J**	<41	<79	**120**	**120**	**89 J**	**270**
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<4.8	**13**	<2.3	**12**	**21**	**23**	**27**	**9.1**	**9.3**	**25**	<3.4	**57**	**2.8 J**	**8.3**	<3.4	**27**	**98**	**18**
F1	DG-F1S-0.5-1	8/20/18	0.5-1	**100**	<5.5	**20**	**42**	**37**	**34**	**78**	**26**	**21**	**52**	**7.6 J**	**81**	**4.5 J**	**17**	**92**	**100**	**78**	**120 B**
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<190	<110	<93	<78	<58	**95 J**	**90 J**	<170	<82	<54	<140	**63 J**	<86	<160	<140	<70	**87 J**	**4.6**
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<4.7	<2.7	**2.3 J**	**2.1 J**	<1.4	**2.2 J**	**26**	<4.1	**2.5 J**	**17**	**3.4 J**	**9.0**	<2.1	<4.0	**5.3**	**47**	**6.5**	**100**
F3	DG-F3S-0.5-1	8/21/18	0.5-1	**28 J**	<11	**75**	**45**	**140**	**270**	**320**	**190**	**110**	**160**	**44**	**210**	<8.6	**140**	**38 B**	**120**	**270**	**79**
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<4.7	<2.6	**2.5 J**	**2.0 J**	**4.7**	**6.1**	**7.5**	**6.3**	**3.4 J**	**3.4 J**	<3.3	**5.0**	<2.1	**4.2 J**	<3.3	**3.6 J**	**6.6**	**5.7**
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<4.8	<2.7	<2.3	<1.9	<1.5	**3.0 J**	**4.0 J**	<4.2	**2.3 J**	**1.7 J**	<3.4	**2.9 J**	<2.1	<4.1	**4.4 J B**	**2.7 J**	**3.5 J**	**8.7**
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<99	<56	<48	<40	<30	**39 J**	<42	<85	<42	<28	<69	<28	<44	<83	<69	<36	<34	**68 B**
F5	DG-F5S-3.5-4	8/22/18	2.5-4	**30**	<2.7	**9.3**	**17**	**41**	**50**	**81**	**24**	<2.0	**64 B**	**5.4**	**110**	**7.9**	**21**	**39**	**110**	**150**	**72 B**
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	**53**	**6.0 J**	**59**	**61**	**260**	**320**	**520**	**150**	<4.0	**330 B**	**44**	**370**	**17**	**120**	**59**	**260**	**560**	**110 B**
F9	DG-F9S-0.5-1	8/24/18	0.5-1	**38**	<2.7	**4.5 J**	**10**	**24**	**25**	**49**	**21**	**10**	**75**	**9.1**	**28**	**3.2 J**	**13**	**16**	**63**	**57**	**39**
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<4.8	<2.7	<2.3	<1.9	<1.4	**1.8 J**	**2.3 J**	<4.1	<2.0	**1.9 J**	<3.4	**2.2 J B**	<2.1	<4.0	<3.4	<1.7	**2.4 J**	**3.5**
F9	DG-F9S-9.5-10	8/24/18	9.5-10	**97**	**4.5 J**	**2.7 J**	**5.3**	**12**	**11**	**17**	**9.3**	**6.0**	**28**	**3.8 J**	**23**	**50**	**4.2 J**	**28**	**99**	**38**	**36**
F11	DG-F11S-3.5-4	8/24/18	2.5-4	**960**	**270**	**130**	**1,200**	**1,200**	**900**	**1,500**	**380**	**460**	**2,400**	**190**	**1,200**	**330**	**360**	**570**	**2,100**	**1,600**	**1,300**
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	**6.6 J**	<2.7	<2.4	**2.8 J**	<1.5	**2.9 J**	**20**	<4.2	**3.5 J**	**16**	<3.4	**12**	**3.2 J**	<4.1	**12**	**54**	**11**	**17**
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	<4.7	<2.7	<2.3	**4.2 J**	**4.8**	**6.2**	**7.6**	**28**	**4.2 J**	**10**	<3.3	**12**	<2.1	**5.3**	<3.3	**15**	**17**	**66**
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<5.0	<2.8	<2.4	**2.0 J**	**3.3 J**	**4.5 J**	**35**	**5.9**	**3.3 J**	**32**	**3.8 J**	**15**	<2.2	<4.2	**16 B**	**85**	**12**	**3.9**
G6	DG-G6S-1-2[a]	8/22/18	1-2	**28 J**	<11	**11 J**	**20**	**50**	**75**	**100**	**96**	**42**	**72 B**	**16 J**	**96**	<8.6	**51**	**29**	**71**	**110**	**83**
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<4.9	<2.8	<2.4	<2.0	<1.5	**4.0 J**	**4.1 J**	<4.2	**2.8 J**	**2.8 J**	<3.5	**3.9 J**	<2.2	<4.2	<3.5	**2.4 J**	**4.3 J**	**11**
G7	DG-G7S-3.5-4	8/24/18	2.5-4	**26**	**48**	**57**	**86**	**300**	**340**	**410**	**100**	**190**	**360**	**42**	**440**	**95**	**98**	**24**	**590**	**610**	**47**
G11	DG-G11S-0.5-1	8/27/18	0.5-1	**6.5 J**	<2.7	**5.6**	**6.6**	**29**	**41**	**62**	**17**	**20**	**40**	**5.5**	**47**	<2.2	**15**	**4.5 J**	**29**	**84**	**19**
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<5.0	<2.8	<2.4	<2.0	<1.5	<1.9	**2.8 J**	<4.3	<2.1	**1.4 J**	<3.5	**1.7 J**	<2.2	<4.2	<3.5	<1.8	**2.3 J**	**2.1**
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<24	<13	<12	<9.6	<7.2	**9.9 J**	**19 J**	<21	<10	**11 J**	<17	**21 J**	<11	<20	<17	**21 J**	**17 J**	**100**

Table A4: Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	TPH-Diesel (C10-C28)
Soil Screening Levels (SSL)				2.4E+05	3.6E+06	--	1.8E+07	1.6E+02	1.6E+01	1.6E+02	--	1.6E+03	1.6E+04	1.6E+01	2.4E+06	2.4E+06	1.6E+02	3.8E+03	--	1.8E+06	2.3E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
H1	DG-H1S-0.5-1	8/20/18	0.5-1	**9.8**	<2.7	**4.9**	**9.3**	**27**	**31**	**47**	**24**	**17**	**33**	**6.1**	**46**	<2.1	**18**	**10**	**28**	**54**	**33 B**
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<4.9	<2.8	<2.4	**2.7 J**	**2.8 J**	**3.9 J**	**11**	**4.6 J**	**2.6 J**	**7.0**	<3.4	**6.5**	<2.2	<4.1	**5.0**	**19**	**8.0**	**5.5 B**
H3	DG-H3S-0.5-1	8/21/18	0.5-1	**22**	<2.8	**10**	**9.6**	**18**	**27**	**44**	**20**	**14**	**27**	**5.8**	**27**	**3.8 J**	**17**	**23 B**	**24**	**31**	**31**
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<4.9	<2.7	<2.4	<2.0	<1.5	**2.3 J**	**3.0 J**	<4.2	<2.1	<1.4	<3.4	**1.9 J**	<2.2	<4.1	<3.4	**1.8 J**	**2.3 J**	**31**
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<9.8	<5.5	<4.7	<3.9	<2.9	**6.0 J**	**9.2 J**	<8.5	**4.2 J**	**3.3 J**	<6.9	**6.6 J**	<4.3	<8.3	<6.9	**6.8 J**	**9.9**	**24**
H5	DG-H5S-0.5-1	8/22/18	0.5-1	**94 J**	**33 J**	**2,000**	**500**	**3,800**	**6,900**	**7,400**	**2,800**	**3,700**	**4,500 B**	**910**	**2,600**	**39 J**	**2,500**	**310**	**1,100**	**6,600**	**240 B**
H5	DG-H5S-3.5-4	8/22/18	2.5-4	**8.2 J**	**11**	**16**	**61**	**290**	**280**	**400**	**100**	<2.0	**260 B**	**39**	**360**	**13**	**100**	**29**	**260**	**590**	**18 B**
H6	DG-H6S-0.5-1	8/23/18	0.5-1	<9.4	<5.3	**5.6 J**	**8.1 J**	**29**	**51**	**69**	**24**	<4.0	**39**	**9.1 J**	**30 B**	<4.2	**20**	**8.6 J**	**24**	**49 B**	**540**
H6	DG-H6S-3.5-4	8/23/18	1-2.5	**11**	<2.7	**2.6 J**	**4.4 J**	**14**	**16**	**27**	**7.6**	<2.0	**17**	**3.5 J**	**20 B**	<2.1	**7.2**	**9.8**	**19**	**24 B**	**110**
H9	DG-H9S-0.5-1	8/27/18	0.5-1	**10 J**	<5.6	**7.2 J**	**10**	**16**	**16**	**31**	**9.0 J**	**14**	**17**	<7.0	**20**	<4.4	<8.3	<7.0	**22**	**25**	**68**
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<4.8	<2.7	<2.3	<1.9	<1.4	**2.7 J**	**3.2 J**	<4.1	**2.0 J**	**2.7 J**	<3.3	**4.0 J**	<2.1	<4.0	<3.3	**3.6 J**	**4.4 J**	**5.0**
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<4.8	<2.7	<2.3	<1.9	<1.4	<1.8	**2.2 J**	<4.1	<2.0	**1.3 J**	<3.3	**2.1 J**	<2.1	<4.0	<3.3	**2.8 J**	**1.7 J**	**4.6**
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<4.8	<2.7	<2.3	**2.4 J**	<1.4	**2.6 J**	**3.4 J**	<4.1	**2.0 J**	**3.2 J**	<3.4	**5.1**	<2.1	<4.0	<3.4	**9.5**	**6.6**	**8.5**
I3	DG-I3S-0.5-1	8/22/18	0.5-1	**13 J**	<5.4	**9.3 J**	**7.1 J**	**21**	**26**	**45**	**16**	**16**	**26**	<6.8	**33**	<4.3	**13**	**78 B**	**22**	**33**	**13**
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<20	<11	**13 J**	**10 J**	**25**	**26**	**43**	**18 J**	**17 J**	**21**	<14	**32**	<8.6	<16	<14	**20**	**34**	**21**
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<20	<11	**33**	**75**	**49**	**77**	**110**	**58**	**39**	**85**	**16 J**	**86**	<8.7	**48**	**14 J**	**55**	**110**	**47**
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<4.8	<2.7	**3.3 J**	**3.3 J**	**6.1**	**9.3**	**11**	**5.2**	**5.0**	**6.7**	<3.4	**7.9**	<2.1	**4.6 J**	<3.4	**5.4**	**11**	**10**
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	**29**	<5.4	**76**	**31**	**150**	**260**	**340**	**97**	**160**	**220**	**24**	**270**	**9.1 J**	**90**	**59**	**210**	**510**	**39**
I9	DG-I9S-0.5-1	8/24/18	0.5-1	**18,000**	**18,000**	**620**	**7,000**	**2,800**	**950**	**1,500**	<410	**720**	**2,200**	<330	**17,000**	**13,000**	<400	**57,000**	**37,000**	**11,000**	**2,100**
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<9.6	<5.4	**6.0 J**	**24**	**17**	**24**	**39**	**25**	**16**	**33**	**8.5 J**	**26**	<4.2	**18**	**7.0 J**	**20**	**42**	**59**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<38	<21	<18	<15	<12	<15	<16	<33	<16	<11	<27	<11	<17	<32	<27	<14	<13	**340**
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<120	<69	<59	<49	<37	<47	<51	<110	<51	<34	<86	<34	<54	<100	<86	<44	<42	**1,200**
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<49	<28	<24	<20	<15	<19	**22 J**	<42	<21	<14	<35	**19 J**	<22	<41	<35	<18	<17	**110**
J1	DG-J1S-0.5-1	8/20/18	0.5-1	**810**	**1,000**	**1,600**	**3,200**	**5,300**	**5,000**	**5,800**	**2,900**	**1,900**	**4,900**	**930**	**9,000**	**1,700**	**2,300**	**1,000**	**10,000**	**11,000**	**680 B**
J1	DG-J1S-3.5-4	8/20/18	2.5-4	**5.0 J**	<2.7	**8.0**	**11**	**28**	**29**	**64**	**21**	**13**	**50**	**7.8**	**47**	**4.8**	**16**	**12**	**82**	**50**	**6.9 B**
J5	DG-J5S-0.5-1	8/22/18	0.5-1	**38 J**	**16 J**	**29**	**64**	**350**	**570**	**930**	**1,600**	<10	**450 B**	**66**	**590**	**15 J**	**310**	**26**	**280**	**990**	**200 B**
J5	DG-J5S-3.5-4	8/22/18	2.5-4	**31 J**	<14	**57**	**73**	**220**	**330**	**410**	**190**	**170**	**310 B**	**42**	**420**	**11 J**	**150**	**46**	**260**	**580**	**190 B**
J5	DG-J5S-7-7.5	8/22/18	7-7.5	**7.0 J**	<2.7	<2.3	**2.6 J**	**4.4 J**	**5.7**	**39**	**6.5**	<2.0	**31 B**	**3.6 J**	**13**	**4.1 J**	**5.3**	**16**	**47**	**16**	**5.5 B**
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<380	<210	<180	<150	<110	**200 J**	**210 J**	<330	<160	<110	<270	**120 J**	<170	<320	<270	<140	**180 J**	**810**
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<390	<220	<190	<150	<120	**170 J**	**170 J**	<330	<160	<110	<270	<110	<170	<330	<270	<140	<130	**620**
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<19	<11	<9.2	<7.7	<5.8	**12 J**	**20**	<17	<8.1	**13 J**	<13	**11 J**	<8.5	<16	<13	**31**	**17 J**	**46**
K3	DG-K3S-0.5-1	8/22/18	0.5-1	**14**	**5.1**	**8.0**	**15**	**43**	**60**	**96**	**30**	**36**	**68**	**9.5**	**100**	**4.9**	**25**	**16 B**	**110**	**110**	**49**
K3	DG-K3S-3.5-4	8/22/18	2.5-4	**4.9 J**	<2.7	**4.3 J**	**5.9**	**21**	**16**	**21**	**11**	**9.7**	**19**	**4.5 J**	**28**	**2.2 J**	**8.2**	**53 B**	**17**	**31**	**3.7**
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<190	<110	<93	<78	<58	**89 J**	**170 J**	<170	<81	<54	<140	**57 J B**	<85	<160	<140	**71 J B**	**110 J**	**1,700**
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<4.9	<2.7	<2.4	<2.0	<1.5	**2.4 J**	**3.6 J**	<4.2	<2.1	**2.4 J**	<3.4	**3.1 J B**	<2.2	<4.1	<3.4	**3.5 J B**	**3.8 J**	**15**
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<4.8	<2.7	**2.7 J**	**1.9 J**	**5.0**	**6.1**	**6.6**	<4.2	**3.3 J**	**4.9**	<3.4	**7.0 B**	<2.1	<4.1	<3.4	**6.6 B**	**9.6**	**50**
K8	DG-K8S-1-2[b]	8/22/18	1-2	<4.9	<2.8	<2.4	**2.3 J**	<1.5	**4.2 J**	**4.6 J**	**7.4**	**2.6 J**	**3.4 J**	<3.5	**4.6 J B**	<2.2	<4.1	<3.5	**5.9**	**6.3 B**	**6.6 B**
K11	DG-K11S-0.5-1	8/27/18	0.5-1	**6.4 J**	<2.7	**3.2 J**	**5.8**	**16**	**21**	**33 F1**	**9.4 F1**	**14 F1**	**25**	<3.4	**24**	<2.2	**8.7 F1**	**4.5 J**	**19**	**29**	**59**
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	**110**	**3.9 J**	**2.7 J**	**12**	**15**	**14**	**23**	**6.6**	**6.3**	**32**	**3.7 J**	**15**	**30**	**4.3 J**	**46**	**130**	**32**	**13**

Table A4: Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	TPH-Diesel (C10-C28)
Soil Screening Levels (SSL)				2.4E+05	3.6E+06	--	1.8E+07	1.6E+02	1.6E+01	1.6E+02	--	1.6E+03	1.6E+04	1.6E+01	2.4E+06	2.4E+06	1.6E+02	3.8E+03	--	1.8E+06	2.3E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	**120**	**4.4 J**	<2.3	**5.0**	**21**	**23**	**42**	**13**	**9.6**	**43**	**5.4**	**25**	**34**	**9.3**	**40**	**120**	**50**	**34**
K11	DG-K11S-9.5-10	8/27/18	9.5-10	**410**	**12**	**2.3 J**	**8.8**	**22**	**21**	**33**	**9.3**	**5.6**	**61**	**6.6**	**24**	**120**	**4.8 J**	**140**	**300**	**62**	**23**
L1	DG-L1S-0.5-1	8/20/18	0.5-1	**40 J**	<13	**14 J**	**26**	**47**	**49**	**91**	**24**	**29**	**52**	<17	**80**	<11	<20	**26**	**69**	**90**	**84 B**
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	**32**	<2.7	**6.4**	**6.5**	**17**	**20**	**35**	**17**	**7.5**	**26**	**5.1**	**23**	**2.1 J**	**11**	**30**	**41**	**37**	**38 B**
L5	DG-L5S-0.5-1	8/22/18	0.5-1	**72**	<11	**40**	**76**	**81**	**120**	**200**	**150**	**74**	**130**	**31**	**140**	<8.5	**95**	**65 B**	**96**	**150**	**210**
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	**24**	**6.3 J**	**18**	**34**	**88**	**120**	**210**	**110**	<4.0	**120 B**	**31**	**140**	**6.4 J**	**86**	**21**	**81**	**180**	**120**
L5	DG-L5S-3.5-4	8/22/18	2.5-4	**14**	<2.7	**12**	**13**	**33**	**37**	**84**	**22**	<2.0	**59 B**	**9.7**	**63**	**3.0 J**	**21**	**38**	**55**	**81**	**26**
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<4.9	<2.7	<2.3	**3.5 J**	**8.0**	**9.1**	**13**	**5.3**	**6.4**	**11**	<3.4	**13**	<2.1	**4.5 J**	**3.5 J**	**13**	**16**	**760**
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<10	<5.6	<4.8	<4.0	**13**	**18**	**29**	**11**	**12**	**17**	<7.0	**22**	<4.4	**9.7 J**	<7.0	**19**	**27**	**760**
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	**4.8 J**	<2.7	**2.9 J**	**2.8 J**	**3.4 J**	**7.5**	**27**	**5.3**	**5.8**	**21**	<3.3	**12**	**2.2 J**	**4.7 J**	**19**	**38**	**16**	**3.2**
L13	DG-L13S-0.5-1	8/24/18	0.5-1	<50	<28	**34 J**	**20 J**	<15	**37 J**	**49 J**	**50 F1**	**28 J F1**	**29 J**	<35	**32 J B**	<22	<42	<35	**19 J B**	**45 J**	**430**
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	**140 J**	**150**	**90 J**	**310**	**300**	**280**	**250**	<86	**100**	**460**	<70	**390**	**160**	<84	**100**	**140**	**990**	**7,000**
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	<190	<110	**100 J**	**82 J**	<58	**150 J**	**120 J**	<170	<81	**96 J**	<130	**100 J**	<85	<160	<130	<69	**300**	**2,200**
M3	DG-M3S-0.5-1	8/22/18	0.5-1	**11**	<2.6	**2.4 J**	**4.0 J**	**3.6 J**	**3.5 J**	**5.5**	**5.0**	**2.8 J**	**3.1 J**	<3.3	**3.8 J**	<2.1	<4.0	**10 B**	**5.6**	**4.3 J**	**21**
M3	DG-M3S-3.5-4	8/22/18	2.5-4	**15**	<2.8	**2.7 J**	**3.1 J**	**1.8 J**	**2.6 J**	**8.3**	<4.2	**2.8 J**	**7.0**	<3.4	**8.5**	<2.2	<4.1	**60 B**	**35**	**5.9**	**40**
M3	DG-M3S-7.5-8	8/22/18	7.5-8	**11**	<2.7	**3.0 J**	**2.7 J**	**2.7 J**	**4.0 J**	**48**	**7.1**	**3.5 J**	**47**	**5.3**	**19**	**3.5 J**	**4.5 J**	**77 B**	**130**	**12**	**5.2**
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<190	<110	<90	<75	<56	<72	<79	<160	<79	<53	<130	<53	<83	<160	<130	<68	<64	**1,600**
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<4.9	<2.7	<2.3	<1.9	<1.5	<1.9	<2.0	<4.2	<2.0	<1.4	<3.4	**1.7 J**	<2.1	<4.1	<3.4	<1.8	**2.0 J**	**8.3**
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<5.0	<2.8	<2.4	<2.0	**5.5**	**7.5**	**13**	**5.5**	**4.5 J**	**8.0**	<3.5	**13**	<2.2	**4.6 J**	<3.5	**9.6**	**16**	**36**
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<4.8	<2.7	**2.3 J**	**3.7 J**	**3.7 J**	**5.5**	**57**	**5.4**	**7.6**	**48**	**3.9 J**	**21**	<2.1	**4.6 J**	**14**	**110**	**17**	**8.9**

Notes:

a. Sample DG-G6S-1-2 was named DG-G6S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
b. Sample DG-K8S-1-2 was named DG-K8S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
1. PAHs analyzed by USEPA Method 8270C SIM
2. TPH-d analyzed by USEPA Method 8015B
3. SSLs are presented from Table 6 of the Final Data Gap Investigation Work Plan (Geosyntec, 2018b).
4. Non-detect results are presented with "<" followed by the MDL.
5. Results in bold font indicate a detection above the MDL.

Abbreviations, and Symbols:

"--" - Not Available
"<" - Non-detect result
µg/kg - microgram per kilogram
B - Compound was found in the blank and sample.
(D) - Duplicate sample
ft bgs - Feet below ground surface
J - Estimated value
MDL - Method Detection Limit
SIM - selective ion monitoring
RL - Reporting Limit
SSL - Soil Screening Level
TPH - Total petroleum hydrocarbon
USEPA - United States Environmental Protection Agency

TABLE A5
SUMMARY OF CHEMICALS DETECTED IN SOIL VAPOR
UPC OU-SM
Brisbane, California

Concentrations presented in micrograms per cubic meter (ug/m3)

Station	Sample Name	Date	Sample Depth (feet bgs)	Tetrachloro-ethene	Trichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride	1,1-Dichloro-ethene
SG-57	SG-57	01/26/11	2.5	**600**	**5700**	**110**	ND(22.0)	ND(14.0)	ND(22.0)
SG-58	SG-58	01/26/11	2.5	12000	69000	**4700**	**49.0/J**	**150/J**	**24.0/J**
SG-58	SG-58	09/12/12	5	9900	**43000**	3000	ND(280)	ND(180)	ND(280)
SG-59	SG-59	01/26/11	2.5	**1100**	**31000**	**320**	ND(230)	ND(150)	ND{230)
SG-59	SG-59	09/12/12	5	ND(880)	**7100**	75000	ND(510)	**3900**	**1100**
SG-59	SG-59-DUP	09/12/12	5	ND(880)	6900	**72000**	ND(510)	**3800**	**1100**
SG-60	SG-60	01/26/11	2.5	**5.7/J**	**4000**	**22**	**10.0/J**	ND(7.5)	0.77/J
SG-61	SG-61	01/26/11	3	NT	NT	NT	NT	NT	NT
SG-61	SG-61	01/26/11	2.5	**21**	**110**	**180**	**14**	**68**	**5.8**
SG-62	SG-62	01/27/11	2.5	**2.8/J**	1.0/J	ND(3.5)	ND(3.5)	ND(2.3)	ND(3.5)
SG-63	SG-63	01/27/11	2.5	9.7	**9.4**	**0.20/J**	ND{3.4)	ND{2.2)	ND(3.4)
SG-64	SG-64	01/27/11	2.5	**250**	**5000**	**30**	ND(22.0)	ND(14.0)	ND(22.0)
SG-64	SG-64-DUP	01/27/11	2.5	**260**	5000	**28**	ND(22.0)	ND(14.0)	ND(22.0)
SG-65	SG-65	01/26/11	2.5	**1600**	**14000**	**180**	ND(80.0)	ND(52.0)	ND(80.0)
SG-66	SG-66	01/26/11	2.5	52	**21**	**3.4/J**	ND{3.6)	ND(2.3)	**0.086/J**
SG-67	SG-67	01/26/11	2.5	**8.2**	**1400**	**620**	**4.8**	**79**	**16**
SG-68	SG-68	01/27/11	2.5	**97**	**1400**	**0.87/J**	ND(7.4)	ND(4.8)	ND(7.4)
SG-69	SG-69	01/27/11	2.5	**1400**	5600	**86**	ND(23.0)	ND(15.0)	ND(23.0)
SG-69	SG-69-DUP	01/27/11	2.5	**1200**	**5100**	**82**	ND/23 .0\	ND /15.0\	ND/23.0l

Notes and Abbreviations:

µg/m^3 = micrograms per cubic meter

ND = Not Detected at the specified reporting level in parentheses

NT= Not Tested

J = The analyte was positively identified with a low bias.

J- = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. A minus sign(-) indicatesthe numerical value has a low bias. A plus sign(+) indicatesthe numerical value has a high bias.

U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of the quantitation necessary to accurately and precisely measure the analyte in the sample.

TABLE A5 (continued)

SUMMARY OF CHEMICALS IN SOIL VAPOR[1]

UPC OU-SM

Brisbane, California

Analyte	SG-57 (µg/m^3)	SG-58 (µg/m^3)	SG-59 (µg/m^3)	SG-60 (µg/m^3)	SG-61 (µg/m^3)	SG-62 (µg/m^3)	SG-63 (µg/m^3)	SG-64 (µg/m^3)	SG-64dup (µg/m^3)	SG-65 (µg/m^3)	SG-66 (µg/m^3)	SG-67 (µg/m^3)	SG-68 (µg/m^3)	SG-69 (µg/m^3)	SG-69dup (µg/m^3)
Freon 12	**1.7 J**	<6.9	<3.7	**2.5 J**	**2.1 J**	**4.2 J**	**2.0 J**	**2.5 J**	**2.3 J**	**2.4 J**	**2.7 J**	**2.3 J**	**2.3 J**	**2.3 J**	**2.3 J**
Freon 114	<1.3	<26	<14	<0.72	**2.1 J**	<0.22	<0.21	<1.4	<1.4	<5	<0.22	<0.25	<0.46	<1.4	<1.4
Chloromethane	<3.4	<68	<36	<1.8	**1.9 J**	<0.56	<0.54	<3.6	<3.5	<13	**0.94 J**	<0.65	<1.2	<3.6	<3.7
Bromomethane	<0.69	<14	<7.3	<0.37	**0.22 J**	<0.11	**0.15 J**	<0.72	<0.72	<2.6	<0.11	**0.14 J**	<0.24	<0.73	<0.75
Chloroethane	<2.6	<51	<27	<1.4	**1.4 J**	<0.42	<0.41	<2.7	<2.6	<9.6	<0.42	<0.49	<0.88	<2.7	<2.8
Trichlorofluoromethane	**5.2 J**	<15	<8.1	**1.3 J**	**0.50 J**	**0.83 J**	**1.4 J**	**1.3 J**	**1.3 J**	<2.9	**0.83 J**	**1.2 J**	**1.0 J**	**1.1 J**	**1.1 J**
Freon 113	<0.9	<18	<9.5	<0.49	<0.15	**0.29 J**	**0.34 J**	<0.94	<0.93	<3.4	**0.40 J**	**0.47 J**	**0.49 J**	<0.95	<0.97
Acetone	**81**	**190 J**	**200 J**	**100**	**160**	**57**	**100**	**120**	**110**	**200**	**270**	**220**	**130**	**59**	**64**
Carbon Disulfide	<0.53	<11	<5.6	**13**	**37**	**1.1 J**	**1.9 J**	<0.55	<0.55	**5.6 J**	**1.1 J**	**1.8 J**	**6.9**	<0.56	<0.57
Methylene Chloride	<0.44	<8.7	<4.7	<0.24	<0.075	<0.072	<0.07	**1.9 J**	<0.45	**2.8 J**	<0.073	<0.083	<0.15	<0.46	<0.47
1,1-Dichloroethane	<0.87	<17	<9.2	<0.47	**1.6 J**	<0.14	<0.14	<0.91	<0.9	<3.2	<0.14	**1.3 J**	<0.3	<0.92	<0.93
Vinyl Acetate	<1.1	<23	<12	<0.62	<0.19	<0.19	<0.18	<1.2	<1.2	<4.3	<0.19	<0.22	<0.39	<1.2	<1.2
2-Butanone	**47**	<12	**39 J**	**30**	**120**	**86**	**210**	**2000**	**1900**	**65**	**39**	**60**	**510**	**440**	**410**
Chloroform	**3.6 J**	**18 J**	<6.9	**1.0 J**	**0.67 J**	<0.11	**0.45 J**	**1.1 J**	**1.0 J**	**2.6 J**	**0.62 J**	**0.72 J**	<0.22	**15 J**	**14 J**
1,1,1-Trichloroethane	**4.6 J**	**63 J**	**14 J**	**7.9 J**	**1.1 J**	**1.0 J**	<0.21	**28 J**	**25 J**	**14 J**	<0.22	**0.66 J**	<0.46	**4.7 J**	**4.7 J**
Carbon Tetrachloride	<0.87	<17	<9.2	<0.47	<0.15	<0.14	<0.14	<0.91	<0.9	<3.2	<0.14	<0.16	<0.3	<0.92	<0.94
Benzene	**18**	**110 J**	**59 J**	**28**	**80**	**11**	**18**	**4.8 J**	**4.4 J**	**49 J**	**23**	**30**	**23**	**3.7 J**	**3.3 J**
1,2-Dichloroethane	<0.73	<14	<7.8	<0.4	<0.12	<0.12	<0.12	<0.76	<0.76	<2.7	<0.12	<0.14	<0.25	<0.77	<0.79
1,2-Dichloropropane	<1.9	<38	<20	<1	<0.33	<0.32	<0.3	<2	<2	<7.2	<0.32	<0.36	<0.66	<2	<2.1
Bromodichloromethane	<1.1	<21	<11	<0.58	<0.18	<0.18	<0.17	<1.1	<1.1	<4	<0.18	<0.2	<0.37	<1.1	<1.2
cis-1,3,-Dichloropropene	<1.1	<22	<12	<0.6	<0.19	<18	<0.18	<1.2	<1.1	<4.2	<0.18	<0.21	<0.38	<1.2	<1.2
4-Methyl-2-Pentanone	<1	<20	<11	<0.56	<0.18	<0.17	**1.5 J**	<1.1	<1.1	<3.9	<0.17	**15**	<0.36	<1.2	<1.1
Toluene	**8.5 J**	**54 J**	**69 J**	**19**	**48**	**4.1**	**11**	**6.9 J**	**6.4 J**	**22 J**	**18**	**12**	**15**	**4.4 J**	**5.8 J**
trans-1,3-Dichloropropene	<1.2	<24	<13	<0.66	<0.21	<0.2	<0.19	<1.3	<1.3	<4.6	<0.2	<0.23	<0.42	<1.2	<1.3
1,1,2-Trichloroethane	<0.48	<9.5	<5.1	<0.26	<0.082	<0.079	<0.076	<0.5	<0.5	<1.8	<0.08	<0.091	<0.17	<0.51	<0.52
2-Hexanone	<1.4	<27	<15	<0.75	<0.24	<0.23	**2.2 J**	<1.4	<1.4	<5.2	<0.23	<0.26	<0.48	<1.5	<1.5
Dibromochloromethane	<1.1	<22	<12	<0.61	<0.19	<0.19	<0.18	<1.2	<1.2	<4.2	<0.19	<0.21	<0.39	<1.2	<1.2
1,2-Dibromoethane	<0.84	<17	<8.9	<0.46	<0.14	**0.14**	<0.13	<0.88	<0.87	<3.2	<0.14	<0.16	<0.29	<0.89	<0.91
Chlorobenzene	<0.96	<19	<10	<0.52	<0.16	**0.16**	<0.15	<1	<0.99	<3.6	<0.16	<0.18	<0.33	<1	<1
Ethylbenzene	**1.7 J**	<13	<7.2	**2.6 J**	**12**	**1.0 J**	**1.2 J**	**1.4 J**	**1.1 J**	<2.5	**2.2 J**	**1.6 J**	**3.0 J**	**1.1 J**	**1.7 J**
m,p-Xylene	**3.3 J**	<15	**21 J**	**7.9 J**	**34**	**2.6 J**	**6**	**4.8 J**	**4.0 J**	**8.1 J**	**10**	**6.6 J**	**8.4**	**5.1 J**	**7.5 J**
o-Xylene	**1.5 J**	<11	**7.0 J**	**3.1 J**	**18**	**0.72 J**	**2.5 J**	**1.8 J**	**1.3 J**	**2.5 J**	**4.5**	**3.8 J**	**2.8 J**	**1.6 J**	**2.8 J**
Styrene	<0.55	<11	<5.8	**0.48 J**	**0.91 J**	<0.091	**0.20 J**	<0.57	<0.57	<2.1	**0.50 J**	**0.30 J**	<0.19	<0.58	<0.59
Bromoform	<1.3	<25	<14	<0.7	<0.22	<0.21	<0.2	<1.3	<1.3	<4.8	<0.21	<0.24	<0.44	<1.4	<1.4
1,1,2,2-Tetrachloroethane	<1.5	<30	<16	<0.82	<0.26	<0.25	<0.24	<1.6	<1.6	<5.6	<0.25	<0.29	<0.52	<1.6	<1.6
4-Ethyltoluene	<0.53	<10	<5.6	**0.64 J**	**1.7 J**	**0.45 J**	**0.39 J**	<0.55	<0.55	<2	**0.96 J**	**0.58 J**	**0.90 J**	**0.62 J**	**1.3 J**
1,3,5-Trimethylbenzene	<0.59	<12	<6.3	**0.87 J**	**3.5 J**	**0.33 J**	**0.57 J**	**0.72 J**	<0.61	<2.2	**1.7 J**	**1.0 J**	**0.85 J**	**0.85 J**	**1.3 J**
1,2,4-Trimethylbenzene	<0.99	<20	<10	**2.0 J**	**5.8**	**1.1 J**	**1.3 J**	**1.6 J**	**1.2 J**	<3.7	**3.8 J**	**1.9 J**	**2.1 J**	**2.3 J**	**4.0 J**
1,3-Dichlorobenzene	<0.8	<16	<8.5	<0.43	<0.14	<0.13	<0.13	**1.6 J**	<0.82	<3	<0.13	<0.15	<0.27	<0.84	<0.86
1,4-Dichlrobenzene	<0.89	<18	<9.5	<0.48	<0.15	<0.15	<0.14	<0.93	<0.92	<3.3	<0.15	<0.17	<0.31	<0.94	<0.96
Benzyl chloride	<0.91	<18	<9.6	<0.49	<0.15	<0.15	**0.56 J**	<0.95	<0.94	<3.4	<0.15	<0.17	<0.31	<0.96	<0.98
1,2-Dichlorobenzene	<1.5	<30	<16	<0.81	<0.26	<0.25	<0.24	<1.6	<1.6	<5.6	<0.25	<0.28	<0.52	<1.6	<1.6
1,2,4-Trichlorobenzene	<6.8	<130	<72	<3.7	<1.2	<1.1	<1.1	<7.1	<7	<25	<1.1	<1.3	<2.3	<7.2	<7.3
Hexachlorobutadiene	<3	<59	<32	<1.6	<0.51	<0.49	<0.47	**3.1**	<3.1	<11	<0.5	<0.57	<1	<3.2	<3.2
Xylene (total)	**4.7 J**	<26	**28 J**	**11 J**	**53**	**3.3 J**	**8.4**	**6.6**	**5.3 J**	**11 J**	**15**	**10**	**11**	**6.7 J**	**10 J**

[1] Samples collected by Mactec in January 2011 as reported by AMEC for the Schlage Operable Unit. Concentrations reported in micrograms per cubic meter (µg/m^3).

<16 = indicates chemical not detected above the laboratory method detection limit shown

dup = duplicate sample

J = Estimated value

Table A6: Dissolved Metals Concentrations in Groundwater,
Fill Water-Bearing Zone
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium, Hexavalent	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Groundwater Screening Level (GSL)			6.0E+00	1.0E+01	1.0E+03	4.0E+00	5.0E+00	5.0E+01	1.0E+01	6.0E+00	3.1E+00	8.1E+00	9.4E-01	1.0E+02	8.2E+00	5.0E+01	1.9E-01	2.0E+00	5.0E+01	8.1E+01
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<2.7	<2.6	**150**	**0.50 J**	<1.3	<1.5	<3.7 R	**4.9**	**1.5 J**	<2.3	<0.10	**3.5 J**	**5.5 J**	<7.1	**17**	<3.5	**1.1 J**	**48 F1**
B4	DG-B4W	8/23/18	**38**	**14**	**600**	<0.33	<1.3	**1.6 J**	<3.7	**3.5**	**20**	**10**	<0.10	**9.0 J**	**4.6 J**	<7.1	<1.2	<3.5	**1.9 J**	**150**
B5	DG-B5W	8/23/18	<2.7	**8.4 J**	**320**	<0.33	<1.3	<1.5	<3.7	**2.9**	**3.0 J**	**7.9**	<0.10	**4.3 J**	**4.7 J**	<7.1	<1.2	<3.5	**0.91 J**	**69**
B9	DG-B9W	8/24/18	**3.5 J**	**34 J**	**470**	<0.33	<1.3	**3.7 J**	<3.7 R	**4.0**	**12 J**	**3.2 J**	<0.10	**7.4 J**	**6.0 J**	<7.1	**10**	<3.5	<0.70	**96**
C3	DG-C3W	8/22/18	**12**	**7.1 J**	**270**	**0.42 J B**	<1.3	<1.5	<3.7	**4.7**	**12 J**	**21**	<0.10	**7.7 J**	**6.0 J**	<7.1	<1.2	<3.5	<0.70	**90**
C7	DG-C7W	8/24/18	<2.7	**5.8 J**	**720**	<0.33	<1.3	**15**	<3.7 R	**2.1**	**2.4 J**	<2.3	<0.10	**3.8 J**	**4.4 J**	<7.1	**15**	<3.5	**2.3 J**	**52**
D1	DG-D1W	8/21/18	<2.7	**25**	**140**	**0.34 J**	<1.3	<1.5	<3.7	**2.4**	**4.5 J**	**6.0**	<0.10	**4.2 J**	**2.7 J**	<7.1	<1.2	<3.5	<0.70	**41**
D9	DG-D9W	8/24/18	<2.7	**18**	**280**	<0.33	<1.3	**2.4 J**	<3.7 R	<1.2	**2.6 J**	<2.3	<0.10	**2.8 J**	**3.0 J**	<7.1	**12**	<3.5	**0.73 J**	**17 J**
DE8-9	DG-DE8-9W	8/24/18	<2.7	**29**	**150**	<0.33	<1.3	**2.0 J**	<3.7 R	**1.5 J**	**4.0 J**	<2.3	<0.10	**5.5 J**	**4.3 J**	<7.1	**11**	<3.5	<0.70	**23**
E7	DG-E7W	8/24/18	**2.7 J**	<2.6	**500**	<0.33	<1.3	**2.1 J**	<3.7 R	**2.4**	**6.4 J**	**2.8 J**	**0.25 F1 F2**	**5.6 J**	**6.1 J**	<7.1	**15**	<3.5	**0.97 J**	**36**
E11	DG-E11W	8/27/18	<2.7	**14**	**430**	**0.56 J**	<1.3	**2.0 J**	**8.4 J**	**1.6 J**	<1.5	**7.9**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	**1.4 J**	<9.6
E11	DG-E11W (D)	8/27/18	<2.7	**13**	**360**	<0.33	<1.3	**1.6 J**	**6.3 J**	**3.3**	**2.6 J**	**9.9**	<0.10	**3.6 J**	**1.0 J**	<7.1	<1.2	<3.5	**1.2 J**	**13 J**
F1	DG-F1W	8/21/18	<2.7	**20**	**79**	**0.53 J**	<1.3	<1.5	<3.7	**3.6**	**2.8 J**	**6.2**	<0.10	**4.5 J**	**2.4 J**	<7.1	<1.2	<3.5	<0.70	**26**
F3	DG-F3W	8/22/18	**3.4 J**	**190**	**200**	**0.69 J B**	<1.3	<1.5	<3.7	**1.9 J**	**3.9 J**	**11**	<0.10	**5.9 J**	**2.9 J**	<7.1	<1.2	<3.5	**0.97 J**	**36**
F9	DG-F9W	8/24/18	<2.7	**37**	**180**	<0.33	<1.3	**2.4 J**	<3.7 R	**5.0**	**3.9 J**	<2.3	<0.10	**7.2 J**	**6.9 J**	<7.1	**14**	<3.5	<0.70	**26**
FG9-10	DG-FG9-10W	8/27/18	<2.7	**5.9 J**	**430**	<0.33	<1.3	<1.5	<3.7	<1.2	**2.2 J**	**11**	<0.10	**3.7 J**	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
G7	DG-G7W	8/24/18	<2.7	**20**	**1,400**	<0.33	<13	**2.4 J**	<3.7 R	**15 J**	**5.7 J**	**30 J**	<0.10	**12**	**7.4 J**	<7.1	**20**	<35	<0.70	<96
G11	DG-G11W	8/27/18	<2.7	**25**	**910**	<0.33	<1.3	**7.0 J**	<3.7	**10**	**11 J**	**14**	<0.10	**7.1 J**	**10**	<7.1	<1.2	<3.5	**4.0 J**	**27**
H1	DG-H1W	8/21/18	<2.7	**19**	**97**	**0.34 J**	<1.3	<1.5	<3.7	**3.6**	**3.4 J**	**4.9 J**	<0.10	**4.5 J**	**2.8 J**	<7.1	<1.2	<3.5	<0.70	**30**
H5	DG-H5W	8/23/18	<2.7	**28**	**260**	**0.62 J B**	<1.3	**4.0 J**	<3.7	**2.3**	**4.8 J**	**8.3**	<0.10	**4.3 J**	**3.2 J**	<7.1	<1.2	<3.5	<0.70	**77**
H6	DG-H6W	8/23/18	<2.7	**44**	**240**	<0.33	<1.3	**1.9 J**	<3.7	**1.5 J**	**1.5 J**	**12**	<0.10	**4.4 J**	**1.9 J**	<7.1	<1.2	<3.5	**1.7 J**	**39**
H9	DG-H9W	8/27/18	<2.7	**3.0 J**	**790**	<0.33	<1.3	<1.5	<3.7	**1.2 J**	**3.7 J**	**11**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	**0.95 J**	<9.6
I3	DG-I3W	8/23/18	**2.8 J**	**84**	**72**	**0.89 J B**	<1.3	<1.5	<3.7	<1.2	**3.2 J**	**8.6**	<0.10	**6.3 J**	**1.8 J**	<7.1	<1.2	<3.5	**2.0 J**	**25**
I7	DG-I7W	8/24/18	<2.7	**31**	**120**	<0.33	<1.3	**27**	<3.7 R	**2.0**	**3.0 J**	<2.3	<0.10	**5.3 J**	**9.6 J**	<7.1	**15**	<3.5	<0.70	<9.6
I7	DG-I7W (D)	8/24/18	<2.7	**31**	**110**	<0.33	<1.3	**1.5 J**	<3.7	**1.3 J**	**1.6 J**	**9.4**	<0.10	**3.8 J**	**2.0 J**	<7.1	<1.2	<3.5	<0.70	<9.6
I11	DG-I11W	8/27/18	<2.7	**17**	**1,100**	**0.64 J B**	<1.3	**3.3 J**	**4.3 J**	**6.8**	**24**	**21**	<0.10	**10**	**3.0 J**	<7.1	<1.2	<3.5	**0.91 J**	**61**
J5	DG-J5W	8/23/18	<2.7	**42**	**240**	**3.0 B**	<1.3	**1.7 J**	<3.7	**1.3 J**	**4.2 J**	**9.2**	<0.10	**5.8 J**	**1.6 J**	<7.1	<1.2	<3.5	**1.3 J**	**53**
J9	DG-J9W	9/26/18	<2.7	**6.8 J**	**35**	<0.33	<1.3	<1.5	<3.7	**2.1**	<1.5	**4.7 J**	<0.10	**5.1 J**	**1.7 J**	<7.1	<1.2	<3.5	**1.4 J**	<9.6
K3	DG-K3W	8/23/18	<2.7	**63**	**130**	<0.33	<1.3	<1.5	<3.7	**1.2 J**	**4.2 J**	**9.6**	<0.10	**4.9 J**	**1.6 J**	<7.1	<1.2	<3.5	**0.97 J**	**50**
K11	DG-K11W	8/27/18	<2.7	**28**	**240**	<0.33	<1.3	<1.5	<3.7	**1.3 J**	**2.7 J**	**9.5**	<0.10	**2.4 J**	<0.80	<7.1	<1.2	<3.5	**1.7 J**	<9.6
L1	DG-L1W	8/21/18	<2.7	**15**	**210**	**0.50 J**	<1.3	<1.5	<3.7	**9.5**	**9.0 J**	**7.6**	<0.10	**4.8 J**	**6.7 J**	<7.1	<1.2	<3.5	<0.70	**64**
L5	DG-L5W	8/23/18	**6.6 J**	**3.2 J**	**360**	**1.0 J B**	<1.3	<1.5	<3.7	**3.0**	**160**	**15**	<0.10	**10**	**8.5 J**	<7.1	<1.2	<3.5	<0.70	**180**
L5	DG-L5W (D)	8/23/18	**7.8 J**	**3.7 J**	**360**	<0.33	<1.3	**1.9 J**	<3.7	**3.0**	**150**	**15**	<0.10	**10**	**7.8 J**	<7.1	<1.2	<3.5	<0.70	**170**
L9	DG-L9W	8/27/18	<2.7	**9.0 J**	**50**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**6.3**	<0.10	**6.5 J**	<0.80	<7.1	<1.2	<3.5	**0.89 J**	<9.6
L9	DG-L9W (D)	8/27/18	<2.7	**8.2 J**	**50**	**0.97 J**	<1.3	<1.5	<3.7	<1.2	**1.8 J**	**7.0**	<0.10	**9.8 J**	<0.80	<7.1	<1.2	<3.5	**1.0 J**	<9.6
M3	DG-M3W	8/23/18	**3.6 J**	**31**	**89**	**1.1 J B**	<1.3	<1.5	<3.7	<1.2	**4.4 J**	**8.1**	<0.10	**5.4 J**	**1.5 J**	<7.1	<1.2	<3.5	**1.0 J**	**37**
M7	DG-M7W	8/24/18	<2.7	**13**	**520**	<0.33	<1.3	**3.4 J**	<3.7 R	**9.6**	**11 J**	**2.3 J**	<0.10	**9.0 J**	**14**	<7.1	**12**	<3.5	**2.0 J**	**56**
M11	DG-M11W	8/27/18	<2.7	**2.7 J**	**63**	<0.33	<1.3	**5.9 J**	<3.7	**1.4 J**	**2.2 J**	**4.1 J**	<0.10	<2.3	**1.9 J**	<7.1	<1.2	<3.5	**9.6 J**	**11 J**
P5	DG-P5W	8/23/18	<2.7	**14**	**480**	**0.34 J B**	<1.3	<1.5	<3.7	**1.9 J**	**2.5 J**	**15**	<0.10	**5.7 J**	**4.9 J**	<7.1	<1.2	<3.5	<0.70	**34**

Table A6: Dissolved Metals Concentrations in Groundwater,
Fill Water-Bearing Zone
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium, Hexavalent	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Groundwater Screening Level (GSL)			6.0E+00	1.0E+01	1.0E+03	4.0E+00	5.0E+00	5.0E+01	1.0E+01	6.0E+00	3.1E+00	8.1E+00	9.4E-01	1.0E+02	8.2E+00	5.0E+01	1.9E-01	2.0E+00	5.0E+01	8.1E+01
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
GWE-1	GWE-1	8/30/18	<2.7	**10**	**220**	<0.33	<1.3	**1.8 J**	<3.7	<1.2	**1.9 J**	**8.6**	<0.10	<2.3	**5.9 J**	<7.1	<1.2	<3.5	**1.4 J**	<9.6
GWE-2	GWE-2	8/30/18	<2.7	**21**	**790**	<0.33	<1.3	<1.5	<3.7	**2.6**	**2.0 J**	**9.6**	<0.10	<2.3	**6.6 J**	<7.1	<1.2	<3.5	<0.70	**13 J**
GWE-3	GWE-3	8/15/18	<2.7	**18**	**290**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	<2.3	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
GWE-4	GWE-4	8/15/18	<2.7	<2.6	**970**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**14**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
GWE-4	GWE-4 (D)	8/15/18	<2.7	<2.6	**940**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**13**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MK-2A	MK-2A	8/14/18	<2.7	<2.6	**330**	<0.33	<1.3	<1.5	<3.7	**79**	<1.5	<2.3	<0.10	<2.3	**49**	<7.1	<1.2	<3.5	<0.70	<9.6
MK-4A	MK-4A	8/15/18	<2.7	**41**	**69**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	<2.3	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MK-5AR	MK-5AR	8/14/18	<2.7	**130**	**79**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**8.1**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	**24**
MK-5AR	MK-5AR (D)	8/14/18	<2.7	**130**	**79**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**8.1**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	**26**
MK-6A	MK-6A	8/15/18	<2.7	<2.6	**81**	<0.33	<1.3	<1.5	<3.7	**5.2**	<1.5	**6.2**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MW-4A	MW-4A	8/15/18	<2.7	**120**	**210**	<0.33	<1.3	<1.5	<3.7	**13**	<1.5	**12**	<0.10	**14**	**24**	<7.1	<1.2	<3.5	<0.70	**22**
MW-6AR	MW-6AR	8/15/18	<2.7	**12**	**200**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**5.3**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MW-7A	MW-7A	8/15/18	<2.7	<2.6	**560**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**16**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MW-8A	MW-8A	8/15/18	<2.7	<2.6	**280**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**7.8**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6

Notes:

1. Metals were analyzed by USEPA Methods 6010B, 7196, and 7471A.
2. GSLs are presented from Table 7 of the Final Data Gap Investigation Work Plan (Geosyntec, 2018b).
3. Non-detect results are presented with "<" followed by the MDL.
4. Results in bold font indicate a detection above the MDL.

Abbreviations and Symbols:

"<" - Non-detect result
µg/L - microgram per liter
B - Compound was found in the blank and sample.
(D) - Duplicate sample
F1 - MS and/or MSD Recovery is outside acceptance limits.
F2 - MS/MSD RPD exceeds control limits.
GSL - Groundwater screening level
J - Estimated value
MDL - Method Detection Limit
R - Result rejected during data validation
USEPA - United States Environmental Protection Agency

Table A7: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Groundwater, Fill Water-Bearing Zone
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene
Groundwater Screening Level (GSL)			5.7E-01	2.0E+02	1.0E+00	--	5.0E+00	5.0E+00	6.0E+00	--	--	5.0E-03	5.0E+00	--	2.0E-01	5.0E-02	6.5E+01	5.0E-01	5.0E+00	--	6.5E+01
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<2.0	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
B4	DG-B4W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
B5	DG-B5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.44 J**	<4.0	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
B9	DG-B9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
C3	DG-C3W	8/22/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.14 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
C7	DG-C7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
D1	DG-D1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
D9	DG-D9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
DE8-9	DG-DE8-9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
E7	DG-E7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
E11	DG-E11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
E11	DG-E11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
F1	DG-F1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
F3	DG-F3W	8/22/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
F9	DG-F9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.12 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
FG9-10	DG-FG9-10W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
G7	DG-G7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
G11	DG-G11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
H1	DG-H1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
H5	DG-H5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
H6	DG-H6W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
H9	DG-H9W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
I3	DG-I3W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
I7	DG-I7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
I7	DG-I7W (D)	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
I11	DG-I11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
J5	DG-J5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
J9	DG-J9W	9/26/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
K3	DG-K3W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
K11	DG-K11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
L1	DG-L1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
L5	DG-L5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
L5	DG-L5W (D)	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
L9	DG-L9W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
L9	DG-L9W (D)	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20

Table A7: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Groundwater, Fill Water-Bearing Zone
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene
Groundwater Screening Level (GSL)			5.7E-01	2.0E+02	1.0E+00	--	5.0E+00	5.0E+00	6.0E+00	--	--	5.0E-03	5.0E+00	--	2.0E-01	5.0E-02	6.5E+01	5.0E-01	5.0E+00	--	6.5E+01
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M3	DG-M3W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
M7	DG-M7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
M11	DG-M11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
P5	DG-P5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.11 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
GWE-1	GWE-1	8/30/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.35 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
GWE-2	GWE-2	8/30/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
GWE-3	GWE-3	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
GWE-4	GWE-4	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
GWE-4	GWE-4 (D)	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MK-2A	MK-2A	8/14/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MK-4A	MK-4A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MK-5AR	MK-5AR	8/14/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MK-5AR	MK-5AR (D)	8/14/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MK-6A	MK-6A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MW-4A	MW-4A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MW-6AR	MW-6AR	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MW-7A	MW-7A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MW-8A	MW-8A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20

Table A7: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Groundwater, Fill Water-Bearing Zone
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	1,3-Dichloropropene	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene
Groundwater Screening Level (GSL)			--	5.0E+00	--	5.0E-01	--	--	--	--	1.2E+02	1.4E+04	1.0E+00	--	--	8.0E+01	8.0E+01	7.5E+00	--	2.2E-01	5.0E+01
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
B4	DG-B4W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
B5	DG-B5W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
B9	DG-B9W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
C3	DG-C3W	8/22/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
C7	DG-C7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
D1	DG-D1W	8/21/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
D9	DG-D9W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
DE8-9	DG-DE8-9W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
E7	DG-E7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
E11	DG-E11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
E11	DG-E11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
F1	DG-F1W	8/21/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
F3	DG-F3W	8/22/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
F9	DG-F9W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
FG9-10	DG-FG9-10W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
G7	DG-G7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
G11	DG-G11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
H1	DG-H1W	8/21/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
H5	DG-H5W	8/23/18	<0.17	<0.16	<0.17	**8.8 J**	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
H6	DG-H6W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
H9	DG-H9W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
I3	DG-I3W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
I7	DG-I7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
I7	DG-I7W (D)	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
I11	DG-I11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
J5	DG-J5W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
J9	DG-J9W	9/26/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
K3	DG-K3W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
K11	DG-K11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
L1	DG-L1W	8/21/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
L5	DG-L5W	8/23/18	<0.17	<0.16	<0.17	**8.8 J**	<0.20	<3.0	<0.20	<0.20	<4.5	<20	**0.27 J**	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
L5	DG-L5W (D)	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
L9	DG-L9W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
L9	DG-L9W (D)	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13

Table A7: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Groundwater, Fill Water-Bearing Zone
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	1,3-Dichloropropene	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene
Groundwater Screening Level (GSL)			--	5.0E+00	--	5.0E-01	--	--	--	--	1.2E+02	1.4E+04	1.0E+00	--	--	8.0E+01	8.0E+01	7.5E+00	--	2.2E-01	5.0E+01
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M3	DG-M3W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
M7	DG-M7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
M11	DG-M11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
P5	DG-P5W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
GWE-1	GWE-1	8/30/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
GWE-2	GWE-2	8/30/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
GWE-3	GWE-3	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
GWE-4	GWE-4	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
GWE-4	GWE-4 (D)	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MK-2A	MK-2A	8/14/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MK-4A	MK-4A	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MK-5AR	MK-5AR	8/14/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MK-5AR	MK-5AR (D)	8/14/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MK-6A	MK-6A	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MW-4A	MW-4A	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MW-6AR	MW-6AR	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MW-7A	MW-7A	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MW-8A	MW-8A	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13

Table A7: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Groundwater, Fill Water-Bearing Zone
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene
Groundwater Screening Level (GSL)			1.6E+01	2.3E+00	1.9E+02	6.0E+00	--	8.0E+01	--	--	1.3E+01	1.4E-01	--	5.0E+00	5.0E+00	1.7E-01	--	--	--	1.0E+01	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<0.17	<0.40	<0.19	**130**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
B4	DG-B4W	8/23/18	<0.17	<0.40	<0.19	**0.86**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
B5	DG-B5W	8/23/18	<0.17	<0.40	<0.19	**160**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
B9	DG-B9W	8/24/18	<0.17	<0.40	<0.19	**2.1**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
C3	DG-C3W	8/22/18	<0.17	<0.40	<0.19	**7.6**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
C7	DG-C7W	8/24/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
D1	DG-D1W	8/21/18	<0.17	<0.40	<0.19	**1.0**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.16 J**	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
D9	DG-D9W	8/24/18	<0.17	<0.40	<0.19	**0.62**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
DE8-9	DG-DE8-9W	8/24/18	<0.17	<0.40	<0.19	**0.15 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
E7	DG-E7W	8/24/18	<0.17	<0.40	<0.19	**0.50**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
E11	DG-E11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
E11	DG-E11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
F1	DG-F1W	8/21/18	<0.17	<0.40	<0.19	**0.55**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.33 J**	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
F3	DG-F3W	8/22/18	<0.17	<0.40	<0.19	**7.9**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
F9	DG-F9W	8/24/18	<0.17	<0.40	<0.19	**0.095 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
FG9-10	DG-FG9-10W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
G7	DG-G7W	8/24/18	<0.17	<0.40	<0.19	**23**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
G11	DG-G11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
H1	DG-H1W	8/21/18	<0.17	<0.40	<0.19	**0.30 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.27 J**	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
H5	DG-H5W	8/23/18	<0.17	<0.40	<0.19	**3.2**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
H6	DG-H6W	8/23/18	<0.17	<0.40	<0.19	**0.25 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
H9	DG-H9W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
I3	DG-I3W	8/23/18	<0.17	<0.40	<0.19	**6.0**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
I7	DG-I7W	8/24/18	<0.17	<0.40	<0.19	**18**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
I7	DG-I7W (D)	8/24/18	<0.17	<0.40	<0.19	**21**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
I11	DG-I11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
J5	DG-J5W	8/23/18	<0.17	<0.40	<0.19	**1.6**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
J9	DG-J9W	9/26/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
K3	DG-K3W	8/23/18	<0.17	<0.40	<0.19	**3.9**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
K11	DG-K11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
L1	DG-L1W	8/21/18	<0.17	<0.40	<0.19	**0.26 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.49 J**	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
L5	DG-L5W	8/23/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
L5	DG-L5W (D)	8/23/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
L9	DG-L9W	8/27/18	<0.17	<0.40	<0.19	**0.82**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
L9	DG-L9W (D)	8/27/18	<0.17	<0.40	<0.19	**0.79**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20

Table A7: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Groundwater, Fill Water-Bearing Zone
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene
Groundwater Screening Level (GSL)			1.6E+01	2.3E+00	1.9E+02	6.0E+00	--	8.0E+01	--	--	1.3E+01	1.4E-01	--	5.0E+00	5.0E+00	1.7E-01	--	--	--	1.0E+01	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M3	DG-M3W	8/23/18	<0.17	<0.40	<0.19	**1.3**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
M7	DG-M7W	8/24/18	<0.17	<0.40	<0.19	**0.23 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
M11	DG-M11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
P5	DG-P5W	8/23/18	<0.17	<0.40	<0.19	**6.0**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
GWE-1	GWE-1	8/30/18	<0.17	<0.40	<0.19	**70**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<15	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
GWE-2	GWE-2	8/30/18	<0.17	<0.40	<0.19	**0.34 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
GWE-3	GWE-3	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
GWE-4	GWE-4	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
GWE-4	GWE-4 (D)	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MK-2A	MK-2A	8/14/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MK-4A	MK-4A	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MK-5AR	MK-5AR	8/14/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MK-5AR	MK-5AR (D)	8/14/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MK-6A	MK-6A	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MW-4A	MW-4A	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MW-6AR	MW-6AR	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MW-7A	MW-7A	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MW-8A	MW-8A	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20

Table A7: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Groundwater, Fill Water-Bearing Zone
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-diesel (C10-C28)	TPH-gasoline (C4-C12)
Groundwater Screening Level (GSL)			3.0E+00	4.0E+01	1.0E+01	--	5.0E+00	--	--	6.1E-02	2.0E+01	1.0E+02	1.0E+02
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	**5.7**	<0.17	**24**	<0.17	**200**	<0.30	<0.60	**2.6**	<0.40	**55**	**280**
B4	DG-B4W	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**1.8**	<0.40	**260**	**30 J**
B5	DG-B5W	8/23/18	<0.20	<0.17	<2.6	<0.17	**8.5**	<0.30	<0.60	**410**	<0.40	**57**	**380**
B9	DG-B9W	8/24/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.37 J**	<0.40	**180**	**24 J**
C3	DG-C3W	8/22/18	<0.20	<0.17	**0.53**	<0.17	**3.9**	<0.30	<0.60	**0.78**	<0.40	**69**	<21
C7	DG-C7W	8/24/18	<0.20	<0.17	<0.13	<0.17	**1.2**	<0.30	<0.60	<0.20	<0.40	**240**	**24 J**
D1	DG-D1W	8/21/18	<0.20	<0.17	<0.13	<0.17	**0.25 J**	<0.30	<0.60	<0.20	<0.40	**73**	<21
D9	DG-D9W	8/24/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.51**	<0.40	**170**	**30 J**
DE8-9	DG-DE8-9W	8/24/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.24 J**	<0.40	**210**	<21
E7	DG-E7W	8/24/18	<0.20	<0.17	<0.13	<0.17	**1.0**	<0.30	<0.60	<0.20	<0.40	**170**	**26 J**
E11	DG-E11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**99**	<21
E11	DG-E11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**110 B**	**29 J**
F1	DG-F1W	8/21/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**120**	<21
F3	DG-F3W	8/22/18	<0.20	<0.17	**0.39 J**	<0.17	**0.60**	<0.30	<0.60	<0.20	<0.40	**120**	<21
F9	DG-F9W	8/24/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**220**	<21
FG9-10	DG-FG9-10W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**230**	<21
G7	DG-G7W	8/24/18	<0.20	<0.17	**1.9**	<0.17	**15**	<0.30	<0.60	**4.6**	<0.40	**130**	**54**
G11	DG-G11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**670**	**85**
H1	DG-H1W	8/21/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**96**	<21
H5	DG-H5W	8/23/18	<0.20	<0.17	<0.13	<0.17	**0.22 J**	<0.30	<0.60	<0.20	<0.40	**59**	<21
H6	DG-H6W	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**71**	<21
H9	DG-H9W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**160**	<21
I3	DG-I3W	8/23/18	<0.20	<0.17	<0.13	<0.17	**0.52**	<0.30	<0.60	<0.20	<0.40	**57**	<21
I7	DG-I7W	8/24/18	<0.20	<0.17	**1.1**	<0.17	**5.3**	<0.30	<0.60	**13**	<0.40	**100**	**42 J**
I7	DG-I7W (D)	8/24/18	<0.20	<0.17	**1.2**	<0.17	**5.9**	<0.30	<0.60	**16**	<0.40	**110**	**30 J**
I11	DG-I11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**220**	<21
J5	DG-J5W	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.37 J**	<0.40	**76**	<21
J9	DG-J9W	9/26/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**78**	<21
K3	DG-K3W	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**52**	<21
K11	DG-K11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**68**	<21
L1	DG-L1W	8/21/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**220**	<21
L5	DG-L5W	8/23/18	<0.20	**0.26 J**	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**170**	**57**
L5	DG-L5W (D)	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**190**	**31 J**
L9	DG-L9W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**80**	<21
L9	DG-L9W (D)	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.37 J**	<0.40	**91**	<21

Table A7: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Groundwater, Fill Water-Bearing Zone
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-diesel (C10-C28)	TPH-gasoline (C4-C12)
Groundwater Screening Level (GSL)			3.0E+00	4.0E+01	1.0E+01	--	5.0E+00	--	--	6.1E-02	2.0E+01	1.0E+02	1.0E+02
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M3	DG-M3W	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**56**	<21
M7	DG-M7W	8/24/18	<0.20	<0.17	<0.13	<0.17	**0.36 J**	<0.30	<0.60	<0.20	<0.40	**600**	<21
M11	DG-M11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**77**	<21
P5	DG-P5W	8/23/18	**0.33 J**	<0.17	**0.75**	<0.17	**4.1**	<0.30	<0.60	**0.73**	<0.40	**130**	**30 J**
GWE-1	GWE-1	8/30/18	**0.28 J**	<0.17	**0.85**	<0.17	**3.0**	<0.30	<0.60	**210**	<0.40	**64**	**120**
GWE-2	GWE-2	8/30/18	<0.20	<0.17	**0.15 J**	<0.17	<0.20	<0.30	<0.60	**0.34 J**	<0.40	**73**	<21
GWE-3	GWE-3	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	<32	<25
GWE-4	GWE-4	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**120**	<25
GWE-4	GWE-4 (D)	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**120**	<25
MK-2A	MK-2A	8/14/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	<32	<25
MK-4A	MK-4A	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**55**	<25
MK-5AR	MK-5AR	8/14/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**250**	<25
MK-5AR	MK-5AR (D)	8/14/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**240**	<25
MK-6A	MK-6A	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**200**	<25
MW-4A	MW-4A	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**1,100**	<25
MW-6AR	MW-6AR	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**58**	<25
MW-7A	MW-7A	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**97**	<25
MW-8A	MW-8A	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**120**	<25

APPENDIX B
ProUCL Output Files

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Antimony

General Statistics			
Total Number of Observations	153	Number of Distinct Observations	93
Number of Detects	132	Number of Non-Detects	21
Number of Distinct Detects	84	Number of Distinct Non-Detects	11
Minimum Detect	0.33	Minimum Non-Detect	0.23
Maximum Detect	24	Maximum Non-Detect	7.4
Variance Detects	22.01	Percent Non-Detects	13.73%
Mean Detects	3.73	SD Detects	4.692
Median Detects	2.05	CV Detects	1.258
Skewness Detects	2.587	Kurtosis Detects	6.981
Mean of Logged Detects	0.778	SD of Logged Detects	1.011

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.66	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.249	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0775	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	3.26	KM Standard Error of Mean	0.365
KM SD	4.502	95% KM (BCA) UCL	3.897
95% KM (t) UCL	3.865	95% KM (Percentile Bootstrap) UCL	3.883
95% KM (z) UCL	3.861	95% KM Bootstrap t UCL	3.964
90% KM Chebyshev UCL	4.356	95% KM Chebyshev UCL	4.853
97.5% KM Chebyshev UCL	5.542	99% KM Chebyshev UCL	6.896

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.436	Anderson-Darling GOF Test	
5% A-D Critical Value	0.782	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.131	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0835	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.064	k star (bias corrected MLE)	1.045
Theta hat (MLE)	3.505	Theta star (bias corrected MLE)	3.57
nu hat (MLE)	280.9	nu star (bias corrected)	275.9
Mean (detects)	3.73		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3.227
Maximum	24	Median	1.7
SD	4.537	CV	1.406
k hat (MLE)	0.566	k star (bias corrected MLE)	0.559
Theta hat (MLE)	5.703	Theta star (bias corrected MLE)	5.772
nu hat (MLE)	173.1	nu star (bias corrected)	171.1
Adjusted Level of Significance (β)	0.0484		
Approximate Chi Square Value (171.05, α)	141.8	Adjusted Chi Square Value (171.05, β)	141.6
95% Gamma Approximate UCL (use when n>=50)	3.892	95% Gamma Adjusted UCL (use when n<50)	3.899

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	3.26	SD (KM)	4.502
Variance (KM)	20.26	SE of Mean (KM)	0.365
k hat (KM)	0.524	k star (KM)	0.518
nu hat (KM)	160.5	nu star (KM)	158.7
theta hat (KM)	6.216	theta star (KM)	6.287
80% gamma percentile (KM)	5.362	90% gamma percentile (KM)	8.753
95% gamma percentile (KM)	12.36	99% gamma percentile (KM)	21.21
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (158.66, α)	130.5	Adjusted Chi Square Value (158.66, β)	130.3
95% Gamma Approximate KM-UCL (use when n>=50)	3.962	95% Gamma Adjusted KM-UCL (use when n<50)	3.97
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.962	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.0108	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0524	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0775	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.258	Mean in Log Scale	0.483
SD in Original Scale	4.515	SD in Log Scale	1.206
95% t UCL (assumes normality of ROS data)	3.862	95% Percentile Bootstrap UCL	3.88
95% BCA Bootstrap UCL	4.009	95% Bootstrap t UCL	3.97
95% H-UCL (Log ROS)	4.247		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	0.48	KM Geo Mean	1.616
KM SD (logged)	1.206	95% Critical H Value (KM-Log)	2.404
KM Standard Error of Mean (logged)	0.0981	95% H-UCL (KM -Log)	4.232
KM SD (logged)	1.206	95% Critical H Value (KM-Log)	2.404
KM Standard Error of Mean (logged)	0.0981		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.261	Mean in Log Scale	0.423
SD in Original Scale	4.521	SD in Log Scale	1.321
95% t UCL (Assumes normality)	3.866	95% H-Stat UCL	4.785
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	4.232		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Arsenic

General Statistics			
Total Number of Observations	185	Number of Distinct Observations	125
Number of Detects	180	Number of Non-Detects	5
Number of Distinct Detects	124	Number of Distinct Non-Detects	2
Minimum Detect	0.25	Minimum Non-Detect	0.1
Maximum Detect	790	Maximum Non-Detect	1
Variance Detects	11658	Percent Non-Detects	2.70%
Mean Detects	56.12	SD Detects	108
Median Detects	11	CV Detects	1.924
Skewness Detects	3.378	Kurtosis Detects	15.13
Mean of Logged Detects	2.557	SD of Logged Detects	1.791
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.573	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.314	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0665	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	54.61	KM Standard Error of Mean	7.858
KM SD	106.6	95% KM (BCA) UCL	68.79
95% KM (t) UCL	67.6	95% KM (Percentile Bootstrap) UCL	67.74
95% KM (z) UCL	67.54	95% KM Bootstrap t UCL	70.59
90% KM Chebyshev UCL	78.19	95% KM Chebyshev UCL	88.87
97.5% KM Chebyshev UCL	103.7	99% KM Chebyshev UCL	132.8
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	7.658	Anderson-Darling GOF Test	
5% A-D Critical Value	0.835	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.169	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0734	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.441	k star (bias corrected MLE)	0.437
Theta hat (MLE)	127.3	Theta star (bias corrected MLE)	128.4
nu hat (MLE)	158.7	nu star (bias corrected)	157.3
Mean (detects)	56.12		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	54.6
Maximum	790	Median	11
SD	106.9	CV	1.958
k hat (MLE)	0.402	k star (bias corrected MLE)	0.399
Theta hat (MLE)	135.9	Theta star (bias corrected MLE)	136.9
nu hat (MLE)	148.7	nu star (bias corrected)	147.6
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (147.60, α)	120.5	Adjusted Chi Square Value (147.60, β)	120.3
95% Gamma Approximate UCL (use when n>=50)	66.87	95% Gamma Adjusted UCL (use when n<50)	66.97

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	54.61	SD (KM)	106.6
Variance (KM)	11361	SE of Mean (KM)	7.858
k hat (KM)	0.263	k star (KM)	0.262
nu hat (KM)	97.13	nu star (KM)	96.89
theta hat (KM)	208	theta star (KM)	208.6
80% gamma percentile (KM)	80.57	90% gamma percentile (KM)	163.3
95% gamma percentile (KM)	260.7	99% gamma percentile (KM)	518.2
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (96.89, α)	75.18	Adjusted Chi Square Value (96.89, β)	75.03
95% Gamma Approximate KM-UCL (use when n>=50)	70.38	95% Gamma Adjusted KM-UCL (use when n<50)	70.52
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.958	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	2.85E-04	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0657	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0665	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	54.61	Mean in Log Scale	2.452
SD in Original Scale	106.9	SD in Log Scale	1.88
95% t UCL (assumes normality of ROS data)	67.6	95% Percentile Bootstrap UCL	67.85
95% BCA Bootstrap UCL	70.99	95% Bootstrap t UCL	70.34
95% H-UCL (Log ROS)	104.1		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	2.456	KM Geo Mean	11.66
KM SD (logged)	1.868	95% Critical H Value (KM-Log)	3.059
KM Standard Error of Mean (logged)	0.138	95% H-UCL (KM -Log)	101.6
KM SD (logged)	1.868	95% Critical H Value (KM-Log)	3.059
KM Standard Error of Mean (logged)	0.138		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	54.61	Mean in Log Scale	2.457
SD in Original Scale	106.9	SD in Log Scale	1.873
95% t UCL (Assumes normality)	67.6	95% H-Stat UCL	102.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	101.6		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Barium

General Statistics			
Total Number of Observations	185	Number of Distinct Observations	99
Number of Detects	182	Number of Non-Detects	3
Number of Distinct Detects	97	Number of Distinct Non-Detects	2
Minimum Detect	8.2	Minimum Non-Detect	1
Maximum Detect	1500	Maximum Non-Detect	20
Variance Detects	33045	Percent Non-Detects	1.62%
Mean Detects	128.9	SD Detects	181.8
Median Detects	75.5	CV Detects	1.41
Skewness Detects	4.611	Kurtosis Detects	26.01
Mean of Logged Detects	4.447	SD of Logged Detects	0.805
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.515	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.273	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0661	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	126.9	KM Standard Error of Mean	13.31
KM SD	180.5	95% KM (BCA) UCL	150
95% KM (t) UCL	148.9	95% KM (Percentile Bootstrap) UCL	150.7
95% KM (z) UCL	148.8	95% KM Bootstrap t UCL	158.5
90% KM Chebyshev UCL	166.8	95% KM Chebyshev UCL	184.9
97.5% KM Chebyshev UCL	210	99% KM Chebyshev UCL	259.3
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.223	Anderson-Darling GOF Test	
5% A-D Critical Value	0.775	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.147	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0698	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.356	k star (bias corrected MLE)	1.337
Theta hat (MLE)	95.08	Theta star (bias corrected MLE)	96.41
nu hat (MLE)	493.5	nu star (bias corrected)	486.7
Mean (detects)	128.9		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	126.8
Maximum	1500	Median	74
SD	181	CV	1.427
k hat (MLE)	1.057	k star (bias corrected MLE)	1.044
Theta hat (MLE)	120	Theta star (bias corrected MLE)	121.5
nu hat (MLE)	391.1	nu star (bias corrected)	386.1
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (386.14, α)	341.6	Adjusted Chi Square Value (386.14, β)	341.3
95% Gamma Approximate UCL (use when n>=50)	143.4	95% Gamma Adjusted UCL (use when n<50)	143.5

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	126.9	SD (KM)	180.5
Variance (KM)	32584	SE of Mean (KM)	13.31
k hat (KM)	0.494	k star (KM)	0.49
nu hat (KM)	182.8	nu star (KM)	181.1
theta hat (KM)	256.8	theta star (KM)	259.1
80% gamma percentile (KM)	208.2	90% gamma percentile (KM)	344.7
95% gamma percentile (KM)	491	99% gamma percentile (KM)	851.5
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (181.15, α)	151	Adjusted Chi Square Value (181.15, β)	150.8
95% Gamma Approximate KM-UCL (use when n>=50)	152.2	95% Gamma Adjusted KM-UCL (use when n<50)	152.4
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.955	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	5.65E-05	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0791	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0661	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	127	Mean in Log Scale	4.414
SD in Original Scale	180.9	SD in Log Scale	0.839
95% t UCL (assumes normality of ROS data)	149	95% Percentile Bootstrap UCL	150.9
95% BCA Bootstrap UCL	156.1	95% Bootstrap t UCL	156.1
95% H-UCL (Log ROS)	133.2		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.382	KM Geo Mean	79.98
KM SD (logged)	0.952	95% Critical H Value (KM-Log)	2.129
KM Standard Error of Mean (logged)	0.0706	95% H-UCL (KM -Log)	146.2
KM SD (logged)	0.952	95% Critical H Value (KM-Log)	2.129
KM Standard Error of Mean (logged)	0.0706		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	126.9	Mean in Log Scale	4.38
SD in Original Scale	181	SD in Log Scale	0.972
95% t UCL (Assumes normality)	148.9	95% H-Stat UCL	149.3
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	184.9		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Beryllium

General Statistics			
Total Number of Observations	154	Number of Distinct Observations	44
Number of Detects	58	Number of Non-Detects	96
Number of Distinct Detects	30	Number of Distinct Non-Detects	21
Minimum Detect	0.087	Minimum Non-Detect	0.07
Maximum Detect	0.65	Maximum Non-Detect	0.25
Variance Detects	0.0158	Percent Non-Detects	62.34%
Mean Detects	0.214	SD Detects	0.126
Median Detects	0.178	CV Detects	0.588
Skewness Detects	1.818	Kurtosis Detects	3.604
Mean of Logged Detects	-1.676	SD of Logged Detects	0.499
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.808	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	6.70E-10	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.185	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.116	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.129	KM Standard Error of Mean	0.00842
KM SD	0.101	95% KM (BCA) UCL	0.147
95% KM (t) UCL	0.143	95% KM (Percentile Bootstrap) UCL	0.145
95% KM (z) UCL	0.143	95% KM Bootstrap t UCL	0.145
90% KM Chebyshev UCL	0.154	95% KM Chebyshev UCL	0.166
97.5% KM Chebyshev UCL	0.182	99% KM Chebyshev UCL	0.213
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.184	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.119	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.117	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.913	k star (bias corrected MLE)	3.722
Theta hat (MLE)	0.0546	Theta star (bias corrected MLE)	0.0574
nu hat (MLE)	453.9	nu star (bias corrected)	431.8
Mean (detects)	0.214		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0933
Maximum	0.65	Median	0.026
SD	0.123	CV	1.315
k hat (MLE)	0.679	k star (bias corrected MLE)	0.67
Theta hat (MLE)	0.137	Theta star (bias corrected MLE)	0.139
nu hat (MLE)	209.2	nu star (bias corrected)	206.5
Adjusted Level of Significance (β)	0.0484		
Approximate Chi Square Value (206.48, α)	174.2	Adjusted Chi Square Value (206.48, β)	173.9
95% Gamma Approximate UCL (use when n>=50)	0.111	95% Gamma Adjusted UCL (use when n<50)	0.111

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.129	SD (KM)	0.101
Variance (KM)	0.0103	SE of Mean (KM)	0.00842
k hat (KM)	1.616	k star (KM)	1.589
nu hat (KM)	497.7	nu star (KM)	489.3
theta hat (KM)	0.0798	theta star (KM)	0.0812
80% gamma percentile (KM)	0.198	90% gamma percentile (KM)	0.265
95% gamma percentile (KM)	0.33	99% gamma percentile (KM)	0.475
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (489.30, α)	439	Adjusted Chi Square Value (489.30, β)	438.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.144	95% Gamma Adjusted KM-UCL (use when n<50)	0.144
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.945	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	1.91E-02	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0893	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.116	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.115	Mean in Log Scale	-2.51
SD in Original Scale	0.111	SD in Log Scale	0.812
95% t UCL (assumes normality of ROS data)	0.129	95% Percentile Bootstrap UCL	0.129
95% BCA Bootstrap UCL	0.131	95% Bootstrap t UCL	0.132
95% H-UCL (Log ROS)	0.129		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-2.231	KM Geo Mean	0.107
KM SD (logged)	0.54	95% Critical H Value (KM-Log)	1.856
KM Standard Error of Mean (logged)	0.0485	95% H-UCL (KM -Log)	0.135
KM SD (logged)	0.54	95% Critical H Value (KM-Log)	1.856
KM Standard Error of Mean (logged)	0.0485		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.115	Mean in Log Scale	-2.446
SD in Original Scale	0.109	SD in Log Scale	0.685
95% t UCL (Assumes normality)	0.129	95% H-Stat UCL	0.122
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM Student's t	0.119	KM H-UCL	0.135

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Cadmium

General Statistics			
Total Number of Observations	181	Number of Distinct Observations	111
Number of Detects	134	Number of Non-Detects	47
Number of Distinct Detects	96	Number of Distinct Non-Detects	18
Minimum Detect	0.045	Minimum Non-Detect	0.03
Maximum Detect	80	Maximum Non-Detect	1
Variance Detects	57.99	Percent Non-Detects	25.97%
Mean Detects	2.294	SD Detects	7.615
Median Detects	0.54	CV Detects	3.319
Skewness Detects	8.479	Kurtosis Detects	83.16
Mean of Logged Detects	-0.453	SD of Logged Detects	1.432
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.297	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.384	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0769	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	1.732	KM Standard Error of Mean	0.492
KM SD	6.597	95% KM (BCA) UCL	2.667
95% KM (t) UCL	2.546	95% KM (Percentile Bootstrap) UCL	2.585
95% KM (z) UCL	2.542	95% KM Bootstrap t UCL	3.618
90% KM Chebyshev UCL	3.209	95% KM Chebyshev UCL	3.878
97.5% KM Chebyshev UCL	4.806	99% KM Chebyshev UCL	6.63
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	7.809	Anderson-Darling GOF Test	
5% A-D Critical Value	0.82	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.174	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0854	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.496	k star (bias corrected MLE)	0.49
Theta hat (MLE)	4.628	Theta star (bias corrected MLE)	4.686
nu hat (MLE)	132.9	nu star (bias corrected)	131.2
Mean (detects)	2.294		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.715
Maximum	80	Median	0.34
SD	6.62	CV	3.861
k hat (MLE)	0.338	k star (bias corrected MLE)	0.336
Theta hat (MLE)	5.07	Theta star (bias corrected MLE)	5.099
nu hat (MLE)	122.4	nu star (bias corrected)	121.8
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (121.75, α)	97.27	Adjusted Chi Square Value (121.75, β)	97.1
95% Gamma Approximate UCL (use when n>=50)	2.146	95% Gamma Adjusted UCL (use when n<50)	2.15

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	1.732	SD (KM)	6.597
Variance (KM)	43.52	SE of Mean (KM)	0.492
k hat (KM)	0.0689	k star (KM)	0.0715
nu hat (KM)	24.96	nu star (KM)	25.88
theta hat (KM)	25.12	theta star (KM)	24.23
80% gamma percentile (KM)	0.651	90% gamma percentile (KM)	3.799
95% gamma percentile (KM)	9.988	99% gamma percentile (KM)	32.33
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (25.88, α)	15.29	Adjusted Chi Square Value (25.88, β)	15.22
95% Gamma Approximate KM-UCL (use when n>=50)	2.933	95% Gamma Adjusted KM-UCL (use when n<50)	2.945
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.967	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	4.04E-02	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0529	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0769	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.731	Mean in Log Scale	-1.083
SD in Original Scale	6.616	SD in Log Scale	1.733
95% t UCL (assumes normality of ROS data)	2.544	95% Percentile Bootstrap UCL	2.618
95% BCA Bootstrap UCL	3.214	95% Bootstrap t UCL	3.629
95% H-UCL (Log ROS)	2.213		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-1.062	KM Geo Mean	0.346
KM SD (logged)	1.696	95% Critical H Value (KM-Log)	2.863
KM Standard Error of Mean (logged)	0.13	95% H-UCL (KM -Log)	2.094
KM SD (logged)	1.696	95% Critical H Value (KM-Log)	2.863
KM Standard Error of Mean (logged)	0.13		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.757	Mean in Log Scale	-0.984
SD in Original Scale	6.61	SD in Log Scale	1.72
95% t UCL (Assumes normality)	2.569	95% H-Stat UCL	2.379
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	2.094		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Chromium

General Statistics			
Total Number of Observations	185	Number of Distinct Observations	87
Number of Detects	183	Number of Non-Detects	2
Number of Distinct Detects	86	Number of Distinct Non-Detects	1
Minimum Detect	4.2	Minimum Non-Detect	5
Maximum Detect	590	Maximum Non-Detect	5
Variance Detects	3426	Percent Non-Detects	1.08%
Mean Detects	39.91	SD Detects	58.53
Median Detects	25	CV Detects	1.467
Skewness Detects	5.935	Kurtosis Detects	46.88
Mean of Logged Detects	3.278	SD of Logged Detects	0.802
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.495	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.287	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0659	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	39.52	KM Standard Error of Mean	4.289
KM SD	58.18	95% KM (BCA) UCL	46.56
95% KM (t) UCL	46.61	95% KM (Percentile Bootstrap) UCL	47.3
95% KM (z) UCL	46.58	95% KM Bootstrap t UCL	50.07
90% KM Chebyshev UCL	52.39	95% KM Chebyshev UCL	58.22
97.5% KM Chebyshev UCL	66.31	99% KM Chebyshev UCL	82.2
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	7.06E+00	Anderson-Darling GOF Test	
5% A-D Critical Value	0.774	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.13	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0695	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.366	k star (bias corrected MLE)	1.347
Theta hat (MLE)	29.23	Theta star (bias corrected MLE)	29.63
nu hat (MLE)	499.8	nu star (bias corrected)	492.9
Mean (detects)	39.91		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	39.48
Maximum	590	Median	24
SD	58.36	CV	1.478
k hat (MLE)	1.173	k star (bias corrected MLE)	1.158
Theta hat (MLE)	33.65	Theta star (bias corrected MLE)	34.09
nu hat (MLE)	434.1	nu star (bias corrected)	428.4
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (428.42, α)	381.4	Adjusted Chi Square Value (428.42, β)	381.1
95% Gamma Approximate UCL (use when n>=50)	44.34	95% Gamma Adjusted UCL (use when n<50)	44.38

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	39.52	SD (KM)	58.18
Variance (KM)	3384	SE of Mean (KM)	4.289
k hat (KM)	0.462	k star (KM)	0.458
nu hat (KM)	170.8	nu star (KM)	169.3
theta hat (KM)	85.63	theta star (KM)	86.36
80% gamma percentile (KM)	64.59	90% gamma percentile (KM)	108.9
95% gamma percentile (KM)	156.7	99% gamma percentile (KM)	275.2
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (169.34, α)	140.3	Adjusted Chi Square Value (169.34, β)	140
95% Gamma Approximate KM-UCL (use when n>=50)	47.72	95% Gamma Adjusted KM-UCL (use when n<50)	47.79
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.953	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	1.99E-05	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0765	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0659	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	39.52	Mean in Log Scale	3.256
SD in Original Scale	58.34	SD in Log Scale	0.824
95% t UCL (assumes normality of ROS data)	46.61	95% Percentile Bootstrap UCL	46.46
95% BCA Bootstrap UCL	48.92	95% Bootstrap t UCL	49.56
95% H-UCL (Log ROS)	41.22		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	3.258	KM Geo Mean	25.99
KM SD (logged)	0.818	95% Critical H Value (KM-Log)	2.022
KM Standard Error of Mean (logged)	0.0603	95% H-UCL (KM -Log)	41.02
KM SD (logged)	0.818	95% Critical H Value (KM-Log)	2.022
KM Standard Error of Mean (logged)	0.0603		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	39.51	Mean in Log Scale	3.252
SD in Original Scale	58.34	SD in Log Scale	0.834
95% t UCL (Assumes normality)	46.6	95% H-Stat UCL	41.48
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	58.22		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Cobalt

General Statistics			
Total Number of Observations	157	Number of Distinct Observations	50
Number of Detects	155	Number of Non-Detects	2
Number of Distinct Detects	48	Number of Distinct Non-Detects	2
Minimum Detect	3.9	Minimum Non-Detect	2
Maximum Detect	37.5	Maximum Non-Detect	3
Variance Detects	22.71	Percent Non-Detects	1.27%
Mean Detects	12.6	SD Detects	4.765
Median Detects	12	CV Detects	0.378
Skewness Detects	2.418	Kurtosis Detects	9.596
Mean of Logged Detects	2.476	SD of Logged Detects	0.336
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.809	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.183	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0716	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	12.47	KM Standard Error of Mean	0.39
KM SD	4.867	95% KM (BCA) UCL	13.19
95% KM (t) UCL	13.11	95% KM (Percentile Bootstrap) UCL	13.11
95% KM (z) UCL	13.11	95% KM Bootstrap t UCL	13.21
90% KM Chebyshev UCL	13.64	95% KM Chebyshev UCL	14.17
97.5% KM Chebyshev UCL	14.9	99% KM Chebyshev UCL	16.34
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.19	Anderson-Darling GOF Test	
5% A-D Critical Value	0.752	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.135	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0752	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	8.82	k star (bias corrected MLE)	8.654
Theta hat (MLE)	1.429	Theta star (bias corrected MLE)	1.456
nu hat (MLE)	2734	nu star (bias corrected)	2683
Mean (detects)	12.6		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	3.716	Mean	12.49
Maximum	37.5	Median	12
SD	4.839	CV	0.387
k hat (MLE)	8.03	k star (bias corrected MLE)	7.881
Theta hat (MLE)	1.555	Theta star (bias corrected MLE)	1.585
nu hat (MLE)	2522	nu star (bias corrected)	2475
Adjusted Level of Significance (β)	0.0485		
Approximate Chi Square Value (N/A, α)	2360	Adjusted Chi Square Value (N/A, β)	2359
95% Gamma Approximate UCL (use when n>=50)	13.1	95% Gamma Adjusted UCL (use when n<50)	13.1

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	12.47	SD (KM)	4.867
Variance (KM)	23.69	SE of Mean (KM)	0.39
k hat (KM)	6.561	k star (KM)	6.44
nu hat (KM)	2060	nu star (KM)	2022
theta hat (KM)	1.9	theta star (KM)	1.936
80% gamma percentile (KM)	16.3	90% gamma percentile (KM)	19.03
95% gamma percentile (KM)	21.49	99% gamma percentile (KM)	26.63
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (N/A, α)	1919	Adjusted Chi Square Value (N/A, β)	1918
95% Gamma Approximate KM-UCL (use when n>=50)	13.14	95% Gamma Adjusted KM-UCL (use when n<50)	13.15
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.943	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	2.34E-06	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.118	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0716	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	12.51	Mean in Log Scale	2.465
SD in Original Scale	4.811	SD in Log Scale	0.348
95% t UCL (assumes normality of ROS data)	13.14	95% Percentile Bootstrap UCL	13.14
95% BCA Bootstrap UCL	13.22	95% Bootstrap t UCL	13.24
95% H-UCL (Log ROS)	13.12		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	2.453	KM Geo Mean	11.63
KM SD (logged)	0.388	95% Critical H Value (KM-Log)	1.772
KM Standard Error of Mean (logged)	0.0311	95% H-UCL (KM -Log)	13.25
KM SD (logged)	0.388	95% Critical H Value (KM-Log)	1.772
KM Standard Error of Mean (logged)	0.0311		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	12.46	Mean in Log Scale	2.447
SD in Original Scale	4.904	SD in Log Scale	0.421
95% t UCL (Assumes normality)	13.1	95% H-Stat UCL	13.41
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	13.11	KM H-UCL	13.25
95% KM (BCA) UCL	13.19		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Copper

General Statistics			
Total Number of Observations	183	Number of Distinct Observations	91
Number of Detects	182	Number of Non-Detects	1
Number of Distinct Detects	90	Number of Distinct Non-Detects	1
Minimum Detect	5.8	Minimum Non-Detect	2
Maximum Detect	6000	Maximum Non-Detect	2
Variance Detects	212562	Percent Non-Detects	0.55%
Mean Detects	193.3	SD Detects	461
Median Detects	120	CV Detects	2.385
Skewness Detects	11.28	Kurtosis Detects	140.9
Mean of Logged Detects	4.788	SD of Logged Detects	0.883
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.258	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.342	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0661	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	192.3	KM Standard Error of Mean	34
KM SD	458.7	95% KM (BCA) UCL	262.4
95% KM (t) UCL	248.5	95% KM (Percentile Bootstrap) UCL	257
95% KM (z) UCL	248.2	95% KM Bootstrap t UCL	349.1
90% KM Chebyshev UCL	294.3	95% KM Chebyshev UCL	340.5
97.5% KM Chebyshev UCL	404.6	99% KM Chebyshev UCL	530.6
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	10.17	Anderson-Darling GOF Test	
5% A-D Critical Value	0.779	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.188	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.07	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.189	k star (bias corrected MLE)	1.173
Theta hat (MLE)	162.7	Theta star (bias corrected MLE)	164.9
nu hat (MLE)	432.6	nu star (bias corrected)	426.8
Mean (detects)	193.3		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	192.3
Maximum	6000	Median	120
SD	460	CV	2.392
k hat (MLE)	1.094	k star (bias corrected MLE)	1.08
Theta hat (MLE)	175.8	Theta star (bias corrected MLE)	178.1
nu hat (MLE)	400.4	nu star (bias corrected)	395.2
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (395.16, α)	350.1	Adjusted Chi Square Value (395.16, β)	349.8
95% Gamma Approximate UCL (use when n>=50)	217	95% Gamma Adjusted UCL (use when n<50)	217.2

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	192.3	SD (KM)	458.7
Variance (KM)	210438	SE of Mean (KM)	34
k hat (KM)	0.176	k star (KM)	0.176
nu hat (KM)	64.31	nu star (KM)	64.59
theta hat (KM)	1094	theta star (KM)	1090
80% gamma percentile (KM)	235.6	90% gamma percentile (KM)	579.3
95% gamma percentile (KM)	1022	99% gamma percentile (KM)	2267
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (64.59, α)	47.1	Adjusted Chi Square Value (64.59, β)	46.98
95% Gamma Approximate KM-UCL (use when n>=50)	263.7	95% Gamma Adjusted KM-UCL (use when n<50)	264.4
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.925	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	2.11E-12	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.145	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0661	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	192.3	Mean in Log Scale	4.775
SD in Original Scale	460	SD in Log Scale	0.898
95% t UCL (assumes normality of ROS data)	248.6	95% Percentile Bootstrap UCL	256.7
95% BCA Bootstrap UCL	310.8	95% Bootstrap t UCL	344.6
95% H-UCL (Log ROS)	203.7		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.766	KM Geo Mean	117.4
KM SD (logged)	0.928	95% Critical H Value (KM-Log)	2.108
KM Standard Error of Mean (logged)	0.0688	95% H-UCL (KM -Log)	208.8
KM SD (logged)	0.928	95% Critical H Value (KM-Log)	2.108
KM Standard Error of Mean (logged)	0.0688		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	192.3	Mean in Log Scale	4.762
SD in Original Scale	460	SD in Log Scale	0.949
95% t UCL (Assumes normality)	248.5	95% H-Stat UCL	213
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	340.5		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Lead

General Statistics

Total Number of Observations	183	Number of Distinct Observations	121
		Number of Missing Observations	2
Number of Detects	181	Number of Non-Detects	2
Number of Distinct Detects	119	Number of Distinct Non-Detects	2
Minimum Detect	1.47	Minimum Non-Detect	1
Maximum Detect	13000	Maximum Non-Detect	10
Variance Detects	666971	Percent Non-Detects	1.09%
Mean Detects	409.4	SD Detects	816.7
Median Detects	150	CV Detects	1.995
Skewness Detects	4.783	Kurtosis Detects	28.73
Mean of Logged Detects	4.936	SD of Logged Detects	1.568

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.498	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.309	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0663	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	405	KM Standard Error of Mean	60.12
KM SD	811.1	95% KM (BCA) UCL	514.9
95% KM (t) UCL	504.4	95% KM (Percentile Bootstrap) UCL	507.4
95% KM (z) UCL	503.9	95% KM Bootstrap t UCL	543.4
90% KM Chebyshev UCL	585.4	95% KM Chebyshev UCL	667.1
97.5% KM Chebyshev UCL	780.4	99% KM Chebyshev UCL	1003

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.656	Anderson-Darling GOF Test	
5% A-D Critical Value	0.813	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.119	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0721	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.576	k star (bias corrected MLE)	0.57
Theta hat (MLE)	710.7	Theta star (bias corrected MLE)	718
nu hat (MLE)	208.5	nu star (bias corrected)	206.4
Mean (detects)	409.4		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	405
Maximum	6805	Median	140
SD	813.3	CV	2.008
k hat (MLE)	0.536	k star (bias corrected MLE)	0.531
Theta hat (MLE)	755.5	Theta star (bias corrected MLE)	762.8
nu hat (MLE)	196.2	nu star (bias corrected)	194.3
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (194.31, α)	163.1	Adjusted Chi Square Value (194.31, β)	162.8
95% Gamma Approximate UCL (use when n>=50)	482.6	95% Gamma Adjusted UCL (use when n<50)	483.2

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	405	SD (KM)	811.1
Variance (KM)	657821	SE of Mean (KM)	60.12
k hat (KM)	0.249	k star (KM)	0.249
nu hat (KM)	91.25	nu star (KM)	91.09
theta hat (KM)	1624	theta star (KM)	1627
80% gamma percentile (KM)	587.2	90% gamma percentile (KM)	1216
95% gamma percentile (KM)	1963	99% gamma percentile (KM)	3953
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (91.09, α)	70.08	Adjusted Chi Square Value (91.09, β)	69.94
95% Gamma Approximate KM-UCL (use when n>=50)	526.4	95% Gamma Adjusted KM-UCL (use when n<50)	527.5
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.978	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.258	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0534	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0663	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	405	Mean in Log Scale	4.896
SD in Original Scale	813.3	SD in Log Scale	1.608
95% t UCL (assumes normality of ROS data)	504.4	95% Percentile Bootstrap UCL	508.6
95% BCA Bootstrap UCL	527.5	95% Bootstrap t UCL	533.6
95% H-UCL (Log ROS)	677.3		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.89	KM Geo Mean	133
KM SD (logged)	1.617	95% Critical H Value (KM-Log)	2.777
KM Standard Error of Mean (logged)	0.12	95% H-UCL (KM -Log)	685.6
KM SD (logged)	1.617	95% Critical H Value (KM-Log)	2.777
KM Standard Error of Mean (logged)	0.12		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	405	Mean in Log Scale	4.887
SD in Original Scale	813.3	SD in Log Scale	1.632
95% t UCL (Assumes normality)	504.4	95% H-Stat UCL	703.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	685.6		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Mercury

General Statistics

Total Number of Observations	183	Number of Distinct Observations	106
Number of Detects	177	Number of Non-Detects	6
Number of Distinct Detects	105	Number of Distinct Non-Detects	3
Minimum Detect	0	Minimum Non-Detect	0.05
Maximum Detect	37	Maximum Non-Detect	0.2
Variance Detects	15.5	Percent Non-Detects	3.28%
Mean Detects	0.752	SD Detects	3.937
Median Detects	0.14	CV Detects	5.237
Skewness Detects	8.692	Kurtosis Detects	77.18

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.172	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.424	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.067	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.729	KM Standard Error of Mean	0.286
KM SD	3.863	95% KM (BCA) UCL	1.288
95% KM (t) UCL	1.202	95% KM (Percentile Bootstrap) UCL	1.233
95% KM (z) UCL	1.2	95% KM Bootstrap t UCL	2.968
90% KM Chebyshev UCL	1.588	95% KM Chebyshev UCL	1.977
97.5% KM Chebyshev UCL	2.517	99% KM Chebyshev UCL	3.578

Gamma Statistics on Detected Data Only

Dataset Contains Values <= 0 - Cannot Compute Gamma Statistics!

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.729	SD (KM)	3.863
Variance (KM)	14.92	SE of Mean (KM)	0.286
k hat (KM)	0.0356	k star (KM)	0.0387
nu hat (KM)	13.04	nu star (KM)	14.15
theta hat (KM)	20.47	theta star (KM)	18.85
80% gamma percentile (KM)	0.0341	90% gamma percentile (KM)	0.744
95% gamma percentile (KM)	3.428	99% gamma percentile (KM)	17.43

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0487
Approximate Chi Square Value (14.15, α)	6.677	Adjusted Chi Square Value (14.15, β)	6.637
95% Gamma Approximate KM-UCL (use when n>=50)	1.545	95% Gamma Adjusted KM-UCL (use when n<50)	1.555

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	N/A	KM Geo Mean	N/A
KM SD (logged)	N/A	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	N/A	95% H-UCL (KM -Log)	N/A
KM SD (logged)	N/A	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	N/A		

DL/2 Statistics

Mean in Original Scale	0.729	SD in Original Scale	3.873
95% t UCL (Assumes normality)	1.202		

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	3.578

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Molybdenum

General Statistics			
Total Number of Observations	153	Number of Distinct Observations	90
Number of Detects	127	Number of Non-Detects	26
Number of Distinct Detects	87	Number of Distinct Non-Detects	9
Minimum Detect	0.15	Minimum Non-Detect	0.17
Maximum Detect	22	Maximum Non-Detect	0.25
Variance Detects	7.566	Percent Non-Detects	16.99%
Mean Detects	1.708	SD Detects	2.751
Median Detects	0.87	CV Detects	1.61
Skewness Detects	4.568	Kurtosis Detects	26.56
Mean of Logged Detects	-0.0575	SD of Logged Detects	0.999
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.533	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.286	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.079	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	1.445	KM Standard Error of Mean	0.208
KM SD	2.563	95% KM (BCA) UCL	1.827
95% KM (t) UCL	1.79	95% KM (Percentile Bootstrap) UCL	1.808
95% KM (z) UCL	1.787	95% KM Bootstrap t UCL	1.971
90% KM Chebyshev UCL	2.069	95% KM Chebyshev UCL	2.352
97.5% KM Chebyshev UCL	2.744	99% KM Chebyshev UCL	3.515
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.888	Anderson-Darling GOF Test	
5% A-D Critical Value	0.784	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.175	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.085	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.976	k star (bias corrected MLE)	0.958
Theta hat (MLE)	1.75	Theta star (bias corrected MLE)	1.782
nu hat (MLE)	248	nu star (bias corrected)	243.4
Mean (detects)	1.708		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.42
Maximum	22	Median	0.65
SD	2.585	CV	1.821
k hat (MLE)	0.533	k star (bias corrected MLE)	0.527
Theta hat (MLE)	2.665	Theta star (bias corrected MLE)	2.695
nu hat (MLE)	163	nu star (bias corrected)	161.2
Adjusted Level of Significance (β)	0.0484		
Approximate Chi Square Value (161.16, α)	132.8	Adjusted Chi Square Value (161.16, β)	132.6
95% Gamma Approximate UCL (use when n>=50)	1.723	95% Gamma Adjusted UCL (use when n<50)	1.726

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	1.445	SD (KM)	2.563
Variance (KM)	6.568	SE of Mean (KM)	0.208
k hat (KM)	0.318	k star (KM)	0.316
nu hat (KM)	97.32	nu star (KM)	96.75
theta hat (KM)	4.544	theta star (KM)	4.571
80% gamma percentile (KM)	2.244	90% gamma percentile (KM)	4.235
95% gamma percentile (KM)	6.5	99% gamma percentile (KM)	12.35
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (96.75, α)	75.06	Adjusted Chi Square Value (96.75, β)	74.88
95% Gamma Approximate KM-UCL (use when n>=50)	1.863	95% Gamma Adjusted KM-UCL (use when n<50)	1.867
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.958	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	4.07E-03	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0927	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.079	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.439	Mean in Log Scale	-0.413
SD in Original Scale	2.575	SD in Log Scale	1.212
95% t UCL (assumes normality of ROS data)	1.783	95% Percentile Bootstrap UCL	1.789
95% BCA Bootstrap UCL	1.901	95% Bootstrap t UCL	1.918
95% H-UCL (Log ROS)	1.746		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.359	KM Geo Mean	0.699
KM SD (logged)	1.125	95% Critical H Value (KM-Log)	2.324
KM Standard Error of Mean (logged)	0.0915	95% H-UCL (KM -Log)	1.627
KM SD (logged)	1.125	95% Critical H Value (KM-Log)	2.324
KM Standard Error of Mean (logged)	0.0915		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.436	Mean in Log Scale	-0.428
SD in Original Scale	2.576	SD in Log Scale	1.226
95% t UCL (Assumes normality)	1.781	95% H-Stat UCL	1.759
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	2.352		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Nickel

General Statistics			
Total Number of Observations	157	Number of Distinct Observations	88
		Number of Missing Observations	0
Minimum	3.6	Mean	27.74
Maximum	170	Median	19
SD	25.74	Std. Error of Mean	2.054
Coefficient of Variation	0.928	Skewness	2.352
Normal GOF Test			
Shapiro Wilk Test Statistic	0.783	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.174	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0711	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	31.14	95% Adjusted-CLT UCL (Chen-1995)	31.53
		95% Modified-t UCL (Johnson-1978)	31.2
Gamma GOF Test			
A-D Test Statistic	1.172	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.77	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0801	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0761	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.562	k star (bias corrected MLE)	1.536
Theta hat (MLE)	17.76	Theta star (bias corrected MLE)	18.06
nu hat (MLE)	490.4	nu star (bias corrected)	482.3
MLE Mean (bias corrected)	27.74	MLE Sd (bias corrected)	22.38
		Approximate Chi Square Value (0.05)	432.4
Adjusted Level of Significance	0.0485	Adjusted Chi Square Value	432
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	30.94	95% Adjusted Gamma UCL (use when n<50)	30.97
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.969	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0399	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0545	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0711	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.281	Mean of logged Data	2.97
Maximum of Logged Data	5.136	SD of logged Data	0.852
Assuming Lognormal Distribution			
95% H-UCL	32.3	90% Chebyshev (MVUE) UCL	34.53
95% Chebyshev (MVUE) UCL	37.51	97.5% Chebyshev (MVUE) UCL	41.66
99% Chebyshev (MVUE) UCL	49.8		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Nonparametric Distribution Free UCLs			
95% CLT UCL	31.12	95% Jackknife UCL	31.14
95% Standard Bootstrap UCL	31.13	95% Bootstrap-t UCL	31.54
95% Hall's Bootstrap UCL	31.65	95% Percentile Bootstrap UCL	31.05
95% BCA Bootstrap UCL	31.67		
90% Chebyshev(Mean, Sd) UCL	33.9	95% Chebyshev(Mean, Sd) UCL	36.69
97.5% Chebyshev(Mean, Sd) UCL	40.57	99% Chebyshev(Mean, Sd) UCL	48.18
Suggested UCL to Use			
95% H-UCL	32.3		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Selenium

General Statistics			
Total Number of Observations	181	Number of Distinct Observations	53
Number of Detects	52	Number of Non-Detects	129
Number of Distinct Detects	34	Number of Distinct Non-Detects	30
Minimum Detect	0.3	Minimum Non-Detect	0.35
Maximum Detect	2.6	Maximum Non-Detect	13
Variance Detects	0.246	Percent Non-Detects	71.27%
Mean Detects	1.006	SD Detects	0.496
Median Detects	0.865	CV Detects	0.493
Skewness Detects	1.396	Kurtosis Detects	1.666
Mean of Logged Detects	-0.0962	SD of Logged Detects	0.447
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.862	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	2.60E-06	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.177	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.122	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.541	KM Standard Error of Mean	0.034
KM SD	0.425	95% KM (BCA) UCL	0.633
95% KM (t) UCL	0.597	95% KM (Percentile Bootstrap) UCL	0.619
95% KM (z) UCL	0.597	95% KM Bootstrap t UCL	0.596
90% KM Chebyshev UCL	0.643	95% KM Chebyshev UCL	0.689
97.5% KM Chebyshev UCL	0.753	99% KM Chebyshev UCL	0.879
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.126	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.134	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.123	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.046	k star (bias corrected MLE)	4.767
Theta hat (MLE)	0.199	Theta star (bias corrected MLE)	0.211
nu hat (MLE)	524.8	nu star (bias corrected)	495.8
Mean (detects)	1.006		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.397
Maximum	2.6	Median	0.198
SD	0.51	CV	1.282
k hat (MLE)	0.485	k star (bias corrected MLE)	0.481
Theta hat (MLE)	0.819	Theta star (bias corrected MLE)	0.826
nu hat (MLE)	175.7	nu star (bias corrected)	174.1
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (174.14, α)	144.6	Adjusted Chi Square Value (174.14, β)	144.4
95% Gamma Approximate UCL (use when n>=50)	0.478	95% Gamma Adjusted UCL (use when n<50)	0.479

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.541	SD (KM)	0.425
Variance (KM)	0.181	SE of Mean (KM)	0.034
k hat (KM)	1.618	k star (KM)	1.595
nu hat (KM)	585.6	nu star (KM)	577.2
theta hat (KM)	0.334	theta star (KM)	0.339
80% gamma percentile (KM)	0.831	90% gamma percentile (KM)	1.11
95% gamma percentile (KM)	1.38	99% gamma percentile (KM)	1.988
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (577.23, α)	522.5	Adjusted Chi Square Value (577.23, β)	522.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.597	95% Gamma Adjusted KM-UCL (use when n<50)	0.598
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.967	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.268	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.105	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.122	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.529	Mean in Log Scale	-0.879
SD in Original Scale	0.429	SD in Log Scale	0.671
95% t UCL (assumes normality of ROS data)	0.582	95% Percentile Bootstrap UCL	0.584
95% BCA Bootstrap UCL	0.59	95% Bootstrap t UCL	0.589
95% H-UCL (Log ROS)	0.572		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.816	KM Geo Mean	0.442
KM SD (logged)	0.575	95% Critical H Value (KM-Log)	1.856
KM Standard Error of Mean (logged)	0.0475	95% H-UCL (KM -Log)	0.565
KM SD (logged)	0.575	95% Critical H Value (KM-Log)	1.856
KM Standard Error of Mean (logged)	0.0475		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.627	Mean in Log Scale	-0.767
SD in Original Scale	0.634	SD in Log Scale	0.734
95% t UCL (Assumes normality)	0.704	95% H-Stat UCL	0.677
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM Student's t	0.485	KM H-UCL	0.565

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Silver

General Statistics			
Total Number of Observations	181	Number of Distinct Observations	62
Number of Detects	93	Number of Non-Detects	88
Number of Distinct Detects	58	Number of Distinct Non-Detects	12
Minimum Detect	0.12	Minimum Non-Detect	0.1
Maximum Detect	4.4	Maximum Non-Detect	1
Variance Detects	0.669	Percent Non-Detects	48.62%
Mean Detects	0.678	SD Detects	81.80%
Median Detects	0.38	CV Detects	1.207
Skewness Detects	3.027	Kurtosis Detects	9.91
Mean of Logged Detects	-0.784	SD of Logged Detects	0.801
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.605	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.265	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0921	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.424	KM Standard Error of Mean	0.0487
KM SD	0.645	95% KM (BCA) UCL	0.509
95% KM (t) UCL	0.504	95% KM (Percentile Bootstrap) UCL	0.51
95% KM (z) UCL	0.504	95% KM Bootstrap t UCL	0.529
90% KM Chebyshev UCL	0.57	95% KM Chebyshev UCL	0.636
97.5% KM Chebyshev UCL	0.728	99% KM Chebyshev UCL	0.908
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.933	Anderson-Darling GOF Test	
5% A-D Critical Value	0.773	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.175	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0947	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.41	k star (bias corrected MLE)	1.372
Theta hat (MLE)	0.481	Theta star (bias corrected MLE)	0.494
nu hat (MLE)	262.3	nu star (bias corrected)	255.2
Mean (detects)	0.678		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.381
Maximum	4.4	Median	0.2
SD	0.674	CV	1.767
k hat (MLE)	0.441	k star (bias corrected MLE)	0.438
Theta hat (MLE)	0.864	Theta star (bias corrected MLE)	0.871
nu hat (MLE)	159.8	nu star (bias corrected)	158.5
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (158.46, α)	130.4	Adjusted Chi Square Value (158.46, β)	130.2
95% Gamma Approximate UCL (use when n>=50)	0.464	95% Gamma Adjusted UCL (use when n<50)	0.464

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.424	SD (KM)	0.645
Variance (KM)	0.416	SE of Mean (KM)	0.0487
k hat (KM)	0.431	k star (KM)	0.428
nu hat (KM)	156	nu star (KM)	154.8
theta hat (KM)	0.983	theta star (KM)	0.991
80% gamma percentile (KM)	0.689	90% gamma percentile (KM)	1.182
95% gamma percentile (KM)	1.72	99% gamma percentile (KM)	3.063
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (154.76, α)	127	Adjusted Chi Square Value (154.76, β)	126.8
95% Gamma Approximate KM-UCL (use when n>=50)	0.516	95% Gamma Adjusted KM-UCL (use when n<50)	0.517
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.917	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	2.35E-06	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.112	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0921	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.409	Mean in Log Scale	-1.579
SD in Original Scale	0.654	SD in Log Scale	1.137
95% t UCL (assumes normality of ROS data)	0.49	95% Percentile Bootstrap UCL	0.495
95% BCA Bootstrap UCL	0.52	95% Bootstrap t UCL	0.518
95% H-UCL (Log ROS)	0.478		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-1.387	KM Geo Mean	0.25
KM SD (logged)	0.906	95% Critical H Value (KM-Log)	2.089
KM Standard Error of Mean (logged)	0.0733	95% H-UCL (KM -Log)	0.434
KM SD (logged)	0.906	95% Critical H Value (KM-Log)	2.089
KM Standard Error of Mean (logged)	0.0733		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.446	Mean in Log Scale	-1.361
SD in Original Scale	0.645	SD in Log Scale	0.997
95% t UCL (Assumes normality)	0.525	95% H-Stat UCL	0.495
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.636		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Thallium

General Statistics			
Total Number of Observations	153	Number of Distinct Observations	66
Number of Detects	90	Number of Non-Detects	63
Number of Distinct Detects	47	Number of Distinct Non-Detects	26
Minimum Detect	0.31	Minimum Non-Detect	0.29
Maximum Detect	3.9	Maximum Non-Detect	13
Variance Detects	0.246	Percent Non-Detects	41.18%
Mean Detects	1.118	SD Detects	49.60%
Median Detects	1.028	CV Detects	0.443
Skewness Detects	2.614	Kurtosis Detects	11.78
Mean of Logged Detects	0.0342	SD of Logged Detects	0.388
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.82	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	4.44E-16	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.157	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0936	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.797	KM Standard Error of Mean	0.0451
KM SD	0.548	95% KM (BCA) UCL	0.877
95% KM (t) UCL	0.872	95% KM (Percentile Bootstrap) UCL	0.876
95% KM (z) UCL	0.872	95% KM Bootstrap t UCL	0.877
90% KM Chebyshev UCL	0.933	95% KM Chebyshev UCL	0.994
97.5% KM Chebyshev UCL	1.079	99% KM Chebyshev UCL	1.246
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.864	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0989	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0943	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	6.646	k star (bias corrected MLE)	6.431
Theta hat (MLE)	0.168	Theta star (bias corrected MLE)	0.174
nu hat (MLE)	1196	nu star (bias corrected)	1158
Mean (detects)	1.118		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.772
Maximum	3.9	Median	0.74
SD	0.572	CV	0.741
k hat (MLE)	1.451	k star (bias corrected MLE)	1.427
Theta hat (MLE)	0.532	Theta star (bias corrected MLE)	0.541
nu hat (MLE)	444	nu star (bias corrected)	436.7
Adjusted Level of Significance (β)	0.0484		
Approximate Chi Square Value (436.65, α)	389.2	Adjusted Chi Square Value (436.65, β)	388.8
95% Gamma Approximate UCL (use when n>=50)	0.866	95% Gamma Adjusted UCL (use when n<50)	0.867

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.797	SD (KM)	0.548
Variance (KM)	0.3	SE of Mean (KM)	0.0451
k hat (KM)	2.121	k star (KM)	2.084
nu hat (KM)	649	nu star (KM)	637.6
theta hat (KM)	0.376	theta star (KM)	0.383
80% gamma percentile (KM)	1.188	90% gamma percentile (KM)	1.536
95% gamma percentile (KM)	1.867	99% gamma percentile (KM)	2.6
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (637.56, α)	580	Adjusted Chi Square Value (637.56, β)	579.5
95% Gamma Approximate KM-UCL (use when n>=50)	0.877	95% Gamma Adjusted KM-UCL (use when n<50)	0.877
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.982	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.674	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0806	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0936	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.847	Mean in Log Scale	-0.309
SD in Original Scale	0.503	SD in Log Scale	0.526
95% t UCL (assumes normality of ROS data)	0.914	95% Percentile Bootstrap UCL	0.917
95% BCA Bootstrap UCL	0.925	95% Bootstrap t UCL	0.926
95% H-UCL (Log ROS)	0.912		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.444	KM Geo Mean	0.641
KM SD (logged)	0.665	95% Critical H Value (KM-Log)	1.936
KM Standard Error of Mean (logged)	0.0562	95% H-UCL (KM -Log)	0.888
KM SD (logged)	0.665	95% Critical H Value (KM-Log)	1.936
KM Standard Error of Mean (logged)	0.0562		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.812	Mean in Log Scale	-0.512
SD in Original Scale	0.732	SD in Log Scale	0.788
95% t UCL (Assumes normality)	0.91	95% H-Stat UCL	0.931
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM Student's t	0.715	KM H-UCL	0.888

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Vanadium

General Statistics

Total Number of Observations	156	Number of Distinct Observations	72
Number of Detects	155	Number of Non-Detects	1
Number of Distinct Detects	71	Number of Distinct Non-Detects	1
Minimum Detect	20	Minimum Non-Detect	30
Maximum Detect	245	Maximum Non-Detect	30
Variance Detects	976.4	Percent Non-Detects	0.64%
Mean Detects	81.67	SD Detects	3125.00%
Median Detects	82	CV Detects	0.383
Skewness Detects	1.157	Kurtosis Detects	4.651
Mean of Logged Detects	4.328	SD of Logged Detects	0.401

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.937	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	1.52E-07	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	7.91E-02	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0716	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	81.3	KM Standard Error of Mean	2.52
KM SD	31.38	95% KM (BCA) UCL	85.72
95% KM (t) UCL	85.47	95% KM (Percentile Bootstrap) UCL	85.51
95% KM (z) UCL	85.45	95% KM Bootstrap t UCL	85.74
90% KM Chebyshev UCL	88.86	95% KM Chebyshev UCL	92.29
97.5% KM Chebyshev UCL	97.04	99% KM Chebyshev UCL	106.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.176	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0823	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0753	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	6.871	k star (bias corrected MLE)	6.743
Theta hat (MLE)	11.89	Theta star (bias corrected MLE)	12.11
nu hat (MLE)	2130	nu star (bias corrected)	2090
Mean (detects)	81.67		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	20	Mean	81.33
Maximum	245	Median	82
SD	31.43	CV	0.386
k hat (MLE)	6.696	k star (bias corrected MLE)	6.572
Theta hat (MLE)	12.15	Theta star (bias corrected MLE)	12.38
nu hat (MLE)	2089	nu star (bias corrected)	2050
Adjusted Level of Significance (β)	0.0485		
Approximate Chi Square Value (N/A, α)	1946	Adjusted Chi Square Value (N/A, β)	1945
95% Gamma Approximate UCL (use when n>=50)	85.68	95% Gamma Adjusted UCL (use when n<50)	85.73

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	81.3	SD (KM)	31.38
Variance (KM)	984.6	SE of Mean (KM)	2.52
k hat (KM)	6.714	k star (KM)	6.589
nu hat (KM)	2095	nu star (KM)	2056
theta hat (KM)	12.11	theta star (KM)	12.34
80% gamma percentile (KM)	106.1	90% gamma percentile (KM)	123.6
95% gamma percentile (KM)	139.4	99% gamma percentile (KM)	172.4
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (N/A, α)	1951	Adjusted Chi Square Value (N/A, β)	1951
95% Gamma Approximate KM-UCL (use when n>=50)	85.65	95% Gamma Adjusted KM-UCL (use when n<50)	85.69
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.963	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.00667	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	9.91E-02	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0716	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	81.35	Mean in Log Scale	4.323
SD in Original Scale	31.4	SD in Log Scale	0.405
95% t UCL (assumes normality of ROS data)	85.51	95% Percentile Bootstrap UCL	85.51
95% BCA Bootstrap UCL	85.86	95% Bootstrap t UCL	85.74
95% H-UCL (Log ROS)	86.72		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.321	KM Geo Mean	75.26
KM SD (logged)	0.408	95% Critical H Value (KM-Log)	1.782
KM Standard Error of Mean (logged)	0.0328	95% H-UCL (KM -Log)	86.72
KM SD (logged)	0.408	95% Critical H Value (KM-Log)	1.782
KM Standard Error of Mean (logged)	0.0328		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	81.24	Mean in Log Scale	4.318
SD in Original Scale	31.6	SD in Log Scale	0.42
95% t UCL (Assumes normality)	85.43	95% H-Stat UCL	87.02
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	85.47	KM H-UCL	86.72
95% KM (BCA) UCL	85.72		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 2 feet bgs

Zinc

General Statistics

Total Number of Observations	181	Number of Distinct Observations	109
		Number of Missing Observations	0
Minimum	9.1	Mean	465.4
Maximum	26000	Median	130
SD	2017	Std. Error of Mean	149.9
Coefficient of Variation	4.335	Skewness	11.55

Normal GOF Test

Shapiro Wilk Test Statistic	0.2	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.411	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0663	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	713.3	95% Adjusted-CLT UCL (Chen-1995)	849.5
		95% Modified-t UCL (Johnson-1978)	734.7

Gamma GOF Test

A-D Test Statistic	17.53	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.812	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.226	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	7.21E-02	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.591	k star (bias corrected MLE)	0.585
Theta hat (MLE)	787.4	Theta star (bias corrected MLE)	795.6
nu hat (MLE)	213.9	nu star (bias corrected)	211.7
MLE Mean (bias corrected)	465.4	MLE Sd (bias corrected)	608.5
		Approximate Chi Square Value (0.05)	179.1
Adjusted Level of Significance	0.0487	Adjusted Chi Square Value	178.8

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	550.3	95% Adjusted Gamma UCL (use when n<50)	551

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.935	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.29E-09	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0999	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0663	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.208	Mean of logged Data	5.095
Maximum of Logged Data	10.17	SD of logged Data	1.099

Assuming Lognormal Distribution

95% H-UCL	359.3	90% Chebyshev (MVUE) UCL	388
95% Chebyshev (MVUE) UCL	429.2	97.5% Chebyshev (MVUE) UCL	486.4
99% Chebyshev (MVUE) UCL	598.7		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	712	95% Jackknife UCL	713.3
95% Standard Bootstrap UCL	720.7	95% Bootstrap-t UCL	1255
95% Hall's Bootstrap UCL	1542	95% Percentile Bootstrap UCL	747.6
95% BCA Bootstrap UCL	975.6		
90% Chebyshev(Mean, Sd) UCL	915.2	95% Chebyshev(Mean, Sd) UCL	1119
97.5% Chebyshev(Mean, Sd) UCL	1402	99% Chebyshev(Mean, Sd) UCL	1957

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 1119

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Antimony

General Statistics

Total Number of Observations	322	Number of Distinct Observations	136
Number of Detects	285	Number of Non-Detects	37
Number of Distinct Detects	124	Number of Distinct Non-Detects	14
Minimum Detect	0.33	Minimum Non-Detect	0.21
Maximum Detect	340	Maximum Non-Detect	7.4
Variance Detects	524.4	Percent Non-Detects	11.49%
Mean Detects	6.018	SD Detects	22.9
Median Detects	1.9	CV Detects	3.805
Skewness Detects	11.75	Kurtosis Detects	162.7
Mean of Logged Detects	0.791	SD of Logged Detects	1.118

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.232	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.402	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0529	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	5.355	KM Standard Error of Mean	1.205
KM SD	21.58	95% KM (BCA) UCL	8.07
95% KM (t) UCL	7.343	95% KM (Percentile Bootstrap) UCL	7.681
95% KM (z) UCL	7.337	95% KM Bootstrap t UCL	9.831
90% KM Chebyshev UCL	8.97	95% KM Chebyshev UCL	10.61
97.5% KM Chebyshev UCL	12.88	99% KM Chebyshev UCL	17.34

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	24.77	Anderson-Darling GOF Test	
5% A-D Critical Value	0.81	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.238	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0565	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.614	k star (bias corrected MLE)	0.61
Theta hat (MLE)	9.806	Theta star (bias corrected MLE)	9.872
nu hat (MLE)	349.8	nu star (bias corrected)	347.5
Mean (detects)	6.018		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	5.328
Maximum	340	Median	1.6
SD	21.62	CV	4.059
k hat (MLE)	0.433	k star (bias corrected MLE)	0.431
Theta hat (MLE)	12.31	Theta star (bias corrected MLE)	12.37
nu hat (MLE)	278.7	nu star (bias corrected)	277.4
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (277.40, α)	239.8	Adjusted Chi Square Value (277.40, β)	239.7
95% Gamma Approximate UCL (use when n>=50)	6.162	95% Gamma Adjusted UCL (use when n<50)	6.166

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	5.355	SD (KM)	21.58

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Variance (KM)	465.9	SE of Mean (KM)	1.205
k hat (KM)	0.0616	k star (KM)	0.0631
nu hat (KM)	39.64	nu star (KM)	40.6
theta hat (KM)	87	theta star (KM)	84.94
80% gamma percentile (KM)	1.48	90% gamma percentile (KM)	10.57
95% gamma percentile (KM)	30.32	99% gamma percentile (KM)	105.7

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (40.60, α)	27	Adjusted Chi Square Value (40.60, β)	26.95
95% Gamma Approximate KM-UCL (use when n>=50)	8.053	95% Gamma Adjusted KM-UCL (use when n<50)	8.068

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.93	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.103	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0529	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	5.353	Mean in Log Scale	0.516
SD in Original Scale	21.62	SD in Log Scale	1.308
95% t UCL (assumes normality of ROS data)	7.34	95% Percentile Bootstrap UCL	7.585
95% BCA Bootstrap UCL	9.091	95% Bootstrap t UCL	10
95% H-UCL (Log ROS)	4.693		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.526	KM Geo Mean	1.693
KM SD (logged)	1.286	95% Critical H Value (KM-Log)	2.367
KM Standard Error of Mean (logged)	0.0719	95% H-UCL (KM -Log)	4.587
KM SD (logged)	1.286	95% Critical H Value (KM-Log)	2.367
KM Standard Error of Mean (logged)	0.0719		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.353	Mean in Log Scale	0.481
SD in Original Scale	21.62	SD in Log Scale	1.372
95% t UCL (Assumes normality)	7.341	95% H-Stat UCL	5.003

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	10.61

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Arsenic

General Statistics			
Total Number of Observations	403	Number of Distinct Observations	198
Number of Detects	394	Number of Non-Detects	9
Number of Distinct Detects	197	Number of Distinct Non-Detects	3
Minimum Detect	0.25	Minimum Non-Detect	0.1
Maximum Detect	790	Maximum Non-Detect	5
Variance Detects	8107	Percent Non-Detects	2.23%
Mean Detects	48.85	SD Detects	90.04
Median Detects	11	CV Detects	1.843
Skewness Detects	3.539	Kurtosis Detects	17.41
Mean of Logged Detects	2.599	SD of Logged Detects	1.668

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.583	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.295	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.045	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	47.77	KM Standard Error of Mean	4.449
KM SD	89.2	95% KM (BCA) UCL	55.68
95% KM (t) UCL	55.1	95% KM (Percentile Bootstrap) UCL	55.7
95% KM (z) UCL	55.09	95% KM Bootstrap t UCL	56.03
90% KM Chebyshev UCL	61.12	95% KM Chebyshev UCL	67.16
97.5% KM Chebyshev UCL	75.55	99% KM Chebyshev UCL	92.04

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	13.71	Anderson-Darling GOF Test	
5% A-D Critical Value	0.824	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.147	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0483	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.494	k star (bias corrected MLE)	0.492
Theta hat (MLE)	98.95	Theta star (bias corrected MLE)	99.37
nu hat (MLE)	389	nu star (bias corrected)	387.3
Mean (detects)	48.85		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	47.75
Maximum	790	Median	11
SD	89.32	CV	1.87
k hat (MLE)	0.452	k star (bias corrected MLE)	0.45
Theta hat (MLE)	105.6	Theta star (bias corrected MLE)	106.1
nu hat (MLE)	364.3	nu star (bias corrected)	362.9
Adjusted Level of Significance (β)	0.0494		
Approximate Chi Square Value (362.94, α)	319.8	Adjusted Chi Square Value (362.94, β)	319.6
95% Gamma Approximate UCL (use when n>=50)	54.2	95% Gamma Adjusted UCL (use when n<50)	54.22

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	47.77	SD (KM)	89.2
Variance (KM)	7956	SE of Mean (KM)	4.449
k hat (KM)	0.287	k star (KM)	0.286
nu hat (KM)	231.2	nu star (KM)	230.8
theta hat (KM)	166.6	theta star (KM)	166.8
80% gamma percentile (KM)	72.38	90% gamma percentile (KM)	141.6
95% gamma percentile (KM)	221.8	99% gamma percentile (KM)	431.3
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (230.77, α)	196.6	Adjusted Chi Square Value (230.77, β)	196.5
95% Gamma Approximate KM-UCL (use when n>=50)	56.07	95% Gamma Adjusted KM-UCL (use when n<50)	56.1
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.962	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	3.16E-08	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0685	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.045	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	47.77	Mean in Log Scale	2.518
SD in Original Scale	89.31	SD in Log Scale	1.74
95% t UCL (assumes normality of ROS data)	55.1	95% Percentile Bootstrap UCL	55.25
95% BCA Bootstrap UCL	56.06	95% Bootstrap t UCL	56.15
95% H-UCL (Log ROS)	71.77		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	2.519	KM Geo Mean	12.41
KM SD (logged)	1.739	95% Critical H Value (KM-Log)	2.78
KM Standard Error of Mean (logged)	0.0869	95% H-UCL (KM -Log)	71.61
KM SD (logged)	1.739	95% Critical H Value (KM-Log)	2.78
KM Standard Error of Mean (logged)	0.0869		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	47.77	Mean in Log Scale	2.518
SD in Original Scale	89.31	SD in Log Scale	1.743
95% t UCL (Assumes normality)	55.1	95% H-Stat UCL	72.24
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	67.16		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Barium

General Statistics

Total Number of Observations	403	Number of Distinct Observations	156
Number of Detects	399	Number of Non-Detects	4
Number of Distinct Detects	154	Number of Distinct Non-Detects	2
Minimum Detect	8.2	Minimum Non-Detect	1
Maximum Detect	3300	Maximum Non-Detect	20
Variance Detects	83888	Percent Non-Detects	0.99%
Mean Detects	154.9	SD Detects	289.6
Median Detects	82	CV Detects	1.87
Skewness Detects	6.289	Kurtosis Detects	51.24
Mean of Logged Detects	4.514	SD of Logged Detects	0.862

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.411	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.324	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0447	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	153.4	KM Standard Error of Mean	14.37
KM SD	288.2	95% KM (BCA) UCL	178
95% KM (t) UCL	177.1	95% KM (Percentile Bootstrap) UCL	177.9
95% KM (z) UCL	177.1	95% KM Bootstrap t UCL	185.3
90% KM Chebyshev UCL	196.5	95% KM Chebyshev UCL	216.1
97.5% KM Chebyshev UCL	243.2	99% KM Chebyshev UCL	296.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	26.74	Anderson-Darling GOF Test	
5% A-D Critical Value	0.783	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.204	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0465	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.082	k star (bias corrected MLE)	1.075
Theta hat (MLE)	143.2	Theta star (bias corrected MLE)	144
nu hat (MLE)	863.3	nu star (bias corrected)	858.1
Mean (detects)	154.9		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	153.4
Maximum	3300	Median	80
SD	288.6	CV	1.882
k hat (MLE)	0.953	k star (bias corrected MLE)	0.947
Theta hat (MLE)	161	Theta star (bias corrected MLE)	161.9
nu hat (MLE)	768	nu star (bias corrected)	763.6
Adjusted Level of Significance (β)	0.0494		
Approximate Chi Square Value (763.57, α)	700.5	Adjusted Chi Square Value (763.57, β)	700.2
95% Gamma Approximate UCL (use when n>=50)	167.2	95% Gamma Adjusted UCL (use when n<50)	167.2

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	153.4	SD (KM)	288.2
Variance (KM)	83066	SE of Mean (KM)	14.37
k hat (KM)	0.283	k star (KM)	0.283
nu hat (KM)	228.4	nu star (KM)	228
theta hat (KM)	541.4	theta star (KM)	542.3
80% gamma percentile (KM)	231.7	90% gamma percentile (KM)	455.5
95% gamma percentile (KM)	715	99% gamma percentile (KM)	1395
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (228.02, α)	194.1	Adjusted Chi Square Value (228.02, β)	194
95% Gamma Approximate KM-UCL (use when n>=50)	180.3	95% Gamma Adjusted KM-UCL (use when n<50)	180.4
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.931	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.103	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0447	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	153.5	Mean in Log Scale	4.492
SD in Original Scale	288.5	SD in Log Scale	0.886
95% t UCL (assumes normality of ROS data)	177.2	95% Percentile Bootstrap UCL	177.5
95% BCA Bootstrap UCL	181.5	95% Bootstrap t UCL	183.8
95% H-UCL (Log ROS)	144.6		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.478	KM Geo Mean	88.07
KM SD (logged)	0.938	95% Critical H Value (KM-Log)	2.055
KM Standard Error of Mean (logged)	0.0471	95% H-UCL (KM -Log)	150.5
KM SD (logged)	0.938	95% Critical H Value (KM-Log)	2.055
KM Standard Error of Mean (logged)	0.0471		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	153.4	Mean in Log Scale	4.477
SD in Original Scale	288.6	SD in Log Scale	0.945
95% t UCL (Assumes normality)	177.1	95% H-Stat UCL	151.6
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	216.1		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Beryllium

General Statistics			
Total Number of Observations	326	Number of Distinct Observations	84
Number of Detects	176	Number of Non-Detects	150
Number of Distinct Detects	68	Number of Distinct Non-Detects	29
Minimum Detect	0.075	Minimum Non-Detect	0.067
Maximum Detect	0.94	Maximum Non-Detect	0.25
Variance Detects	0.0359	Percent Non-Detects	46.01%
Mean Detects	0.287	SD Detects	0.189
Median Detects	0.23	CV Detects	0.661
Skewness Detects	1.37	Kurtosis Detects	1.365
Mean of Logged Detects	-1.437	SD of Logged Detects	0.603

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.837	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.187	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0672	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.189	KM Standard Error of Mean	0.00974
KM SD	0.175	95% KM (BCA) UCL	0.206
95% KM (t) UCL	0.205	95% KM (Percentile Bootstrap) UCL	0.206
95% KM (z) UCL	0.205	95% KM Bootstrap t UCL	0.207
90% KM Chebyshev UCL	0.219	95% KM Chebyshev UCL	0.232
97.5% KM Chebyshev UCL	0.25	99% KM Chebyshev UCL	0.286

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.116	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.115	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0704	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.813	k star (bias corrected MLE)	2.769
Theta hat (MLE)	0.102	Theta star (bias corrected MLE)	0.104
nu hat (MLE)	990.2	nu star (bias corrected)	974.7
Mean (detects)	0.287		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.164
Maximum	0.94	Median	0.11
SD	0.193	CV	1.175
k hat (MLE)	0.668	k star (bias corrected MLE)	0.664
Theta hat (MLE)	0.246	Theta star (bias corrected MLE)	0.247
nu hat (MLE)	435.3	nu star (bias corrected)	432.6
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (432.62, α)	385.4	Adjusted Chi Square Value (432.62, β)	385.2
95% Gamma Approximate UCL (use when n>=50)	0.184	95% Gamma Adjusted UCL (use when n<50)	0.184

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.189	SD (KM)	0.175
Variance (KM)	0.0305	SE of Mean (KM)	0.00974
k hat (KM)	1.177	k star (KM)	1.169
nu hat (KM)	767.6	nu star (KM)	761.9
theta hat (KM)	0.161	theta star (KM)	0.162
80% gamma percentile (KM)	0.301	90% gamma percentile (KM)	0.42
95% gamma percentile (KM)	0.537	99% gamma percentile (KM)	0.807
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (761.88, α)	698.8	Adjusted Chi Square Value (761.88, β)	698.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.206	95% Gamma Adjusted KM-UCL (use when n<50)	0.207
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.949	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	7.14E-06	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.075	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0672	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.183	Mean in Log Scale	-2.105
SD in Original Scale	0.18	SD in Log Scale	0.906
95% t UCL (assumes normality of ROS data)	0.199	95% Percentile Bootstrap UCL	0.2
95% BCA Bootstrap UCL	0.201	95% Bootstrap t UCL	0.201
95% H-UCL (Log ROS)	0.204		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-1.973	KM Geo Mean	0.139
KM SD (logged)	0.737	95% Critical H Value (KM-Log)	1.928
KM Standard Error of Mean (logged)	0.0426	95% H-UCL (KM -Log)	0.197
KM SD (logged)	0.737	95% Critical H Value (KM-Log)	1.928
KM Standard Error of Mean (logged)	0.0426		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.18	Mean in Log Scale	-2.122
SD in Original Scale	0.181	SD in Log Scale	0.873
95% t UCL (Assumes normality)	0.196	95% H-Stat UCL	0.193
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.232		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Cadmium

General Statistics

Total Number of Observations	374	Number of Distinct Observations	161
Number of Detects	255	Number of Non-Detects	119
Number of Distinct Detects	145	Number of Distinct Non-Detects	26
Minimum Detect	0.027	Minimum Non-Detect	0.026
Maximum Detect	80	Maximum Non-Detect	1
Variance Detects	32.17	Percent Non-Detects	31.82%
Mean Detects	1.563	SD Detects	5.672
Median Detects	0.34	CV Detects	3.628
Skewness Detects	11.06	Kurtosis Detects	146.3
Mean of Logged Detects	-0.89	SD of Logged Detects	1.458

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.269	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.393	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0559	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.09	KM Standard Error of Mean	0.245
KM SD	4.726	95% KM (BCA) UCL	1.599
95% KM (t) UCL	1.494	95% KM (Percentile Bootstrap) UCL	1.545
95% KM (z) UCL	1.493	95% KM Bootstrap t UCL	1.963
90% KM Chebyshev UCL	1.825	95% KM Chebyshev UCL	2.158
97.5% KM Chebyshev UCL	2.62	99% KM Chebyshev UCL	3.527

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	15.5	Anderson-Darling GOF Test	
5% A-D Critical Value	0.827	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.186	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0608	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.478	k star (bias corrected MLE)	0.475
Theta hat (MLE)	3.269	Theta star (bias corrected MLE)	3.289
nu hat (MLE)	243.9	nu star (bias corrected)	242.4
Mean (detects)	1.563		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.088
Maximum	80	Median	0.165
SD	4.735	CV	4.352
k hat (MLE)	0.328	k star (bias corrected MLE)	0.327
Theta hat (MLE)	3.32	Theta star (bias corrected MLE)	3.329
nu hat (MLE)	245.1	nu star (bias corrected)	244.4
Adjusted Level of Significance (β)	0.0494		
Approximate Chi Square Value (244.43, α)	209.2	Adjusted Chi Square Value (244.43, β)	209.1
95% Gamma Approximate UCL (use when n>=50)	1.271	95% Gamma Adjusted UCL (use when n<50)	1.272

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	1.09	SD (KM)	4.726
Variance (KM)	22.33	SE of Mean (KM)	0.245
k hat (KM)	0.0532	k star (KM)	0.0546
nu hat (KM)	39.82	nu star (KM)	40.84
theta hat (KM)	20.48	theta star (KM)	19.97
80% gamma percentile (KM)	0.199	90% gamma percentile (KM)	1.854
95% gamma percentile (KM)	5.967	99% gamma percentile (KM)	22.89
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (40.84, α)	27.19	Adjusted Chi Square Value (40.84, β)	27.15
95% Gamma Approximate KM-UCL (use when n>=50)	1.638	95% Gamma Adjusted KM-UCL (use when n<50)	1.64
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.956	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	6.09E-07	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0749	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0559	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.088	Mean in Log Scale	-1.754
SD in Original Scale	4.733	SD in Log Scale	1.874
95% t UCL (assumes normality of ROS data)	1.492	95% Percentile Bootstrap UCL	1.52
95% BCA Bootstrap UCL	1.783	95% Bootstrap t UCL	1.951
95% H-UCL (Log ROS)	1.338		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-1.623	KM Geo Mean	0.197
KM SD (logged)	1.687	95% Critical H Value (KM-Log)	2.775
KM Standard Error of Mean (logged)	0.0897	95% H-UCL (KM -Log)	1.044
KM SD (logged)	1.687	95% Critical H Value (KM-Log)	2.775
KM Standard Error of Mean (logged)	0.0897		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.117	Mean in Log Scale	-1.532
SD in Original Scale	4.728	SD in Log Scale	1.734
95% t UCL (Assumes normality)	1.521	95% H-Stat UCL	1.252
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	2.158		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Chromium

General Statistics			
Total Number of Observations	394	Number of Distinct Observations	134
Number of Detects	389	Number of Non-Detects	5
Number of Distinct Detects	133	Number of Distinct Non-Detects	2
Minimum Detect	3.4	Minimum Non-Detect	5
Maximum Detect	4400	Maximum Non-Detect	10
Variance Detects	52551	Percent Non-Detects	1.27%
Mean Detects	63.14	SD Detects	229.2
Median Detects	33	CV Detects	3.63
Skewness Detects	17.62	Kurtosis Detects	332.4
Mean of Logged Detects	3.551	SD of Logged Detects	0.898

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.175	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.397	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0453	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	62.41	KM Standard Error of Mean	11.48
KM SD	227.6	95% KM (BCA) UCL	87.49
95% KM (t) UCL	81.34	95% KM (Percentile Bootstrap) UCL	84.71
95% KM (z) UCL	81.29	95% KM Bootstrap t UCL	121.8
90% KM Chebyshev UCL	96.85	95% KM Chebyshev UCL	112.4
97.5% KM Chebyshev UCL	134.1	99% KM Chebyshev UCL	176.6

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.57E+28	Anderson-Darling GOF Test	
5% A-D Critical Value	0.786	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.161	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0473	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.975	k star (bias corrected MLE)	0.969
Theta hat (MLE)	64.79	Theta star (bias corrected MLE)	65.17
nu hat (MLE)	758.3	nu star (bias corrected)	753.8
Mean (detects)	63.14		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	62.34
Maximum	4400	Median	33
SD	227.9	CV	3.655
k hat (MLE)	0.859	k star (bias corrected MLE)	0.854
Theta hat (MLE)	72.59	Theta star (bias corrected MLE)	73.01
nu hat (MLE)	676.7	nu star (bias corrected)	672.9
Adjusted Level of Significance (β)	0.0494		
Approximate Chi Square Value (672.89, α)	613.7	Adjusted Chi Square Value (672.89, β)	613.5
95% Gamma Approximate UCL (use when n>=50)	68.35	95% Gamma Adjusted UCL (use when n<50)	68.38

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	62.41	SD (KM)	227.6
Variance (KM)	51793	SE of Mean (KM)	11.48
k hat (KM)	0.0752	k star (KM)	0.0763
nu hat (KM)	59.26	nu star (KM)	60.14
theta hat (KM)	829.9	theta star (KM)	817.7
80% gamma percentile (KM)	27.02	90% gamma percentile (KM)	143.5
95% gamma percentile (KM)	361.9	99% gamma percentile (KM)	1130
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (60.14, α)	43.31	Adjusted Chi Square Value (60.14, β)	43.25
95% Gamma Approximate KM-UCL (use when n>=50)	86.67	95% Gamma Adjusted KM-UCL (use when n<50)	86.77
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.976	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.0192	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.053	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0453	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	62.4	Mean in Log Scale	3.525
SD in Original Scale	227.9	SD in Log Scale	0.923
95% t UCL (assumes normality of ROS data)	81.33	95% Percentile Bootstrap UCL	83.51
95% BCA Bootstrap UCL	98.23	95% Bootstrap t UCL	122
95% H-UCL (Log ROS)	57.24		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	3.526	KM Geo Mean	34
KM SD (logged)	0.919	95% Critical H Value (KM-Log)	2.067
KM Standard Error of Mean (logged)	0.0464	95% H-UCL (KM -Log)	57.08
KM SD (logged)	0.919	95% Critical H Value (KM-Log)	2.067
KM Standard Error of Mean (logged)	0.0464		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	62.39	Mean in Log Scale	3.521
SD in Original Scale	227.9	SD in Log Scale	0.931
95% t UCL (Assumes normality)	81.31	95% H-Stat UCL	57.54
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	112.4		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Cobalt

General Statistics

Total Number of Observations	329	Number of Distinct Observations	94
Number of Detects	327	Number of Non-Detects	2
Number of Distinct Detects	92	Number of Distinct Non-Detects	2
Minimum Detect	2.3	Minimum Non-Detect	2
Maximum Detect	37.5	Maximum Non-Detect	3
Variance Detects	37.85	Percent Non-Detects	0.61%
Mean Detects	13.01	SD Detects	6.153
Median Detects	12	CV Detects	0.473
Skewness Detects	1.368	Kurtosis Detects	2.361
Mean of Logged Detects	2.462	SD of Logged Detects	0.461

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.888	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.158	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0494	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	12.94	KM Standard Error of Mean	0.341
KM SD	6.183	95% KM (BCA) UCL	13.51
95% KM (t) UCL	13.5	95% KM (Percentile Bootstrap) UCL	13.51
95% KM (z) UCL	13.5	95% KM Bootstrap t UCL	13.58
90% KM Chebyshev UCL	13.96	95% KM Chebyshev UCL	14.43
97.5% KM Chebyshev UCL	15.07	99% KM Chebyshev UCL	16.34

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.646	Anderson-Darling GOF Test	
5% A-D Critical Value	0.757	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0983	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0504	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.995	k star (bias corrected MLE)	4.951
Theta hat (MLE)	2.604	Theta star (bias corrected MLE)	2.627
nu hat (MLE)	3267	nu star (bias corrected)	3238
Mean (detects)	13.01		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.554	Mean	12.94
Maximum	37.5	Median	12
SD	6.196	CV	0.479
k hat (MLE)	4.719	k star (bias corrected MLE)	4.678
Theta hat (MLE)	2.742	Theta star (bias corrected MLE)	2.766
nu hat (MLE)	3105	nu star (bias corrected)	3078
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (N/A, α)	2950	Adjusted Chi Square Value (N/A, β)	2950
95% Gamma Approximate UCL (use when n>=50)	13.5	95% Gamma Adjusted UCL (use when n<50)	13.5

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	12.94	SD (KM)	6.183
Variance (KM)	38.23	SE of Mean (KM)	0.341
k hat (KM)	4.379	k star (KM)	4.341
nu hat (KM)	2882	nu star (KM)	2857
theta hat (KM)	2.955	theta star (KM)	2.98
80% gamma percentile (KM)	17.67	90% gamma percentile (KM)	21.26
95% gamma percentile (KM)	24.55	99% gamma percentile (KM)	31.55
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (N/A, α)	2733	Adjusted Chi Square Value (N/A, β)	2733
95% Gamma Approximate KM-UCL (use when n>=50)	13.52	95% Gamma Adjusted KM-UCL (use when n<50)	13.53
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.974	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.0114	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0869	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0494	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	12.95	Mean in Log Scale	2.454
SD in Original Scale	6.181	SD in Log Scale	0.47
95% t UCL (assumes normality of ROS data)	13.51	95% Percentile Bootstrap UCL	13.53
95% BCA Bootstrap UCL	13.54	95% Bootstrap t UCL	13.54
95% H-UCL (Log ROS)	13.61		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	2.451	KM Geo Mean	11.6
KM SD (logged)	0.478	95% Critical H Value (KM-Log)	1.782
KM Standard Error of Mean (logged)	0.0264	95% H-UCL (KM -Log)	13.64
KM SD (logged)	0.478	95% Critical H Value (KM-Log)	1.782
KM Standard Error of Mean (logged)	0.0264		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	12.93	Mean in Log Scale	2.448
SD in Original Scale	6.202	SD in Log Scale	0.492
95% t UCL (Assumes normality)	13.5	95% H-Stat UCL	13.71
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	13.5	KM H-UCL	13.64
95% KM (BCA) UCL	13.51		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Copper

General Statistics

Total Number of Observations	376	Number of Distinct Observations	171
Number of Detects	375	Number of Non-Detects	1
Number of Distinct Detects	170	Number of Distinct Non-Detects	1
Minimum Detect	1.4	Minimum Non-Detect	2
Maximum Detect	10000	Maximum Non-Detect	2
Variance Detects	436559	Percent Non-Detects	0.27%
Mean Detects	209.1	SD Detects	660.7
Median Detects	100	CV Detects	3.16
Skewness Detects	11.07	Kurtosis Detects	146
Mean of Logged Detects	4.468	SD of Logged Detects	1.196

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.26	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.377	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0461	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	208.5	KM Standard Error of Mean	34.03
KM SD	659.1	95% KM (BCA) UCL	270
95% KM (t) UCL	264.6	95% KM (Percentile Bootstrap) UCL	267
95% KM (z) UCL	264.5	95% KM Bootstrap t UCL	310.7
90% KM Chebyshev UCL	310.6	95% KM Chebyshev UCL	356.9
97.5% KM Chebyshev UCL	421	99% KM Chebyshev UCL	547.1

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	16.89	Anderson-Darling GOF Test	
5% A-D Critical Value	0.803	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.184	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.049	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.692	k star (bias corrected MLE)	0.689
Theta hat (MLE)	301.9	Theta star (bias corrected MLE)	303.6
nu hat (MLE)	519.3	nu star (bias corrected)	516.5
Mean (detects)	209.1		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	208.5
Maximum	10000	Median	100
SD	659.9	CV	3.165
k hat (MLE)	0.678	k star (bias corrected MLE)	0.674
Theta hat (MLE)	307.6	Theta star (bias corrected MLE)	309.3
nu hat (MLE)	509.7	nu star (bias corrected)	507
Adjusted Level of Significance (β)	0.0494		
Approximate Chi Square Value (506.98, α)	455.8	Adjusted Chi Square Value (506.98, β)	455.6
95% Gamma Approximate UCL (use when n>=50)	231.9	95% Gamma Adjusted UCL (use when n<50)	232

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	208.5	SD (KM)	659.1
Variance (KM)	434351	SE of Mean (KM)	34.03
k hat (KM)	0.1	k star (KM)	0.101
nu hat (KM)	75.27	nu star (KM)	76
theta hat (KM)	2083	theta star (KM)	2063
80% gamma percentile (KM)	146.9	90% gamma percentile (KM)	557.4
95% gamma percentile (KM)	1209	99% gamma percentile (KM)	3295
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (76.00, α)	56.92	Adjusted Chi Square Value (76.00, β)	56.86
95% Gamma Approximate KM-UCL (use when n>=50)	278.4	95% Gamma Adjusted KM-UCL (use when n<50)	278.7
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.981	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.177	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0695	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0461	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	208.5	Mean in Log Scale	4.459
SD in Original Scale	659.9	SD in Log Scale	1.207
95% t UCL (assumes normality of ROS data)	264.6	95% Percentile Bootstrap UCL	265.6
95% BCA Bootstrap UCL	294.3	95% Bootstrap t UCL	325.7
95% H-UCL (Log ROS)	206.8		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.457	KM Geo Mean	86.27
KM SD (logged)	1.212	95% Critical H Value (KM-Log)	2.31
KM Standard Error of Mean (logged)	0.0626	95% H-UCL (KM -Log)	207.7
KM SD (logged)	1.212	95% Critical H Value (KM-Log)	2.31
KM Standard Error of Mean (logged)	0.0626		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	208.5	Mean in Log Scale	4.457
SD in Original Scale	659.9	SD in Log Scale	1.217
95% t UCL (Assumes normality)	264.6	95% H-Stat UCL	208.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	207.7		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Lead

General Statistics

Total Number of Observations	403	Number of Distinct Observations	225
		Number of Missing Observations	2
Number of Detects	396	Number of Non-Detects	7
Number of Distinct Detects	225	Number of Distinct Non-Detects	2
Minimum Detect	0.48	Minimum Non-Detect	1
Maximum Detect	13000	Maximum Non-Detect	10
Variance Detects	1660790	Percent Non-Detects	1.74%
Mean Detects	473.9	SD Detects	1289
Median Detects	95.5	CV Detects	2.72
Skewness Detects	5.262	Kurtosis Detects	32.11
Mean of Logged Detects	4.447	SD of Logged Detects	1.939

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.392	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.357	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0449	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	465.7	KM Standard Error of Mean	63.71
KM SD	1277	95% KM (BCA) UCL	577.6
95% KM (t) UCL	570.7	95% KM (Percentile Bootstrap) UCL	574
95% KM (z) UCL	570.5	95% KM Bootstrap t UCL	600.6
90% KM Chebyshev UCL	656.8	95% KM Chebyshev UCL	743.4
97.5% KM Chebyshev UCL	863.6	99% KM Chebyshev UCL	1100

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	14.16	Anderson-Darling GOF Test	
5% A-D Critical Value	0.85	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.138	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0488	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.386	k star (bias corrected MLE)	0.385
Theta hat (MLE)	1227	Theta star (bias corrected MLE)	1231
nu hat (MLE)	305.7	nu star (bias corrected)	304.8
Mean (detects)	473.9		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	465.6
Maximum	12000	Median	91
SD	1279	CV	2.747
k hat (MLE)	0.361	k star (bias corrected MLE)	0.36
Theta hat (MLE)	1290	Theta star (bias corrected MLE)	1294
nu hat (MLE)	290.9	nu star (bias corrected)	290
Adjusted Level of Significance (β)	0.0494		
Approximate Chi Square Value (290.03, α)	251.6	Adjusted Chi Square Value (290.03, β)	251.5
95% Gamma Approximate UCL (use when n>=50)	536.8	95% Gamma Adjusted UCL (use when n<50)	537.1

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	465.7	SD (KM)	1277
Variance (KM)	1631605	SE of Mean (KM)	63.71
k hat (KM)	0.133	k star (KM)	0.134
nu hat (KM)	107.1	nu star (KM)	107.7
theta hat (KM)	3504	theta star (KM)	3486
80% gamma percentile (KM)	457	90% gamma percentile (KM)	1354
95% gamma percentile (KM)	2617	99% gamma percentile (KM)	6374
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (107.66, α)	84.72	Adjusted Chi Square Value (107.66, β)	84.64
95% Gamma Approximate KM-UCL (use when n>=50)	591.8	95% Gamma Adjusted KM-UCL (use when n<50)	592.3
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.979	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.0702	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0329	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0449	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	465.7	Mean in Log Scale	4.379
SD in Original Scale	1279	SD in Log Scale	1.994
95% t UCL (assumes normality of ROS data)	570.7	95% Percentile Bootstrap UCL	584.2
95% BCA Bootstrap UCL	588.4	95% Bootstrap t UCL	598.8
95% H-UCL (Log ROS)	788.1		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.379	KM Geo Mean	79.77
KM SD (logged)	1.991	95% Critical H Value (KM-Log)	3.044
KM Standard Error of Mean (logged)	0.0994	95% H-UCL (KM -Log)	783.5
KM SD (logged)	1.991	95% Critical H Value (KM-Log)	3.044
KM Standard Error of Mean (logged)	0.0994		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	465.7	Mean in Log Scale	4.38
SD in Original Scale	1279	SD in Log Scale	1.992
95% t UCL (Assumes normality)	570.7	95% H-Stat UCL	785.7
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	783.5		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Mercury

General Statistics

Total Number of Observations	376	Number of Distinct Observations	164
Number of Detects	366	Number of Non-Detects	10
Number of Distinct Detects	163	Number of Distinct Non-Detects	4
Minimum Detect	0	Minimum Non-Detect	0.0024
Maximum Detect	100	Maximum Non-Detect	0.2
Variance Detects	36.15	Percent Non-Detects	2.66%
Mean Detects	0.927	SD Detects	6.013
Median Detects	0.12	CV Detects	6.488
Skewness Detects	13.57	Kurtosis Detects	209.4

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.15	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.439	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.903	KM Standard Error of Mean	0.306
KM SD	5.926	95% KM (BCA) UCL	1.45
95% KM (t) UCL	1.408	95% KM (Percentile Bootstrap) UCL	1.461
95% KM (z) UCL	1.406	95% KM Bootstrap t UCL	2.251
90% KM Chebyshev UCL	1.821	95% KM Chebyshev UCL	2.237
97.5% KM Chebyshev UCL	2.814	99% KM Chebyshev UCL	3.948

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.903	SD (KM)	5.926
Variance (KM)	35.11	SE of Mean (KM)	0.306
k hat (KM)	0.0232	k star (KM)	0.0248
nu hat (KM)	17.47	nu star (KM)	18.66
theta hat (KM)	38.88	theta star (KM)	36.39
80% gamma percentile (KM)	0.00259	90% gamma percentile (KM)	0.301
95% gamma percentile (KM)	2.844	99% gamma percentile (KM)	24.38

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0494
Approximate Chi Square Value (18.66, α)	9.871	Adjusted Chi Square Value (18.66, β)	9.846
95% Gamma Approximate KM-UCL (use when n>=50)	1.707	95% Gamma Adjusted KM-UCL (use when n<50)	1.712

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	N/A	KM Geo Mean	N/A
KM SD (logged)	N/A	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	N/A	95% H-UCL (KM -Log)	N/A
KM SD (logged)	N/A	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	N/A		

DL/2 Statistics

Mean in Original Scale	0.903	SD in Original Scale	5.934
95% t UCL (Assumes normality)	1.408		

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	3.948

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Molybdenum

General Statistics			
Total Number of Observations	325	Number of Distinct Observations	117
Number of Detects	253	Number of Non-Detects	72
Number of Distinct Detects	113	Number of Distinct Non-Detects	11
Minimum Detect	0.15	Minimum Non-Detect	0.13
Maximum Detect	22	Maximum Non-Detect	0.25
Variance Detects	4.225	Percent Non-Detects	22.15%
Mean Detects	1.211	SD Detects	2.056
Median Detects	0.61	CV Detects	1.698
Skewness Detects	6.082	Kurtosis Detects	49.04
Mean of Logged Detects	-0.331	SD of Logged Detects	0.898

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.468	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.303	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0561	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.975	KM Standard Error of Mean	0.104
KM SD	1.863	95% KM (BCA) UCL	1.18
95% KM (t) UCL	1.146	95% KM (Percentile Bootstrap) UCL	1.153
95% KM (z) UCL	1.145	95% KM Bootstrap t UCL	1.218
90% KM Chebyshev UCL	1.286	95% KM Chebyshev UCL	1.426
97.5% KM Chebyshev UCL	1.622	99% KM Chebyshev UCL	2.006

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.62	Anderson-Darling GOF Test	
5% A-D Critical Value	0.782	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.158	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0591	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.094	k star (bias corrected MLE)	1.084
Theta hat (MLE)	1.107	Theta star (bias corrected MLE)	1.117
nu hat (MLE)	553.6	nu star (bias corrected)	548.4
Mean (detects)	1.211		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.945
Maximum	22	Median	0.42
SD	1.88	CV	1.99
k hat (MLE)	0.517	k star (bias corrected MLE)	0.515
Theta hat (MLE)	1.826	Theta star (bias corrected MLE)	1.836
nu hat (MLE)	336.3	nu star (bias corrected)	334.6
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (334.57, α)	293.2	Adjusted Chi Square Value (334.57, β)	293
95% Gamma Approximate UCL (use when n>=50)	1.078	95% Gamma Adjusted UCL (use when n<50)	1.079

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.975	SD (KM)	1.863
Variance (KM)	3.472	SE of Mean (KM)	0.104
k hat (KM)	0.274	k star (KM)	0.273
nu hat (KM)	178	nu star (KM)	177.7
theta hat (KM)	3.561	theta star (KM)	3.567
80% gamma percentile (KM)	1.458	90% gamma percentile (KM)	2.905
95% gamma percentile (KM)	4.593	99% gamma percentile (KM)	9.034
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (177.67, α)	147.8	Adjusted Chi Square Value (177.67, β)	147.7
95% Gamma Approximate KM-UCL (use when n>=50)	1.172	95% Gamma Adjusted KM-UCL (use when n<50)	1.173
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.937	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	5.94E-14	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0847	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0561	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.967	Mean in Log Scale	-0.77
SD in Original Scale	1.87	SD in Log Scale	1.162
95% t UCL (assumes normality of ROS data)	1.138	95% Percentile Bootstrap UCL	1.147
95% BCA Bootstrap UCL	1.195	95% Bootstrap t UCL	1.198
95% H-UCL (Log ROS)	1.052		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.686	KM Geo Mean	0.503
KM SD (logged)	1.037	95% Critical H Value (KM-Log)	2.15
KM Standard Error of Mean (logged)	0.0581	95% H-UCL (KM -Log)	0.975
KM SD (logged)	1.037	95% Critical H Value (KM-Log)	2.15
KM Standard Error of Mean (logged)	0.0581		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.966	Mean in Log Scale	-0.761
SD in Original Scale	1.87	SD in Log Scale	1.134
95% t UCL (Assumes normality)	1.137	95% H-Stat UCL	1.023
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	1.426		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Nickel

General Statistics

Total Number of Observations	329	Number of Distinct Observations	136
		Number of Missing Observations	0
Minimum	2.9	Mean	48.17
Maximum	500	Median	29.5
SD	60.76	Std. Error of Mean	3.35
Coefficient of Variation	1.261	Skewness	3.282

Normal GOF Test

Shapiro Wilk Test Statistic	0.654	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.244	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0492	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	53.69	95% Adjusted-CLT UCL (Chen-1995)	54.32
		95% Modified-t UCL (Johnson-1978)	53.79

Gamma GOF Test

A-D Test Statistic	5.871	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.782	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.115	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0515	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics

k hat (MLE)	1.103	k star (bias corrected MLE)	1.095
Theta hat (MLE)	43.65	Theta star (bias corrected MLE)	43.97
nu hat (MLE)	726.1	nu star (bias corrected)	720.8
MLE Mean (bias corrected)	48.17	MLE Sd (bias corrected)	46.02
		Approximate Chi Square Value (0.05)	659.5
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	659.2

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	52.64	95% Adjusted Gamma UCL (use when n<50)	52.66

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.975	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0165	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0472	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0492	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			

Lognormal Statistics

Minimum of Logged Data	1.065	Mean of logged Data	3.357
Maximum of Logged Data	6.215	SD of logged Data	1.007

Assuming Lognormal Distribution

95% H-UCL	53.68	90% Chebyshev (MVUE) UCL	57.24
95% Chebyshev (MVUE) UCL	61.62	97.5% Chebyshev (MVUE) UCL	67.7
99% Chebyshev (MVUE) UCL	79.63		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Nonparametric Distribution Free UCLs			
95% CLT UCL	53.68	95% Jackknife UCL	53.69
95% Standard Bootstrap UCL	53.72	95% Bootstrap-t UCL	54.53
95% Hall's Bootstrap UCL	54.47	95% Percentile Bootstrap UCL	53.85
95% BCA Bootstrap UCL	54.08		
90% Chebyshev(Mean, Sd) UCL	58.22	95% Chebyshev(Mean, Sd) UCL	62.77
97.5% Chebyshev(Mean, Sd) UCL	69.08	99% Chebyshev(Mean, Sd) UCL	81.49
Suggested UCL to Use			
95% H-UCL	53.68		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Selenium

General Statistics			
Total Number of Observations	374	Number of Distinct Observations	73
Number of Detects	104	Number of Non-Detects	270
Number of Distinct Detects	54	Number of Distinct Non-Detects	38
Minimum Detect	0.3	Minimum Non-Detect	0.31
Maximum Detect	2.6	Maximum Non-Detect	13
Variance Detects	0.248	Percent Non-Detects	72.19%
Mean Detects	1	SD Detects	0.498
Median Detects	0.835	CV Detects	0.498
Skewness Detects	1.334	Kurtosis Detects	1.254
Mean of Logged Detects	-0.106	SD of Logged Detects	0.449

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.853	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	2.55E-15	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.181	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0872	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.526	KM Standard Error of Mean	0.0229
KM SD	0.417	95% KM (BCA) UCL	0.575
95% KM (t) UCL	0.564	95% KM (Percentile Bootstrap) UCL	0.568
95% KM (z) UCL	0.564	95% KM Bootstrap t UCL	0.564
90% KM Chebyshev UCL	0.595	95% KM Chebyshev UCL	0.626
97.5% KM Chebyshev UCL	0.669	99% KM Chebyshev UCL	0.754

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.265	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.136	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0886	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	4.916	k star (bias corrected MLE)	4.781
Theta hat (MLE)	0.203	Theta star (bias corrected MLE)	0.209
nu hat (MLE)	1023	nu star (bias corrected)	994.4
Mean (detects)	1		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.372
Maximum	2.6	Median	0.137
SD	0.505	CV	1.356
k hat (MLE)	0.458	k star (bias corrected MLE)	0.456
Theta hat (MLE)	0.814	Theta star (bias corrected MLE)	0.817
nu hat (MLE)	342.3	nu star (bias corrected)	340.9
Adjusted Level of Significance (β)	0.0494		
Approximate Chi Square Value (340.92, α)	299.1	Adjusted Chi Square Value (340.92, β)	299
95% Gamma Approximate UCL (use when n>=50)	0.424	95% Gamma Adjusted UCL (use when n<50)	0.425

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.526	SD (KM)	0.417
Variance (KM)	0.174	SE of Mean (KM)	0.0229
k hat (KM)	1.589	k star (KM)	1.578
nu hat (KM)	1189	nu star (KM)	1180
theta hat (KM)	0.331	theta star (KM)	0.333
80% gamma percentile (KM)	0.809	90% gamma percentile (KM)	1.083
95% gamma percentile (KM)	1.348	99% gamma percentile (KM)	1.943
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (N/A, α)	1102	Adjusted Chi Square Value (N/A, β)	1101
95% Gamma Approximate KM-UCL (use when n>=50)	0.564	95% Gamma Adjusted KM-UCL (use when n<50)	0.564
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.958	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.012	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.106	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0872	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.501	Mean in Log Scale	-0.969
SD in Original Scale	0.432	SD in Log Scale	0.725
95% t UCL (assumes normality of ROS data)	0.538	95% Percentile Bootstrap UCL	0.539
95% BCA Bootstrap UCL	0.541	95% Bootstrap t UCL	0.539
95% H-UCL (Log ROS)	0.53		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.838	KM Geo Mean	0.433
KM SD (logged)	0.561	95% Critical H Value (KM-Log)	1.826
KM Standard Error of Mean (logged)	0.0319	95% H-UCL (KM -Log)	0.534
KM SD (logged)	0.561	95% Critical H Value (KM-Log)	1.826
KM Standard Error of Mean (logged)	0.0319		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.575	Mean in Log Scale	-0.851
SD in Original Scale	0.55	SD in Log Scale	0.731
95% t UCL (Assumes normality)	0.622	95% H-Stat UCL	0.6
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.564	KM H-UCL	0.534
95% KM (BCA) UCL	0.575		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Silver

General Statistics			
Total Number of Observations	374	Number of Distinct Observations	91
Number of Detects	191	Number of Non-Detects	183
Number of Distinct Detects	87	Number of Distinct Non-Detects	15
Minimum Detect	0.12	Minimum Non-Detect	0.1
Maximum Detect	9.5	Maximum Non-Detect	1
Variance Detects	1.882	Percent Non-Detects	48.93%
Mean Detects	0.886	SD Detects	1.372
Median Detects	0.39	CV Detects	1.548
Skewness Detects	3.324	Kurtosis Detects	12.56
Mean of Logged Detects	-0.699	SD of Logged Detects	0.931

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.546	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.317	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0645	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.522	KM Standard Error of Mean	0.0545
KM SD	1.049	95% KM (BCA) UCL	0.619
95% KM (t) UCL	0.612	95% KM (Percentile Bootstrap) UCL	0.615
95% KM (z) UCL	0.612	95% KM Bootstrap t UCL	0.629
90% KM Chebyshev UCL	0.686	95% KM Chebyshev UCL	0.76
97.5% KM Chebyshev UCL	0.863	99% KM Chebyshev UCL	1.065

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	15.36	Anderson-Darling GOF Test	
5% A-D Critical Value	0.784	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.209	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0679	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.998	k star (bias corrected MLE)	0.986
Theta hat (MLE)	0.888	Theta star (bias corrected MLE)	0.899
nu hat (MLE)	381.3	nu star (bias corrected)	376.7
Mean (detects)	0.886		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.482
Maximum	9.5	Median	0.19
SD	1.073	CV	2.227
k hat (MLE)	0.383	k star (bias corrected MLE)	0.381
Theta hat (MLE)	1.26	Theta star (bias corrected MLE)	1.264
nu hat (MLE)	286.3	nu star (bias corrected)	285.3
Adjusted Level of Significance (β)	0.0494		
Approximate Chi Square Value (285.30, α)	247.2	Adjusted Chi Square Value (285.30, β)	247
95% Gamma Approximate UCL (use when n>=50)	0.556	95% Gamma Adjusted UCL (use when n<50)	0.557

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.522	SD (KM)	1.049
Variance (KM)	1.101	SE of Mean (KM)	0.0545
k hat (KM)	0.247	k star (KM)	0.247
nu hat (KM)	185.1	nu star (KM)	185
theta hat (KM)	2.109	theta star (KM)	2.111
80% gamma percentile (KM)	0.755	90% gamma percentile (KM)	1.568
95% gamma percentile (KM)	2.535	99% gamma percentile (KM)	5.113
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (184.96, α)	154.5	Adjusted Chi Square Value (184.96, β)	154.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.625	95% Gamma Adjusted KM-UCL (use when n<50)	0.625
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.876	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.138	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0645	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.504	Mean in Log Scale	-1.677
SD in Original Scale	1.059	SD in Log Scale	1.357
95% t UCL (assumes normality of ROS data)	0.595	95% Percentile Bootstrap UCL	0.596
95% BCA Bootstrap UCL	0.614	95% Bootstrap t UCL	0.614
95% H-UCL (Log ROS)	0.557		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-1.382	KM Geo Mean	0.251
KM SD (logged)	1.012	95% Critical H Value (KM-Log)	2.137
KM Standard Error of Mean (logged)	0.0549	95% H-UCL (KM -Log)	0.468
KM SD (logged)	1.012	95% Critical H Value (KM-Log)	2.137
KM Standard Error of Mean (logged)	0.0549		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.541	Mean in Log Scale	-1.367
SD in Original Scale	1.048	SD in Log Scale	1.095
95% t UCL (Assumes normality)	0.63	95% H-Stat UCL	0.526
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.76		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Thallium

General Statistics

Total Number of Observations	325	Number of Distinct Observations	91
Number of Detects	178	Number of Non-Detects	147
Number of Distinct Detects	75	Number of Distinct Non-Detects	33
Minimum Detect	0.31	Minimum Non-Detect	0.29
Maximum Detect	4.8	Maximum Non-Detect	13
Variance Detects	0.337	Percent Non-Detects	45.23%
Mean Detects	1.116	SD Detects	0.581
Median Detects	1	CV Detects	0.52
Skewness Detects	2.729	Kurtosis Detects	11.96
Mean of Logged Detects	0.00983	SD of Logged Detects	0.433

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.798	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.162	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0668	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.756	KM Standard Error of Mean	0.033
KM SD	0.588	95% KM (BCA) UCL	0.816
95% KM (t) UCL	0.811	95% KM (Percentile Bootstrap) UCL	0.813
95% KM (z) UCL	0.81	95% KM Bootstrap t UCL	0.813
90% KM Chebyshev UCL	0.855	95% KM Chebyshev UCL	0.9
97.5% KM Chebyshev UCL	0.962	99% KM Chebyshev UCL	1.084

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.757	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0946	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0695	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	5.166	k star (bias corrected MLE)	5.082
Theta hat (MLE)	0.216	Theta star (bias corrected MLE)	0.22
nu hat (MLE)	1839	nu star (bias corrected)	1809
Mean (detects)	1.116		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.678
Maximum	4.8	Median	0.57
SD	0.654	CV	0.965
k hat (MLE)	0.702	k star (bias corrected MLE)	0.697
Theta hat (MLE)	0.966	Theta star (bias corrected MLE)	0.972
nu hat (MLE)	456	nu star (bias corrected)	453.1
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (453.14, α)	404.8	Adjusted Chi Square Value (453.14, β)	404.6
95% Gamma Approximate UCL (use when n>=50)	0.758	95% Gamma Adjusted UCL (use when n<50)	0.759

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.756	SD (KM)	0.588
Variance (KM)	0.345	SE of Mean (KM)	0.033
k hat (KM)	1.655	k star (KM)	1.642
nu hat (KM)	1076	nu star (KM)	1067
theta hat (KM)	0.457	theta star (KM)	0.461
80% gamma percentile (KM)	1.158	90% gamma percentile (KM)	1.541
95% gamma percentile (KM)	1.912	99% gamma percentile (KM)	2.742
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (N/A, α)	992.4	Adjusted Chi Square Value (N/A, β)	992.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.813	95% Gamma Adjusted KM-UCL (use when n<50)	0.813
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.982	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.501	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0664	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0668	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.783	Mean in Log Scale	-0.45
SD in Original Scale	0.569	SD in Log Scale	0.631
95% t UCL (assumes normality of ROS data)	0.835	95% Percentile Bootstrap UCL	0.838
95% BCA Bootstrap UCL	0.84	95% Bootstrap t UCL	0.843
95% H-UCL (Log ROS)	0.83		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.521	KM Geo Mean	0.594
KM SD (logged)	0.677	95% Critical H Value (KM-Log)	1.89
KM Standard Error of Mean (logged)	0.0391	95% H-UCL (KM -Log)	0.802
KM SD (logged)	0.677	95% Critical H Value (KM-Log)	1.89
KM Standard Error of Mean (logged)	0.0391		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.744	Mean in Log Scale	-0.626
SD in Original Scale	0.69	SD in Log Scale	0.808
95% t UCL (Assumes normality)	0.808	95% H-Stat UCL	0.811
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM Student's t	0.641	KM H-UCL	0.802

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Vanadium

General Statistics			
Total Number of Observations	328	Number of Distinct Observations	99
Number of Detects	327	Number of Non-Detects	1
Number of Distinct Detects	99	Number of Distinct Non-Detects	1
Minimum Detect	7.5	Minimum Non-Detect	30
Maximum Detect	245	Maximum Non-Detect	30
Variance Detects	1038	Percent Non-Detects	0.31%
Mean Detects	69.92	SD Detects	32.22
Median Detects	66	CV Detects	0.461
Skewness Detects	0.865	Kurtosis Detects	2.289
Mean of Logged Detects	4.131	SD of Logged Detects	0.511

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.957	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	1.01E-08	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0713	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0494	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	69.78	KM Standard Error of Mean	1.782
KM SD	32.23	95% KM (BCA) UCL	72.9
95% KM (t) UCL	72.72	95% KM (Percentile Bootstrap) UCL	72.83
95% KM (z) UCL	72.71	95% KM Bootstrap t UCL	72.83
90% KM Chebyshev UCL	75.12	95% KM Chebyshev UCL	77.55
97.5% KM Chebyshev UCL	80.91	99% KM Chebyshev UCL	87.51

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.971	Anderson-Darling GOF Test	
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.05	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0504	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	4.45	k star (bias corrected MLE)	4.411
Theta hat (MLE)	15.71	Theta star (bias corrected MLE)	15.85
nu hat (MLE)	2910	nu star (bias corrected)	2885
Mean (detects)	69.92		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	7.5	Mean	69.79
Maximum	245	Median	65.5
SD	32.26	CV	0.462
k hat (MLE)	4.424	k star (bias corrected MLE)	4.386
Theta hat (MLE)	15.78	Theta star (bias corrected MLE)	15.91
nu hat (MLE)	2902	nu star (bias corrected)	2877
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (N/A, α)	2753	Adjusted Chi Square Value (N/A, β)	2753
95% Gamma Approximate UCL (use when n>=50)	72.92	95% Gamma Adjusted UCL (use when n<50)	72.94

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	69.78	SD (KM)	32.23
Variance (KM)	1039	SE of Mean (KM)	1.782
k hat (KM)	4.688	k star (KM)	4.647
nu hat (KM)	3076	nu star (KM)	3049
theta hat (KM)	14.88	theta star (KM)	15.01
80% gamma percentile (KM)	94.57	90% gamma percentile (KM)	113.1
95% gamma percentile (KM)	130.1	99% gamma percentile (KM)	166.1
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (N/A, α)	2921	Adjusted Chi Square Value (N/A, β)	2921
95% Gamma Approximate KM-UCL (use when n>=50)	72.82	95% Gamma Adjusted KM-UCL (use when n<50)	72.83
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.964	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	7.66E-06	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0597	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0494	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	69.79	Mean in Log Scale	4.128
SD in Original Scale	32.26	SD in Log Scale	0.513
95% t UCL (assumes normality of ROS data)	72.73	95% Percentile Bootstrap UCL	72.59
95% BCA Bootstrap UCL	72.61	95% Bootstrap t UCL	72.77
95% H-UCL (Log ROS)	74.49		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.128	KM Geo Mean	62.03
KM SD (logged)	0.513	95% Critical H Value (KM-Log)	1.798
KM Standard Error of Mean (logged)	0.0284	95% H-UCL (KM -Log)	74.47
KM SD (logged)	0.513	95% Critical H Value (KM-Log)	1.798
KM Standard Error of Mean (logged)	0.0284		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	69.75	Mean in Log Scale	4.127
SD in Original Scale	32.31	SD in Log Scale	0.516
95% t UCL (Assumes normality)	72.7	95% H-Stat UCL	74.54
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM Approximate Gamma UCL	72.82	95% GROS Approximate Gamma UCL	72.92
When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test			
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Zinc

General Statistics			
Total Number of Observations	358	Number of Distinct Observations	166
		Number of Missing Observations	0
Minimum	9	Mean	375.2
Maximum	26000	Median	100
SD	1521	Std. Error of Mean	80.41
Coefficient of Variation	4.054	Skewness	13.92
Normal GOF Test			
Shapiro Wilk Test Statistic	0.217	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.405	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0472	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	507.9	95% Adjusted-CLT UCL (Chen-1995)	570.7
		95% Modified-t UCL (Johnson-1978)	517.7
Gamma GOF Test			
A-D Test Statistic	2.79E+28	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.813	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.225	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0506	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.593	k star (bias corrected MLE)	0.59
Theta hat (MLE)	633.2	Theta star (bias corrected MLE)	636.5
nu hat (MLE)	424.4	nu star (bias corrected)	422.1
MLE Mean (bias corrected)	375.2	MLE Sd (bias corrected)	488.7
		Approximate Chi Square Value (0.05)	375.5
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	375.3
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	421.8	95% Adjusted Gamma UCL (use when n<50)	422
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.936	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.105	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0472	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.197	Mean of logged Data	4.883
Maximum of Logged Data	10.17	SD of logged Data	1.149
Assuming Lognormal Distribution			
95% H-UCL	292.9	90% Chebyshev (MVUE) UCL	313.9
95% Chebyshev (MVUE) UCL	340.8	97.5% Chebyshev (MVUE) UCL	378
99% Chebyshev (MVUE) UCL	451.2		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			

Table B1a - ProUCL Outplut Files - Metals 0 - 10 feet bgs

Nonparametric Distribution Free UCLs			
95% CLT UCL	507.5	95% Jackknife UCL	507.9
95% Standard Bootstrap UCL	504.2	95% Bootstrap-t UCL	669.7
95% Hall's Bootstrap UCL	1011	95% Percentile Bootstrap UCL	521.8
95% BCA Bootstrap UCL	607.9		
90% Chebyshev(Mean, Sd) UCL	616.5	95% Chebyshev(Mean, Sd) UCL	725.7
97.5% Chebyshev(Mean, Sd) UCL	877.4	99% Chebyshev(Mean, Sd) UCL	1175
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	725.7		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

1,1-Dichloroethene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	25
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	25

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable A was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

1,2,3-Trichlorobenzene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	28
Number of Detects	1	Number of Non-Detects	49
Number of Distinct Detects	1	Number of Distinct Non-Detects	27

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable B was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

1,3,5-Trimethylbenzene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	27
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	27

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable C was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

2-Butanone

General Statistics

Total Number of Observations	50	Number of Distinct Observations	17
Number of Detects	2	Number of Non-Detects	48
Number of Distinct Detects	2	Number of Distinct Non-Detects	15
Minimum Detect	28	Minimum Non-Detect	8.8
Maximum Detect	35	Maximum Non-Detect	2400000.00%
Variance Detects	24.5	Percent Non-Detects	96%
Mean Detects	31.5	SD Detects	4.95
Median Detects	31.5	CV Detects	0.157
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	3.444	SD of Logged Detects	0.158

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	9.735	KM Standard Error of Mean	0.925
KM SD	4.563	95% KM (BCA) UCL	N/A
95% KM (t) UCL	11.29	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	11.26	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	12.51	95% KM Chebyshev UCL	13.77
97.5% KM Chebyshev UCL	15.51	99% KM Chebyshev UCL	18.94

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	80.67	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.391	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	322.7	nu star (bias corrected)	N/A
Mean (detects)	31.5		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	9.735	SD (KM)	4.563
Variance (KM)	20.82	SE of Mean (KM)	0.925
k hat (KM)	4.552	k star (KM)	4.292
nu hat (KM)	455.2	nu star (KM)	429.2
theta hat (KM)	2.139	theta star (KM)	2.268
80% gamma percentile (KM)	13.31	90% gamma percentile (KM)	16.03
95% gamma percentile (KM)	18.52	99% gamma percentile (KM)	23.83

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (429.23, α)	382.2	Adjusted Chi Square Value (429.23, β)	380.9
95% Gamma Approximate KM-UCL (use when n>=50)	10.93	95% Gamma Adjusted KM-UCL (use when n<50)	10.97

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	12.04	Mean in Log Scale	2.418
SD in Original Scale	5.23	SD in Log Scale	0.363
95% t UCL (assumes normality of ROS data)	13.28	95% Percentile Bootstrap UCL	13.3
95% BCA Bootstrap UCL	13.5	95% Bootstrap t UCL	13.71
95% H-UCL (Log ROS)	13.17		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.227	KM Geo Mean	9.272
KM SD (logged)	0.253	95% Critical H Value (KM-Log)	1.827
KM Standard Error of Mean (logged)	0.0514	95% H-UCL (KM -Log)	10.23
KM SD (logged)	0.253	95% Critical H Value (KM-Log)	1.827
KM Standard Error of Mean (logged)	0.0514		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	250.2	Mean in Log Scale	2.424
SD in Original Scale	1696	SD in Log Scale	1.051
95% t UCL (Assumes normality)	652.2	95% H-Stat UCL	28.11

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	11.29	KM H-UCL	10.23
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

2-Hexanone

General Statistics

Total Number of Observations	50	Number of Distinct Observations	27
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	27

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable E was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Acetone

General Statistics

Total Number of Observations	50	Number of Distinct Observations	27
Number of Detects	18	Number of Non-Detects	32
Number of Distinct Detects	15	Number of Distinct Non-Detects	16
Minimum Detect	29	Minimum Non-Detect	16
Maximum Detect	80	Maximum Non-Detect	28000
Variance Detects	208.3	Percent Non-Detects	64%
Mean Detects	51.86	SD Detects	14.43
Median Detects	50	CV Detects	0.278
Skewness Detects	0.443	Kurtosis Detects	-0.444
Mean of Logged Detects	3.912	SD of Logged Detects	0.281

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.955	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.139	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.202	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	31.14	KM Standard Error of Mean	3.105
KM SD	18.65	95% KM (BCA) UCL	40.71
95% KM (t) UCL	36.34	95% KM (Percentile Bootstrap) UCL	39.92
95% KM (z) UCL	36.25	95% KM Bootstrap t UCL	36.13
90% KM Chebyshev UCL	40.45	95% KM Chebyshev UCL	44.67
97.5% KM Chebyshev UCL	50.53	99% KM Chebyshev UCL	62.03

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.265	Anderson-Darling GOF Test	
5% A-D Critical Value	0.739	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.12	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.203	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	13.73	k star (bias corrected MLE)	11.47
Theta hat (MLE)	3.779	Theta star (bias corrected MLE)	4.52
nu hat (MLE)	494.1	nu star (bias corrected)	413.1
Mean (detects)	51.86		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	5.221	Mean	30.19
Maximum	80	Median	26.13
SD	19.36	CV	0.641
k hat (MLE)	2.524	k star (bias corrected MLE)	2.386
Theta hat (MLE)	11.96	Theta star (bias corrected MLE)	12.65
nu hat (MLE)	252.4	nu star (bias corrected)	238.6
Adjusted Level of Significance (β)	0.0452		
Approximate Chi Square Value (238.57, α)	203.8	Adjusted Chi Square Value (238.57, β)	202.9
95% Gamma Approximate UCL (use when n>=50)	35.33	95% Gamma Adjusted UCL (use when n<50)	35.5

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	31.14	SD (KM)	18.65
Variance (KM)	347.8	SE of Mean (KM)	3.105
k hat (KM)	2.787	k star (KM)	2.633
nu hat (KM)	278.7	nu star (KM)	263.3
theta hat (KM)	11.17	theta star (KM)	11.82
80% gamma percentile (KM)	45.11	90% gamma percentile (KM)	56.85
95% gamma percentile (KM)	67.88	99% gamma percentile (KM)	91.95

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (263.34, α)	226.8	Adjusted Chi Square Value (263.34, β)	225.8
95% Gamma Approximate KM-UCL (use when n>=50)	36.16	95% Gamma Adjusted KM-UCL (use when n<50)	36.32

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.97	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.139	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.202	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	34.07	Mean in Log Scale	3.433
SD in Original Scale	16.31	SD in Log Scale	0.425
95% t UCL (assumes normality of ROS data)	37.94	95% Percentile Bootstrap UCL	37.94
95% BCA Bootstrap UCL	38.27	95% Bootstrap t UCL	38.48
95% H-UCL (Log ROS)	37.91		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.277	KM Geo Mean	26.48
KM SD (logged)	0.555	95% Critical H Value (KM-Log)	1.93
KM Standard Error of Mean (logged)	0.105	95% H-UCL (KM -Log)	36
KM SD (logged)	0.555	95% Critical H Value (KM-Log)	1.93
KM Standard Error of Mean (logged)	0.105		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	309.3	Mean in Log Scale	3.348
SD in Original Scale	1976	SD in Log Scale	1.063
95% t UCL (Assumes normality)	777.8	95% H-Stat UCL	72.24

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	36.34

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Benzene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	27
Number of Detects	1	Number of Non-Detects	49
Number of Distinct Detects	1	Number of Distinct Non-Detects	26

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable G was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Carbon disulfide

General Statistics

Total Number of Observations	50	Number of Distinct Observations	13
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	13

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable H was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

cis-1,2-Dichloroethene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	27
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	27

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable I was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Isopropylbenzene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	27
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	27

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable J was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

n-Butylbenzene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	27
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	27

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable K was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

n-Propylbenzene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	26
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	26

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable L was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

sec-Butylbenzene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	26
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	26

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable M was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

tert-Butylbenzene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	27
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	27

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable N was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Tetrachloroethene (PCE)

General Statistics

Total Number of Observations	50	Number of Distinct Observations	26
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	26

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable O was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Toluene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	28
Number of Detects	4	Number of Non-Detects	46
Number of Distinct Detects	4	Number of Distinct Non-Detects	25
Minimum Detect	0.49	Minimum Non-Detect	0.3
Maximum Detect	1.7	Maximum Non-Detect	810
Variance Detects	0.283	Percent Non-Detects	92%
Mean Detects	0.928	SD Detects	0.532
Median Detects	0.76	CV Detects	0.574
Skewness Detects	1.617	Kurtosis Detects	2.937
Mean of Logged Detects	-0.184	SD of Logged Detects	0.522

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.847	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.337	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.438	KM Standard Error of Mean	0.0795
KM SD	0.218	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.572	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.569	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.677	95% KM Chebyshev UCL	0.785
97.5% KM Chebyshev UCL	0.935	99% KM Chebyshev UCL	1.23

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.362	Anderson-Darling GOF Test	
5% A-D Critical Value	0.659	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.303	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.396	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.759	k star (bias corrected MLE)	1.356
Theta hat (MLE)	0.195	Theta star (bias corrected MLE)	0.684
nu hat (MLE)	38.07	nu star (bias corrected)	10.85
Mean (detects)	0.928		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.175
Maximum	1.7	Median	0.0555
SD	0.285	CV	1.624
k hat (MLE)	0.613	k star (bias corrected MLE)	0.589
Theta hat (MLE)	0.286	Theta star (bias corrected MLE)	0.298
nu hat (MLE)	61.29	nu star (bias corrected)	58.94
Adjusted Level of Significance (β)	0.0452		
Approximate Chi Square Value (58.94, α)	42.29	Adjusted Chi Square Value (58.94, β)	41.87
95% Gamma Approximate UCL (use when n>=50)	0.244	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.438	SD (KM)	0.218
Variance (KM)	0.0475	SE of Mean (KM)	0.0795
k hat (KM)	4.048	k star (KM)	3.818
nu hat (KM)	404.8	nu star (KM)	381.8
theta hat (KM)	0.108	theta star (KM)	0.115
80% gamma percentile (KM)	0.608	90% gamma percentile (KM)	0.739
95% gamma percentile (KM)	0.86	99% gamma percentile (KM)	1.12

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (381.84, α)	337.5	Adjusted Chi Square Value (381.84, β)	336.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.496	95% Gamma Adjusted KM-UCL (use when n<50)	0.498

Lognormal GOF Test on Detected Observations Only

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Shapiro Wilk Test Statistic	0.942	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.27	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.356	Mean in Log Scale	-1.136
SD in Original Scale	0.23	SD in Log Scale	0.408
95% t UCL (assumes normality of ROS data)	0.411	95% Percentile Bootstrap UCL	0.413
95% BCA Bootstrap UCL	0.442	95% Bootstrap t UCL	0.464
95% H-UCL (Log ROS)	0.388		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.897	KM Geo Mean	0.408
KM SD (logged)	0.345	95% Critical H Value (KM-Log)	1.812
KM Standard Error of Mean (logged)	0.192	95% H-UCL (KM -Log)	0.473
KM SD (logged)	0.345	95% Critical H Value (KM-Log)	1.812
KM Standard Error of Mean (logged)	0.192		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8.464	Mean in Log Scale	-0.93
SD in Original Scale	57.22	SD in Log Scale	1.059
95% t UCL (Assumes normality)	22.03	95% H-Stat UCL	0.995
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics	
Detected Data appear Normal Distributed at 5% Significance Level	

Suggested UCL to Use	
95% KM (t) UCL	0.572

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

trans-1,2-Dichloroethene

General Statistics

Total Number of Observations	50	Number of Distinct Observations	28
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	28

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Q was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Trichloroethene (TCE)

General Statistics

Total Number of Observations	50	Number of Distinct Observations	29
Number of Detects	3	Number of Non-Detects	47
Number of Distinct Detects	3	Number of Distinct Non-Detects	27
Minimum Detect	0.57	Minimum Non-Detect	0.26
Maximum Detect	18	Maximum Non-Detect	390
Variance Detects	98.28	Percent Non-Detects	94%
Mean Detects	6.557	SD Detects	991.40%
Median Detects	1.1	CV Detects	1.512
Skewness Detects	1.726	Kurtosis Detects	N/A
Mean of Logged Detects	0.808	SD of Logged Detects	1.833

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.773	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.376	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.649	KM Standard Error of Mean	0.439
KM SD	2.508	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.385	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.371	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.966	95% KM Chebyshev UCL	2.562
97.5% KM Chebyshev UCL	3.39	99% KM Chebyshev UCL	5.015

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	0.579	k star (bias corrected MLE)	N/A
Theta hat (MLE)	11.32	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	3.474	nu star (bias corrected)	N/A
Mean (detects)	6.557		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.403
Maximum	18	Median	0.01
SD	2.545	CV	6.319
k hat (MLE)	0.216	k star (bias corrected MLE)	0.216
Theta hat (MLE)	1.867	Theta star (bias corrected MLE)	1.864
nu hat (MLE)	21.57	nu star (bias corrected)	21.61
Adjusted Level of Significance (β)	0.0452		
Approximate Chi Square Value (21.61, α)	12.05	Adjusted Chi Square Value (21.61, β)	11.83
95% Gamma Approximate UCL (use when n>=50)	0.723	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.649	SD (KM)	2.508
Variance (KM)	6.289	SE of Mean (KM)	0.439
k hat (KM)	0.067	k star (KM)	0.0763
nu hat (KM)	6.7	nu star (KM)	7.631
theta hat (KM)	9.688	theta star (KM)	8.506
80% gamma percentile (KM)	0.281	90% gamma percentile (KM)	1.492
95% gamma percentile (KM)	3.764	99% gamma percentile (KM)	11.75

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.63, α)	2.523	Adjusted Chi Square Value (7.63, β)	2.437
95% Gamma Approximate KM-UCL (use when n>=50)	1.963	95% Gamma Adjusted KM-UCL (use when n<50)	2.033

Lognormal GOF Test on Detected Observations Only

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Shapiro Wilk Test Statistic	0.887	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.318	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.394	Mean in Log Scale	-9.271
SD in Original Scale	2.547	SD in Log Scale	3.372
95% t UCL (assumes normality of ROS data)	0.998	95% Percentile Bootstrap UCL	1.102
95% BCA Bootstrap UCL	1.8	95% Bootstrap t UCL	12.47
95% H-UCL (Log ROS)	0.421		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-1.206	KM Geo Mean	0.299
KM SD (logged)	0.639	95% Critical H Value (KM-Log)	1.994
KM Standard Error of Mean (logged)	0.113	95% H-UCL (KM -Log)	0.441
KM SD (logged)	0.639	95% Critical H Value (KM-Log)	1.994
KM Standard Error of Mean (logged)	0.113		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.554	Mean in Log Scale	-1.023
SD in Original Scale	27.6	SD in Log Scale	1.117
95% t UCL (Assumes normality)	11.1	95% H-Stat UCL	0.996
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics	
Detected Data appear Normal Distributed at 5% Significance Level	

Suggested UCL to Use	
95% KM (t) UCL	1.385

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Vinyl Chloride

General Statistics

Total Number of Observations	50	Number of Distinct Observations	27
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	27

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable S was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

Xylenes, Total

General Statistics

Total Number of Observations	50	Number of Distinct Observations	18
Number of Detects	0	Number of Non-Detects	50
Number of Distinct Detects	0	Number of Distinct Non-Detects	18

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable T was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 2 feet bgs

TPH-g (C4-C12)

General Statistics

Total Number of Observations	50	Number of Distinct Observations	27
Number of Detects	1	Number of Non-Detects	49
Number of Distinct Detects	1	Number of Distinct Non-Detects	27

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable U was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

1,1-Dichloroethene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	35
Number of Detects	0	Number of Non-Detects	117
Number of Distinct Detects	0	Number of Distinct Non-Detects	35

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable A was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

1,2,3-Trichlorobenzene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	39
Number of Detects	1	Number of Non-Detects	116
Number of Distinct Detects	1	Number of Distinct Non-Detects	39

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable B was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

1,3,5-Trimethylbenzene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	36
Number of Detects	1	Number of Non-Detects	116
Number of Distinct Detects	1	Number of Distinct Non-Detects	36

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable C was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

2-Butanone

General Statistics

Total Number of Observations	117	Number of Distinct Observations	22
Number of Detects	5	Number of Non-Detects	112
Number of Distinct Detects	5	Number of Distinct Non-Detects	18
Minimum Detect	28	Minimum Non-Detect	8.8
Maximum Detect	79	Maximum Non-Detect	24000
Variance Detects	460.5	Percent Non-Detects	95.73%
Mean Detects	41	SD Detects	21.46
Median Detects	34	CV Detects	0.523
Skewness Detects	2.125	Kurtosis Detects	4.603
Mean of Logged Detects	3.63	SD of Logged Detects	0.424

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.678	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.41	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	10.19	KM Standard Error of Mean	0.796
KM SD	7.661	95% KM (BCA) UCL	15.73
95% KM (t) UCL	11.51	95% KM (Percentile Bootstrap) UCL	15.01
95% KM (z) UCL	11.5	95% KM Bootstrap t UCL	11.13
90% KM Chebyshev UCL	12.58	95% KM Chebyshev UCL	13.66
97.5% KM Chebyshev UCL	15.16	99% KM Chebyshev UCL	18.11

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.805	Anderson-Darling GOF Test	
5% A-D Critical Value	0.68	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.397	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.358	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	6.154	k star (bias corrected MLE)	2.595
Theta hat (MLE)	6.662	Theta star (bias corrected MLE)	15.8
nu hat (MLE)	61.54	nu star (bias corrected)	25.95
Mean (detects)	41		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.762
Maximum	79	Median	0.01
SD	9.231	CV	5.24
k hat (MLE)	0.158	k star (bias corrected MLE)	0.16
Theta hat (MLE)	11.13	Theta star (bias corrected MLE)	11.02
nu hat (MLE)	37.03	nu star (bias corrected)	37.41
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (37.41, α)	24.41	Adjusted Chi Square Value (37.41, β)	24.28
95% Gamma Approximate UCL (use when n>=50)	2.7	95% Gamma Adjusted UCL (use when n<50)	2.715

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	10.19	SD (KM)	7.661
Variance (KM)	58.7	SE of Mean (KM)	0.796
k hat (KM)	1.769	k star (KM)	1.73
nu hat (KM)	414	nu star (KM)	404.8
theta hat (KM)	5.76	theta star (KM)	5.892
80% gamma percentile (KM)	15.52	90% gamma percentile (KM)	20.52
95% gamma percentile (KM)	25.33	99% gamma percentile (KM)	36.09

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (404.75, α)	359.1	Adjusted Chi Square Value (404.75, β)	358.6
95% Gamma Approximate KM-UCL (use when n>=50)	11.49	95% Gamma Adjusted KM-UCL (use when n<50)	11.5

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.749	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.37	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4.826	Mean in Log Scale	0.855
SD in Original Scale	9.156	SD in Log Scale	1.127
95% t UCL (assumes normality of ROS data)	6.229	95% Percentile Bootstrap UCL	6.261
95% BCA Bootstrap UCL	6.852	95% Bootstrap t UCL	7.226
95% H-UCL (Log ROS)	5.671		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.238	KM Geo Mean	9.371
KM SD (logged)	0.306	95% Critical H Value (KM-Log)	1.74
KM Standard Error of Mean (logged)	0.0318	95% H-UCL (KM -Log)	10.32
KM SD (logged)	0.306	95% Critical H Value (KM-Log)	1.74
KM Standard Error of Mean (logged)	0.0318		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	113	Mean in Log Scale	2.319
SD in Original Scale	1108	SD in Log Scale	0.746
95% t UCL (Assumes normality)	282.9	95% H-Stat UCL	15.42

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	11.51	KM H-UCL	10.32
95% KM (BCA) UCL	15.73		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

2-Hexanone

General Statistics

Total Number of Observations	117	Number of Distinct Observations	39
Number of Detects	1	Number of Non-Detects	116
Number of Distinct Detects	1	Number of Distinct Non-Detects	39

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable E was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Acetone

General Statistics

Total Number of Observations	117	Number of Distinct Observations	51
Number of Detects	55	Number of Non-Detects	62
Number of Distinct Detects	42	Number of Distinct Non-Detects	19
Minimum Detect	24	Minimum Non-Detect	16
Maximum Detect	490	Maximum Non-Detect	28000
Variance Detects	4197	Percent Non-Detects	52.99%
Mean Detects	62.82	SD Detects	64.78
Median Detects	49	CV Detects	1.031
Skewness Detects	5.639	Kurtosis Detects	36.22
Mean of Logged Detects	3.961	SD of Logged Detects	0.494

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.427	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.323	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.119	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	41	KM Standard Error of Mean	4.711
KM SD	49.02	95% KM (BCA) UCL	51.8
95% KM (t) UCL	48.81	95% KM (Percentile Bootstrap) UCL	49.54
95% KM (z) UCL	48.75	95% KM Bootstrap t UCL	55.21
90% KM Chebyshev UCL	55.13	95% KM Chebyshev UCL	61.54
97.5% KM Chebyshev UCL	70.42	99% KM Chebyshev UCL	87.88

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.438	Anderson-Darling GOF Test	
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.196	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.121	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.946	k star (bias corrected MLE)	2.797
Theta hat (MLE)	21.32	Theta star (bias corrected MLE)	22.46
nu hat (MLE)	324.1	nu star (bias corrected)	307.7
Mean (detects)	62.82		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	29.87
Maximum	490	Median	4.754
SD	54.1	CV	1.811
k hat (MLE)	0.208	k star (bias corrected MLE)	0.208
Theta hat (MLE)	143.5	Theta star (bias corrected MLE)	143.3
nu hat (MLE)	48.7	nu star (bias corrected)	48.78
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (48.78, α)	33.75	Adjusted Chi Square Value (48.78, β)	33.59
95% Gamma Approximate UCL (use when n>=50)	43.18	95% Gamma Adjusted UCL (use when n<50)	43.38

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	41	SD (KM)	49.02
Variance (KM)	2403	SE of Mean (KM)	4.711
k hat (KM)	0.7	k star (KM)	0.687
nu hat (KM)	163.7	nu star (KM)	160.8
theta hat (KM)	58.61	theta star (KM)	59.65
80% gamma percentile (KM)	67.43	90% gamma percentile (KM)	103.4
95% gamma percentile (KM)	140.5	99% gamma percentile (KM)	229.2

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (160.83, α)	132.5	Adjusted Chi Square Value (160.83, β)	132.2
95% Gamma Approximate KM-UCL (use when n>=50)	49.76	95% Gamma Adjusted KM-UCL (use when n<50)	49.88

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.843	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	1.28E-07	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.143	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.119	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	39.24	Mean in Log Scale	3.376
SD in Original Scale	49.69	SD in Log Scale	0.691
95% t UCL (assumes normality of ROS data)	46.86	95% Percentile Bootstrap UCL	47.52
95% BCA Bootstrap UCL	51.74	95% Bootstrap t UCL	53.27
95% H-UCL (Log ROS)	42.11		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	3.467	KM Geo Mean	32.03
KM SD (logged)	0.611	95% Critical H Value (KM-Log)	1.906
KM Standard Error of Mean (logged)	0.0766	95% H-UCL (KM -Log)	43.01
KM SD (logged)	0.611	95% Critical H Value (KM-Log)	1.906
KM Standard Error of Mean (logged)	0.0766		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	157.8	Mean in Log Scale	3.4
SD in Original Scale	1292	SD in Log Scale	0.895
95% t UCL (Assumes normality)	355.9	95% H-Stat UCL	53.34
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	48.81	KM H-UCL	43.01
95% KM (BCA) UCL	51.8		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Benzene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	36
Number of Detects	2	Number of Non-Detects	115
Number of Distinct Detects	2	Number of Distinct Non-Detects	34
Minimum Detect	0.86	Minimum Non-Detect	0.27
Maximum Detect	1.6	Maximum Non-Detect	390
Variance Detects	0.274	Percent Non-Detects	98.29%
Mean Detects	1.23	SD Detects	0.523
Median Detects	1.23	CV Detects	0.425
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	0.16	SD of Logged Detects	0.439

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.287	KM Standard Error of Mean	0.0176
KM SD	0.134	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.316	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.316	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.339	95% KM Chebyshev UCL	0.363
97.5% KM Chebyshev UCL	0.397	99% KM Chebyshev UCL	0.462

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	10.71	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.115	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	42.83	nu star (bias corrected)	N/A
Mean (detects)	1.23		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.287	SD (KM)	0.134
Variance (KM)	0.018	SE of Mean (KM)	0.0176
k hat (KM)	4.563	k star (KM)	4.452
nu hat (KM)	1068	nu star (KM)	1042
theta hat (KM)	0.0628	theta star (KM)	0.0644
80% gamma percentile (KM)	0.39	90% gamma percentile (KM)	0.469
95% gamma percentile (KM)	0.54	99% gamma percentile (KM)	0.693

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0479
Approximate Chi Square Value (N/A, α)	967.8	Adjusted Chi Square Value (N/A, β)	966.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.308	95% Gamma Adjusted KM-UCL (use when n<50)	0.309

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0598	Mean in Log Scale	-3.587
SD in Original Scale	0.166	SD in Log Scale	1.067
95% t UCL (assumes normality of ROS data)	0.0853	95% Percentile Bootstrap UCL	0.087
95% BCA Bootstrap UCL	0.102	95% Bootstrap t UCL	0.158
95% H-UCL (Log ROS)	0.0613		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.284	KM Geo Mean	0.277
KM SD (logged)	0.196	95% Critical H Value (KM-Log)	1.699
KM Standard Error of Mean (logged)	0.0257	95% H-UCL (KM -Log)	0.291
KM SD (logged)	0.196	95% Critical H Value (KM-Log)	1.699
KM Standard Error of Mean (logged)	0.0257		

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.964	Mean in Log Scale	-1.197
SD in Original Scale	18	SD in Log Scale	0.657
95% t UCL (Assumes normality)	4.723	95% H-Stat UCL	0.422

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.316	KM H-UCL	0.291
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Carbon disulfide

General Statistics

Total Number of Observations	117	Number of Distinct Observations	19
Number of Detects	3	Number of Non-Detects	114
Number of Distinct Detects	3	Number of Distinct Non-Detects	16
Minimum Detect	4.3	Minimum Non-Detect	0.84
Maximum Detect	14	Maximum Non-Detect	530
Variance Detects	27.49	Percent Non-Detects	97.44%
Mean Detects	8	SD Detects	5.243
Median Detects	5.7	CV Detects	0.655
Skewness Detects	1.594	Kurtosis Detects	N/A
Mean of Logged Detects	1.946	SD of Logged Detects	0.616

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.856	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.336	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.025	KM Standard Error of Mean	0.151
KM SD	1.329	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.276	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.274	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.478	95% KM Chebyshev UCL	1.684
97.5% KM Chebyshev UCL	1.969	99% KM Chebyshev UCL	2.529

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	3.907	k star (bias corrected MLE)	N/A
Theta hat (MLE)	2.048	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	23.44	nu star (bias corrected)	N/A
Mean (detects)	8		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.215
Maximum	14	Median	0.01
SD	1.443	CV	6.716
k hat (MLE)	0.246	k star (bias corrected MLE)	0.245
Theta hat (MLE)	0.875	Theta star (bias corrected MLE)	0.877
nu hat (MLE)	57.49	nu star (bias corrected)	57.34
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (57.34, α)	40.94	Adjusted Chi Square Value (57.34, β)	40.76
95% Gamma Approximate UCL (use when n>=50)	0.301	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.025	SD (KM)	1.329
Variance (KM)	1.766	SE of Mean (KM)	0.151
k hat (KM)	0.595	k star (KM)	0.586
nu hat (KM)	139.3	nu star (KM)	137.1
theta hat (KM)	1.722	theta star (KM)	1.75
80% gamma percentile (KM)	1.69	90% gamma percentile (KM)	2.681
95% gamma percentile (KM)	3.721	99% gamma percentile (KM)	6.243

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (137.06, α)	111	Adjusted Chi Square Value (137.06, β)	110.7
95% Gamma Approximate KM-UCL (use when n>=50)	1.266	95% Gamma Adjusted KM-UCL (use when n<50)	1.269

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.917	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.297	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.263	Mean in Log Scale	-4.518
SD in Original Scale	1.442	SD in Log Scale	2.406
95% t UCL (assumes normality of ROS data)	0.484	95% Percentile Bootstrap UCL	0.503
95% BCA Bootstrap UCL	0.684	95% Bootstrap t UCL	0.896
95% H-UCL (Log ROS)	0.465		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.12	KM Geo Mean	0.887
KM SD (logged)	0.346	95% Critical H Value (KM-Log)	1.758
KM Standard Error of Mean (logged)	0.0394	95% H-UCL (KM -Log)	0.997
KM SD (logged)	0.346	95% Critical H Value (KM-Log)	1.758
KM Standard Error of Mean (logged)	0.0394		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.314	Mean in Log Scale	-0.0468
SD in Original Scale	24.44	SD in Log Scale	0.649
95% t UCL (Assumes normality)	7.06	95% H-Stat UCL	1.323

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.276

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

cis-1,2-Dichloroethene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	45
Number of Detects	10	Number of Non-Detects	107
Number of Distinct Detects	10	Number of Distinct Non-Detects	36
Minimum Detect	0.76	Minimum Non-Detect	0.29
Maximum Detect	87	Maximum Non-Detect	420
Variance Detects	710	Percent Non-Detects	91.45%
Mean Detects	11.3	SD Detects	26.65
Median Detects	2.75	CV Detects	2.359
Skewness Detects	3.142	Kurtosis Detects	9.904
Mean of Logged Detects	1.255	SD of Logged Detects	1.274

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.419	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.483	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.239	KM Standard Error of Mean	0.787
KM SD	8.039	95% KM (BCA) UCL	3.429
95% KM (t) UCL	2.544	95% KM (Percentile Bootstrap) UCL	2.783
95% KM (z) UCL	2.533	95% KM Bootstrap t UCL	11.8
90% KM Chebyshev UCL	3.599	95% KM Chebyshev UCL	4.669
97.5% KM Chebyshev UCL	6.153	99% KM Chebyshev UCL	9.068

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.736	Anderson-Darling GOF Test	
5% A-D Critical Value	0.774	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.39	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.28	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.537	k star (bias corrected MLE)	0.443
Theta hat (MLE)	21.03	Theta star (bias corrected MLE)	25.51
nu hat (MLE)	10.74	nu star (bias corrected)	8.855
Mean (detects)	11.3		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.975
Maximum	87	Median	0.01
SD	8.07	CV	8.281
k hat (MLE)	0.183	k star (bias corrected MLE)	0.184
Theta hat (MLE)	5.328	Theta star (bias corrected MLE)	5.298
nu hat (MLE)	42.81	nu star (bias corrected)	43.04
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (43.04, α)	29	Adjusted Chi Square Value (43.04, β)	28.86
95% Gamma Approximate UCL (use when n>=50)	1.447	95% Gamma Adjusted UCL (use when n<50)	1.454

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.239	SD (KM)	8.039
Variance (KM)	64.63	SE of Mean (KM)	0.787
k hat (KM)	0.0238	k star (KM)	0.0288
nu hat (KM)	5.558	nu star (KM)	6.749
theta hat (KM)	52.16	theta star (KM)	42.96
80% gamma percentile (KM)	0.0108	90% gamma percentile (KM)	0.649
95% gamma percentile (KM)	4.618	99% gamma percentile (KM)	32.32

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (6.75, α)	2.034	Adjusted Chi Square Value (6.75, β)	2.002
95% Gamma Approximate KM-UCL (use when n>=50)	4.111	95% Gamma Adjusted KM-UCL (use when n<50)	4.177

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.81	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.252	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.979	Mean in Log Scale	-5.117
SD in Original Scale	8.07	SD in Log Scale	2.74
95% t UCL (assumes normality of ROS data)	2.216	95% Percentile Bootstrap UCL	2.435
95% BCA Bootstrap UCL	3.283	95% Bootstrap t UCL	11.4
95% H-UCL (Log ROS)	0.761		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.022	KM Geo Mean	0.36
KM SD (logged)	0.785	95% Critical H Value (KM-Log)	2.035
KM Standard Error of Mean (logged)	0.0768	95% H-UCL (KM -Log)	0.568
KM SD (logged)	0.785	95% Critical H Value (KM-Log)	2.035
KM Standard Error of Mean (logged)	0.0768		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.031	Mean in Log Scale	-0.956
SD in Original Scale	20.91	SD in Log Scale	0.991
95% t UCL (Assumes normality)	6.236	95% H-Stat UCL	0.771

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	0.568

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Isopropylbenzene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	39
Number of Detects	1	Number of Non-Detects	116
Number of Distinct Detects	1	Number of Distinct Non-Detects	38

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable J was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

n-Butylbenzene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	39
Number of Detects	2	Number of Non-Detects	115
Number of Distinct Detects	2	Number of Distinct Non-Detects	39
Minimum Detect	0.73	Minimum Non-Detect	0.42
Maximum Detect	0.86	Maximum Non-Detect	1100
Variance Detects	0.00845	Percent Non-Detects	98.29%
Mean Detects	0.795	SD Detects	0.0919
Median Detects	0.795	CV Detects	0.116
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-0.233	SD of Logged Detects	0.116

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.446	KM Standard Error of Mean	0.0277
KM SD	0.0911	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.492	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.492	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.529	95% KM Chebyshev UCL	0.567
97.5% KM Chebyshev UCL	0.619	99% KM Chebyshev UCL	0.722

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	149.3	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00533	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	597	nu star (bias corrected)	N/A
Mean (detects)	0.795		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.446	SD (KM)	0.0911
Variance (KM)	0.00831	SE of Mean (KM)	0.0277
k hat (KM)	23.96	k star (KM)	23.35
nu hat (KM)	5606	nu star (KM)	5463
theta hat (KM)	0.0186	theta star (KM)	0.0191
80% gamma percentile (KM)	0.521	90% gamma percentile (KM)	0.568
95% gamma percentile (KM)	0.608	99% gamma percentile (KM)	0.688

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0479
Approximate Chi Square Value (N/A, α)	5293	Adjusted Chi Square Value (N/A, β)	5290
95% Gamma Approximate KM-UCL (use when n>=50)	0.46	95% Gamma Adjusted KM-UCL (use when n<50)	0.461

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.508	Mean in Log Scale	-0.687
SD in Original Scale	0.0759	SD in Log Scale	0.143
95% t UCL (assumes normality of ROS data)	0.52	95% Percentile Bootstrap UCL	0.52
95% BCA Bootstrap UCL	0.52	95% Bootstrap t UCL	0.521
95% H-UCL (Log ROS)	0.52		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.822	KM Geo Mean	0.439
KM SD (logged)	0.158	95% Critical H Value (KM-Log)	1.687
KM Standard Error of Mean (logged)	0.049	95% H-UCL (KM -Log)	0.456
KM SD (logged)	0.158	95% Critical H Value (KM-Log)	1.687
KM Standard Error of Mean (logged)	0.049		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.141	Mean in Log Scale	-0.769

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

SD in Original Scale	50.81	SD in Log Scale	0.687
95% t UCL (Assumes normality)	12.93	95% H-Stat UCL	0.665

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.492	KM H-UCL	0.456
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

n-Propylbenzene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	37
Number of Detects	2	Number of Non-Detects	115
Number of Distinct Detects	2	Number of Distinct Non-Detects	36
Minimum Detect	0.63	Minimum Non-Detect	0.28
Maximum Detect	1.6	Maximum Non-Detect	420
Variance Detects	0.47	Percent Non-Detects	98.29%
Mean Detects	1.115	SD Detects	0.686
Median Detects	1.115	CV Detects	0.615
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	0.00398	SD of Logged Detects	0.659

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.295	KM Standard Error of Mean	0.0169
KM SD	0.127	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.323	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.323	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.346	95% KM Chebyshev UCL	0.369
97.5% KM Chebyshev UCL	0.4	99% KM Chebyshev UCL	0.463

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	4.928	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.226	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	19.71	nu star (bias corrected)	N/A
Mean (detects)	1.115		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.295	SD (KM)	0.127
Variance (KM)	0.0161	SE of Mean (KM)	0.0169
k hat (KM)	5.404	k star (KM)	5.271
nu hat (KM)	1265	nu star (KM)	1233
theta hat (KM)	0.0546	theta star (KM)	0.056
80% gamma percentile (KM)	0.394	90% gamma percentile (KM)	0.467
95% gamma percentile (KM)	0.533	99% gamma percentile (KM)	0.673

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0479
Approximate Chi Square Value (N/A, α)	1153	Adjusted Chi Square Value (N/A, β)	1152
95% Gamma Approximate KM-UCL (use when n>=50)	0.316	95% Gamma Adjusted KM-UCL (use when n<50)	0.316

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0297	Mean in Log Scale	-5.173
SD in Original Scale	0.158	SD in Log Scale	1.457
95% t UCL (assumes normality of ROS data)	0.0539	95% Percentile Bootstrap UCL	0.0562
95% BCA Bootstrap UCL	0.0761	95% Bootstrap t UCL	0.273
95% H-UCL (Log ROS)	0.0236		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.249	KM Geo Mean	0.287
KM SD (logged)	0.181	95% Critical H Value (KM-Log)	1.694
KM Standard Error of Mean (logged)	0.0244	95% H-UCL (KM -Log)	0.3
KM SD (logged)	0.181	95% Critical H Value (KM-Log)	1.694
KM Standard Error of Mean (logged)	0.0244		

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.096	Mean in Log Scale	-1.178
SD in Original Scale	19.39	SD in Log Scale	0.657
95% t UCL (Assumes normality)	5.067	95% H-Stat UCL	0.43

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	0.369

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

sec-Butylbenzene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	38
Number of Detects	2	Number of Non-Detects	115
Number of Distinct Detects	2	Number of Distinct Non-Detects	36
Minimum Detect	0.8	Minimum Non-Detect	0.3
Maximum Detect	1.1	Maximum Non-Detect	490
Variance Detects	0.045	Percent Non-Detects	98.29%
Mean Detects	0.95	SD Detects	0.212
Median Detects	0.95	CV Detects	0.223
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-0.0639	SD of Logged Detects	0.225

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.312	KM Standard Error of Mean	0.0118
KM SD	0.0881	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.331	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.331	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.347	95% KM Chebyshev UCL	0.363
97.5% KM Chebyshev UCL	0.385	99% KM Chebyshev UCL	0.429

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	39.77	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0239	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	159.1	nu star (bias corrected)	N/A
Mean (detects)	0.95		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.312	SD (KM)	0.0881
Variance (KM)	0.00777	SE of Mean (KM)	0.0118
k hat (KM)	12.5	k star (KM)	12.19
nu hat (KM)	2925	nu star (KM)	2852
theta hat (KM)	0.0249	theta star (KM)	0.0256
80% gamma percentile (KM)	0.383	90% gamma percentile (KM)	0.43
95% gamma percentile (KM)	0.472	99% gamma percentile (KM)	0.556

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0479
Approximate Chi Square Value (N/A, α)	2729	Adjusted Chi Square Value (N/A, β)	2727
95% Gamma Approximate KM-UCL (use when n>=50)	0.326	95% Gamma Adjusted KM-UCL (use when n<50)	0.326

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.168	Mean in Log Scale	-1.938
SD in Original Scale	0.127	SD in Log Scale	0.523
95% t UCL (assumes normality of ROS data)	0.188	95% Percentile Bootstrap UCL	0.189
95% BCA Bootstrap UCL	0.195	95% Bootstrap t UCL	0.2
95% H-UCL (Log ROS)	0.181		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.184	KM Geo Mean	0.306
KM SD (logged)	0.153	95% Critical H Value (KM-Log)	1.685
KM Standard Error of Mean (logged)	0.0204	95% H-UCL (KM -Log)	0.317
KM SD (logged)	0.153	95% Critical H Value (KM-Log)	1.685
KM Standard Error of Mean (logged)	0.0204		

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.418	Mean in Log Scale	-1.092
SD in Original Scale	22.62	SD in Log Scale	0.656
95% t UCL (Assumes normality)	5.885	95% H-Stat UCL	0.468

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.331	KM H-UCL	0.317
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

tert-Butylbenzene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	38
Number of Detects	1	Number of Non-Detects	116
Number of Distinct Detects	1	Number of Distinct Non-Detects	38

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable N was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Tetrachloroethene (PCE)

General Statistics

Total Number of Observations	117	Number of Distinct Observations	38
Number of Detects	2	Number of Non-Detects	115
Number of Distinct Detects	2	Number of Distinct Non-Detects	36
Minimum Detect	1.8	Minimum Non-Detect	0.28
Maximum Detect	9.1	Maximum Non-Detect	500
Variance Detects	26.65	Percent Non-Detects	98.29%
Mean Detects	5.45	SD Detects	5.162
Median Detects	5.45	CV Detects	0.947
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	1.398	SD of Logged Detects	1.146

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.369	KM Standard Error of Mean	0.108
KM SD	0.826	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.549	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.548	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.695	95% KM Chebyshev UCL	0.842
97.5% KM Chebyshev UCL	1.047	99% KM Chebyshev UCL	1.449

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	1.829	k star (bias corrected MLE)	N/A
Theta hat (MLE)	2.979	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	7.317	nu star (bias corrected)	N/A
Mean (detects)	5.45		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.369	SD (KM)	0.826
Variance (KM)	0.683	SE of Mean (KM)	0.108
k hat (KM)	0.2	k star (KM)	0.2
nu hat (KM)	46.71	nu star (KM)	46.85
theta hat (KM)	1.849	theta star (KM)	1.844
80% gamma percentile (KM)	0.487	90% gamma percentile (KM)	1.116
95% gamma percentile (KM)	1.902	99% gamma percentile (KM)	4.062

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0479
Approximate Chi Square Value (46.85, α)	32.14	Adjusted Chi Square Value (46.85, β)	31.99
95% Gamma Approximate KM-UCL (use when n>=50)	0.538	95% Gamma Adjusted KM-UCL (use when n<50)	0.541

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0932	Mean in Log Scale	-13.84
SD in Original Scale	0.856	SD in Log Scale	4.314
95% t UCL (assumes normality of ROS data)	0.224	95% Percentile Bootstrap UCL	0.249
95% BCA Bootstrap UCL	0.357	95% Bootstrap t UCL	458.5
95% H-UCL (Log ROS)	0.141		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.227	KM Geo Mean	0.293
KM SD (logged)	0.364	95% Critical H Value (KM-Log)	1.765
KM Standard Error of Mean (logged)	0.0477	95% H-UCL (KM -Log)	0.332
KM SD (logged)	0.364	95% Critical H Value (KM-Log)	1.765
KM Standard Error of Mean (logged)	0.0477		

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.516	Mean in Log Scale	-1.137
SD in Original Scale	23.09	SD in Log Scale	0.738
95% t UCL (Assumes normality)	6.056	95% H-Stat UCL	0.483

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	0.842

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Toluene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	39
Number of Detects	8	Number of Non-Detects	109
Number of Distinct Detects	8	Number of Distinct Non-Detects	35
Minimum Detect	0.49	Minimum Non-Detect	0.3
Maximum Detect	1.7	Maximum Non-Detect	810
Variance Detects	0.222	Percent Non-Detects	93.16%
Mean Detects	0.909	SD Detects	0.471
Median Detects	0.73	CV Detects	0.518
Skewness Detects	1.222	Kurtosis Detects	-0.172
Mean of Logged Detects	-0.197	SD of Logged Detects	0.464

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.775	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.333	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.283	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.377	KM Standard Error of Mean	0.0323
KM SD	0.201	95% KM (BCA) UCL	0.526
95% KM (t) UCL	0.43	95% KM (Percentile Bootstrap) UCL	0.505
95% KM (z) UCL	0.43	95% KM Bootstrap t UCL	0.442
90% KM Chebyshev UCL	0.473	95% KM Chebyshev UCL	0.517
97.5% KM Chebyshev UCL	0.578	99% KM Chebyshev UCL	0.698

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.707	Anderson-Darling GOF Test	
5% A-D Critical Value	0.719	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.292	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.295	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	5.08	k star (bias corrected MLE)	3.258
Theta hat (MLE)	0.179	Theta star (bias corrected MLE)	0.279
nu hat (MLE)	81.28	nu star (bias corrected)	52.13
Mean (detects)	0.909		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0861
Maximum	1.7	Median	0.01
SD	0.257	CV	2.979
k hat (MLE)	0.419	k star (bias corrected MLE)	0.413
Theta hat (MLE)	0.206	Theta star (bias corrected MLE)	0.208
nu hat (MLE)	97.94	nu star (bias corrected)	96.76
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (96.76, α)	75.07	Adjusted Chi Square Value (96.76, β)	74.83
95% Gamma Approximate UCL (use when n>=50)	0.111	95% Gamma Adjusted UCL (use when n<50)	0.111

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.377	SD (KM)	0.201
Variance (KM)	0.0404	SE of Mean (KM)	0.0323
k hat (KM)	3.511	k star (KM)	3.427
nu hat (KM)	821.6	nu star (KM)	801.8
theta hat (KM)	0.107	theta star (KM)	0.11
80% gamma percentile (KM)	0.529	90% gamma percentile (KM)	0.649
95% gamma percentile (KM)	0.761	99% gamma percentile (KM)	1.002

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (801.84, α)	737.1	Adjusted Chi Square Value (801.84, β)	736.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.41	95% Gamma Adjusted KM-UCL (use when n<50)	0.41

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.86	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.262	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.231	Mean in Log Scale	-1.713
SD in Original Scale	0.234	SD in Log Scale	0.64
95% t UCL (assumes normality of ROS data)	0.267	95% Percentile Bootstrap UCL	0.267
95% BCA Bootstrap UCL	0.279	95% Bootstrap t UCL	0.281
95% H-UCL (Log ROS)	0.248		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.047	KM Geo Mean	0.351
KM SD (logged)	0.323	95% Critical H Value (KM-Log)	1.747
KM Standard Error of Mean (logged)	0.0724	95% H-UCL (KM -Log)	0.39
KM SD (logged)	0.323	95% Critical H Value (KM-Log)	1.747
KM Standard Error of Mean (logged)	0.0724		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.81	Mean in Log Scale	-1.057
SD in Original Scale	37.41	SD in Log Scale	0.734
95% t UCL (Assumes normality)	9.545	95% H-Stat UCL	0.521

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	0.41	95% GROS Approximate Gamma UCL	0.111

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

trans-1,2-Dichloroethene

General Statistics

Total Number of Observations	117	Number of Distinct Observations	40
Number of Detects	1	Number of Non-Detects	116
Number of Distinct Detects	1	Number of Distinct Non-Detects	39

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Q was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Trichloroethene (TCE)

General Statistics

Total Number of Observations	116	Number of Distinct Observations	43
		Number of Missing Observations	1
Number of Detects	9	Number of Non-Detects	107
Number of Distinct Detects	9	Number of Distinct Non-Detects	36
Minimum Detect	0.52	Minimum Non-Detect	0.26
Maximum Detect	120	Maximum Non-Detect	39000.00%
Variance Detects	1816	Percent Non-Detects	92.24%
Mean Detects	27.77	SD Detects	42.62
Median Detects	1.735	CV Detects	1.535
Skewness Detects	1.661	Kurtosis Detects	1.956
Mean of Logged Detects	1.648	SD of Logged Detects	2.192

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.721	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.285	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2.417	KM Standard Error of Mean	1.33
KM SD	13.45	95% KM (BCA) UCL	4.857
95% KM (t) UCL	4.623	95% KM (Percentile Bootstrap) UCL	4.637
95% KM (z) UCL	4.605	95% KM Bootstrap t UCL	10.16
90% KM Chebyshev UCL	6.408	95% KM Chebyshev UCL	8.216
97.5% KM Chebyshev UCL	10.72	99% KM Chebyshev UCL	15.65

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.666	Anderson-Darling GOF Test	
5% A-D Critical Value	0.79	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.295	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.298	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.394	k star (bias corrected MLE)	0.337
Theta hat (MLE)	70.53	Theta star (bias corrected MLE)	82.5
nu hat (MLE)	7.086	nu star (bias corrected)	6.058
Mean (detects)	27.77		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.163
Maximum	120	Median	0.01
SD	13.49	CV	6.235
k hat (MLE)	0.156	k star (bias corrected MLE)	0.158
Theta hat (MLE)	13.85	Theta star (bias corrected MLE)	13.7
nu hat (MLE)	36.24	nu star (bias corrected)	36.63
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (36.63, α)	23.78	Adjusted Chi Square Value (36.63, β)	23.65
95% Gamma Approximate UCL (use when n>=50)	3.333	95% Gamma Adjusted UCL (use when n<50)	3.351

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2.417	SD (KM)	13.45
Variance (KM)	180.9	SE of Mean (KM)	1.33
k hat (KM)	0.0323	k star (KM)	0.0372
nu hat (KM)	7.493	nu star (KM)	8.633
theta hat (KM)	74.84	theta star (KM)	64.96
80% gamma percentile (KM)	0.0936	90% gamma percentile (KM)	2.291
95% gamma percentile (KM)	11.09	99% gamma percentile (KM)	58.53

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (8.63, α)	3.107	Adjusted Chi Square Value (8.63, β)	3.065
95% Gamma Approximate KM-UCL (use when n>=50)	6.717	95% Gamma Adjusted KM-UCL (use when n<50)	6.808

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.858	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.247	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.155	Mean in Log Scale	-9.422
SD in Original Scale	13.49	SD in Log Scale	4.635
95% t UCL (assumes normality of ROS data)	4.232	95% Percentile Bootstrap UCL	4.366
95% BCA Bootstrap UCL	5.275	95% Bootstrap t UCL	10.84
95% H-UCL (Log ROS)	72.6		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.101	KM Geo Mean	0.333
KM SD (logged)	0.992	95% Critical H Value (KM-Log)	2.212
KM Standard Error of Mean (logged)	0.099	95% H-UCL (KM -Log)	0.668
KM SD (logged)	0.992	95% Critical H Value (KM-Log)	2.212
KM Standard Error of Mean (logged)	0.099		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.087	Mean in Log Scale	-1.018
SD in Original Scale	22.37	SD in Log Scale	1.157
95% t UCL (Assumes normality)	7.532	95% H-Stat UCL	0.912

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	6.717

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Vinyl Chloride

General Statistics

Total Number of Observations	117	Number of Distinct Observations	38
Number of Detects	2	Number of Non-Detects	115
Number of Distinct Detects	2	Number of Distinct Non-Detects	37
Minimum Detect	0.85	Minimum Non-Detect	0.31
Maximum Detect	0.88	Maximum Non-Detect	610
Variance Detects	4.50E-04	Percent Non-Detects	98.29%
Mean Detects	0.865	SD Detects	0.0212
Median Detects	0.865	CV Detects	0.0245
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-0.145	SD of Logged Detects	0.0245

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.32	KM Standard Error of Mean	0.00982
KM SD	0.0735	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.336	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.336	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.349	95% KM Chebyshev UCL	0.363
97.5% KM Chebyshev UCL	0.381	99% KM Chebyshev UCL	0.418

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	3325	k star (bias corrected MLE)	N/A
Theta hat (MLE)	2.60E-04	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	13300	nu star (bias corrected)	N/A
Mean (detects)	0.865		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.32	SD (KM)	0.0735
Variance (KM)	0.0054	SE of Mean (KM)	0.00982
k hat (KM)	18.94	k star (KM)	18.46
nu hat (KM)	4432	nu star (KM)	4320
theta hat (KM)	0.0169	theta star (KM)	0.0173
80% gamma percentile (KM)	0.38	90% gamma percentile (KM)	0.418
95% gamma percentile (KM)	0.451	99% gamma percentile (KM)	0.518

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0479
Approximate Chi Square Value (N/A, α)	4168	Adjusted Chi Square Value (N/A, β)	4166
95% Gamma Approximate KM-UCL (use when n>=50)	0.332	95% Gamma Adjusted KM-UCL (use when n<50)	0.332

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.705	Mean in Log Scale	-0.351
SD in Original Scale	0.0413	SD in Log Scale	0.0574
95% t UCL (assumes normality of ROS data)	0.711	95% Percentile Bootstrap UCL	0.711
95% BCA Bootstrap UCL	0.712	95% Bootstrap t UCL	0.712
95% H-UCL (Log ROS)	N/A		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.153	KM Geo Mean	0.316
KM SD (logged)	0.136	95% Critical H Value (KM-Log)	1.681
KM Standard Error of Mean (logged)	0.0182	95% H-UCL (KM -Log)	0.325
KM SD (logged)	0.136	95% Critical H Value (KM-Log)	1.681
KM Standard Error of Mean (logged)	0.0182		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.932	Mean in Log Scale	-1.082

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

SD in Original Scale	28.17	SD in Log Scale	0.671
95% t UCL (Assumes normality)	7.25	95% H-Stat UCL	0.479

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.336	KM H-UCL	0.325
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Xylenes, Total

General Statistics

Total Number of Observations	117	Number of Distinct Observations	28
Number of Detects	1	Number of Non-Detects	116
Number of Distinct Detects	1	Number of Distinct Non-Detects	28

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable T was not processed!

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

TPH-g (C4-C12)

General Statistics

Total Number of Observations	117	Number of Distinct Observations	43
Number of Detects	6	Number of Non-Detects	111
Number of Distinct Detects	6	Number of Distinct Non-Detects	39
Minimum Detect	0.076	Minimum Non-Detect	0.042
Maximum Detect	0.88	Maximum Non-Detect	110
Variance Detects	0.0922	Percent Non-Detects	94.87%
Mean Detects	0.266	SD Detects	0.304
Median Detects	0.165	CV Detects	1.142
Skewness Detects	2.345	Kurtosis Detects	5.618
Mean of Logged Detects	-1.683	SD of Logged Detects	0.831

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.631	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.432	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0548	KM Standard Error of Mean	0.00829
KM SD	0.0803	95% KM (BCA) UCL	0.0865
95% KM (t) UCL	0.0685	95% KM (Percentile Bootstrap) UCL	0.0787
95% KM (z) UCL	0.0684	95% KM Bootstrap t UCL	0.0799
90% KM Chebyshev UCL	0.0797	95% KM Chebyshev UCL	0.0909
97.5% KM Chebyshev UCL	0.107	99% KM Chebyshev UCL	0.137

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.769	Anderson-Darling GOF Test	
5% A-D Critical Value	0.708	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.38	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.337	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.539	k star (bias corrected MLE)	0.881
Theta hat (MLE)	0.173	Theta star (bias corrected MLE)	0.302
nu hat (MLE)	18.47	nu star (bias corrected)	10.57
Mean (detects)	0.266		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0231
Maximum	0.88	Median	0.01
SD	0.0848	CV	3.666
k hat (MLE)	0.855	k star (bias corrected MLE)	0.838
Theta hat (MLE)	0.0271	Theta star (bias corrected MLE)	0.0276
nu hat (MLE)	200	nu star (bias corrected)	196.2
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (196.17, α)	164.8	Adjusted Chi Square Value (196.17, β)	164.4
95% Gamma Approximate UCL (use when n>=50)	0.0275	95% Gamma Adjusted UCL (use when n<50)	0.0276

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0548	SD (KM)	0.0803
Variance (KM)	0.00645	SE of Mean (KM)	0.00829
k hat (KM)	0.465	k star (KM)	0.459
nu hat (KM)	108.9	nu star (KM)	107.5
theta hat (KM)	0.118	theta star (KM)	0.119
80% gamma percentile (KM)	0.0896	90% gamma percentile (KM)	0.151
95% gamma percentile (KM)	0.217	99% gamma percentile (KM)	0.381

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (107.47, α)	84.54	Adjusted Chi Square Value (107.47, β)	84.29
95% Gamma Approximate KM-UCL (use when n>=50)	0.0696	95% Gamma Adjusted KM-UCL (use when n<50)	0.0699

Lognormal GOF Test on Detected Observations Only

Table B1b - ProUCL Output Files - VOCs 0 - 10 feet bgs

Shapiro Wilk Test Statistic	0.856	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.323	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0172	Mean in Log Scale	-6.014
SD in Original Scale	0.0858	SD in Log Scale	1.571
95% t UCL (assumes normality of ROS data)	0.0304	95% Percentile Bootstrap UCL	0.032
95% BCA Bootstrap UCL	0.0422	95% Bootstrap t UCL	0.0621
95% H-UCL (Log ROS)	0.0127		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-3.072	KM Geo Mean	0.0463
KM SD (logged)	0.384	95% Critical H Value (KM-Log)	1.775
KM Standard Error of Mean (logged)	0.0462	95% H-UCL (KM -Log)	0.0531
KM SD (logged)	0.384	95% Critical H Value (KM-Log)	1.775
KM Standard Error of Mean (logged)	0.0462		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.525	Mean in Log Scale	-3.005
SD in Original Scale	5.08	SD in Log Scale	0.769
95% t UCL (Assumes normality)	1.304	95% H-Stat UCL	0.0769
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use
KM H-UCL 0.0531

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

2-Methylnaphthalene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	36
Number of Detects	24	Number of Non-Detects	22
Number of Distinct Detects	20	Number of Distinct Non-Detects	17
Minimum Detect	6.4	Minimum Non-Detect	4.7
Maximum Detect	18000	Maximum Non-Detect	480
Variance Detects	13424029	Percent Non-Detects	47.83%
Mean Detects	815.4	SD Detects	3664
Median Detects	28	CV Detects	4.493
Skewness Detects	4.884	Kurtosis Detects	23.89
Mean of Logged Detects	3.553	SD of Logged Detects	1.749

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.23	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.916	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.489	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	430.6	KM Standard Error of Mean	394.9
KM SD	2622	95% KM (BCA) UCL	1208
95% KM (t) UCL	1094	95% KM (Percentile Bootstrap) UCL	1198
95% KM (z) UCL	1080	95% KM Bootstrap t UCL	38360
90% KM Chebyshev UCL	1615	95% KM Chebyshev UCL	2152
97.5% KM Chebyshev UCL	2897	99% KM Chebyshev UCL	4360

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.398	Anderson-Darling GOF Test	
5% A-D Critical Value	0.885	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.393	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.196	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.229	k star (bias corrected MLE)	0.228
Theta hat (MLE)	3566	Theta star (bias corrected MLE)	3579
nu hat (MLE)	10.98	nu star (bias corrected)	10.94
Mean (detects)	815.4		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	425.4
Maximum	18000	Median	6.45
SD	2652	CV	6.233
k hat (MLE)	0.123	k star (bias corrected MLE)	0.13
Theta hat (MLE)	3448	Theta star (bias corrected MLE)	3276
nu hat (MLE)	11.35	nu star (bias corrected)	11.95
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (11.95, α)	5.191	Adjusted Chi Square Value (11.95, β)	5.047
95% Gamma Approximate UCL (use when n>=50)	979	95% Gamma Adjusted UCL (use when n<50)	1007

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	430.6	SD (KM)	2622
Variance (KM)	6873703	SE of Mean (KM)	394.9
k hat (KM)	0.027	k star (KM)	0.0397
nu hat (KM)	2.481	nu star (KM)	3.653
theta hat (KM)	15964	theta star (KM)	10844
80% gamma percentile (KM)	22.83	90% gamma percentile (KM)	460.9
95% gamma percentile (KM)	2057	99% gamma percentile (KM)	10201

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.65, α)	0.59	Adjusted Chi Square Value (3.65, β)	0.554
95% Gamma Approximate KM-UCL (use when n>=50)	2668	95% Gamma Adjusted KM-UCL (use when n<50)	2841

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	7.75E-01	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.916	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.219	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	427.4	Mean in Log Scale	2.289
SD in Original Scale	2651	SD in Log Scale	1.968
95% t UCL (assumes normality of ROS data)	1084	95% Percentile Bootstrap UCL	1208
95% BCA Bootstrap UCL	1640	95% Bootstrap t UCL	40327
95% H-UCL (Log ROS)	193.3		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.793	KM Geo Mean	16.34
KM SD (logged)	1.553	95% Critical H Value (KM-Log)	2.982
KM Standard Error of Mean (logged)	0.244	95% H-UCL (KM -Log)	108.8
KM SD (logged)	1.553	95% Critical H Value (KM-Log)	2.982
KM Standard Error of Mean (logged)	0.244		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	443.9	Mean in Log Scale	3.019
SD in Original Scale	2649	SD in Log Scale	1.752
95% t UCL (Assumes normality)	1100	95% H-Stat UCL	221.5

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	2152

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Acenaphthene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	24
Number of Detects	6	Number of Non-Detects	40
Number of Distinct Detects	6	Number of Distinct Non-Detects	18
Minimum Detect	5.1	Minimum Non-Detect	2.6
Maximum Detect	18000	Maximum Non-Detect	27000.00%
Variance Detects	52890321	Percent Non-Detects	86.96%
Mean Detects	3177	SD Detects	7273
Median Detects	24.5	CV Detects	2.289
Skewness Detects	2.434	Kurtosis Detects	5.937
Mean of Logged Detects	4.407	SD of Logged Detects	3.259

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.531	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.451	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	417	KM Standard Error of Mean	424
KM SD	2625	95% KM (BCA) UCL	1199
95% KM (t) UCL	1129	95% KM (Percentile Bootstrap) UCL	1199
95% KM (z) UCL	1114	95% KM Bootstrap t UCL	159630
90% KM Chebyshev UCL	1689	95% KM Chebyshev UCL	2265
97.5% KM Chebyshev UCL	3065	99% KM Chebyshev UCL	4636

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.756	Anderson-Darling GOF Test	
5% A-D Critical Value	0.801	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.352	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.364	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.201	k star (bias corrected MLE)	0.212
Theta hat (MLE)	15796	Theta star (bias corrected MLE)	15008
nu hat (MLE)	2.413	nu star (bias corrected)	2.54
Mean (detects)	3177		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	414.4
Maximum	18000	Median	0.01
SD	2655	CV	6.406
k hat (MLE)	0.0873	k star (bias corrected MLE)	0.0961
Theta hat (MLE)	4746	Theta star (bias corrected MLE)	4311
nu hat (MLE)	8.033	nu star (bias corrected)	8.843
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (8.84, α)	3.232	Adjusted Chi Square Value (8.84, β)	3.123
95% Gamma Approximate UCL (use when n>=50)	1134	95% Gamma Adjusted UCL (use when n<50)	1173

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	417	SD (KM)	2625
Variance (KM)	6891400	SE of Mean (KM)	424
k hat (KM)	0.0252	k star (KM)	0.0381
nu hat (KM)	2.321	nu star (KM)	3.503
theta hat (KM)	16527	theta star (KM)	10951
80% gamma percentile (KM)	18.1	90% gamma percentile (KM)	413.1
95% gamma percentile (KM)	1942	99% gamma percentile (KM)	10020

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.50, α)	0.536	Adjusted Chi Square Value (3.50, β)	0.502
95% Gamma Approximate KM-UCL (use when n>=50)	2726	95% Gamma Adjusted KM-UCL (use when n<50)	2908

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.855	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.277	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	414.4	Mean in Log Scale	-6.198
SD in Original Scale	2655	SD in Log Scale	5.313
95% t UCL (assumes normality of ROS data)	1072	95% Percentile Bootstrap UCL	1196
95% BCA Bootstrap UCL	2000	95% Bootstrap t UCL	226174
95% H-UCL (Log ROS)	2381301		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.462	KM Geo Mean	4.314
KM SD (logged)	1.59	95% Critical H Value (KM-Log)	3.03
KM Standard Error of Mean (logged)	0.262	95% H-UCL (KM -Log)	31.31
KM SD (logged)	1.59	95% Critical H Value (KM-Log)	3.03
KM Standard Error of Mean (logged)	0.262		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	426.6	Mean in Log Scale	1.885
SD in Original Scale	2653	SD in Log Scale	1.948
95% t UCL (Assumes normality)	1083	95% H-Stat UCL	121.7

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	2908

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Acenaphthylene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	35
Number of Detects	29	Number of Non-Detects	17
Number of Distinct Detects	25	Number of Distinct Non-Detects	11
Minimum Detect	2.4	Minimum Non-Detect	230.00%
Maximum Detect	2000	Maximum Non-Detect	230
Variance Detects	221693	Percent Non-Detects	36.96%
Mean Detects	161.1	SD Detects	470.8
Median Detects	12	CV Detects	2.923
Skewness Detects	3.386	Kurtosis Detects	10.86
Mean of Logged Detects	2.948	SD of Logged Detects	1.679

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.375	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.469	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.161	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	103.9	KM Standard Error of Mean	56.26
KM SD	374.9	95% KM (BCA) UCL	212.7
95% KM (t) UCL	198.4	95% KM (Percentile Bootstrap) UCL	205.2
95% KM (z) UCL	196.5	95% KM Bootstrap t UCL	436.1
90% KM Chebyshev UCL	272.7	95% KM Chebyshev UCL	349.2
97.5% KM Chebyshev UCL	455.3	99% KM Chebyshev UCL	663.7

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.922	Anderson-Darling GOF Test	
5% A-D Critical Value	0.852	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.363	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.176	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.32	k star (bias corrected MLE)	0.31
Theta hat (MLE)	503.7	Theta star (bias corrected MLE)	520.1
nu hat (MLE)	18.55	nu star (bias corrected)	17.96
Mean (detects)	161.1		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	101.6
Maximum	2000	Median	5.6
SD	379.6	CV	3.738
k hat (MLE)	0.169	k star (bias corrected MLE)	0.173
Theta hat (MLE)	600.4	Theta star (bias corrected MLE)	588.4
nu hat (MLE)	15.56	nu star (bias corrected)	15.88
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (15.88, α)	7.877	Adjusted Chi Square Value (15.88, β)	7.694
95% Gamma Approximate UCL (use when n>=50)	204.7	95% Gamma Adjusted UCL (use when n<50)	209.6

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	103.9	SD (KM)	374.9
Variance (KM)	140550	SE of Mean (KM)	56.26
k hat (KM)	0.0769	k star (KM)	0.0864
nu hat (KM)	7.073	nu star (KM)	7.945
theta hat (KM)	1352	theta star (KM)	1204
80% gamma percentile (KM)	57.01	90% gamma percentile (KM)	257.8
95% gamma percentile (KM)	605.7	99% gamma percentile (KM)	1775

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.94, α)	2.703	Adjusted Chi Square Value (7.94, β)	2.605
95% Gamma Approximate KM-UCL (use when n>=50)	305.5	95% Gamma Adjusted KM-UCL (use when n<50)	317

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.818	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.194	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.161	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	102.7	Mean in Log Scale	2.045
SD in Original Scale	379.3	SD in Log Scale	1.935
95% t UCL (assumes normality of ROS data)	196.6	95% Percentile Bootstrap UCL	207.6
95% BCA Bootstrap UCL	253.6	95% Bootstrap t UCL	2033
95% H-UCL (Log ROS)	137.6		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.359	KM Geo Mean	10.58
KM SD (logged)	1.604	95% Critical H Value (KM-Log)	3.048
KM Standard Error of Mean (logged)	0.249	95% H-UCL (KM -Log)	79.38
KM SD (logged)	1.604	95% Critical H Value (KM-Log)	3.048
KM Standard Error of Mean (logged)	0.249		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	110.1	Mean in Log Scale	2.527
SD in Original Scale	378	SD in Log Scale	1.797
95% t UCL (Assumes normality)	203.7	95% H-Stat UCL	152.5

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	349.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Anthracene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	39
Number of Detects	36	Number of Non-Detects	10
Number of Distinct Detects	32	Number of Distinct Non-Detects	800.00%
Minimum Detect	2.3	Minimum Non-Detect	1.9
Maximum Detect	7000	Maximum Non-Detect	190
Variance Detects	1592754	Percent Non-Detects	21.74%
Mean Detects	329.8	SD Detects	1262
Median Detects	14.5	CV Detects	3.827
Skewness Detects	4.808	Kurtosis Detects	24.1
Mean of Logged Detects	3.136	SD of Logged Detects	1.85

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.29	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.935	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.437	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.145	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	260.1	KM Standard Error of Mean	165.8
KM SD	1109	95% KM (BCA) UCL	570.8
95% KM (t) UCL	538.6	95% KM (Percentile Bootstrap) UCL	562.7
95% KM (z) UCL	532.8	95% KM Bootstrap t UCL	3764
90% KM Chebyshev UCL	757.5	95% KM Chebyshev UCL	982.8
97.5% KM Chebyshev UCL	1296	99% KM Chebyshev UCL	1910

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.783	Anderson-Darling GOF Test	
5% A-D Critical Value	0.875	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.318	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.161	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.264	k star (bias corrected MLE)	0.261
Theta hat (MLE)	1247	Theta star (bias corrected MLE)	1264
nu hat (MLE)	19.04	nu star (bias corrected)	18.78
Mean (detects)	329.8		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	258.1
Maximum	7000	Median	9.45
SD	1121	CV	4.345
k hat (MLE)	0.182	k star (bias corrected MLE)	0.185
Theta hat (MLE)	1417	Theta star (bias corrected MLE)	1397
nu hat (MLE)	16.75	nu star (bias corrected)	16.99
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (16.99, α)	8.668	Adjusted Chi Square Value (16.99, β)	8.475
95% Gamma Approximate UCL (use when n>=50)	506	95% Gamma Adjusted UCL (use when n<50)	517.5

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	260.1	SD (KM)	1109
Variance (KM)	1229397	SE of Mean (KM)	165.8
k hat (KM)	0.055	k star (KM)	0.0659
nu hat (KM)	5.063	nu star (KM)	6.066
theta hat (KM)	4726	theta star (KM)	3945
80% gamma percentile (KM)	80.68	90% gamma percentile (KM)	534.3
95% gamma percentile (KM)	1484	99% gamma percentile (KM)	5035

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (6.07, α)	1.674	Adjusted Chi Square Value (6.07, β)	1.601
95% Gamma Approximate KM-UCL (use when n>=50)	942.7	95% Gamma Adjusted KM-UCL (use when n<50)	985.8

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.868	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.935	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.169	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.145	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	259.3	Mean in Log Scale	2.668
SD in Original Scale	1121	SD in Log Scale	1.993
95% t UCL (assumes normality of ROS data)	536.9	95% Percentile Bootstrap UCL	555.2
95% BCA Bootstrap UCL	717.6	95% Bootstrap t UCL	3447
95% H-UCL (Log ROS)	303.5		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	2.791	KM Geo Mean	16.29
KM SD (logged)	1.812	95% Critical H Value (KM-Log)	3.324
KM Standard Error of Mean (logged)	0.277	95% H-UCL (KM -Log)	206.4
KM SD (logged)	1.812	95% Critical H Value (KM-Log)	3.324
KM Standard Error of Mean (logged)	0.277		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	264.4	Mean in Log Scale	2.932
SD in Original Scale	1120	SD in Log Scale	1.897
95% t UCL (Assumes normality)	541.8	95% H-Stat UCL	299.8
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	982.8		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Benzo(a)anthracene

General Statistics			
Total Number of Observations	46	Number of Distinct Observations	39
Number of Detects	35	Number of Non-Detects	1100.00%
Number of Distinct Detects	32	Number of Distinct Non-Detects	8
Minimum Detect	3.6	Minimum Non-Detect	1.4
Maximum Detect	5300	Maximum Non-Detect	150
Variance Detects	1334645	Percent Non-Detects	23.91%
Mean Detects	386.5	SD Detects	1155
Median Detects	30	CV Detects	2.989
Skewness Detects	3.462	Kurtosis Detects	11.55
Mean of Logged Detects	3.772	SD of Logged Detects	1.725

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.37	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.934	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.443	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.148	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	296.8	KM Standard Error of Mean	150.5
KM SD	1006	95% KM (BCA) UCL	582.2
95% KM (t) UCL	549.6	95% KM (Percentile Bootstrap) UCL	553.6
95% KM (z) UCL	544.4	95% KM Bootstrap t UCL	802.3
90% KM Chebyshev UCL	748.3	95% KM Chebyshev UCL	952.8
97.5% KM Chebyshev UCL	1237	99% KM Chebyshev UCL	1794

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.535	Anderson-Darling GOF Test	
5% A-D Critical Value	0.853	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.338	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.161	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.313	k star (bias corrected MLE)	0.306
Theta hat (MLE)	1233	Theta star (bias corrected MLE)	1265
nu hat (MLE)	21.94	nu star (bias corrected)	21.39
Mean (detects)	386.5		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	294.1
Maximum	5300	Median	22.5
SD	1018	CV	3.461
k hat (MLE)	0.19	k star (bias corrected MLE)	0.192
Theta hat (MLE)	1552	Theta star (bias corrected MLE)	1534
nu hat (MLE)	17.44	nu star (bias corrected)	17.63
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (17.63, α)	9.127	Adjusted Chi Square Value (17.63, β)	8.928
95% Gamma Approximate UCL (use when n>=50)	568.2	95% Gamma Adjusted UCL (use when n<50)	580.9

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	296.8	SD (KM)	1006
Variance (KM)	1012164	SE of Mean (KM)	150.5
k hat (KM)	0.087	k star (KM)	0.0959
nu hat (KM)	8.007	nu star (KM)	8.818
theta hat (KM)	3410	theta star (KM)	3097
80% gamma percentile (KM)	193.3	90% gamma percentile (KM)	775.6
95% gamma percentile (KM)	1726	99% gamma percentile (KM)	4815

Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (8.82, α)	3.218	Adjusted Chi Square Value (8.82, β)	3.109
95% Gamma Approximate KM-UCL (use when n>=50)	8.13E+02	95% Gamma Adjusted KM-UCL (use when n<50)	842
95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)			

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.863	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.934	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.211	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.148	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	295.9	Mean in Log Scale	3.209
SD in Original Scale	1017	SD in Log Scale	1.91
95% t UCL (assumes normality of ROS data)	547.9	95% Percentile Bootstrap UCL	561.3
95% BCA Bootstrap UCL	695.5	95% Bootstrap t UCL	815
95% H-UCL (Log ROS)	411		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.232	KM Geo Mean	25.33
KM SD (logged)	1.884	95% Critical H Value (KM-Log)	3.422
KM Standard Error of Mean (logged)	0.29	95% H-UCL (KM -Log)	390.4
KM SD (logged)	1.884	95% Critical H Value (KM-Log)	3.422
KM Standard Error of Mean (logged)	0.29		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	299	Mean in Log Scale	3.317
SD in Original Scale	1017	SD in Log Scale	1.925
95% t UCL (Assumes normality)	550.7	95% H-Stat UCL	477.6

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	952.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Benzo(a)pyrene

General Statistics			
Total Number of Observations	46	Number of Distinct Observations	4100.00%
Number of Detects	45	Number of Non-Detects	1
Number of Distinct Detects	40	Number of Distinct Non-Detects	1
Minimum Detect	2.1	Minimum Non-Detect	72
Maximum Detect	6900	Maximum Non-Detect	72
Variance Detects	1558404	Percent Non-Detects	2.17%
Mean Detects	358.2	SD Detects	1248
Median Detects	39	CV Detects	3.485
Skewness Detects	4.633	Kurtosis Detects	21.41
Mean of Logged Detects	3.809	SD of Logged Detects	1.767
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.306	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.945	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.417	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.131	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	351	KM Standard Error of Mean	182.2
KM SD	1222	95% KM (BCA) UCL	735.5
95% KM (t) UCL	656.9	95% KM (Percentile Bootstrap) UCL	663.2
95% KM (z) UCL	650.6	95% KM Bootstrap t UCL	2342
90% KM Chebyshev UCL	897.5	95% KM Chebyshev UCL	1145
97.5% KM Chebyshev UCL	1489	99% KM Chebyshev UCL	2164
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.982	Anderson-Darling GOF Test	
5% A-D Critical Value	0.855	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.274	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.143	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.328	k star (bias corrected MLE)	0.321
Theta hat (MLE)	1092	Theta star (bias corrected MLE)	1116
nu hat (MLE)	29.52	nu star (bias corrected)	28.89
Mean (detects)	358.2		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	350.4
Maximum	6900	Median	38
SD	1236	CV	3.526
k hat (MLE)	0.308	k star (bias corrected MLE)	0.302
Theta hat (MLE)	1139	Theta star (bias corrected MLE)	1160
nu hat (MLE)	28.3	nu star (bias corrected)	27.79
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (27.79, α)	16.76	Adjusted Chi Square Value (27.79, β)	16.48
95% Gamma Approximate UCL (use when n>=50)	580.8	95% Gamma Adjusted UCL (use when n<50)	590.6
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	351	SD (KM)	1222
Variance (KM)	1492995	SE of Mean (KM)	182.2
k hat (KM)	0.0825	k star (KM)	0.0916
nu hat (KM)	7.59	nu star (KM)	8.428
theta hat (KM)	4254	theta star (KM)	3831
80% gamma percentile (KM)	212.8	90% gamma percentile (KM)	897.7
95% gamma percentile (KM)	2044	99% gamma percentile (KM)	5822
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (8.43, α)	2.99E+00	Adjusted Chi Square Value (8.43, β)	2.881
95% Gamma Approximate KM-UCL (use when n>=50)	990.8	95% Gamma Adjusted KM-UCL (use when n<50)	1027
95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)			

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.946	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.945	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.125	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.131	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	350.9	Mean in Log Scale	3.793
SD in Original Scale	1235	SD in Log Scale	1.751
95% t UCL (assumes normality of ROS data)	656.8	95% Percentile Bootstrap UCL	677
95% BCA Bootstrap UCL	805.9	95% Bootstrap t UCL	2383
95% H-UCL (Log ROS)	479.3		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.79	KM Geo Mean	44.24
KM SD (logged)	1.74	95% Critical H Value (KM-Log)	3.227
KM Standard Error of Mean (logged)	0.26	95% H-UCL (KM -Log)	463.7
KM SD (logged)	1.74	95% Critical H Value (KM-Log)	3.227
KM Standard Error of Mean (logged)	0.26		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	351.2	Mean in Log Scale	3.804
SD in Original Scale	1235	SD in Log Scale	1.748
95% t UCL (Assumes normality)	657.1	95% H-Stat UCL	480.9

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	1145

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Benzo(b)fluoranthene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	45
Number of Detects	44	Number of Non-Detects	2
Number of Distinct Detects	43	Number of Distinct Non-Detects	2
Minimum Detect	2.6	Minimum Non-Detect	42
Maximum Detect	7400	Maximum Non-Detect	79
Variance Detects	1950669	Percent Non-Detects	4.35%
Mean Detects	437.8	SD Detects	1397
Median Detects	60.75	CV Detects	3.19
Skewness Detects	4.39	Kurtosis Detects	19.11
Mean of Logged Detects	4.18	SD of Logged Detects	1.764

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.333	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.944	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.411	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.132	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	419.9	KM Standard Error of Mean	201.8
KM SD	1353	95% KM (BCA) UCL	768.7
95% KM (t) UCL	758.8	95% KM (Percentile Bootstrap) UCL	798.4
95% KM (z) UCL	751.8	95% KM Bootstrap t UCL	2317
90% KM Chebyshev UCL	1025	95% KM Chebyshev UCL	1299
97.5% KM Chebyshev UCL	1680	99% KM Chebyshev UCL	2428

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.222	Anderson-Darling GOF Test	
5% A-D Critical Value	0.848	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.261	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.144	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.353	k star (bias corrected MLE)	0.344
Theta hat (MLE)	1240	Theta star (bias corrected MLE)	1272
nu hat (MLE)	31.08	nu star (bias corrected)	30.29
Mean (detects)	437.8		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	418.8
Maximum	7400	Median	55.5
SD	1368	CV	3.267
k hat (MLE)	0.307	k star (bias corrected MLE)	0.301
Theta hat (MLE)	1365	Theta star (bias corrected MLE)	1390
nu hat (MLE)	28.23	nu star (bias corrected)	27.72
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (27.72, α)	16.71	Adjusted Chi Square Value (27.72, β)	16.43
95% Gamma Approximate UCL (use when n>=50)	694.7	95% Gamma Adjusted UCL (use when n<50)	706.5

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	419.9	SD (KM)	1353
Variance (KM)	1830563	SE of Mean (KM)	201.8
k hat (KM)	0.0963	k star (KM)	0.105
nu hat (KM)	8.861	nu star (KM)	9.616
theta hat (KM)	4360	theta star (KM)	4017
80% gamma percentile (KM)	310.1	90% gamma percentile (KM)	1137
95% gamma percentile (KM)	2430	99% gamma percentile (KM)	6523

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (9.62, α)	3.703	Adjusted Chi Square Value (9.62, β)	3.585
95% Gamma Approximate KM-UCL (use when n>=50)	1090	95% Gamma Adjusted KM-UCL (use when n<50)	1126

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.956	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.944	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.111	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.132	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	419.6	Mean in Log Scale	4.123
SD in Original Scale	1368	SD in Log Scale	1.748
95% t UCL (assumes normality of ROS data)	758.4	95% Percentile Bootstrap UCL	767.7
95% BCA Bootstrap UCL	929.6	95% Bootstrap t UCL	2135
95% H-UCL (Log ROS)	660.5		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.119	KM Geo Mean	61.53
KM SD (logged)	1.742	95% Critical H Value (KM-Log)	3.23
KM Standard Error of Mean (logged)	0.262	95% H-UCL (KM -Log)	648.5
KM SD (logged)	1.742	95% Critical H Value (KM-Log)	3.23
KM Standard Error of Mean (logged)	0.262		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	420.1	Mean in Log Scale	4.145
SD in Original Scale	1368	SD in Log Scale	1.733
95% t UCL (Assumes normality)	758.8	95% H-Stat UCL	651.4

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	1299

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Benzo(g,h,i)perylene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	42
Number of Detects	36	Number of Non-Detects	10
Number of Distinct Detects	33	Number of Distinct Non-Detects	9
Minimum Detect	4.3	Minimum Non-Detect	4.1
Maximum Detect	2900	Maximum Non-Detect	420
Variance Detects	480698	Percent Non-Detects	21.74%
Mean Detects	242.9	SD Detects	693.3
Median Detects	25.5	CV Detects	2.854
Skewness Detects	3.42	Kurtosis Detects	10.82
Mean of Logged Detects	3.651	SD of Logged Detects	1.59

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.369	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.935	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.447	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.145	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	195.3	KM Standard Error of Mean	91.5
KM SD	611.7	95% KM (BCA) UCL	375.9
95% KM (t) UCL	349	95% KM (Percentile Bootstrap) UCL	356.6
95% KM (z) UCL	345.8	95% KM Bootstrap t UCL	538.9
90% KM Chebyshev UCL	469.8	95% KM Chebyshev UCL	594.1
97.5% KM Chebyshev UCL	766.7	99% KM Chebyshev UCL	1106

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.182	Anderson-Darling GOF Test	
5% A-D Critical Value	0.843	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.287	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.158	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.363	k star (bias corrected MLE)	0.351
Theta hat (MLE)	669.2	Theta star (bias corrected MLE)	691.5
nu hat (MLE)	26.14	nu star (bias corrected)	25.29
Mean (detects)	242.9		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	190.1
Maximum	2900	Median	21.5
SD	619.8	CV	3.26
k hat (MLE)	0.215	k star (bias corrected MLE)	0.215
Theta hat (MLE)	885.8	Theta star (bias corrected MLE)	883.8
nu hat (MLE)	19.75	nu star (bias corrected)	19.79
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (19.79, α)	10.7	Adjusted Chi Square Value (19.79, β)	10.48
95% Gamma Approximate UCL (use when n>=50)	351.7	95% Gamma Adjusted UCL (use when n<50)	359

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	195.3	SD (KM)	611.7
Variance (KM)	374178	SE of Mean (KM)	91.5
k hat (KM)	0.102	k star (KM)	0.11
nu hat (KM)	9.377	nu star (KM)	10.1
theta hat (KM)	1916	theta star (KM)	1779
80% gamma percentile (KM)	153.9	90% gamma percentile (KM)	538.4
95% gamma percentile (KM)	1125	99% gamma percentile (KM)	2959

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (10.10, α)	4.004	Adjusted Chi Square Value (10.10, β)	3.879
95% Gamma Approximate KM-UCL (use when n>=50)	492.6	95% Gamma Adjusted KM-UCL (use when n<50)	508.4

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.868	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.935	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.193	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.145	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	193.4	Mean in Log Scale	3.332
SD in Original Scale	618.8	SD in Log Scale	1.648
95% t UCL (assumes normality of ROS data)	346.6	95% Percentile Bootstrap UCL	353.2
95% BCA Bootstrap UCL	410.2	95% Bootstrap t UCL	532.8
95% H-UCL (Log ROS)	233.7		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	3.4	KM Geo Mean	29.97
KM SD (logged)	1.553	95% Critical H Value (KM-Log)	2.982
KM Standard Error of Mean (logged)	0.24	95% H-UCL (KM -Log)	199.6
KM SD (logged)	1.553	95% Critical H Value (KM-Log)	2.982
KM Standard Error of Mean (logged)	0.24		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	207.7	Mean in Log Scale	3.582
SD in Original Scale	616.3	SD in Log Scale	1.657
95% t UCL (Assumes normality)	360.3	95% H-Stat UCL	306.5
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	594.1		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Benzo(k)fluoranthene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	36
Number of Detects	38	Number of Non-Detects	8
Number of Distinct Detects	31	Number of Distinct Non-Detects	7
Minimum Detect	2.3	Minimum Non-Detect	2
Maximum Detect	3700	Maximum Non-Detect	160
Variance Detects	444334	Percent Non-Detects	17.39%
Mean Detects	198	SD Detects	666.6
Median Detects	20	CV Detects	3.367
Skewness Detects	4.608	Kurtosis Detects	22.33
Mean of Logged Detects	3.241	SD of Logged Detects	1.696

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.326	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.429	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.142	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	165.5	KM Standard Error of Mean	89.97
KM SD	602.1	95% KM (BCA) UCL	345.3
95% KM (t) UCL	316.5	95% KM (Percentile Bootstrap) UCL	321.3
95% KM (z) UCL	313.4	95% KM Bootstrap t UCL	925.2
90% KM Chebyshev UCL	435.4	95% KM Chebyshev UCL	557.6
97.5% KM Chebyshev UCL	727.3	99% KM Chebyshev UCL	1061

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.862	Anderson-Darling GOF Test	
5% A-D Critical Value	0.85	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.307	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.155	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.331	k star (bias corrected MLE)	0.323
Theta hat (MLE)	597.5	Theta star (bias corrected MLE)	613.4
nu hat (MLE)	25.19	nu star (bias corrected)	24.53
Mean (detects)	198		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	163.6
Maximum	3700	Median	16
SD	609.2	CV	3.724
k hat (MLE)	0.224	k star (bias corrected MLE)	0.224
Theta hat (MLE)	728.9	Theta star (bias corrected MLE)	729.4
nu hat (MLE)	20.64	nu star (bias corrected)	20.63
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (20.63, α)	11.32	Adjusted Chi Square Value (20.63, β)	11.09
95% Gamma Approximate UCL (use when n>=50)	298.2	95% Gamma Adjusted UCL (use when n<50)	304.2

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	165.5	SD (KM)	602.1
Variance (KM)	362478	SE of Mean (KM)	89.97
k hat (KM)	0.0755	k star (KM)	0.0851
nu hat (KM)	6.948	nu star (KM)	7.828
theta hat (KM)	2191	theta star (KM)	1944
80% gamma percentile (KM)	88.4	90% gamma percentile (KM)	407
95% gamma percentile (KM)	963.9	99% gamma percentile (KM)	2845

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.83, α)	2.636	Adjusted Chi Square Value (7.83, β)	2.539
95% Gamma Approximate KM-UCL (use when n>=50)	491.4	95% Gamma Adjusted KM-UCL (use when n<50)	510.1

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.913	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.148	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.142	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	164.8	Mean in Log Scale	2.917
SD in Original Scale	608.8	SD in Log Scale	1.78
95% t UCL (assumes normality of ROS data)	315.6	95% Percentile Bootstrap UCL	322.4
95% BCA Bootstrap UCL	408.3	95% Bootstrap t UCL	895
95% H-UCL (Log ROS)	215.5		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	2.971	KM Geo Mean	19.51
KM SD (logged)	1.692	95% Critical H Value (KM-Log)	3.164
KM Standard Error of Mean (logged)	0.258	95% H-UCL (KM -Log)	181.5
KM SD (logged)	1.692	95% Critical H Value (KM-Log)	3.164
KM Standard Error of Mean (logged)	0.258		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	167.7	Mean in Log Scale	3.064
SD in Original Scale	608.2	SD in Log Scale	1.719
95% t UCL (Assumes normality)	318.3	95% H-Stat UCL	212.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	557.6		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Chrysene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	43
Number of Detects	42	Number of Non-Detects	4
Number of Distinct Detects	39	Number of Distinct Non-Detects	4
Minimum Detect	1.7	Minimum Non-Detect	28
Maximum Detect	4900	Maximum Non-Detect	110
Variance Detects	1093688	Percent Non-Detects	8.70%
Mean Detects	335.7	SD Detects	1046
Median Detects	39.5	CV Detects	3.115
Skewness Detects	3.87	Kurtosis Detects	14.4
Mean of Logged Detects	3.736	SD of Logged Detects	1.815

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.343	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.425	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.135	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	308.4	KM Standard Error of Mean	147.9
KM SD	991.3	95% KM (BCA) UCL	565.8
95% KM (t) UCL	556.9	95% KM (Percentile Bootstrap) UCL	570.5
95% KM (z) UCL	551.8	95% KM Bootstrap t UCL	958.6
90% KM Chebyshev UCL	752.2	95% KM Chebyshev UCL	953.3
97.5% KM Chebyshev UCL	1232	99% KM Chebyshev UCL	1780

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.848	Anderson-Darling GOF Test	
5% A-D Critical Value	0.853	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.3	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.148	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.327	k star (bias corrected MLE)	0.319
Theta hat (MLE)	1027	Theta star (bias corrected MLE)	1051
nu hat (MLE)	27.45	nu star (bias corrected)	26.82
Mean (detects)	335.7		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	306.5
Maximum	4900	Median	34.25
SD	1003	CV	3.271
k hat (MLE)	0.26	k star (bias corrected MLE)	0.258
Theta hat (MLE)	1179	Theta star (bias corrected MLE)	1190
nu hat (MLE)	23.92	nu star (bias corrected)	23.69
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (23.69, α)	13.61	Adjusted Chi Square Value (23.69, β)	13.37
95% Gamma Approximate UCL (use when n>=50)	533.4	95% Gamma Adjusted UCL (use when n<50)	543.3

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	308.4	SD (KM)	991.3
Variance (KM)	982656	SE of Mean (KM)	147.9
k hat (KM)	0.0968	k star (KM)	0.105
nu hat (KM)	8.907	nu star (KM)	9.659
theta hat (KM)	3186	theta star (KM)	2938
80% gamma percentile (KM)	229.2	90% gamma percentile (KM)	836.9
95% gamma percentile (KM)	1784	99% gamma percentile (KM)	4781

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (9.66, α)	3.73	Adjusted Chi Square Value (9.66, β)	3.611
95% Gamma Approximate KM-UCL (use when n>=50)	798.7	95% Gamma Adjusted KM-UCL (use when n<50)	825.1

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.908	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.136	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.135	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	307.9	Mean in Log Scale	3.647
SD in Original Scale	1002	SD in Log Scale	1.76
95% t UCL (assumes normality of ROS data)	556.1	95% Percentile Bootstrap UCL	579.3
95% BCA Bootstrap UCL	671	95% Bootstrap t UCL	991.4
95% H-UCL (Log ROS)	424		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.639	KM Geo Mean	38.03
KM SD (logged)	1.771	95% Critical H Value (KM-Log)	3.269
KM Standard Error of Mean (logged)	0.269	95% H-UCL (KM -Log)	432.7
KM SD (logged)	1.771	95% Critical H Value (KM-Log)	3.269
KM Standard Error of Mean (logged)	0.269		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	309.2	Mean in Log Scale	3.698
SD in Original Scale	1002	SD in Log Scale	1.743
95% t UCL (Assumes normality)	557.3	95% H-Stat UCL	426.6

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	953.3

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Dibenzo(a,h)anthracene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	33
Number of Detects	18	Number of Non-Detects	28
Number of Distinct Detects	16	Number of Distinct Non-Detects	18
Minimum Detect	5.5	Minimum Non-Detect	3.3
Maximum Detect	930	Maximum Non-Detect	340
Variance Detects	85678	Percent Non-Detects	60.87%
Mean Detects	116.7	SD Detects	292.7
Median Detects	9.25	CV Detects	2.509
Skewness Detects	2.692	Kurtosis Detects	5.929
Mean of Logged Detects	2.951	SD of Logged Detects	1.571

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.411	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.458	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.202	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	49.13	KM Standard Error of Mean	28.25
KM SD	186.1	95% KM (BCA) UCL	109.8
95% KM (t) UCL	96.57	95% KM (Percentile Bootstrap) UCL	92.95
95% KM (z) UCL	95.59	95% KM Bootstrap t UCL	663
90% KM Chebyshev UCL	133.9	95% KM Chebyshev UCL	172.3
97.5% KM Chebyshev UCL	225.5	99% KM Chebyshev UCL	330.2

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.485	Anderson-Darling GOF Test	
5% A-D Critical Value	0.828	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.353	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.219	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.369	k star (bias corrected MLE)	0.344
Theta hat (MLE)	316.4	Theta star (bias corrected MLE)	338.8
nu hat (MLE)	13.27	nu star (bias corrected)	12.4
Mean (detects)	116.7		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	45.65
Maximum	930	Median	0.01
SD	188.9	CV	4.137
k hat (MLE)	0.142	k star (bias corrected MLE)	0.147
Theta hat (MLE)	322.2	Theta star (bias corrected MLE)	310.7
nu hat (MLE)	13.03	nu star (bias corrected)	13.52
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (13.52, α)	6.243	Adjusted Chi Square Value (13.52, β)	6.082
95% Gamma Approximate UCL (use when n>=50)	98.86	95% Gamma Adjusted UCL (use when n<50)	101.5

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	49.13	SD (KM)	186.1
Variance (KM)	34626	SE of Mean (KM)	28.25
k hat (KM)	0.0697	k star (KM)	0.0797
nu hat (KM)	6.414	nu star (KM)	7.329
theta hat (KM)	704.8	theta star (KM)	616.8
80% gamma percentile (KM)	23.19	90% gamma percentile (KM)	116.2
95% gamma percentile (KM)	285.6	99% gamma percentile (KM)	871.9

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.33, α)	2.353	Adjusted Chi Square Value (7.33, β)	2.262
95% Gamma Approximate KM-UCL (use when n>=50)	153	95% Gamma Adjusted KM-UCL (use when n<50)	159.2

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.715	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.283	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.202	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	46.77	Mean in Log Scale	1.315
SD in Original Scale	188.6	SD in Log Scale	1.801
95% t UCL (assumes normality of ROS data)	93.47	95% Percentile Bootstrap UCL	91.3
95% BCA Bootstrap UCL	125.2	95% Bootstrap t UCL	732.9
95% H-UCL (Log ROS)	45.92		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	2.064	KM Geo Mean	7.878
KM SD (logged)	1.269	95% Critical H Value (KM-Log)	2.629
KM Standard Error of Mean (logged)	0.204	95% H-UCL (KM -Log)	28.98
KM SD (logged)	1.269	95% Critical H Value (KM-Log)	2.629
KM Standard Error of Mean (logged)	0.204		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	63.19	Mean in Log Scale	2.42
SD in Original Scale	188.9	SD in Log Scale	1.647
95% t UCL (Assumes normality)	110	95% H-Stat UCL	93.52
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	172.3		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Fluoranthene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	41
Number of Detects	44	Number of Non-Detects	2
Number of Distinct Detects	41	Number of Distinct Non-Detects	2
Minimum Detect	2.8	Minimum Non-Detect	28
Maximum Detect	17000	Maximum Non-Detect	53
Variance Detects	8245383	Percent Non-Detects	4.35%
Mean Detects	722.7	SD Detects	2871
Median Detects	46.5	CV Detects	3.973
Skewness Detects	5.016	Kurtosis Detects	26.24
Mean of Logged Detects	3.977	SD of Logged Detects	1.84

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.279	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.944	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.458	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.132	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	692	KM Standard Error of Mean	414.6
KM SD	2780	95% KM (BCA) UCL	1473
95% KM (t) UCL	1388	95% KM (Percentile Bootstrap) UCL	1440
95% KM (z) UCL	1374	95% KM Bootstrap t UCL	4922
90% KM Chebyshev UCL	1936	95% KM Chebyshev UCL	2499
97.5% KM Chebyshev UCL	3281	99% KM Chebyshev UCL	4817

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	6.814	Anderson-Darling GOF Test	
5% A-D Critical Value	0.876	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.346	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.146	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.269	k star (bias corrected MLE)	0.266
Theta hat (MLE)	2684	Theta star (bias corrected MLE)	2716
nu hat (MLE)	23.7	nu star (bias corrected)	23.41
Mean (detects)	722.7		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	691.2
Maximum	17000	Median	43
SD	2811	CV	4.066
k hat (MLE)	0.243	k star (bias corrected MLE)	0.242
Theta hat (MLE)	2843	Theta star (bias corrected MLE)	2859
nu hat (MLE)	22.37	nu star (bias corrected)	22.24
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (22.24, α)	12.52	Adjusted Chi Square Value (22.24, β)	12.28
95% Gamma Approximate UCL (use when n>=50)	1228	95% Gamma Adjusted UCL (use when n<50)	1252

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	692	SD (KM)	2780
Variance (KM)	7728340	SE of Mean (KM)	414.6
k hat (KM)	0.062	k star (KM)	0.0724
nu hat (KM)	5.7	nu star (KM)	6.662
theta hat (KM)	11168	theta star (KM)	9556
80% gamma percentile (KM)	267.6	90% gamma percentile (KM)	1532
95% gamma percentile (KM)	3995	99% gamma percentile (KM)	12839

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (6.66, α)	1.987	Adjusted Chi Square Value (6.66, β)	1.906
95% Gamma Approximate KM-UCL (use when n>=50)	2320	95% Gamma Adjusted KM-UCL (use when n<50)	2419

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.91	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.944	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.141	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.132	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	691.8	Mean in Log Scale	3.914
SD in Original Scale	2811	SD in Log Scale	1.824
95% t UCL (assumes normality of ROS data)	1388	95% Percentile Bootstrap UCL	1475
95% BCA Bootstrap UCL	1822	95% Bootstrap t UCL	4924
95% H-UCL (Log ROS)	656		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.914	KM Geo Mean	50.1
KM SD (logged)	1.812	95% Critical H Value (KM-Log)	3.324
KM Standard Error of Mean (logged)	0.272	95% H-UCL (KM -Log)	634.7
KM SD (logged)	1.812	95% Critical H Value (KM-Log)	3.324
KM Standard Error of Mean (logged)	0.272		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	692.1	Mean in Log Scale	3.932
SD in Original Scale	2811	SD in Log Scale	1.812
95% t UCL (Assumes normality)	1388	95% H-Stat UCL	647.1

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	2499

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Fluorene

General Statistics			
Total Number of Observations	46	Number of Distinct Observations	28
Number of Detects	10	Number of Non-Detects	36
Number of Distinct Detects	10	Number of Distinct Non-Detects	18
Minimum Detect	3.2	Minimum Non-Detect	2.1
Maximum Detect	13000	Maximum Non-Detect	210
Variance Detects	16671106	Percent Non-Detects	78.26%
Mean Detects	1478	SD Detects	4083
Median Detects	6	CV Detects	2.762
Skewness Detects	3.069	Kurtosis Detects	9.529
Mean of Logged Detects	3.245	SD of Logged Detects	2.884

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.429	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.438	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	323.5	KM Standard Error of Mean	296.2
KM SD	1906	95% KM (BCA) UCL	888.4
95% KM (t) UCL	820.9	95% KM (Percentile Bootstrap) UCL	888.6
95% KM (z) UCL	810.7	95% KM Bootstrap t UCL	95673
90% KM Chebyshev UCL	1212	95% KM Chebyshev UCL	1615
97.5% KM Chebyshev UCL	2173	99% KM Chebyshev UCL	3271

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.836	Anderson-Darling GOF Test	
5% A-D Critical Value	0.87	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.394	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.296	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.184	k star (bias corrected MLE)	0.195
Theta hat (MLE)	8037	Theta star (bias corrected MLE)	7565
nu hat (MLE)	3.679	nu star (bias corrected)	3.908
Mean (detects)	1478		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	321.4
Maximum	13000	Median	0.01
SD	1927	CV	5.997
k hat (MLE)	0.0943	k star (bias corrected MLE)	0.103
Theta hat (MLE)	3406	Theta star (bias corrected MLE)	3130
nu hat (MLE)	8.679	nu star (bias corrected)	9.446
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (9.45, α)	3.599	Adjusted Chi Square Value (9.45, β)	3.482
95% Gamma Approximate UCL (use when n>=50)	843.5	95% Gamma Adjusted UCL (use when n<50)	871.8

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	323.5	SD (KM)	1906
Variance (KM)	3632156	SE of Mean (KM)	296.2
k hat (KM)	0.0288	k star (KM)	0.0414
nu hat (KM)	2.65	nu star (KM)	3.811
theta hat (KM)	11228	theta star (KM)	7809
80% gamma percentile (KM)	20.8	90% gamma percentile (KM)	372.8
95% gamma percentile (KM)	1582	99% gamma percentile (KM)	7552

Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (3.81, α)	0.648	Adjusted Chi Square Value (3.81, β)	0.61
95% Gamma Approximate KM-UCL (use when n>=50)	1901	95% Gamma Adjusted KM-UCL (use when n<50)	2022
95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)			

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.728	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.285	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	321.4	Mean in Log Scale	-2.446
SD in Original Scale	1927	SD in Log Scale	3.809
95% t UCL (assumes normality of ROS data)	798.6	95% Percentile Bootstrap UCL	886.4
95% BCA Bootstrap UCL	1243	95% Bootstrap t UCL	156920
95% H-UCL (Log ROS)	4229		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.385	KM Geo Mean	3.996
KM SD (logged)	1.642	95% Critical H Value (KM-Log)	3.097
KM Standard Error of Mean (logged)	0.262	95% H-UCL (KM -Log)	32.8
KM SD (logged)	1.642	95% Critical H Value (KM-Log)	3.097
KM Standard Error of Mean (logged)	0.262		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	330.6	Mean in Log Scale	1.734
SD in Original Scale	1926	SD in Log Scale	1.96
95% t UCL (Assumes normality)	807.4	95% H-Stat UCL	108.3

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	2173

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Indeno(1,2,3-cd)pyrene

General Statistics			
Total Number of Observations	46	Number of Distinct Observations	39
Number of Detects	28	Number of Non-Detects	18
Number of Distinct Detects	25	Number of Distinct Non-Detects	15
Minimum Detect	4.4	Minimum Non-Detect	4
Maximum Detect	2500	Maximum Non-Detect	410
Variance Detects	386236	Percent Non-Detects	39.13%
Mean Detects	213	SD Detects	621.5
Median Detects	19	CV Detects	2.918
Skewness Detects	3.472	Kurtosis Detects	11.01
Mean of Logged Detects	3.451	SD of Logged Detects	1.646

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.357	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.44	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.164	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	135	KM Standard Error of Mean	73.06
KM SD	486.3	95% KM (BCA) UCL	278.6
95% KM (t) UCL	257.7	95% KM (Percentile Bootstrap) UCL	251.4
95% KM (z) UCL	255.1	95% KM Bootstrap t UCL	1161
90% KM Chebyshev UCL	354.1	95% KM Chebyshev UCL	453.4
97.5% KM Chebyshev UCL	591.2	99% KM Chebyshev UCL	861.9

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.799	Anderson-Darling GOF Test	
5% A-D Critical Value	0.843	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.286	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.178	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.352	k star (bias corrected MLE)	0.338
Theta hat (MLE)	605.6	Theta star (bias corrected MLE)	630.5
nu hat (MLE)	19.69	nu star (bias corrected)	18.92
Mean (detects)	213		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	129.7
Maximum	2500	Median	7.45
SD	492.7	CV	3.8
k hat (MLE)	0.166	k star (bias corrected MLE)	0.17
Theta hat (MLE)	781.8	Theta star (bias corrected MLE)	764.9
nu hat (MLE)	15.26	nu star (bias corrected)	15.6
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (15.60, α)	7.678	Adjusted Chi Square Value (15.60, β)	7.497
95% Gamma Approximate UCL (use when n>=50)	263.4	95% Gamma Adjusted UCL (use when n<50)	269.7

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	135	SD (KM)	486.3
Variance (KM)	236465	SE of Mean (KM)	73.06
k hat (KM)	7.70E-02	k star (KM)	0.0865
nu hat (KM)	7.089	nu star (KM)	7.96
theta hat (KM)	1752	theta star (KM)	1560
80% gamma percentile (KM)	74.28	90% gamma percentile (KM)	335.1
95% gamma percentile (KM)	786.5	99% gamma percentile (KM)	2303

Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (7.96, α)	2.712	Adjusted Chi Square Value (7.96, β)	2.613
95% Gamma Approximate KM-UCL (use when n>=50)	396.2	95% Gamma Adjusted KM-UCL (use when n<50)	411.1
95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)			

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.874	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.189	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.164	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	132.2	Mean in Log Scale	2.653
SD in Original Scale	492.1	SD in Log Scale	1.765
95% t UCL (assumes normality of ROS data)	254.1	95% Percentile Bootstrap UCL	249.2
95% BCA Bootstrap UCL	306.2	95% Bootstrap t UCL	1197
95% H-UCL (Log ROS)	158.7		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.894	KM Geo Mean	18.07
KM SD (logged)	1.54	95% Critical H Value (KM-Log)	2.966
KM Standard Error of Mean (logged)	0.244	95% H-UCL (KM -Log)	116.8
KM SD (logged)	1.54	95% Critical H Value (KM-Log)	2.966
KM Standard Error of Mean (logged)	0.244		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	148.6	Mean in Log Scale	3.161
SD in Original Scale	490.1	SD in Log Scale	1.685
95% t UCL (Assumes normality)	270	95% H-Stat UCL	215.2

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	453.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Naphthalene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	35
Number of Detects	28	Number of Non-Detects	18
Number of Distinct Detects	24	Number of Distinct Non-Detects	13
Minimum Detect	3.5	Minimum Non-Detect	3.3
Maximum Detect	57000	Maximum Non-Detect	340
Variance Detects	1.16E+08	Percent Non-Detects	39.13%
Mean Detects	2107	SD Detects	10760
Median Detects	20.5	CV Detects	5.107
Skewness Detects	5.289	Kurtosis Detects	27.98
Mean of Logged Detects	3.44	SD of Logged Detects	1.937

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.202	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.505	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.164	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1286	KM Standard Error of Mean	1247
KM SD	8307	95% KM (BCA) UCL	3755
95% KM (t) UCL	3381	95% KM (Percentile Bootstrap) UCL	3763
95% KM (z) UCL	3338	95% KM Bootstrap t UCL	228793
90% KM Chebyshev UCL	5028	95% KM Chebyshev UCL	6723
97.5% KM Chebyshev UCL	9075	99% KM Chebyshev UCL	13696

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	6.984	Anderson-Darling GOF Test	
5% A-D Critical Value	0.924	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.432	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.185	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.178	k star (bias corrected MLE)	0.183
Theta hat (MLE)	11845	Theta star (bias corrected MLE)	11537
nu hat (MLE)	9.961	nu star (bias corrected)	10.23
Mean (detects)	2107		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1283
Maximum	57000	Median	8.3
SD	8399	CV	6.549
k hat (MLE)	0.116	k star (bias corrected MLE)	0.123
Theta hat (MLE)	11052	Theta star (bias corrected MLE)	10429
nu hat (MLE)	10.68	nu star (bias corrected)	11.31
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (11.31, α)	4.778	Adjusted Chi Square Value (11.31, β)	4.641
95% Gamma Approximate UCL (use when n>=50)	3037	95% Gamma Adjusted UCL (use when n<50)	3127

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1286	SD (KM)	8307
Variance (KM)	6.90E+07	SE of Mean (KM)	1247
k hat (KM)	0.024	k star (KM)	0.0369
nu hat (KM)	2.206	nu star (KM)	3.395
theta hat (KM)	53646	theta star (KM)	34852
80% gamma percentile (KM)	47.77	90% gamma percentile (KM)	1199
95% gamma percentile (KM)	5871	99% gamma percentile (KM)	31229

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.40, α)	0.499	Adjusted Chi Square Value (3.40, β)	0.467
95% Gamma Approximate KM-UCL (use when n>=50)	8759	95% Gamma Adjusted KM-UCL (use when n<50)	9354

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.779	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.22	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.164	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1284	Mean in Log Scale	2.368
SD in Original Scale	8399	SD in Log Scale	2.165
95% t UCL (assumes normality of ROS data)	3364	95% Percentile Bootstrap UCL	3757
95% BCA Bootstrap UCL	5054	95% Bootstrap t UCL	229023
95% H-UCL (Log ROS)	381.2		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.763	KM Geo Mean	15.85
KM SD (logged)	1.789	95% Critical H Value (KM-Log)	3.293
KM Standard Error of Mean (logged)	0.277	95% H-UCL (KM -Log)	188.7
KM SD (logged)	1.789	95% Critical H Value (KM-Log)	3.293
KM Standard Error of Mean (logged)	0.277		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1295	Mean in Log Scale	2.934
SD in Original Scale	8397	SD in Log Scale	1.949
95% t UCL (Assumes normality)	3374	95% H-Stat UCL	348.3

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	6723

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Phenanthrene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	41
Number of Detects	43	Number of Non-Detects	3
Number of Distinct Detects	38	Number of Distinct Non-Detects	3
Minimum Detect	2.2	Minimum Non-Detect	36
Maximum Detect	37000	Maximum Non-Detect	140
Variance Detects	33605690	Percent Non-Detects	6.52%
Mean Detects	1172	SD Detects	5797
Median Detects	33	CV Detects	4.944
Skewness Detects	5.976	Kurtosis Detects	37
Mean of Logged Detects	3.795	SD of Logged Detects	1.889

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.219	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.943	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.487	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.134	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1098	KM Standard Error of Mean	827.5
KM SD	5546	95% KM (BCA) UCL	2498
95% KM (t) UCL	2487	95% KM (Percentile Bootstrap) UCL	2681
95% KM (z) UCL	2459	95% KM Bootstrap t UCL	36517
90% KM Chebyshev UCL	3580	95% KM Chebyshev UCL	4705
97.5% KM Chebyshev UCL	6265	99% KM Chebyshev UCL	9331

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	8.339	Anderson-Darling GOF Test	
5% A-D Critical Value	0.9	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.389	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.149	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.221	k star (bias corrected MLE)	0.221
Theta hat (MLE)	5296	Theta star (bias corrected MLE)	5295
nu hat (MLE)	19.04	nu star (bias corrected)	19.04
Mean (detects)	1172		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1096
Maximum	37000	Median	29
SD	5608	CV	5.117
k hat (MLE)	0.197	k star (bias corrected MLE)	0.198
Theta hat (MLE)	5573	Theta star (bias corrected MLE)	5526
nu hat (MLE)	18.09	nu star (bias corrected)	18.25
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (18.25, α)	9.569	Adjusted Chi Square Value (18.25, β)	9.365
95% Gamma Approximate UCL (use when n>=50)	2090	95% Gamma Adjusted UCL (use when n<50)	2135

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1098	SD (KM)	5546
Variance (KM)	30763480	SE of Mean (KM)	827.5
k hat (KM)	0.0392	k star (KM)	0.0511
nu hat (KM)	3.604	nu star (KM)	4.702
theta hat (KM)	28024	theta star (KM)	21478
80% gamma percentile (KM)	160.7	90% gamma percentile (KM)	1723
95% gamma percentile (KM)	5884	99% gamma percentile (KM)	23671

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.70, α)	1.017	Adjusted Chi Square Value (4.70, β)	0.964
95% Gamma Approximate KM-UCL (use when n>=50)	5075	95% Gamma Adjusted KM-UCL (use when n<50)	5353

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.888	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.943	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.16	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.134	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1097	Mean in Log Scale	3.744
SD in Original Scale	5608	SD in Log Scale	1.838
95% t UCL (assumes normality of ROS data)	2486	95% Percentile Bootstrap UCL	2683
95% BCA Bootstrap UCL	3718	95% Bootstrap t UCL	35779
95% H-UCL (Log ROS)	574.7		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.735	KM Geo Mean	41.88
KM SD (logged)	1.838	95% Critical H Value (KM-Log)	3.359
KM Standard Error of Mean (logged)	0.277	95% H-UCL (KM -Log)	568.9
KM SD (logged)	1.838	95% Critical H Value (KM-Log)	3.359
KM Standard Error of Mean (logged)	0.277		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1099	Mean in Log Scale	3.78
SD in Original Scale	5608	SD in Log Scale	1.832
95% t UCL (Assumes normality)	2487	95% H-Stat UCL	585.8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	4705

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Pyrene

General Statistics

Total Number of Observations	46	Number of Distinct Observations	40
Number of Detects	44	Number of Non-Detects	2
Number of Distinct Detects	38	Number of Distinct Non-Detects	2
Minimum Detect	2.6	Minimum Non-Detect	34
Maximum Detect	11000	Maximum Non-Detect	64
Variance Detects	6103303	Percent Non-Detects	4.35%
Mean Detects	750	SD Detects	2470
Median Detects	60	CV Detects	3.294
Skewness Detects	3.784	Kurtosis Detects	13.47
Mean of Logged Detects	4.252	SD of Logged Detects	1.86

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.324	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.944	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.456	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.132	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	718.4	KM Standard Error of Mean	356.9
KM SD	2393	95% KM (BCA) UCL	1401
95% KM (t) UCL	1318	95% KM (Percentile Bootstrap) UCL	1327
95% KM (z) UCL	1305	95% KM Bootstrap t UCL	1975
90% KM Chebyshev UCL	1789	95% KM Chebyshev UCL	2274
97.5% KM Chebyshev UCL	2947	99% KM Chebyshev UCL	4270

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	6.11	Anderson-Darling GOF Test	
5% A-D Critical Value	0.865	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.33	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.145	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.292	k star (bias corrected MLE)	0.288
Theta hat (MLE)	2565	Theta star (bias corrected MLE)	2608
nu hat (MLE)	25.73	nu star (bias corrected)	25.31
Mean (detects)	750		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	717.4
Maximum	11000	Median	55.5
SD	2420	CV	3.373
k hat (MLE)	0.26	k star (bias corrected MLE)	0.258
Theta hat (MLE)	2755	Theta star (bias corrected MLE)	2781
nu hat (MLE)	23.96	nu star (bias corrected)	23.73
Adjusted Level of Significance (β)	0.0448		
Approximate Chi Square Value (23.73, α)	13.64	Adjusted Chi Square Value (23.73, β)	13.4
95% Gamma Approximate UCL (use when n>=50)	1248	95% Gamma Adjusted UCL (use when n<50)	1271

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	718.4	SD (KM)	2393
Variance (KM)	5727341	SE of Mean (KM)	356.9
k hat (KM)	0.0901	k star (KM)	0.0987
nu hat (KM)	8.289	nu star (KM)	9.082
theta hat (KM)	7973	theta star (KM)	7277
80% gamma percentile (KM)	489.1	90% gamma percentile (KM)	1902
95% gamma percentile (KM)	4173	99% gamma percentile (KM)	11485

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (9.08, α)	3.377	Adjusted Chi Square Value (9.08, β)	3.264
95% Gamma Approximate KM-UCL (use when n>=50)	1932	95% Gamma Adjusted KM-UCL (use when n<50)	1999

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.919	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.944	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.137	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.132	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	718.1	Mean in Log Scale	4.187
SD in Original Scale	2420	SD in Log Scale	1.846
95% t UCL (assumes normality of ROS data)	1317	95% Percentile Bootstrap UCL	1336
95% BCA Bootstrap UCL	1575	95% Bootstrap t UCL	2005
95% H-UCL (Log ROS)	912.9		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.185	KM Geo Mean	65.7
KM SD (logged)	1.835	95% Critical H Value (KM-Log)	3.356
KM Standard Error of Mean (logged)	0.275	95% H-UCL (KM -Log)	886.9
KM SD (logged)	1.835	95% Critical H Value (KM-Log)	3.356
KM Standard Error of Mean (logged)	0.275		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	718.5	Mean in Log Scale	4.204
SD in Original Scale	2420	SD in Log Scale	1.834
95% t UCL (Assumes normality)	1318	95% H-Stat UCL	900.1

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	2274

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 2 feet bgs

TPH-Diesel (C10-C28)

General Statistics

Total Number of Observations	46	Number of Distinct Observations	44
		Number of Missing Observations	0
Minimum	6.6	Mean	305.9
Maximum	2100	Median	83.5
SD	460.1	Std. Error of Mean	67.84
Coefficient of Variation	1.504	Skewness	2.508

Normal GOF Test

Shapiro Wilk Test Statistic	0.657	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.945	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.258	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.129	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	419.9	95% Adjusted-CLT UCL (Chen-1995)	444.3
		95% Modified-t UCL (Johnson-1978)	424

Gamma GOF Test

A-D Test Statistic	1.153	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.801	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.176	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.137	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics

k hat (MLE)	0.631	k star (bias corrected MLE)	0.604
Theta hat (MLE)	485	Theta star (bias corrected MLE)	506.4
nu hat (MLE)	58.04	nu star (bias corrected)	55.59
MLE Mean (bias corrected)	305.9	MLE Sd (bias corrected)	393.6
		Approximate Chi Square Value (0.05)	39.45
Adjusted Level of Significance	0.0448	Adjusted Chi Square Value	39.01

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	431.1	95% Adjusted Gamma UCL (use when n<50)	435.9

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.965	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.945	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.107	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.129	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			

Lognormal Statistics

Minimum of Logged Data	1.887	Mean of logged Data	4.751
Maximum of Logged Data	7.65	SD of logged Data	1.481

Assuming Lognormal Distribution

95% H-UCL	655.8	90% Chebyshev (MVUE) UCL	614.8
95% Chebyshev (MVUE) UCL	743.5	97.5% Chebyshev (MVUE) UCL	922.2
99% Chebyshev (MVUE) UCL	1273		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	417.5	95% Jackknife UCL	419.9
95% Standard Bootstrap UCL	417.7	95% Bootstrap-t UCL	481.7
95% Hall's Bootstrap UCL	453.8	95% Percentile Bootstrap UCL	421.5
95% BCA Bootstrap UCL	455.3		
90% Chebyshev(Mean, Sd) UCL	509.5	95% Chebyshev(Mean, Sd) UCL	601.6
97.5% Chebyshev(Mean, Sd) UCL	729.6	99% Chebyshev(Mean, Sd) UCL	980.9

Suggested UCL to Use

95% H-UCL	655.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

2-Methylnaphthalene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	61
Number of Detects	59	Number of Non-Detects	55
Number of Distinct Detects	47	Number of Distinct Non-Detects	21
Minimum Detect	4.8	Minimum Non-Detect	4.7
Maximum Detect	18000	Maximum Non-Detect	480
Variance Detects	5470369	Percent Non-Detects	48.25%
Mean Detects	386.3	SD Detects	2339
Median Detects	28	CV Detects	6.055
Skewness Detects	7.619	Kurtosis Detects	58.34
Mean of Logged Detects	3.484	SD of Logged Detects	1.555

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.164	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.447	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.115	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	203.7	KM Standard Error of Mean	158.6
KM SD	1679	95% KM (BCA) UCL	526.3
95% KM (t) UCL	466.7	95% KM (Percentile Bootstrap) UCL	514.2
95% KM (z) UCL	464.6	95% KM Bootstrap t UCL	3417
90% KM Chebyshev UCL	679.5	95% KM Chebyshev UCL	895.1
97.5% KM Chebyshev UCL	1194	99% KM Chebyshev UCL	1782

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	9.817	Anderson-Darling GOF Test	
5% A-D Critical Value	0.872	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.3	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.126	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.282	k star (bias corrected MLE)	0.279
Theta hat (MLE)	1371	Theta star (bias corrected MLE)	1386
nu hat (MLE)	33.25	nu star (bias corrected)	32.89
Mean (detects)	386.3		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	199.9
Maximum	18000	Median	4.95
SD	1687	CV	8.438
k hat (MLE)	0.136	k star (bias corrected MLE)	0.139
Theta hat (MLE)	1467	Theta star (bias corrected MLE)	1443
nu hat (MLE)	31.08	nu star (bias corrected)	31.59
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (31.59, α)	19.75	Adjusted Chi Square Value (31.59, β)	19.63
95% Gamma Approximate UCL (use when n>=50)	319.8	95% Gamma Adjusted UCL (use when n<50)	321.8

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	203.7	SD (KM)	1679
Variance (KM)	2819040	SE of Mean (KM)	158.6
k hat (KM)	0.0147	k star (KM)	0.0202
nu hat (KM)	3.356	nu star (KM)	4.601
theta hat (KM)	13839	theta star (KM)	10094
80% gamma percentile (KM)	0.0909	90% gamma percentile (KM)	31.22
95% gamma percentile (KM)	474.8	99% gamma percentile (KM)	5687

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.60, α)	0.973	Adjusted Chi Square Value (4.60, β)	0.952
95% Gamma Approximate KM-UCL (use when n>=50)	963.7	95% Gamma Adjusted KM-UCL (use when n<50)	984.4

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.889	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	1.14E-05	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.141	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.115	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	201.1	Mean in Log Scale	1.971
SD in Original Scale	1687	SD in Log Scale	2.086
95% t UCL (assumes normality of ROS data)	463.1	95% Percentile Bootstrap UCL	514.8
95% BCA Bootstrap UCL	698.5	95% Bootstrap t UCL	3922
95% H-UCL (Log ROS)	124.1		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.646	KM Geo Mean	14.09
KM SD (logged)	1.46	95% Critical H Value (KM-Log)	2.689
KM Standard Error of Mean (logged)	0.142	95% H-UCL (KM -Log)	59.14
KM SD (logged)	1.46	95% Critical H Value (KM-Log)	2.689
KM Standard Error of Mean (logged)	0.142		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	209.9	Mean in Log Scale	2.667
SD in Original Scale	1686	SD in Log Scale	1.686
95% t UCL (Assumes normality)	471.7	95% H-Stat UCL	95.19

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	895.1

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Acenaphthene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	37
Number of Detects	22	Number of Non-Detects	92
Number of Distinct Detects	22	Number of Distinct Non-Detects	19
Minimum Detect	4.15	Minimum Non-Detect	2.6
Maximum Detect	18000	Maximum Non-Detect	270
Variance Detects	14639594	Percent Non-Detects	80.70%
Mean Detects	896.3	SD Detects	3826
Median Detects	12.5	CV Detects	4.269
Skewness Detects	4.667	Kurtosis Detects	21.84
Mean of Logged Detects	3.22	SD of Logged Detects	2.07

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.246	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.474	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.184	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	175.4	KM Standard Error of Mean	161
KM SD	1680	95% KM (BCA) UCL	491.5
95% KM (t) UCL	442.4	95% KM (Percentile Bootstrap) UCL	488.1
95% KM (z) UCL	440.3	95% KM Bootstrap t UCL	11238
90% KM Chebyshev UCL	658.5	95% KM Chebyshev UCL	877.2
97.5% KM Chebyshev UCL	1181	99% KM Chebyshev UCL	1777

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.435	Anderson-Darling GOF Test	
5% A-D Critical Value	0.894	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.358	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.206	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.205	k star (bias corrected MLE)	0.207
Theta hat (MLE)	4374	Theta star (bias corrected MLE)	4324
nu hat (MLE)	9.016	nu star (bias corrected)	9.12
Mean (detects)	896.3		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	173
Maximum	18000	Median	0.01
SD	1687	CV	9.754
k hat (MLE)	0.0986	k star (bias corrected MLE)	0.102
Theta hat (MLE)	1754	Theta star (bias corrected MLE)	1698
nu hat (MLE)	22.49	nu star (bias corrected)	23.23
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (23.23, α)	13.26	Adjusted Chi Square Value (23.23, β)	13.17
95% Gamma Approximate UCL (use when n>=50)	302.9	95% Gamma Adjusted UCL (use when n<50)	305.2

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	175.4	SD (KM)	1680
Variance (KM)	2821047	SE of Mean (KM)	161
k hat (KM)	0.0109	k star (KM)	0.0165
nu hat (KM)	2.487	nu star (KM)	3.755
theta hat (KM)	16082	theta star (KM)	10652
80% gamma percentile (KM)	0.00791	90% gamma percentile (KM)	10.11
95% gamma percentile (KM)	276	99% gamma percentile (KM)	4969

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.75, α)	0.627	Adjusted Chi Square Value (3.75, β)	0.612
95% Gamma Approximate KM-UCL (use when n>=50)	1050	95% Gamma Adjusted KM-UCL (use when n<50)	1076

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.793	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.193	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.184	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	173.1	Mean in Log Scale	-2.181
SD in Original Scale	1687	SD in Log Scale	3.565
95% t UCL (assumes normality of ROS data)	435.2	95% Percentile Bootstrap UCL	486.5
95% BCA Bootstrap UCL	796.8	95% Bootstrap t UCL	11225
95% H-UCL (Log ROS)	393.5		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.442	KM Geo Mean	4.229
KM SD (logged)	1.27	95% Critical H Value (KM-Log)	2.485
KM Standard Error of Mean (logged)	0.125	95% H-UCL (KM -Log)	12.75
KM SD (logged)	1.27	95% Critical H Value (KM-Log)	2.485
KM Standard Error of Mean (logged)	0.125		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	179.9	Mean in Log Scale	1.498
SD in Original Scale	1687	SD in Log Scale	1.628
95% t UCL (Assumes normality)	441.9	95% H-Stat UCL	26.18

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	877.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Acenaphthylene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	60
Number of Detects	66	Number of Non-Detects	48
Number of Distinct Detects	51	Number of Distinct Non-Detects	16
Minimum Detect	2.3	Minimum Non-Detect	2.3
Maximum Detect	2000	Maximum Non-Detect	230
Variance Detects	101163	Percent Non-Detects	42.11%
Mean Detects	85.52	SD Detects	318.1
Median Detects	9.35	CV Detects	3.719
Skewness Detects	5.238	Kurtosis Detects	27.82
Mean of Logged Detects	2.566	SD of Logged Detects	1.545

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.282	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.422	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.109	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	51.16	KM Standard Error of Mean	22.99
KM SD	243.6	95% KM (BCA) UCL	96.07
95% KM (t) UCL	89.29	95% KM (Percentile Bootstrap) UCL	91.78
95% KM (z) UCL	88.98	95% KM Bootstrap t UCL	187
90% KM Chebyshev UCL	120.1	95% KM Chebyshev UCL	151.4
97.5% KM Chebyshev UCL	194.7	99% KM Chebyshev UCL	279.9

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	8.35	Anderson-Darling GOF Test	
5% A-D Critical Value	0.851	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.251	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.118	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.356	k star (bias corrected MLE)	0.35
Theta hat (MLE)	240.2	Theta star (bias corrected MLE)	244.3
nu hat (MLE)	47	nu star (bias corrected)	46.2
Mean (detects)	85.52		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	49.51
Maximum	2000	Median	2.7
SD	244.9	CV	4.947
k hat (MLE)	0.173	k star (bias corrected MLE)	0.174
Theta hat (MLE)	286.6	Theta star (bias corrected MLE)	284.4
nu hat (MLE)	39.39	nu star (bias corrected)	39.69
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (39.69, α)	26.26	Adjusted Chi Square Value (39.69, β)	26.12
95% Gamma Approximate UCL (use when n>=50)	74.85	95% Gamma Adjusted UCL (use when n<50)	75.25

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	51.16	SD (KM)	243.6
Variance (KM)	59325	SE of Mean (KM)	22.99
k hat (KM)	0.0441	k star (KM)	0.0488
nu hat (KM)	10.06	nu star (KM)	11.13
theta hat (KM)	1160	theta star (KM)	1048
80% gamma percentile (KM)	6.365	90% gamma percentile (KM)	75.63
95% gamma percentile (KM)	269.7	99% gamma percentile (KM)	1124

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (11.13, α)	4.659	Adjusted Chi Square Value (11.13, β)	4.605
95% Gamma Approximate KM-UCL (use when n>=50)	122.2	95% Gamma Adjusted KM-UCL (use when n<50)	123.6

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.879	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	5.44E-07	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.131	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.109	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	50	Mean in Log Scale	1.295
SD in Original Scale	244.8	SD in Log Scale	2.061
95% t UCL (assumes normality of ROS data)	88.03	95% Percentile Bootstrap UCL	91.65
95% BCA Bootstrap UCL	109.7	95% Bootstrap t UCL	211.4
95% H-UCL (Log ROS)	59		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.918	KM Geo Mean	6.805
KM SD (logged)	1.44	95% Critical H Value (KM-Log)	2.667
KM Standard Error of Mean (logged)	0.139	95% H-UCL (KM -Log)	27.57
KM SD (logged)	1.44	95% Critical H Value (KM-Log)	2.667
KM Standard Error of Mean (logged)	0.139		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	54.12	Mean in Log Scale	1.923
SD in Original Scale	244.5	SD in Log Scale	1.677
95% t UCL (Assumes normality)	92.1	95% H-Stat UCL	44.36

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	151.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Anthracene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	77
Number of Detects	84	Number of Non-Detects	30
Number of Distinct Detects	72	Number of Distinct Non-Detects	13
Minimum Detect	1.9	Minimum Non-Detect	1.9
Maximum Detect	7000	Maximum Non-Detect	190
Variance Detects	708200	Percent Non-Detects	26.32%
Mean Detects	172	SD Detects	841.5
Median Detects	9.7	CV Detects	4.893
Skewness Detects	7.185	Kurtosis Detects	55.22
Mean of Logged Detects	2.721	SD of Logged Detects	1.701

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.221	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.43	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0968	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	127.9	KM Standard Error of Mean	68.02
KM SD	721.9	95% KM (BCA) UCL	251.1
95% KM (t) UCL	240.7	95% KM (Percentile Bootstrap) UCL	251.6
95% KM (z) UCL	239.8	95% KM Bootstrap t UCL	779.4
90% KM Chebyshev UCL	332	95% KM Chebyshev UCL	424.4
97.5% KM Chebyshev UCL	552.7	99% KM Chebyshev UCL	804.7

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	12.18	Anderson-Darling GOF Test	
5% A-D Critical Value	0.873	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.28	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.106	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.286	k star (bias corrected MLE)	0.284
Theta hat (MLE)	600.5	Theta star (bias corrected MLE)	605.4
nu hat (MLE)	48.11	nu star (bias corrected)	47.73
Mean (detects)	172		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	126.7
Maximum	7000	Median	6.1
SD	725.2	CV	5.723
k hat (MLE)	0.184	k star (bias corrected MLE)	0.185
Theta hat (MLE)	688.3	Theta star (bias corrected MLE)	684.6
nu hat (MLE)	41.98	nu star (bias corrected)	42.2
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (42.20, α)	28.31	Adjusted Chi Square Value (42.20, β)	28.17
95% Gamma Approximate UCL (use when n>=50)	188.9	95% Gamma Adjusted UCL (use when n<50)	189.9

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	127.9	SD (KM)	721.9
Variance (KM)	521078	SE of Mean (KM)	68.02
k hat (KM)	0.0314	k star (KM)	0.0364
nu hat (KM)	7.159	nu star (KM)	8.304
theta hat (KM)	4074	theta star (KM)	3512
80% gamma percentile (KM)	4.439	90% gamma percentile (KM)	116.2
95% gamma percentile (KM)	578.7	99% gamma percentile (KM)	3119

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (8.30, α)	2.912	Adjusted Chi Square Value (8.30, β)	2.872
95% Gamma Approximate KM-UCL (use when n>=50)	364.7	95% Gamma Adjusted KM-UCL (use when n<50)	369.9

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.884	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	1.00E-08	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.145	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0968	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	127.2	Mean in Log Scale	1.976
SD in Original Scale	725.1	SD in Log Scale	2.041
95% t UCL (assumes normality of ROS data)	239.9	95% Percentile Bootstrap UCL	247.7
95% BCA Bootstrap UCL	355.2	95% Bootstrap t UCL	712.6
95% H-UCL (Log ROS)	110.6		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	2.27	KM Geo Mean	9.679
KM SD (logged)	1.68	95% Critical H Value (KM-Log)	2.94
KM Standard Error of Mean (logged)	0.161	95% H-UCL (KM -Log)	63.18
KM SD (logged)	1.68	95% Critical H Value (KM-Log)	2.94
KM Standard Error of Mean (logged)	0.161		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	130.1	Mean in Log Scale	2.306
SD in Original Scale	724.8	SD in Log Scale	1.817
95% t UCL (Assumes normality)	242.7	95% H-Stat UCL	88.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	424.4		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Benzo(a)anthracene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	69
Number of Detects	79	Number of Non-Detects	35
Number of Distinct Detects	62	Number of Distinct Non-Detects	12
Minimum Detect	1.8	Minimum Non-Detect	1.4
Maximum Detect	5300	Maximum Non-Detect	150
Variance Detects	627222	Percent Non-Detects	30.70%
Mean Detects	227	SD Detects	792
Median Detects	25	CV Detects	3.488
Skewness Detects	5.129	Kurtosis Detects	27.51
Mean of Logged Detects	3.505	SD of Logged Detects	1.664

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.311	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.388	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0998	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	158.6	KM Standard Error of Mean	62.51
KM SD	663.1	95% KM (BCA) UCL	266.6
95% KM (t) UCL	262.3	95% KM (Percentile Bootstrap) UCL	266.3
95% KM (z) UCL	261.5	95% KM Bootstrap t UCL	379.7
90% KM Chebyshev UCL	346.2	95% KM Chebyshev UCL	431.1
97.5% KM Chebyshev UCL	549	99% KM Chebyshev UCL	780.6

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	8.6	Anderson-Darling GOF Test	
5% A-D Critical Value	0.853	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.273	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.108	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.35	k star (bias corrected MLE)	0.345
Theta hat (MLE)	648.5	Theta star (bias corrected MLE)	657.6
nu hat (MLE)	55.32	nu star (bias corrected)	54.55
Mean (detects)	227		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	157.3
Maximum	5300	Median	14
SD	666.3	CV	4.235
k hat (MLE)	0.184	k star (bias corrected MLE)	0.185
Theta hat (MLE)	853.7	Theta star (bias corrected MLE)	849.1
nu hat (MLE)	42.02	nu star (bias corrected)	42.25
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (42.25, α)	28.35	Adjusted Chi Square Value (42.25, β)	28.2
95% Gamma Approximate UCL (use when n>=50)	234.5	95% Gamma Adjusted UCL (use when n<50)	235.7

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	158.6	SD (KM)	663.1
Variance (KM)	439737	SE of Mean (KM)	62.51
k hat (KM)	0.0572	k star (KM)	0.0616
nu hat (KM)	13.05	nu star (KM)	14.04
theta hat (KM)	2772	theta star (KM)	2576
80% gamma percentile (KM)	41.15	90% gamma percentile (KM)	306.1
95% gamma percentile (KM)	894	99% gamma percentile (KM)	3165

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (14.04, α)	6.598	Adjusted Chi Square Value (14.04, β)	6.533
95% Gamma Approximate KM-UCL (use when n>=50)	337.6	95% Gamma Adjusted KM-UCL (use when n<50)	340.9

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.935	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	6.99E-04	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.126	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0998	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	158.1	Mean in Log Scale	2.51
SD in Original Scale	666.2	SD in Log Scale	2.141
95% t UCL (assumes normality of ROS data)	261.6	95% Percentile Bootstrap UCL	272.4
95% BCA Bootstrap UCL	322.5	95% Bootstrap t UCL	385.6
95% H-UCL (Log ROS)	246.1		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	2.655	KM Geo Mean	14.22
KM SD (logged)	1.942	95% Critical H Value (KM-Log)	3.253
KM Standard Error of Mean (logged)	0.186	95% H-UCL (KM -Log)	169.9
KM SD (logged)	1.942	95% Critical H Value (KM-Log)	3.253
KM Standard Error of Mean (logged)	0.186		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	160	Mean in Log Scale	2.654
SD in Original Scale	665.8	SD in Log Scale	2.073
95% t UCL (Assumes normality)	263.4	95% H-Stat UCL	237.1
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	431.1		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Benzo(a)pyrene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	83
Number of Detects	107	Number of Non-Detects	7
Number of Distinct Detects	81	Number of Distinct Non-Detects	5
Minimum Detect	1.8	Minimum Non-Detect	1.8
Maximum Detect	6900	Maximum Non-Detect	72
Variance Detects	682017	Percent Non-Detects	6.14%
Mean Detects	193.7	SD Detects	825.8
Median Detects	23	CV Detects	4.263
Skewness Detects	7.053	Kurtosis Detects	51.8
Mean of Logged Detects	3.235	SD of Logged Detects	1.773

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.242	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.408	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0859	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	182.2	KM Standard Error of Mean	75.06
KM SD	797.6	95% KM (BCA) UCL	321
95% KM (t) UCL	306.7	95% KM (Percentile Bootstrap) UCL	318.1
95% KM (z) UCL	305.7	95% KM Bootstrap t UCL	758.5
90% KM Chebyshev UCL	407.4	95% KM Chebyshev UCL	509.4
97.5% KM Chebyshev UCL	650.9	99% KM Chebyshev UCL	929

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	9.097	Anderson-Darling GOF Test	
5% A-D Critical Value	0.859	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.223	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0947	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.334	k star (bias corrected MLE)	0.33
Theta hat (MLE)	580.8	Theta star (bias corrected MLE)	586.2
nu hat (MLE)	71.38	nu star (bias corrected)	70.72
Mean (detects)	193.7		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	181.8
Maximum	6900	Median	19.5
SD	801.2	CV	4.407
k hat (MLE)	0.284	k star (bias corrected MLE)	0.282
Theta hat (MLE)	640.2	Theta star (bias corrected MLE)	643.9
nu hat (MLE)	64.75	nu star (bias corrected)	64.38
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (64.38, α)	46.92	Adjusted Chi Square Value (64.38, β)	46.73
95% Gamma Approximate UCL (use when n>=50)	249.5	95% Gamma Adjusted UCL (use when n<50)	250.5

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	182.2	SD (KM)	797.6
Variance (KM)	636188	SE of Mean (KM)	75.06
k hat (KM)	0.0522	k star (KM)	0.0567
nu hat (KM)	11.9	nu star (KM)	12.92
theta hat (KM)	3492	theta star (KM)	3216
80% gamma percentile (KM)	37.21	90% gamma percentile (KM)	322.9
95% gamma percentile (KM)	1007	99% gamma percentile (KM)	3766

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (12.92, α)	5.838	Adjusted Chi Square Value (12.92, β)	5.777
95% Gamma Approximate KM-UCL (use when n>=50)	403.2	95% Gamma Adjusted KM-UCL (use when n<50)	407.5

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.944	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	3.48E-04	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0677	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0859	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	182.1	Mean in Log Scale	3.057
SD in Original Scale	801.2	SD in Log Scale	1.895
95% t UCL (assumes normality of ROS data)	306.5	95% Percentile Bootstrap UCL	320.3
95% BCA Bootstrap UCL	400.5	95% Bootstrap t UCL	729.2
95% H-UCL (Log ROS)	226.2		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.11	KM Geo Mean	22.41
KM SD (logged)	1.793	95% Critical H Value (KM-Log)	3.074
KM Standard Error of Mean (logged)	0.169	95% H-UCL (KM -Log)	188
KM SD (logged)	1.793	95% Critical H Value (KM-Log)	3.074
KM Standard Error of Mean (logged)	0.169		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	182.5	Mean in Log Scale	3.112
SD in Original Scale	801.1	SD in Log Scale	1.825
95% t UCL (Assumes normality)	306.9	95% H-Stat UCL	202.7

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	188

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Benzo(b)fluoranthene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	90
Number of Detects	108	Number of Non-Detects	6
Number of Distinct Detects	87	Number of Distinct Non-Detects	4
Minimum Detect	2.3	Minimum Non-Detect	2
Maximum Detect	7400	Maximum Non-Detect	79
Variance Detects	842953	Percent Non-Detects	5.26%
Mean Detects	241.1	SD Detects	918.1
Median Detects	37	CV Detects	3.809
Skewness Detects	6.676	Kurtosis Detects	46.82
Mean of Logged Detects	3.724	SD of Logged Detects	1.674

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.268	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.397	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0855	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	229	KM Standard Error of Mean	83.84
KM SD	891	95% KM (BCA) UCL	379.2
95% KM (t) UCL	368	95% KM (Percentile Bootstrap) UCL	383.4
95% KM (z) UCL	366.9	95% KM Bootstrap t UCL	725.6
90% KM Chebyshev UCL	480.5	95% KM Chebyshev UCL	594.4
97.5% KM Chebyshev UCL	752.5	99% KM Chebyshev UCL	1063

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	8.241	Anderson-Darling GOF Test	
5% A-D Critical Value	0.849	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.215	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0939	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.377	k star (bias corrected MLE)	0.373
Theta hat (MLE)	639.1	Theta star (bias corrected MLE)	646.5
nu hat (MLE)	81.46	nu star (bias corrected)	80.53
Mean (detects)	241.1		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	228.4
Maximum	7400	Median	35
SD	895.1	CV	3.919
k hat (MLE)	0.318	k star (bias corrected MLE)	0.316
Theta hat (MLE)	717.5	Theta star (bias corrected MLE)	723.2
nu hat (MLE)	72.57	nu star (bias corrected)	71.99
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (71.99, α)	53.45	Adjusted Chi Square Value (71.99, β)	53.25
95% Gamma Approximate UCL (use when n>=50)	307.6	95% Gamma Adjusted UCL (use when n<50)	308.7

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	229	SD (KM)	891
Variance (KM)	793838	SE of Mean (KM)	83.84
k hat (KM)	0.066	k star (KM)	0.0701
nu hat (KM)	15.06	nu star (KM)	15.99
theta hat (KM)	3467	theta star (KM)	3264
80% gamma percentile (KM)	82.4	90% gamma percentile (KM)	494.8
95% gamma percentile (KM)	1317	99% gamma percentile (KM)	4310

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (15.99, α)	7.957	Adjusted Chi Square Value (15.99, β)	7.884
95% Gamma Approximate KM-UCL (use when n>=50)	460.2	95% Gamma Adjusted KM-UCL (use when n<50)	464.4

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.961	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.0196	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0641	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0855	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	228.8	Mean in Log Scale	3.587
SD in Original Scale	894.9	SD in Log Scale	1.769
95% t UCL (assumes normality of ROS data)	367.8	95% Percentile Bootstrap UCL	368.2
95% BCA Bootstrap UCL	482.5	95% Bootstrap t UCL	695
95% H-UCL (Log ROS)	286.7		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.614	KM Geo Mean	37.11
KM SD (logged)	1.71	95% Critical H Value (KM-Log)	2.974
KM Standard Error of Mean (logged)	0.162	95% H-UCL (KM -Log)	258.1
KM SD (logged)	1.71	95% Critical H Value (KM-Log)	2.974
KM Standard Error of Mean (logged)	0.162		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	229.1	Mean in Log Scale	3.615
SD in Original Scale	894.9	SD in Log Scale	1.737
95% t UCL (Assumes normality)	368.1	95% H-Stat UCL	274.5

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	258.1

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Benzo(g,h,i)perylene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	75
Number of Detects	78	Number of Non-Detects	36
Number of Distinct Detects	63	Number of Distinct Non-Detects	16
Minimum Detect	4.3	Minimum Non-Detect	4.1
Maximum Detect	2900	Maximum Non-Detect	420
Variance Detects	231223	Percent Non-Detects	31.58%
Mean Detects	135.9	SD Detects	480.9
Median Detects	21	CV Detects	3.538
Skewness Detects	5.164	Kurtosis Detects	26.65
Mean of Logged Detects	3.27	SD of Logged Detects	1.439

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.283	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.395	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.1	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	96.19	KM Standard Error of Mean	37.69
KM SD	399.7	95% KM (BCA) UCL	169.8
95% KM (t) UCL	158.7	95% KM (Percentile Bootstrap) UCL	163.9
95% KM (z) UCL	158.2	95% KM Bootstrap t UCL	314.1
90% KM Chebyshev UCL	209.3	95% KM Chebyshev UCL	260.5
97.5% KM Chebyshev UCL	331.6	99% KM Chebyshev UCL	471.2

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	9.207	Anderson-Darling GOF Test	
5% A-D Critical Value	0.842	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.245	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.108	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.401	k star (bias corrected MLE)	0.394
Theta hat (MLE)	339.2	Theta star (bias corrected MLE)	345.2
nu hat (MLE)	62.5	nu star (bias corrected)	61.43
Mean (detects)	135.9		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	93.52
Maximum	2900	Median	9.3
SD	401.9	CV	4.297
k hat (MLE)	0.2	k star (bias corrected MLE)	0.201
Theta hat (MLE)	467.5	Theta star (bias corrected MLE)	466.2
nu hat (MLE)	45.61	nu star (bias corrected)	45.74
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (45.74, α)	31.22	Adjusted Chi Square Value (45.74, β)	31.07
95% Gamma Approximate UCL (use when n>=50)	137	95% Gamma Adjusted UCL (use when n<50)	137.7

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	96.19	SD (KM)	399.7
Variance (KM)	159742	SE of Mean (KM)	37.69
k hat (KM)	0.0579	k star (KM)	0.0622
nu hat (KM)	13.21	nu star (KM)	14.19
theta hat (KM)	1661	theta star (KM)	1545
80% gamma percentile (KM)	25.7	90% gamma percentile (KM)	187.6
95% gamma percentile (KM)	543.2	99% gamma percentile (KM)	1910

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (14.19, α)	6.703	Adjusted Chi Square Value (14.19, β)	6.637
95% Gamma Approximate KM-UCL (use when n>=50)	203.7	95% Gamma Adjusted KM-UCL (use when n<50)	205.7

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.886	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	7.75E-08	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.121	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.1	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	94.43	Mean in Log Scale	2.514
SD in Original Scale	401.7	SD in Log Scale	1.755
95% t UCL (assumes normality of ROS data)	156.8	95% Percentile Bootstrap UCL	158.6
95% BCA Bootstrap UCL	183.8	95% Bootstrap t UCL	308.4
95% H-UCL (Log ROS)	95		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	2.798	KM Geo Mean	16.42
KM SD (logged)	1.436	95% Critical H Value (KM-Log)	2.663
KM Standard Error of Mean (logged)	0.139	95% H-UCL (KM -Log)	65.99
KM SD (logged)	1.436	95% Critical H Value (KM-Log)	2.663
KM Standard Error of Mean (logged)	0.139		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	102.9	Mean in Log Scale	2.856
SD in Original Scale	401.2	SD in Log Scale	1.63
95% t UCL (Assumes normality)	165.2	95% H-Stat UCL	102
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	260.5		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Benzo(k)fluoranthene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	71
Number of Detects	85	Number of Non-Detects	29
Number of Distinct Detects	64	Number of Distinct Non-Detects	12
Minimum Detect	2	Minimum Non-Detect	2
Maximum Detect	3700	Maximum Non-Detect	160
Variance Detects	206607	Percent Non-Detects	25.44%
Mean Detects	112.4	SD Detects	454.5
Median Detects	10	CV Detects	4.043
Skewness Detects	6.765	Kurtosis Detects	49.62
Mean of Logged Detects	2.752	SD of Logged Detects	1.662

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.265	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.404	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0962	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	84.97	KM Standard Error of Mean	37.03
KM SD	393	95% KM (BCA) UCL	148.6
95% KM (t) UCL	146.4	95% KM (Percentile Bootstrap) UCL	150
95% KM (z) UCL	145.9	95% KM Bootstrap t UCL	338.3
90% KM Chebyshev UCL	196.1	95% KM Chebyshev UCL	246.4
97.5% KM Chebyshev UCL	316.2	99% KM Chebyshev UCL	453.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	8.927	Anderson-Darling GOF Test	
5% A-D Critical Value	0.856	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.229	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.105	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.343	k star (bias corrected MLE)	0.338
Theta hat (MLE)	328.2	Theta star (bias corrected MLE)	332.3
nu hat (MLE)	58.23	nu star (bias corrected)	57.51
Mean (detects)	112.4		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	83.83
Maximum	3700	Median	5.7
SD	395	CV	4.712
k hat (MLE)	0.206	k star (bias corrected MLE)	0.207
Theta hat (MLE)	406.2	Theta star (bias corrected MLE)	405.3
nu hat (MLE)	47.06	nu star (bias corrected)	47.15
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (47.15, α)	32.39	Adjusted Chi Square Value (47.15, β)	32.24
95% Gamma Approximate UCL (use when n>=50)	122	95% Gamma Adjusted UCL (use when n<50)	122.6

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	84.97	SD (KM)	393
Variance (KM)	154468	SE of Mean (KM)	37.03
k hat (KM)	0.0467	k star (KM)	0.0514
nu hat (KM)	10.66	nu star (KM)	11.71
theta hat (KM)	1818	theta star (KM)	1655
80% gamma percentile (KM)	12.65	90% gamma percentile (KM)	134.2
95% gamma percentile (KM)	456.1	99% gamma percentile (KM)	1829

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (11.71, α)	5.036	Adjusted Chi Square Value (11.71, β)	4.98
95% Gamma Approximate KM-UCL (use when n>=50)	197.6	95% Gamma Adjusted KM-UCL (use when n<50)	199.8

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.91	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	2.02E-06	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.113	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0962	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	84.31	Mean in Log Scale	2.037
SD in Original Scale	394.9	SD in Log Scale	1.995
95% t UCL (assumes normality of ROS data)	145.6	95% Percentile Bootstrap UCL	149.9
95% BCA Bootstrap UCL	186.7	95% Bootstrap t UCL	327
95% H-UCL (Log ROS)	104.6		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.313	KM Geo Mean	10.1
KM SD (logged)	1.652	95% Critical H Value (KM-Log)	2.907
KM Standard Error of Mean (logged)	0.158	95% H-UCL (KM -Log)	62.14
KM SD (logged)	1.652	95% Critical H Value (KM-Log)	2.907
KM Standard Error of Mean (logged)	0.158		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	86.41	Mean in Log Scale	2.324
SD in Original Scale	394.6	SD in Log Scale	1.771
95% t UCL (Assumes normality)	147.7	95% H-Stat UCL	81.38

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	246.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Chrysene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	82
Number of Detects	104	Number of Non-Detects	10
Number of Distinct Detects	80	Number of Distinct Non-Detects	7
Minimum Detect	1.3	Minimum Non-Detect	1.4
Maximum Detect	4900	Maximum Non-Detect	110
Variance Detects	509104	Percent Non-Detects	8.77%
Mean Detects	199.5	SD Detects	713.5
Median Detects	29	CV Detects	3.577
Skewness Detects	5.5	Kurtosis Detects	31.45
Mean of Logged Detects	3.393	SD of Logged Detects	1.766

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.292	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.391	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0872	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	183	KM Standard Error of Mean	64.03
KM SD	680.3	95% KM (BCA) UCL	309.5
95% KM (t) UCL	289.1	95% KM (Percentile Bootstrap) UCL	288.6
95% KM (z) UCL	288.3	95% KM Bootstrap t UCL	449.2
90% KM Chebyshev UCL	375	95% KM Chebyshev UCL	462
97.5% KM Chebyshev UCL	582.8	99% KM Chebyshev UCL	820

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	8.67	Anderson-Darling GOF Test	
5% A-D Critical Value	0.855	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.237	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0953	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.353	k star (bias corrected MLE)	0.349
Theta hat (MLE)	565.3	Theta star (bias corrected MLE)	571.4
nu hat (MLE)	73.4	nu star (bias corrected)	72.62
Mean (detects)	199.5		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	182
Maximum	4900	Median	26
SD	683.6	CV	3.756
k hat (MLE)	0.278	k star (bias corrected MLE)	0.276
Theta hat (MLE)	654.9	Theta star (bias corrected MLE)	658.4
nu hat (MLE)	63.36	nu star (bias corrected)	63.02
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (63.02, α)	45.76	Adjusted Chi Square Value (63.02, β)	45.57
95% Gamma Approximate UCL (use when n>=50)	250.6	95% Gamma Adjusted UCL (use when n<50)	251.7

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	183	SD (KM)	680.3
Variance (KM)	462836	SE of Mean (KM)	64.03
k hat (KM)	0.0723	k star (KM)	0.0763
nu hat (KM)	16.49	nu star (KM)	17.39
theta hat (KM)	2530	theta star (KM)	2399
80% gamma percentile (KM)	79.09	90% gamma percentile (KM)	420.4
95% gamma percentile (KM)	1061	99% gamma percentile (KM)	3314

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (17.39, α)	8.95	Adjusted Chi Square Value (17.39, β)	8.873
95% Gamma Approximate KM-UCL (use when n>=50)	355.4	95% Gamma Adjusted KM-UCL (use when n<50)	358.5

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.955	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.006	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0729	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0872	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	182.7	Mean in Log Scale	3.214
SD in Original Scale	683.4	SD in Log Scale	1.834
95% t UCL (assumes normality of ROS data)	288.8	95% Percentile Bootstrap UCL	296.8
95% BCA Bootstrap UCL	345.6	95% Bootstrap t UCL	390
95% H-UCL (Log ROS)	229.1		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.233	KM Geo Mean	25.37
KM SD (logged)	1.798	95% Critical H Value (KM-Log)	3.079
KM Standard Error of Mean (logged)	0.171	95% H-UCL (KM -Log)	214.9
KM SD (logged)	1.798	95% Critical H Value (KM-Log)	3.079
KM Standard Error of Mean (logged)	0.171		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	183.5	Mean in Log Scale	3.273
SD in Original Scale	683.2	SD in Log Scale	1.797
95% t UCL (Assumes normality)	289.6	95% H-Stat UCL	223.2

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	214.9

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Dibenzo(a,h)anthracene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	59
Number of Detects	50	Number of Non-Detects	64
Number of Distinct Detects	42	Number of Distinct Non-Detects	22
Minimum Detect	3.4	Minimum Non-Detect	3.3
Maximum Detect	930	Maximum Non-Detect	340
Variance Detects	32700	Percent Non-Detects	56.14%
Mean Detects	55.39	SD Detects	180.8
Median Detects	8.8	CV Detects	3.265
Skewness Detects	4.643	Kurtosis Detects	20.95
Mean of Logged Detects	2.536	SD of Logged Detects	1.318

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.299	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.425	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.125	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	26.99	KM Standard Error of Mean	11.49
KM SD	121.3	95% KM (BCA) UCL	49.84
95% KM (t) UCL	46.04	95% KM (Percentile Bootstrap) UCL	48.65
95% KM (z) UCL	45.88	95% KM Bootstrap t UCL	135
90% KM Chebyshev UCL	61.45	95% KM Chebyshev UCL	77.06
97.5% KM Chebyshev UCL	98.72	99% KM Chebyshev UCL	141.3

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	6.977	Anderson-Darling GOF Test	
5% A-D Critical Value	0.829	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.262	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.134	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.439	k star (bias corrected MLE)	0.426
Theta hat (MLE)	126.3	Theta star (bias corrected MLE)	130.1
nu hat (MLE)	43.87	nu star (bias corrected)	42.57
Mean (detects)	55.39		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	24.3
Maximum	930	Median	0.01
SD	122.2	CV	5.03
k hat (MLE)	0.163	k star (bias corrected MLE)	0.164
Theta hat (MLE)	149.2	Theta star (bias corrected MLE)	147.8
nu hat (MLE)	37.13	nu star (bias corrected)	37.48
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (37.48, α)	24.47	Adjusted Chi Square Value (37.48, β)	24.33
95% Gamma Approximate UCL (use when n>=50)	37.23	95% Gamma Adjusted UCL (use when n<50)	37.43

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	26.99	SD (KM)	121.3
Variance (KM)	14714	SE of Mean (KM)	11.49
k hat (KM)	0.0495	k star (KM)	0.054
nu hat (KM)	11.29	nu star (KM)	12.32
theta hat (KM)	545.2	theta star (KM)	499.4
80% gamma percentile (KM)	4.756	90% gamma percentile (KM)	45.34
95% gamma percentile (KM)	147.2	99% gamma percentile (KM)	568.9

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (12.32, α)	5.44	Adjusted Chi Square Value (12.32, β)	5.381
95% Gamma Approximate KM-UCL (use when n>=50)	61.13	95% Gamma Adjusted KM-UCL (use when n<50)	61.8

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.83	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.199	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.125	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	25.14	Mean in Log Scale	1.076
SD in Original Scale	122.1	SD in Log Scale	1.756
95% t UCL (assumes normality of ROS data)	44.1	95% Percentile Bootstrap UCL	46.27
95% BCA Bootstrap UCL	56.25	95% Bootstrap t UCL	138.5
95% H-UCL (Log ROS)	22.59		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.875	KM Geo Mean	6.523
KM SD (logged)	1.099	95% Critical H Value (KM-Log)	2.311
KM Standard Error of Mean (logged)	0.109	95% H-UCL (KM -Log)	15.16
KM SD (logged)	1.099	95% Critical H Value (KM-Log)	2.311
KM Standard Error of Mean (logged)	0.109		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	34.06	Mean in Log Scale	1.992
SD in Original Scale	123.5	SD in Log Scale	1.466
95% t UCL (Assumes normality)	53.25	95% H-Stat UCL	31.11

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	77.06

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Fluoranthene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	85
Number of Detects	111	Number of Non-Detects	3
Number of Distinct Detects	84	Number of Distinct Non-Detects	3
Minimum Detect	1.4	Minimum Non-Detect	28
Maximum Detect	17000	Maximum Non-Detect	53
Variance Detects	3343650	Percent Non-Detects	2.63%
Mean Detects	341	SD Detects	1829
Median Detects	25	CV Detects	5.362
Skewness Detects	7.998	Kurtosis Detects	67.91
Mean of Logged Detects	3.406	SD of Logged Detects	1.803

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.196	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.426	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0844	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	332.4	KM Standard Error of Mean	169.1
KM SD	1797	95% KM (BCA) UCL	656.2
95% KM (t) UCL	612.8	95% KM (Percentile Bootstrap) UCL	645.7
95% KM (z) UCL	610.5	95% KM Bootstrap t UCL	1999
90% KM Chebyshev UCL	839.6	95% KM Chebyshev UCL	1069
97.5% KM Chebyshev UCL	1388	99% KM Chebyshev UCL	2015

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	12.98	Anderson-Darling GOF Test	
5% A-D Critical Value	0.875	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.256	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0943	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.286	k star (bias corrected MLE)	0.285
Theta hat (MLE)	1191	Theta star (bias corrected MLE)	1198
nu hat (MLE)	63.58	nu star (bias corrected)	63.19
Mean (detects)	341		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	332
Maximum	17000	Median	24
SD	1805	CV	5.436
k hat (MLE)	0.269	k star (bias corrected MLE)	0.268
Theta hat (MLE)	1235	Theta star (bias corrected MLE)	1240
nu hat (MLE)	61.31	nu star (bias corrected)	61.03
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (61.03, α)	44.07	Adjusted Chi Square Value (61.03, β)	43.88
95% Gamma Approximate UCL (use when n>=50)	459.9	95% Gamma Adjusted UCL (use when n<50)	461.8

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	332.4	SD (KM)	1797
Variance (KM)	3229076	SE of Mean (KM)	169.1
k hat (KM)	0.0342	k star (KM)	0.0392
nu hat (KM)	7.802	nu star (KM)	8.93
theta hat (KM)	9714	theta star (KM)	8487
80% gamma percentile (KM)	16.53	90% gamma percentile (KM)	347.1
95% gamma percentile (KM)	1575	99% gamma percentile (KM)	7913

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (8.93, α)	3.285	Adjusted Chi Square Value (8.93, β)	3.241
95% Gamma Approximate KM-UCL (use when n>=50)	903.7	95% Gamma Adjusted KM-UCL (use when n<50)	915.9

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.955	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.00412	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0745	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0844	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	332.4	Mean in Log Scale	3.38
SD in Original Scale	1805	SD in Log Scale	1.786
95% t UCL (assumes normality of ROS data)	612.7	95% Percentile Bootstrap UCL	621.8
95% BCA Bootstrap UCL	853	95% Bootstrap t UCL	1924
95% H-UCL (Log ROS)	242.1		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	3.375	KM Geo Mean	29.24
KM SD (logged)	1.787	95% Critical H Value (KM-Log)	3.066
KM Standard Error of Mean (logged)	0.169	95% H-UCL (KM -Log)	241.7
KM SD (logged)	1.787	95% Critical H Value (KM-Log)	3.066
KM Standard Error of Mean (logged)	0.169		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	332.6	Mean in Log Scale	3.393
SD in Original Scale	1805	SD in Log Scale	1.781
95% t UCL (Assumes normality)	612.9	95% H-Stat UCL	242.6
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	241.7		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Fluorene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	53
Number of Detects	40	Number of Non-Detects	74
Number of Distinct Detects	35	Number of Distinct Non-Detects	21
Minimum Detect	2.1	Minimum Non-Detect	2.1
Maximum Detect	13000	Maximum Non-Detect	210
Variance Detects	4247402	Percent Non-Detects	64.91%
Mean Detects	400.9	SD Detects	2061
Median Detects	11.73	CV Detects	5.14
Skewness Detects	6.167	Kurtosis Detects	38.53
Mean of Logged Detects	2.847	SD of Logged Detects	1.895

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.204	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.94	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.472	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.139	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	142.5	KM Standard Error of Mean	115.7
KM SD	1220	95% KM (BCA) UCL	368.9
95% KM (t) UCL	334.5	95% KM (Percentile Bootstrap) UCL	367.9
95% KM (z) UCL	332.9	95% KM Bootstrap t UCL	4769
90% KM Chebyshev UCL	489.8	95% KM Chebyshev UCL	647.1
97.5% KM Chebyshev UCL	865.4	99% KM Chebyshev UCL	1294

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	6.97	Anderson-Darling GOF Test	
5% A-D Critical Value	0.895	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.317	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.154	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.229	k star (bias corrected MLE)	0.228
Theta hat (MLE)	1752	Theta star (bias corrected MLE)	1755
nu hat (MLE)	18.31	nu star (bias corrected)	18.27
Mean (detects)	400.9		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	140.7
Maximum	13000	Median	0.01
SD	1226	CV	8.714
k hat (MLE)	0.115	k star (bias corrected MLE)	0.118
Theta hat (MLE)	1224	Theta star (bias corrected MLE)	1194
nu hat (MLE)	26.21	nu star (bias corrected)	26.86
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (26.86, α)	16.04	Adjusted Chi Square Value (26.86, β)	15.93
95% Gamma Approximate UCL (use when n>=50)	235.6	95% Gamma Adjusted UCL (use when n<50)	237.1

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	142.5	SD (KM)	1220
Variance (KM)	1489173	SE of Mean (KM)	115.7
k hat (KM)	0.0136	k star (KM)	0.0191
nu hat (KM)	3.111	nu star (KM)	4.362
theta hat (KM)	10448	theta star (KM)	7450
80% gamma percentile (KM)	0.0365	90% gamma percentile (KM)	17.28
95% gamma percentile (KM)	302.7	99% gamma percentile (KM)	4002

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.36, α)	0.87	Adjusted Chi Square Value (4.36, β)	0.851
95% Gamma Approximate KM-UCL (use when n>=50)	714.9	95% Gamma Adjusted KM-UCL (use when n<50)	730.8

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.871	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.94	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.154	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.139	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	140.9	Mean in Log Scale	-0.204
SD in Original Scale	1226	SD in Log Scale	2.859
95% t UCL (assumes normality of ROS data)	331.3	95% Percentile Bootstrap UCL	368.4
95% BCA Bootstrap UCL	609	95% Bootstrap t UCL	4561
95% H-UCL (Log ROS)	159.6		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	1.551	KM Geo Mean	4.715
KM SD (logged)	1.497	95% Critical H Value (KM-Log)	2.731
KM Standard Error of Mean (logged)	0.145	95% H-UCL (KM -Log)	21.25
KM SD (logged)	1.497	95% Critical H Value (KM-Log)	2.731
KM Standard Error of Mean (logged)	0.145		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	145.7	Mean in Log Scale	1.6
SD in Original Scale	1225	SD in Log Scale	1.766
95% t UCL (Assumes normality)	336.1	95% H-Stat UCL	39.01
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	647.1		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Indeno(1,2,3-cd)pyrene

General Statistics			
Total Number of Observations	114	Number of Distinct Observations	64
Number of Detects	62	Number of Non-Detects	52
Number of Distinct Detects	52	Number of Distinct Non-Detects	18
Minimum Detect	4.2	Minimum Non-Detect	4
Maximum Detect	2500	Maximum Non-Detect	410
Variance Detects	181055	Percent Non-Detects	45.61%
Mean Detects	119.9	SD Detects	425.5
Median Detects	16.5	CV Detects	3.549
Skewness Detects	5.236	Kurtosis Detects	27.03
Mean of Logged Detects	3.113	SD of Logged Detects	1.494

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.28	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.406	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.112	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	68.68	KM Standard Error of Mean	29.9
KM SD	316.4	95% KM (BCA) UCL	127.8
95% KM (t) UCL	118.3	95% KM (Percentile Bootstrap) UCL	123.9
95% KM (z) UCL	117.9	95% KM Bootstrap t UCL	339.4
90% KM Chebyshev UCL	158.4	95% KM Chebyshev UCL	199
97.5% KM Chebyshev UCL	255.4	99% KM Chebyshev UCL	366.2

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.782	Anderson-Darling GOF Test	
5% A-D Critical Value	0.841	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.228	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.121	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.394	k star (bias corrected MLE)	0.386
Theta hat (MLE)	304.2	Theta star (bias corrected MLE)	310.8
nu hat (MLE)	48.86	nu star (bias corrected)	47.83
Mean (detects)	119.9		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	65.81
Maximum	2500	Median	4.6
SD	318.3	CV	4.836
k hat (MLE)	0.167	k star (bias corrected MLE)	0.169
Theta hat (MLE)	393.1	Theta star (bias corrected MLE)	389.7
nu hat (MLE)	38.17	nu star (bias corrected)	38.5
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (38.50, α)	25.29	Adjusted Chi Square Value (38.50, β)	25.15
95% Gamma Approximate UCL (use when n>=50)	100.2	95% Gamma Adjusted UCL (use when n<50)	100.7

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	68.68	SD (KM)	316.4
Variance (KM)	100135	SE of Mean (KM)	29.9
k hat (KM)	0.0471	k star (KM)	0.0517
nu hat (KM)	10.74	nu star (KM)	11.79
theta hat (KM)	1458	theta star (KM)	1328
80% gamma percentile (KM)	10.47	90% gamma percentile (KM)	109.4
95% gamma percentile (KM)	369.6	99% gamma percentile (KM)	1474

Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (11.79, α)	5.09	Adjusted Chi Square Value (11.79, β)	5.034
95% Gamma Approximate KM-UCL (use when n>=50)	159.1	95% Gamma Adjusted KM-UCL (use when n<50)	160.9

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.885	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	3.36E-06	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.131	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.112	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	66.48	Mean in Log Scale	1.862
SD in Original Scale	318.1	SD in Log Scale	1.931
95% t UCL (assumes normality of ROS data)	115.9	95% Percentile Bootstrap UCL	118.1
95% BCA Bootstrap UCL	140.5	95% Bootstrap t UCL	347.1
95% H-UCL (Log ROS)	74.89		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.438	KM Geo Mean	11.45
KM SD (logged)	1.382	95% Critical H Value (KM-Log)	2.603
KM Standard Error of Mean (logged)	0.135	95% H-UCL (KM -Log)	41.71
KM SD (logged)	1.382	95% Critical H Value (KM-Log)	2.603
KM Standard Error of Mean (logged)	0.135		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	76	Mean in Log Scale	2.534
SD in Original Scale	317.9	SD in Log Scale	1.618
95% t UCL (Assumes normality)	125.4	95% H-Stat UCL	72.17

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	199

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Naphthalene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	65
Number of Detects	74	Number of Non-Detects	40
Number of Distinct Detects	54	Number of Distinct Non-Detects	17
Minimum Detect	3.5	Minimum Non-Detect	3.3
Maximum Detect	57000	Maximum Non-Detect	340
Variance Detects	43831806	Percent Non-Detects	35.09%
Mean Detects	829.7	SD Detects	6621
Median Detects	21.5	CV Detects	7.98
Skewness Detects	8.597	Kurtosis Detects	73.93
Mean of Logged Detects	3.253	SD of Logged Detects	1.529

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.125	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.491	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.103	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	541.2	KM Standard Error of Mean	501
KM SD	5312	95% KM (BCA) UCL	1540
95% KM (t) UCL	1372	95% KM (Percentile Bootstrap) UCL	1538
95% KM (z) UCL	1365	95% KM Bootstrap t UCL	42938
90% KM Chebyshev UCL	2044	95% KM Chebyshev UCL	2725
97.5% KM Chebyshev UCL	3670	99% KM Chebyshev UCL	5526

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	17.4	Anderson-Darling GOF Test	
5% A-D Critical Value	0.91	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.39	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.115	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.21	k star (bias corrected MLE)	0.211
Theta hat (MLE)	3942	Theta star (bias corrected MLE)	3933
nu hat (MLE)	31.15	nu star (bias corrected)	31.22
Mean (detects)	829.7		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	538.6
Maximum	57000	Median	9.2
SD	5336	CV	9.908
k hat (MLE)	0.135	k star (bias corrected MLE)	0.137
Theta hat (MLE)	3998	Theta star (bias corrected MLE)	3931
nu hat (MLE)	30.72	nu star (bias corrected)	31.24
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (31.24, α)	19.47	Adjusted Chi Square Value (31.24, β)	19.35
95% Gamma Approximate UCL (use when n>=50)	864.1	95% Gamma Adjusted UCL (use when n<50)	869.4

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	541.2	SD (KM)	5312
Variance (KM)	28221778	SE of Mean (KM)	501
k hat (KM)	0.0104	k star (KM)	0.016
nu hat (KM)	2.366	nu star (KM)	3.637
theta hat (KM)	52147	theta star (KM)	33924
80% gamma percentile (KM)	0.0162	90% gamma percentile (KM)	26.15
95% gamma percentile (KM)	792.6	99% gamma percentile (KM)	15336

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.64, α)	0.584	Adjusted Chi Square Value (3.64, β)	0.57
95% Gamma Approximate KM-UCL (use when n>=50)	3371	95% Gamma Adjusted KM-UCL (use when n<50)	3456

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.87	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	1.29E-08	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.103	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.103	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	539.8	Mean in Log Scale	2.343
SD in Original Scale	5336	SD in Log Scale	1.866
95% t UCL (assumes normality of ROS data)	1369	95% Percentile Bootstrap UCL	1536
95% BCA Bootstrap UCL	2532	95% Bootstrap t UCL	44439
95% H-UCL (Log ROS)	103.4		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.653	KM Geo Mean	14.2
KM SD (logged)	1.533	95% Critical H Value (KM-Log)	2.771
KM Standard Error of Mean (logged)	0.148	95% H-UCL (KM -Log)	68.54
KM SD (logged)	1.533	95% Critical H Value (KM-Log)	2.771
KM Standard Error of Mean (logged)	0.148		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	545.2	Mean in Log Scale	2.69
SD in Original Scale	5336	SD in Log Scale	1.694
95% t UCL (Assumes normality)	1374	95% H-Stat UCL	98.94

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	2725

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Phenanthrene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	86
Number of Detects	105	Number of Non-Detects	9
Number of Distinct Detects	82	Number of Distinct Non-Detects	8
Minimum Detect	1.8	Minimum Non-Detect	1.7
Maximum Detect	37000	Maximum Non-Detect	140
Variance Detects	13889315	Percent Non-Detects	7.90%
Mean Detects	557.6	SD Detects	3727
Median Detects	41	CV Detects	6.684
Skewness Detects	9.323	Kurtosis Detects	90.46
Mean of Logged Detects	3.711	SD of Logged Detects	1.737

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.154	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.457	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0867	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	514.6	KM Standard Error of Mean	335.3
KM SD	3563	95% KM (BCA) UCL	1172
95% KM (t) UCL	1071	95% KM (Percentile Bootstrap) UCL	1138
95% KM (z) UCL	1066	95% KM Bootstrap t UCL	7795
90% KM Chebyshev UCL	1520	95% KM Chebyshev UCL	1976
97.5% KM Chebyshev UCL	2608	99% KM Chebyshev UCL	3851

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	14.98	Anderson-Darling GOF Test	
5% A-D Critical Value	0.883	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.3	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0964	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.269	k star (bias corrected MLE)	0.267
Theta hat (MLE)	2075	Theta star (bias corrected MLE)	2086
nu hat (MLE)	56.42	nu star (bias corrected)	56.14
Mean (detects)	557.6		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	513.5
Maximum	37000	Median	34
SD	3579	CV	6.968
k hat (MLE)	0.226	k star (bias corrected MLE)	0.226
Theta hat (MLE)	2268	Theta star (bias corrected MLE)	2269
nu hat (MLE)	51.62	nu star (bias corrected)	51.6
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (51.60, α)	36.1	Adjusted Chi Square Value (51.60, β)	35.93
95% Gamma Approximate UCL (use when n>=50)	734	95% Gamma Adjusted UCL (use when n<50)	737.4

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	514.6	SD (KM)	3563
Variance (KM)	12692486	SE of Mean (KM)	335.3
k hat (KM)	0.0209	k star (KM)	0.0262
nu hat (KM)	4.758	nu star (KM)	5.966
theta hat (KM)	24663	theta star (KM)	19669
80% gamma percentile (KM)	2.232	90% gamma percentile (KM)	203.2
95% gamma percentile (KM)	1727	99% gamma percentile (KM)	13738

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.97, α)	1.622	Adjusted Chi Square Value (5.97, β)	1.594
95% Gamma Approximate KM-UCL (use when n>=50)	1892	95% Gamma Adjusted KM-UCL (use when n<50)	1926

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Approximate Test Statistic	0.955	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.00602	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0717	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0867	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	514.3	Mean in Log Scale	3.535
SD in Original Scale	3578	SD in Log Scale	1.82
95% t UCL (assumes normality of ROS data)	1070	95% Percentile Bootstrap UCL	1194
95% BCA Bootstrap UCL	1659	95% Bootstrap t UCL	7176
95% H-UCL (Log ROS)	306		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	3.558	KM Geo Mean	35.09
KM SD (logged)	1.776	95% Critical H Value (KM-Log)	3.053
KM Standard Error of Mean (logged)	0.169	95% H-UCL (KM -Log)	282.9
KM SD (logged)	1.776	95% Critical H Value (KM-Log)	3.053
KM Standard Error of Mean (logged)	0.169		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	515.2	Mean in Log Scale	3.585
SD in Original Scale	3578	SD in Log Scale	1.784
95% t UCL (Assumes normality)	1071	95% H-Stat UCL	296.3
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	282.9		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Pyrene

General Statistics

Total Number of Observations	114	Number of Distinct Observations	89
Number of Detects	109	Number of Non-Detects	5
Number of Distinct Detects	87	Number of Distinct Non-Detects	5
Minimum Detect	1.7	Minimum Non-Detect	1.6
Maximum Detect	11000	Maximum Non-Detect	64
Variance Detects	2575182	Percent Non-Detects	4.39%
Mean Detects	385.3	SD Detects	1605
Median Detects	37	CV Detects	4.165
Skewness Detects	6.007	Kurtosis Detects	36.6
Mean of Logged Detects	3.716	SD of Logged Detects	1.857

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.248	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.406	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0852	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	368.9	KM Standard Error of Mean	147.1
KM SD	1564	95% KM (BCA) UCL	680
95% KM (t) UCL	612.9	95% KM (Percentile Bootstrap) UCL	622.6
95% KM (z) UCL	610.9	95% KM Bootstrap t UCL	907
90% KM Chebyshev UCL	810.3	95% KM Chebyshev UCL	1010
97.5% KM Chebyshev UCL	1288	99% KM Chebyshev UCL	1833

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	10.41	Anderson-Darling GOF Test	
5% A-D Critical Value	0.866	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.253	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.0945	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.307	k star (bias corrected MLE)	0.305
Theta hat (MLE)	1255	Theta star (bias corrected MLE)	1265
nu hat (MLE)	66.92	nu star (bias corrected)	66.41
Mean (detects)	385.3		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	368.4
Maximum	11000	Median	35
SD	1571	CV	4.264
k hat (MLE)	0.274	k star (bias corrected MLE)	0.272
Theta hat (MLE)	1346	Theta star (bias corrected MLE)	1353
nu hat (MLE)	62.39	nu star (bias corrected)	62.08
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (62.08, α)	44.96	Adjusted Chi Square Value (62.08, β)	44.77
95% Gamma Approximate UCL (use when n>=50)	508.8	95% Gamma Adjusted UCL (use when n<50)	510.9

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	368.9	SD (KM)	1564
Variance (KM)	2445528	SE of Mean (KM)	147.1
k hat (KM)	0.0557	k star (KM)	0.06
nu hat (KM)	12.69	nu star (KM)	13.69
theta hat (KM)	6629	theta star (KM)	6145
80% gamma percentile (KM)	89.2	90% gamma percentile (KM)	694.4
95% gamma percentile (KM)	2068	99% gamma percentile (KM)	7441

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (13.69, α)	6.358	Adjusted Chi Square Value (13.69, β)	6.294
95% Gamma Approximate KM-UCL (use when n>=50)	794.2	95% Gamma Adjusted KM-UCL (use when n<50)	802.3

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.955	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.00495	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0687	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0852	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	368.8	Mean in Log Scale	3.622
SD in Original Scale	1571	SD in Log Scale	1.895
95% t UCL (assumes normality of ROS data)	612.8	95% Percentile Bootstrap UCL	631.4
95% BCA Bootstrap UCL	729.9	95% Bootstrap t UCL	1270
95% H-UCL (Log ROS)	398.4		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.634	KM Geo Mean	37.85
KM SD (logged)	1.862	95% Critical H Value (KM-Log)	3.156
KM Standard Error of Mean (logged)	0.176	95% H-UCL (KM -Log)	372.6
KM SD (logged)	1.862	95% Critical H Value (KM-Log)	3.156
KM Standard Error of Mean (logged)	0.176		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	369.1	Mean in Log Scale	3.652
SD in Original Scale	1571	SD in Log Scale	1.861
95% t UCL (Assumes normality)	613.1	95% H-Stat UCL	378.3

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	372.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1c - ProUCL Output Files - PAHs 0 - 10 feet bgs

TPH-Diesel (C10-C28)

General Statistics

Total Number of Observations	114	Number of Distinct Observations	93
		Number of Missing Observations	0
Minimum	0.84	Mean	212.6
Maximum	4600	Median	36
SD	543.6	Std. Error of Mean	5091.00%
Coefficient of Variation	2.556	Skewness	5.556

Normal GOF Test

Shapiro Wilk Test Statistic	0.433	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.348	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0833	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	297.1	95% Adjusted-CLT UCL (Chen-1995)	324.7
		95% Modified-t UCL (Johnson-1978)	301.5

Gamma GOF Test

A-D Test Statistic	5.595	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.842	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.183	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0919	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics

k hat (MLE)	0.404	k star (bias corrected MLE)	0.399
Theta hat (MLE)	526	Theta star (bias corrected MLE)	532.3
nu hat (MLE)	92.17	nu star (bias corrected)	91.08
MLE Mean (bias corrected)	212.6	MLE Sd (bias corrected)	336.4
		Approximate Chi Square Value (0.05)	70.07
Adjusted Level of Significance	0.0479	Adjusted Chi Square Value	69.84

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	276.4	95% Adjusted Gamma UCL (use when n<50)	277.3

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.969	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0917	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0527	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0833	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			

Lognormal Statistics

Minimum of Logged Data	-0.174	Mean of logged Data	3.735
Maximum of Logged Data	8.434	SD of logged Data	1.804

Assuming Lognormal Distribution

95% H-UCL	360.1	90% Chebyshev (MVUE) UCL	363.8
95% Chebyshev (MVUE) UCL	435.5	97.5% Chebyshev (MVUE) UCL	534.9
99% Chebyshev (MVUE) UCL	730.2		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	296.4	95% Jackknife UCL	297.1
95% Standard Bootstrap UCL	298.7	95% Bootstrap-t UCL	354.4
95% Hall's Bootstrap UCL	617.4	95% Percentile Bootstrap UCL	301.3
95% BCA Bootstrap UCL	330.7		
90% Chebyshev(Mean, Sd) UCL	365.4	95% Chebyshev(Mean, Sd) UCL	434.5
97.5% Chebyshev(Mean, Sd) UCL	530.6	99% Chebyshev(Mean, Sd) UCL	719.2

Suggested UCL to Use
95% H-UCL 360.1

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

4,4'-DDD

General Statistics

Total Number of Observations	43	Number of Distinct Observations	12
Number of Detects	2	Number of Non-Detects	41
Number of Distinct Detects	2	Number of Distinct Non-Detects	10
Minimum Detect	0.65	Minimum Non-Detect	0.57
Maximum Detect	0.9	Maximum Non-Detect	12
Variance Detects	0.0313	Percent Non-Detects	95.35%
Mean Detects	0.775	SD Detects	0.177
Median Detects	0.775	CV Detects	0.228
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-0.268	SD of Logged Detects	0.23

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.584	KM Standard Error of Mean	0.0161
KM SD	0.0614	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.611	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.611	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.633	95% KM Chebyshev UCL	0.654
97.5% KM Chebyshev UCL	0.685	99% KM Chebyshev UCL	0.745

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	38.1	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0203	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	152.4	nu star (bias corrected)	N/A
Mean (detects)	0.775		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.584	SD (KM)	0.0614
Variance (KM)	0.00378	SE of Mean (KM)	0.0161
k hat (KM)	90.37	k star (KM)	84.08
nu hat (KM)	7771	nu star (KM)	7231
theta hat (KM)	0.00646	theta star (KM)	0.00695
80% gamma percentile (KM)	0.637	90% gamma percentile (KM)	0.667
95% gamma percentile (KM)	0.693	99% gamma percentile (KM)	0.742

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0444
Approximate Chi Square Value (N/A, α)	7034	Adjusted Chi Square Value (N/A, β)	7027
95% Gamma Approximate KM-UCL (use when n>=50)	0.6	95% Gamma Adjusted KM-UCL (use when n<50)	0.601

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.157	Mean in Log Scale	-2.181
SD in Original Scale	0.162	SD in Log Scale	0.785
95% t UCL (assumes normality of ROS data)	0.199	95% Percentile Bootstrap UCL	0.201
95% BCA Bootstrap UCL	0.212	95% Bootstrap t UCL	0.229
95% H-UCL (Log ROS)	0.199		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.542	KM Geo Mean	0.582
KM SD (logged)	0.0859	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.0226	95% H-UCL (KM -Log)	N/A
KM SD (logged)	0.0859	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.0226		

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.754	Mean in Log Scale	-0.712
SD in Original Scale	1.043	SD in Log Scale	0.793
95% t UCL (Assumes normality)	1.022	95% H-Stat UCL	0.875

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.611	KM H-UCL	N/A
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

4,4'-DDE

General Statistics

Total Number of Observations	43	Number of Distinct Observations	17
Number of Detects	5	Number of Non-Detects	38
Number of Distinct Detects	5	Number of Distinct Non-Detects	12
Minimum Detect	0.72	Minimum Non-Detect	0.4
Maximum Detect	24	Maximum Non-Detect	8.4
Variance Detects	102.5	Percent Non-Detects	88.37%
Mean Detects	5.956	SD Detects	10.12
Median Detects	1.5	CV Detects	1.699
Skewness Detects	2.198	Kurtosis Detects	4.859
Mean of Logged Detects	0.802	SD of Logged Detects	1.44

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.622	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.422	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.062	KM Standard Error of Mean	0.608
KM SD	3.564	95% KM (BCA) UCL	2.202
95% KM (t) UCL	2.085	95% KM (Percentile Bootstrap) UCL	2.133
95% KM (z) UCL	2.062	95% KM Bootstrap t UCL	7.137
90% KM Chebyshev UCL	2.886	95% KM Chebyshev UCL	3.713
97.5% KM Chebyshev UCL	4.86	99% KM Chebyshev UCL	7.112

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.685	Anderson-Darling GOF Test	
5% A-D Critical Value	0.705	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.335	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.369	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.625	k star (bias corrected MLE)	0.383
Theta hat (MLE)	9.527	Theta star (bias corrected MLE)	15.53
nu hat (MLE)	6.252	nu star (bias corrected)	3.834
Mean (detects)	5.956		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.701
Maximum	24	Median	0.01
SD	3.671	CV	5.234
k hat (MLE)	0.203	k star (bias corrected MLE)	0.204
Theta hat (MLE)	3.459	Theta star (bias corrected MLE)	3.436
nu hat (MLE)	17.44	nu star (bias corrected)	17.55
Adjusted Level of Significance (β)	0.0444		
Approximate Chi Square Value (17.55, α)	9.069	Adjusted Chi Square Value (17.55, β)	8.857
95% Gamma Approximate UCL (use when n>=50)	1.358	95% Gamma Adjusted UCL (use when n<50)	1.39

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.062	SD (KM)	3.564
Variance (KM)	12.7	SE of Mean (KM)	0.608
k hat (KM)	0.0888	k star (KM)	0.0981
nu hat (KM)	7.64	nu star (KM)	8.44
theta hat (KM)	11.96	theta star (KM)	10.82
80% gamma percentile (KM)	0.717	90% gamma percentile (KM)	2.805
95% gamma percentile (KM)	6.171	99% gamma percentile (KM)	17.03

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (8.44, α)	2.992	Adjusted Chi Square Value (8.44, β)	2.881
95% Gamma Approximate KM-UCL (use when n>=50)	2.996	95% Gamma Adjusted KM-UCL (use when n<50)	3.112

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.844	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.237	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.713	Mean in Log Scale	-4.294
SD in Original Scale	3.669	SD in Log Scale	2.583
95% t UCL (assumes normality of ROS data)	1.654	95% Percentile Bootstrap UCL	1.8
95% BCA Bootstrap UCL	2.45	95% Bootstrap t UCL	10.14
95% H-UCL (Log ROS)	2.328		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.695	KM Geo Mean	0.499
KM SD (logged)	0.714	95% Critical H Value (KM-Log)	2.076
KM Standard Error of Mean (logged)	0.125	95% H-UCL (KM -Log)	0.81
KM SD (logged)	0.714	95% Critical H Value (KM-Log)	2.076
KM Standard Error of Mean (logged)	0.125		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.151	Mean in Log Scale	-0.904
SD in Original Scale	3.659	SD in Log Scale	1.082
95% t UCL (Assumes normality)	2.089	95% H-Stat UCL	1.096

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	3.112

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

4,4'-DDT

General Statistics

Total Number of Observations	43	Number of Distinct Observations	17
Number of Detects	7	Number of Non-Detects	36
Number of Distinct Detects	6	Number of Distinct Non-Detects	12
Minimum Detect	0.41	Minimum Non-Detect	0.39
Maximum Detect	73	Maximum Non-Detect	8.2
Variance Detects	718.6	Percent Non-Detects	83.72%
Mean Detects	12.32	SD Detects	26.81
Median Detects	2.2	CV Detects	2.176
Skewness Detects	2.626	Kurtosis Detects	6.919
Mean of Logged Detects	0.967	SD of Logged Detects	1.756

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.508	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.463	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.304	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2.346	KM Standard Error of Mean	1.802
KM SD	10.94	95% KM (BCA) UCL	5.784
95% KM (t) UCL	5.377	95% KM (Percentile Bootstrap) UCL	5.698
95% KM (z) UCL	5.31	95% KM Bootstrap t UCL	35.58
90% KM Chebyshev UCL	7.752	95% KM Chebyshev UCL	10.2
97.5% KM Chebyshev UCL	13.6	99% KM Chebyshev UCL	20.27

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.887	Anderson-Darling GOF Test	
5% A-D Critical Value	0.764	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.344	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.33	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.422	k star (bias corrected MLE)	0.337
Theta hat (MLE)	29.16	Theta star (bias corrected MLE)	36.59
nu hat (MLE)	5.913	nu star (bias corrected)	4.712
Mean (detects)	12.32		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.013
Maximum	73	Median	0.01
SD	11.13	CV	5.526
k hat (MLE)	0.171	k star (bias corrected MLE)	0.175
Theta hat (MLE)	11.75	Theta star (bias corrected MLE)	11.51
nu hat (MLE)	14.74	nu star (bias corrected)	15.04
Adjusted Level of Significance (β)	0.0444		
Approximate Chi Square Value (15.04, α)	7.29	Adjusted Chi Square Value (15.04, β)	7.102
95% Gamma Approximate UCL (use when n>=50)	4.154	95% Gamma Adjusted UCL (use when n<50)	4.264

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2.346	SD (KM)	10.94
Variance (KM)	119.6	SE of Mean (KM)	1.802
k hat (KM)	0.046	k star (KM)	0.0583
nu hat (KM)	3.956	nu star (KM)	5.013
theta hat (KM)	51	theta star (KM)	40.24
80% gamma percentile (KM)	0.521	90% gamma percentile (KM)	4.285
95% gamma percentile (KM)	13.06	99% gamma percentile (KM)	47.91

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.01, α)	1.158	Adjusted Chi Square Value (5.01, β)	1.096
95% Gamma Approximate KM-UCL (use when n>=50)	10.15	95% Gamma Adjusted KM-UCL (use when n<50)	10.73
95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)			

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.884	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.21	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.019	Mean in Log Scale	-4.449
SD in Original Scale	11.13	SD in Log Scale	3.128
95% t UCL (assumes normality of ROS data)	4.873	95% Percentile Bootstrap UCL	5.361
95% BCA Bootstrap UCL	7.3	95% Bootstrap t UCL	38.3
95% H-UCL (Log ROS)	20.65		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.619	KM Geo Mean	0.539
KM SD (logged)	0.97	95% Critical H Value (KM-Log)	2.329
KM Standard Error of Mean (logged)	0.162	95% H-UCL (KM -Log)	1.221
KM SD (logged)	0.97	95% Critical H Value (KM-Log)	2.329
KM Standard Error of Mean (logged)	0.162		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.423	Mean in Log Scale	-0.826
SD in Original Scale	11.07	SD in Log Scale	1.274
95% t UCL (Assumes normality)	5.263	95% H-Stat UCL	1.67

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	10.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

alpha-Chlordane

General Statistics

Total Number of Observations	43	Number of Distinct Observations	19
Number of Detects	9	Number of Non-Detects	34
Number of Distinct Detects	9	Number of Distinct Non-Detects	10
Minimum Detect	0.41	Minimum Non-Detect	0.38
Maximum Detect	12	Maximum Non-Detect	8
Variance Detects	14.08	Percent Non-Detects	79.07%
Mean Detects	2.344	SD Detects	3.752
Median Detects	0.77	CV Detects	1.6
Skewness Detects	2.649	Kurtosis Detects	7.255
Mean of Logged Detects	0.152	SD of Logged Detects	1.105

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.578	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.335	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.817	KM Standard Error of Mean	0.294
KM SD	1.808	95% KM (BCA) UCL	1.395
95% KM (t) UCL	1.312	95% KM (Percentile Bootstrap) UCL	1.363
95% KM (z) UCL	1.301	95% KM Bootstrap t UCL	3.111
90% KM Chebyshev UCL	1.699	95% KM Chebyshev UCL	2.099
97.5% KM Chebyshev UCL	2.653	99% KM Chebyshev UCL	3.742

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.998	Anderson-Darling GOF Test	
5% A-D Critical Value	0.749	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.301	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.288	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.842	k star (bias corrected MLE)	0.635
Theta hat (MLE)	2.784	Theta star (bias corrected MLE)	3.69
nu hat (MLE)	15.16	nu star (bias corrected)	11.44
Mean (detects)	2.344		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.499
Maximum	12	Median	0.01
SD	1.899	CV	3.808
k hat (MLE)	0.245	k star (bias corrected MLE)	0.243
Theta hat (MLE)	2.038	Theta star (bias corrected MLE)	2.051
nu hat (MLE)	21.04	nu star (bias corrected)	20.9
Adjusted Level of Significance (β)	0.0444		
Approximate Chi Square Value (20.90, α)	11.52	Adjusted Chi Square Value (20.90, β)	11.28
95% Gamma Approximate UCL (use when n>=50)	0.905	95% Gamma Adjusted UCL (use when n<50)	0.924

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.817	SD (KM)	1.808
Variance (KM)	3.268	SE of Mean (KM)	0.294
k hat (KM)	0.204	k star (KM)	0.206
nu hat (KM)	17.58	nu star (KM)	17.68
theta hat (KM)	3.999	theta star (KM)	3.975
80% gamma percentile (KM)	1.092	90% gamma percentile (KM)	2.472
95% gamma percentile (KM)	4.181	99% gamma percentile (KM)	8.864

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (17.68, α)	9.162	Adjusted Chi Square Value (17.68, β)	8.948
95% Gamma Approximate KM-UCL (use when n>=50)	1.577	95% Gamma Adjusted KM-UCL (use when n<50)	1.615

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.848	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.243	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.549	Mean in Log Scale	-2.426
SD in Original Scale	1.886	SD in Log Scale	1.739
95% t UCL (assumes normality of ROS data)	1.032	95% Percentile Bootstrap UCL	1.047
95% BCA Bootstrap UCL	1.503	95% Bootstrap t UCL	2.835
95% H-UCL (Log ROS)	0.971		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.696	KM Geo Mean	0.498
KM SD (logged)	0.673	95% Critical H Value (KM-Log)	2.039
KM Standard Error of Mean (logged)	0.113	95% H-UCL (KM -Log)	0.772
KM SD (logged)	0.673	95% Critical H Value (KM-Log)	2.039
KM Standard Error of Mean (logged)	0.113		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.923	Mean in Log Scale	-0.835
SD in Original Scale	1.922	SD in Log Scale	1.042
95% t UCL (Assumes normality)	1.416	95% H-Stat UCL	1.1

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	0.772

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Chlordane

General Statistics

Total Number of Observations	43	Number of Distinct Observations	13
Number of Detects	5	Number of Non-Detects	38
Number of Distinct Detects	4	Number of Distinct Non-Detects	10
Minimum Detect	6.5	Minimum Non-Detect	3
Maximum Detect	82	Maximum Non-Detect	64
Variance Detects	975.8	Percent Non-Detects	88.37%
Mean Detects	26.5	SD Detects	31.24
Median Detects	14	CV Detects	1.179
Skewness Detects	2.158	Kurtosis Detects	4.747
Mean of Logged Detects	2.866	SD of Logged Detects	0.932

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.658	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.432	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	5.898	KM Standard Error of Mean	2.09
KM SD	12.18	95% KM (BCA) UCL	N/A
95% KM (t) UCL	9.413	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	9.335	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	12.17	95% KM Chebyshev UCL	15.01
97.5% KM Chebyshev UCL	18.95	99% KM Chebyshev UCL	26.69

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.72	Anderson-Darling GOF Test	
5% A-D Critical Value	0.688	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.396	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.362	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.358	k star (bias corrected MLE)	0.677
Theta hat (MLE)	19.51	Theta star (bias corrected MLE)	39.17
nu hat (MLE)	13.58	nu star (bias corrected)	6.766
Mean (detects)	26.5		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	3.09
Maximum	82	Median	0.01
SD	12.91	CV	4.179
k hat (MLE)	0.157	k star (bias corrected MLE)	0.162
Theta hat (MLE)	19.69	Theta star (bias corrected MLE)	19.13
nu hat (MLE)	13.5	nu star (bias corrected)	13.89
Adjusted Level of Significance (β)	0.0444		
Approximate Chi Square Value (13.89, α)	6.496	Adjusted Chi Square Value (13.89, β)	6.32
95% Gamma Approximate UCL (use when n>=50)	6.608	95% Gamma Adjusted UCL (use when n<50)	6.792

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	5.898	SD (KM)	12.18
Variance (KM)	148.3	SE of Mean (KM)	2.09
k hat (KM)	0.235	k star (KM)	0.234
nu hat (KM)	20.17	nu star (KM)	20.1
theta hat (KM)	25.14	theta star (KM)	25.24
80% gamma percentile (KM)	8.351	90% gamma percentile (KM)	17.78
95% gamma percentile (KM)	29.12	99% gamma percentile (KM)	59.6

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (20.10, α)	10.92	Adjusted Chi Square Value (20.10, β)	10.69
95% Gamma Approximate KM-UCL (use when n>=50)	10.85	95% Gamma Adjusted KM-UCL (use when n<50)	11.09

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.849	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.34	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.793	Mean in Log Scale	-0.382
SD in Original Scale	12.77	SD in Log Scale	1.668
95% t UCL (assumes normality of ROS data)	7.067	95% Percentile Bootstrap UCL	7.503
95% BCA Bootstrap UCL	10.94	95% Bootstrap t UCL	15.99
95% H-UCL (Log ROS)	6.251		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	1.329	KM Geo Mean	3.776
KM SD (logged)	0.653	95% Critical H Value (KM-Log)	2.021
KM Standard Error of Mean (logged)	0.116	95% H-UCL (KM -Log)	5.726
KM SD (logged)	0.653	95% Critical H Value (KM-Log)	2.021
KM Standard Error of Mean (logged)	0.116		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	6.719	Mean in Log Scale	1.168
SD in Original Scale	13.27	SD in Log Scale	1.038
95% t UCL (Assumes normality)	10.12	95% H-Stat UCL	8.106
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	5.726		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

delta-BHC

General Statistics

Total Number of Observations	43	Number of Distinct Observations	13
Number of Detects	0	Number of Non-Detects	43
Number of Distinct Detects	0	Number of Distinct Non-Detects	13

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable F was not processed!

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Dieldrin

General Statistics

Total Number of Observations	43	Number of Distinct Observations	10
Number of Detects	0	Number of Non-Detects	43
Number of Distinct Detects	0	Number of Distinct Non-Detects	10

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable G was not processed!

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

gamma-Chlordane

General Statistics

Total Number of Observations	43	Number of Distinct Observations	17
Number of Detects	6	Number of Non-Detects	37
Number of Distinct Detects	6	Number of Distinct Non-Detects	11
Minimum Detect	0.93	Minimum Non-Detect	0.43
Maximum Detect	8.4	Maximum Non-Detect	9.2
Variance Detects	8.086	Percent Non-Detects	86.05%
Mean Detects	2.938	SD Detects	2.844
Median Detects	1.85	CV Detects	0.968
Skewness Detects	1.895	Kurtosis Detects	3.633
Mean of Logged Detects	0.761	SD of Logged Detects	0.832

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.76	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.309	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.812	KM Standard Error of Mean	0.226
KM SD	1.323	95% KM (BCA) UCL	1.211
95% KM (t) UCL	1.192	95% KM (Percentile Bootstrap) UCL	1.185
95% KM (z) UCL	1.184	95% KM Bootstrap t UCL	1.508
90% KM Chebyshev UCL	1.49	95% KM Chebyshev UCL	1.797
97.5% KM Chebyshev UCL	2.223	99% KM Chebyshev UCL	3.061

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.437	Anderson-Darling GOF Test	
5% A-D Critical Value	0.706	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.273	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.337	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.726	k star (bias corrected MLE)	0.974
Theta hat (MLE)	1.702	Theta star (bias corrected MLE)	3.016
nu hat (MLE)	20.71	nu star (bias corrected)	11.69
Mean (detects)	2.938		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.419
Maximum	8.4	Median	0.01
SD	1.42	CV	3.393
k hat (MLE)	0.24	k star (bias corrected MLE)	0.238
Theta hat (MLE)	1.747	Theta star (bias corrected MLE)	1.756
nu hat (MLE)	20.6	nu star (bias corrected)	20.5
Adjusted Level of Significance (β)	0.0444		
Approximate Chi Square Value (20.50, α)	11.22	Adjusted Chi Square Value (20.50, β)	10.98
95% Gamma Approximate UCL (use when n>=50)	0.765	95% Gamma Adjusted UCL (use when n<50)	0.781

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.812	SD (KM)	1.323
Variance (KM)	1.751	SE of Mean (KM)	0.226
k hat (KM)	0.376	k star (KM)	0.366
nu hat (KM)	32.37	nu star (KM)	31.44
theta hat (KM)	2.157	theta star (KM)	2.22
80% gamma percentile (KM)	1.294	90% gamma percentile (KM)	2.328
95% gamma percentile (KM)	3.479	99% gamma percentile (KM)	6.399

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (31.44, α)	19.63	Adjusted Chi Square Value (31.44, β)	19.3
95% Gamma Approximate KM-UCL (use when n>=50)	1.3	95% Gamma Adjusted KM-UCL (use when n<50)	1.322

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.916	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.224	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.527	Mean in Log Scale	-1.994
SD in Original Scale	1.393	SD in Log Scale	1.51
95% t UCL (assumes normality of ROS data)	0.885	95% Percentile Bootstrap UCL	0.916
95% BCA Bootstrap UCL	1.06	95% Bootstrap t UCL	1.594
95% H-UCL (Log ROS)	0.853		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.589	KM Geo Mean	0.555
KM SD (logged)	0.647	95% Critical H Value (KM-Log)	2.017
KM Standard Error of Mean (logged)	0.114	95% H-UCL (KM -Log)	0.837
KM SD (logged)	0.647	95% Critical H Value (KM-Log)	2.017
KM Standard Error of Mean (logged)	0.114		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.918	Mean in Log Scale	-0.77
SD in Original Scale	1.507	SD in Log Scale	1.042
95% t UCL (Assumes normality)	1.305	95% H-Stat UCL	1.174

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.192

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Heptachlor epoxide

General Statistics

Total Number of Observations	43	Number of Distinct Observations	9
Number of Detects	0	Number of Non-Detects	43
Number of Distinct Detects	0	Number of Distinct Non-Detects	9

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable I was not processed!

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Methoxychlor

General Statistics

Total Number of Observations	43	Number of Distinct Observations	13
Number of Detects	1	Number of Non-Detects	42
Number of Distinct Detects	1	Number of Distinct Non-Detects	12

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable J was not processed!

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

PCB-1254 (Aroclor 1254)

General Statistics

Total Number of Observations	43	Number of Distinct Observations	9
Number of Detects	3	Number of Non-Detects	40
Number of Distinct Detects	3	Number of Distinct Non-Detects	6
Minimum Detect	32	Minimum Non-Detect	22
Maximum Detect	590	Maximum Non-Detect	470
Variance Detects	98841	Percent Non-Detects	93.02%
Mean Detects	227.3	SD Detects	314.4
Median Detects	60	CV Detects	1.383
Skewness Detects	1.717	Kurtosis Detects	N/A
Mean of Logged Detects	4.647	SD of Logged Detects	1.534

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.788	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.369	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	36.41	KM Standard Error of Mean	16
KM SD	85.64	95% KM (BCA) UCL	N/A
95% KM (t) UCL	63.32	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	62.73	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	84.41	95% KM Chebyshev UCL	106.1
97.5% KM Chebyshev UCL	136.3	99% KM Chebyshev UCL	195.6

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	0.766	k star (bias corrected MLE)	N/A
Theta hat (MLE)	296.9	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	4.594	nu star (bias corrected)	N/A
Mean (detects)	227.3		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	15.87
Maximum	590	Median	0.01
SD	90.22	CV	5.685
k hat (MLE)	0.118	k star (bias corrected MLE)	0.125
Theta hat (MLE)	134.3	Theta star (bias corrected MLE)	126.5
nu hat (MLE)	10.16	nu star (bias corrected)	10.79
Adjusted Level of Significance (β)	0.0444		
Approximate Chi Square Value (10.79, α)	4.44	Adjusted Chi Square Value (10.79, β)	4.299
95% Gamma Approximate UCL (use when n>=50)	38.56	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	36.41	SD (KM)	85.64
Variance (KM)	7334	SE of Mean (KM)	16
k hat (KM)	0.181	k star (KM)	0.184
nu hat (KM)	15.55	nu star (KM)	15.8
theta hat (KM)	201.4	theta star (KM)	198.2
80% gamma percentile (KM)	45.74	90% gamma percentile (KM)	109.9
95% gamma percentile (KM)	191.7	99% gamma percentile (KM)	420.1

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (15.80, α)	7.818	Adjusted Chi Square Value (15.80, β)	7.623
95% Gamma Approximate KM-UCL (use when n>=50)	73.56	95% Gamma Adjusted KM-UCL (use when n<50)	75.45

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.903	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.307	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	16.27	Mean in Log Scale	-3.287
SD in Original Scale	90.16	SD in Log Scale	3.749
95% t UCL (assumes normality of ROS data)	39.4	95% Percentile Bootstrap UCL	42.93
95% BCA Bootstrap UCL	69.08	95% Bootstrap t UCL	297.8
95% H-UCL (Log ROS)	1623		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.202	KM Geo Mean	24.58
KM SD (logged)	0.518	95% Critical H Value (KM-Log)	1.914
KM Standard Error of Mean (logged)	0.0971	95% H-UCL (KM -Log)	32.75
KM SD (logged)	0.518	95% Critical H Value (KM-Log)	1.914
KM Standard Error of Mean (logged)	0.0971		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	38.92	Mean in Log Scale	2.78
SD in Original Scale	98.71	SD in Log Scale	0.945
95% t UCL (Assumes normality)	64.24	95% H-Stat UCL	35.25

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	63.32

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

PCB-1260 (Aroclor 1260)

General Statistics			
Total Number of Observations	43	Number of Distinct Observations	12
Number of Detects	8	Number of Non-Detects	35
Number of Distinct Detects	7	Number of Distinct Non-Detects	5
Minimum Detect	24	Minimum Non-Detect	21
Maximum Detect	8000	Maximum Non-Detect	450
Variance Detects	7821625	Percent Non-Detects	81.40%
Mean Detects	1086	SD Detects	2797
Median Detects	42	CV Detects	2.575
Skewness Detects	2.816	Kurtosis Detects	7.946
Mean of Logged Detects	4.674	SD of Logged Detects	1.953

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.449	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.469	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.283	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	219.6	KM Standard Error of Mean	196
KM SD	1202	95% KM (BCA) UCL	590.7
95% KM (t) UCL	549.2	95% KM (Percentile Bootstrap) UCL	589.8
95% KM (z) UCL	541.9	95% KM Bootstrap t UCL	20155
90% KM Chebyshev UCL	807.5	95% KM Chebyshev UCL	1074
97.5% KM Chebyshev UCL	1444	99% KM Chebyshev UCL	2170

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.559	Anderson-Darling GOF Test	
5% A-D Critical Value	0.798	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.386	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.317	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.298	k star (bias corrected MLE)	0.27
Theta hat (MLE)	3645	Theta star (bias corrected MLE)	4029
nu hat (MLE)	4.769	nu star (bias corrected)	4.314
Mean (detects)	1086		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	202.1
Maximum	8000	Median	0.01
SD	1219	CV	6.033
k hat (MLE)	0.0993	k star (bias corrected MLE)	0.108
Theta hat (MLE)	2036	Theta star (bias corrected MLE)	1874
nu hat (MLE)	8.538	nu star (bias corrected)	9.276
Adjusted Level of Significance (β)	0.0444		
Approximate Chi Square Value (9.28, α)	3.494	Adjusted Chi Square Value (9.28, β)	3.372
95% Gamma Approximate UCL (use when n>=50)	536.5	95% Gamma Adjusted UCL (use when n<50)	556

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	219.6	SD (KM)	1202
Variance (KM)	1445068	SE of Mean (KM)	196
k hat (KM)	0.0334	k star (KM)	0.0465
nu hat (KM)	2.869	nu star (KM)	4.003
theta hat (KM)	6581	theta star (KM)	4718
80% gamma percentile (KM)	22.86	90% gamma percentile (KM)	303.7
95% gamma percentile (KM)	1136	99% gamma percentile (KM)	4911

Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (4.00, α)	0.723	Adjusted Chi Square Value (4.00, β)	0.678
95% Gamma Approximate KM-UCL (use when n>=50)	1216	95% Gamma Adjusted KM-UCL (use when n<50)	1296
95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)			

Table B1d - ProUCL Output Files - OCPs PCBs 0 - 2 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.734	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.309	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.283	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	202.7	Mean in Log Scale	-1.172
SD in Original Scale	1219	SD in Log Scale	3.829
95% t UCL (assumes normality of ROS data)	515.4	95% Percentile Bootstrap UCL	571.9
95% BCA Bootstrap UCL	783	95% Bootstrap t UCL	15005
95% H-UCL (Log ROS)	21277		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.354	KM Geo Mean	28.63
KM SD (logged)	1.014	95% Critical H Value (KM-Log)	2.378
KM Standard Error of Mean (logged)	0.166	95% H-UCL (KM -Log)	69.47
KM SD (logged)	1.014	95% Critical H Value (KM-Log)	2.378
KM Standard Error of Mean (logged)	0.166		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	218.2	Mean in Log Scale	2.935
SD in Original Scale	1217	SD in Log Scale	1.293
95% t UCL (Assumes normality)	530.4	95% H-Stat UCL	74.51

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	1074

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

4,4'-DDD

General Statistics

Total Number of Observations	107	Number of Distinct Observations	14
		Number of Missing Observations	7
Number of Detects	3	Number of Non-Detects	104
Number of Distinct Detects	3	Number of Distinct Non-Detects	11
Minimum Detect	0.65	Minimum Non-Detect	0.57
Maximum Detect	38	Maximum Non-Detect	12
Variance Detects	461.9	Percent Non-Detects	97.20%
Mean Detects	13.18	SD Detects	21.49
Median Detects	0.9	CV Detects	1.63
Skewness Detects	1.732	Kurtosis Detects	N/A
Mean of Logged Detects	1.034	SD of Logged Detects	2.261

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.755	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.383	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.924	KM Standard Error of Mean	0.426
KM SD	3.601	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.632	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.626	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	2.204	95% KM Chebyshev UCL	2.783
97.5% KM Chebyshev UCL	3.587	99% KM Chebyshev UCL	5.167

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	0.422	k star (bias corrected MLE)	N/A
Theta hat (MLE)	31.23	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	2.533	nu star (bias corrected)	N/A
Mean (detects)	13.18		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.379
Maximum	38	Median	0.01
SD	3.673	CV	9.682
k hat (MLE)	0.21	k star (bias corrected MLE)	0.21
Theta hat (MLE)	1.806	Theta star (bias corrected MLE)	1.803
nu hat (MLE)	44.94	nu star (bias corrected)	45.01
Adjusted Level of Significance (β)	0.0478		
Approximate Chi Square Value (45.01, α)	30.62	Adjusted Chi Square Value (45.01, β)	30.46
95% Gamma Approximate UCL (use when n>=50)	0.558	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.924	SD (KM)	3.601
Variance (KM)	12.97	SE of Mean (KM)	0.426
k hat (KM)	0.0659	k star (KM)	0.0703
nu hat (KM)	14.1	nu star (KM)	15.04
theta hat (KM)	14.03	theta star (KM)	13.15
80% gamma percentile (KM)	0.334	90% gamma percentile (KM)	2.001
95% gamma percentile (KM)	5.32	99% gamma percentile (KM)	17.39

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (15.04, α)	7.29	Adjusted Chi Square Value (15.04, β)	7.216
95% Gamma Approximate KM-UCL (use when n>=50)	1.907	95% Gamma Adjusted KM-UCL (use when n<50)	1.927

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.81	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.359	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.37	Mean in Log Scale	-14.01
SD in Original Scale	3.674	SD in Log Scale	5.918
95% t UCL (assumes normality of ROS data)	0.96	95% Percentile Bootstrap UCL	1.08
95% BCA Bootstrap UCL	1.477	95% Bootstrap t UCL	21.65
95% H-UCL (Log ROS)	4639		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.516	KM Geo Mean	0.597
KM SD (logged)	0.407	95% Critical H Value (KM-Log)	1.782
KM Standard Error of Mean (logged)	0.0482	95% H-UCL (KM -Log)	0.695
KM SD (logged)	0.407	95% Critical H Value (KM-Log)	1.782
KM Standard Error of Mean (logged)	0.0482		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.884	Mean in Log Scale	-0.906
SD in Original Scale	3.697	SD in Log Scale	0.765
95% t UCL (Assumes normality)	1.477	95% H-Stat UCL	0.629

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.632

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

4,4'-DDE

General Statistics

Total Number of Observations	107	Number of Distinct Observations	17
		Number of Missing Observations	7
Number of Detects	5	Number of Non-Detects	102
Number of Distinct Detects	5	Number of Distinct Non-Detects	12
Minimum Detect	0.72	Minimum Non-Detect	0.4
Maximum Detect	24	Maximum Non-Detect	8.4
Variance Detects	102.5	Percent Non-Detects	95.33%
Mean Detects	5.956	SD Detects	10.12
Median Detects	1.5	CV Detects	1.699
Skewness Detects	2.198	Kurtosis Detects	4.859
Mean of Logged Detects	0.802	SD of Logged Detects	1.44

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.622	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.422	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.663	KM Standard Error of Mean	0.247
KM SD	2.282	95% KM (BCA) UCL	1.111
95% KM (t) UCL	1.073	95% KM (Percentile Bootstrap) UCL	1.102
95% KM (z) UCL	1.069	95% KM Bootstrap t UCL	3.158
90% KM Chebyshev UCL	1.404	95% KM Chebyshev UCL	1.739
97.5% KM Chebyshev UCL	2.204	99% KM Chebyshev UCL	3.119

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.685	Anderson-Darling GOF Test	
5% A-D Critical Value	0.705	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.335	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.369	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.625	k star (bias corrected MLE)	0.383
Theta hat (MLE)	9.527	Theta star (bias corrected MLE)	15.53
nu hat (MLE)	6.252	nu star (bias corrected)	3.834
Mean (detects)	5.956		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.288
Maximum	24	Median	0.01
SD	2.336	CV	8.115
k hat (MLE)	0.231	k star (bias corrected MLE)	0.231
Theta hat (MLE)	1.244	Theta star (bias corrected MLE)	1.245
nu hat (MLE)	49.53	nu star (bias corrected)	49.47
Adjusted Level of Significance (β)	0.0478		
Approximate Chi Square Value (49.47, α)	34.33	Adjusted Chi Square Value (49.47, β)	34.15
95% Gamma Approximate UCL (use when n>=50)	0.415	95% Gamma Adjusted UCL (use when n<50)	0.417

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.663	SD (KM)	2.282
Variance (KM)	5.208	SE of Mean (KM)	0.247
k hat (KM)	0.0845	k star (KM)	0.0883
nu hat (KM)	18.08	nu star (KM)	18.9
theta hat (KM)	7.852	theta star (KM)	7.508
80% gamma percentile (KM)	0.378	90% gamma percentile (KM)	1.665
95% gamma percentile (KM)	3.865	99% gamma percentile (KM)	11.2

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (18.90, α)	10.05	Adjusted Chi Square Value (18.90, β)	9.959
95% Gamma Approximate KM-UCL (use when n>=50)	1.248	95% Gamma Adjusted KM-UCL (use when n<50)	1.259

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.844	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.237	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.343	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.289	Mean in Log Scale	-7.214
SD in Original Scale	2.336	SD in Log Scale	3.48
95% t UCL (assumes normality of ROS data)	0.663	95% Percentile Bootstrap UCL	0.726
95% BCA Bootstrap UCL	0.996	95% Bootstrap t UCL	4.399
95% H-UCL (Log ROS)	1.843		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.831	KM Geo Mean	0.435
KM SD (logged)	0.462	95% Critical H Value (KM-Log)	1.811
KM Standard Error of Mean (logged)	0.0506	95% H-UCL (KM -Log)	0.526
KM SD (logged)	0.462	95% Critical H Value (KM-Log)	1.811
KM Standard Error of Mean (logged)	0.0506		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.637	Mean in Log Scale	-1.229
SD in Original Scale	2.357	SD in Log Scale	0.826
95% t UCL (Assumes normality)	1.015	95% H-Stat UCL	0.485
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM Approximate Gamma UCL	1.248		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

4,4'-DDT

General Statistics

Total Number of Observations	107	Number of Distinct Observations	18
		Number of Missing Observations	7
Number of Detects	8	Number of Non-Detects	99
Number of Distinct Detects	7	Number of Distinct Non-Detects	12
Minimum Detect	0.41	Minimum Non-Detect	0.39
Maximum Detect	73	Maximum Non-Detect	8.2
Variance Detects	631.4	Percent Non-Detects	92.52%
Mean Detects	10.93	SD Detects	25.13
Median Detects	2.15	CV Detects	2.299
Skewness Detects	2.808	Kurtosis Detects	7.911
Mean of Logged Detects	0.868	SD of Logged Detects	1.649

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.473	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.467	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.283	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.182	KM Standard Error of Mean	0.723
KM SD	6.999	95% KM (BCA) UCL	2.566
95% KM (t) UCL	2.382	95% KM (Percentile Bootstrap) UCL	2.524
95% KM (z) UCL	2.372	95% KM Bootstrap t UCL	16.23
90% KM Chebyshev UCL	3.352	95% KM Chebyshev UCL	4.335
97.5% KM Chebyshev UCL	5.7	99% KM Chebyshev UCL	8.38

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.067	Anderson-Darling GOF Test	
5% A-D Critical Value	0.775	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.34	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.312	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.428	k star (bias corrected MLE)	0.351
Theta hat (MLE)	25.56	Theta star (bias corrected MLE)	31.17
nu hat (MLE)	6.841	nu star (bias corrected)	5.609
Mean (detects)	10.93		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.826
Maximum	73	Median	0.01
SD	7.072	CV	8.56
k hat (MLE)	0.186	k star (bias corrected MLE)	0.187
Theta hat (MLE)	4.446	Theta star (bias corrected MLE)	4.422
nu hat (MLE)	39.77	nu star (bias corrected)	39.99
Adjusted Level of Significance (β)	0.0478		
Approximate Chi Square Value (39.99, α)	26.5	Adjusted Chi Square Value (39.99, β)	26.35
95% Gamma Approximate UCL (use when n>=50)	1.247	95% Gamma Adjusted UCL (use when n<50)	1.254

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.182	SD (KM)	6.999
Variance (KM)	48.99	SE of Mean (KM)	0.723
k hat (KM)	0.0285	k star (KM)	0.034
nu hat (KM)	6.103	nu star (KM)	7.265
theta hat (KM)	41.45	theta star (KM)	34.82
80% gamma percentile (KM)	0.0281	90% gamma percentile (KM)	0.925
95% gamma percentile (KM)	5.083	99% gamma percentile (KM)	29.46

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.27, α)	2.317	Adjusted Chi Square Value (7.27, β)	2.28
95% Gamma Approximate KM-UCL (use when n>=50)	3.706	95% Gamma Adjusted KM-UCL (use when n<50)	3.767

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.882	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.197	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.828	Mean in Log Scale	-6.853
SD in Original Scale	7.072	SD in Log Scale	3.753
95% t UCL (assumes normality of ROS data)	1.962	95% Percentile Bootstrap UCL	2.187
95% BCA Bootstrap UCL	3.516	95% Bootstrap t UCL	14.13
95% H-UCL (Log ROS)	9.304		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.802	KM Geo Mean	0.448
KM SD (logged)	0.64	95% Critical H Value (KM-Log)	1.921
KM Standard Error of Mean (logged)	0.0667	95% H-UCL (KM -Log)	0.62
KM SD (logged)	0.64	95% Critical H Value (KM-Log)	1.921
KM Standard Error of Mean (logged)	0.0667		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.154	Mean in Log Scale	-1.196
SD in Original Scale	7.054	SD in Log Scale	0.952
95% t UCL (Assumes normality)	2.285	95% H-Stat UCL	0.581
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	0.62		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

alpha-Chlordane

General Statistics

Total Number of Observations	107	Number of Distinct Observations	20
		Number of Missing Observations	7
Number of Detects	10	Number of Non-Detects	97
Number of Distinct Detects	10	Number of Distinct Non-Detects	11
Minimum Detect	0.41	Minimum Non-Detect	0.38
Maximum Detect	780	Maximum Non-Detect	8
Variance Detects	60487	Percent Non-Detects	90.65%
Mean Detects	80.11	SD Detects	245.9
Median Detects	0.855	CV Detects	3.07
Skewness Detects	3.161	Kurtosis Detects	9.994
Mean of Logged Detects	0.803	SD of Logged Detects	2.307

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.375	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.509	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	7.836	KM Standard Error of Mean	7.644
KM SD	75.01	95% KM (BCA) UCL	22.41
95% KM (t) UCL	20.52	95% KM (Percentile Bootstrap) UCL	22.36
95% KM (z) UCL	20.41	95% KM Bootstrap t UCL	1746
90% KM Chebyshev UCL	30.77	95% KM Chebyshev UCL	41.15
97.5% KM Chebyshev UCL	55.57	99% KM Chebyshev UCL	83.89

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.168	Anderson-Darling GOF Test	
5% A-D Critical Value	0.853	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.385	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.294	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.205	k star (bias corrected MLE)	0.21
Theta hat (MLE)	391.2	Theta star (bias corrected MLE)	381.5
nu hat (MLE)	4.095	nu star (bias corrected)	4.2
Mean (detects)	80.11		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	7.496
Maximum	780	Median	0.01
SD	75.4	CV	10.06
k hat (MLE)	0.128	k star (bias corrected MLE)	0.131
Theta hat (MLE)	58.34	Theta star (bias corrected MLE)	57.17
nu hat (MLE)	27.5	nu star (bias corrected)	28.06
Adjusted Level of Significance (β)	0.0478		
Approximate Chi Square Value (28.06, α)	16.98	Adjusted Chi Square Value (28.06, β)	16.86
95% Gamma Approximate UCL (use when n>=50)	12.39	95% Gamma Adjusted UCL (use when n<50)	12.48

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	7.836	SD (KM)	75.01
Variance (KM)	5626	SE of Mean (KM)	7.644
k hat (KM)	0.0109	k star (KM)	0.0168
nu hat (KM)	2.336	nu star (KM)	3.604
theta hat (KM)	718	theta star (KM)	465.4
80% gamma percentile (KM)	4.66E-04	90% gamma percentile (KM)	0.508
95% gamma percentile (KM)	12.94	99% gamma percentile (KM)	221.8

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.60, α)	0.572	Adjusted Chi Square Value (3.60, β)	0.557
95% Gamma Approximate KM-UCL (use when n>=50)	49.4	95% Gamma Adjusted KM-UCL (use when n<50)	50.73

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.727	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.246	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.491	Mean in Log Scale	-8.468
SD in Original Scale	75.4	SD in Log Scale	4.833
95% t UCL (assumes normality of ROS data)	19.59	95% Percentile Bootstrap UCL	22.03
95% BCA Bootstrap UCL	29.56	95% Bootstrap t UCL	1613
95% H-UCL (Log ROS)	691.5		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.795	KM Geo Mean	0.452
KM SD (logged)	0.847	95% Critical H Value (KM-Log)	2.078
KM Standard Error of Mean (logged)	0.0868	95% H-UCL (KM -Log)	0.767
KM SD (logged)	0.847	95% Critical H Value (KM-Log)	2.078
KM Standard Error of Mean (logged)	0.0868		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.809	Mean in Log Scale	-1.176
SD in Original Scale	75.37	SD in Log Scale	1.11
95% t UCL (Assumes normality)	19.9	95% H-Stat UCL	0.734
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	0.767		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Chlordane

General Statistics			
Total Number of Observations	107	Number of Distinct Observations	15
		Number of Missing Observations	7
Number of Detects	6	Number of Non-Detects	101
Number of Distinct Detects	5	Number of Distinct Non-Detects	11
Minimum Detect	6.5	Minimum Non-Detect	3
Maximum Detect	3900	Maximum Non-Detect	64
Variance Detects	2501448	Percent Non-Detects	94.39%
Mean Detects	672.1	SD Detects	1582
Median Detects	15	CV Detects	2.353
Skewness Detects	2.448	Kurtosis Detects	5.993
Mean of Logged Detects	3.766	SD of Logged Detects	2.358

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.509	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.479	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	40.55	KM Standard Error of Mean	39.71
KM SD	374.9	95% KM (BCA) UCL	113.4
95% KM (t) UCL	106.4	95% KM (Percentile Bootstrap) UCL	113.2
95% KM (z) UCL	105.9	95% KM Bootstrap t UCL	5611
90% KM Chebyshev UCL	159.7	95% KM Chebyshev UCL	213.6
97.5% KM Chebyshev UCL	288.5	99% KM Chebyshev UCL	435.6

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.13	Anderson-Darling GOF Test	
5% A-D Critical Value	0.782	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.383	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.36	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.258	k star (bias corrected MLE)	0.24
Theta hat (MLE)	2609	Theta star (bias corrected MLE)	2801
nu hat (MLE)	3.091	nu star (bias corrected)	2.879
Mean (detects)	672.1		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	37.7
Maximum	3900	Median	0.01
SD	377	CV	10
k hat (MLE)	0.104	k star (bias corrected MLE)	0.107
Theta hat (MLE)	362.3	Theta star (bias corrected MLE)	351.1
nu hat (MLE)	22.27	nu star (bias corrected)	22.98
Adjusted Level of Significance (β)	0.0478		
Approximate Chi Square Value (22.98, α)	13.07	Adjusted Chi Square Value (22.98, β)	12.97
95% Gamma Approximate UCL (use when n>=50)	66.25	95% Gamma Adjusted UCL (use when n<50)	66.77

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	40.55	SD (KM)	374.9
Variance (KM)	140583	SE of Mean (KM)	39.71
k hat (KM)	0.0117	k star (KM)	0.0176
nu hat (KM)	2.503	nu star (KM)	3.766
theta hat (KM)	3467	theta star (KM)	2304
80% gamma percentile (KM)	0.00409	90% gamma percentile (KM)	3.302
95% gamma percentile (KM)	73.42	99% gamma percentile (KM)	1146

Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (3.77, α)	0.632	Adjusted Chi Square Value (3.77, β)	0.615
95% Gamma Approximate KM-UCL (use when n>=50)	241.8	95% Gamma Adjusted KM-UCL (use when n<50)	248.1

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.768	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.33	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	37.72	Mean in Log Scale	-8.865
SD in Original Scale	377	SD in Log Scale	5.749
95% t UCL (assumes normality of ROS data)	98.19	95% Percentile Bootstrap UCL	110.4
95% BCA Bootstrap UCL	184.1	95% Bootstrap t UCL	5806
95% H-UCL (Log ROS)	225313		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.253	KM Geo Mean	3.501
KM SD (logged)	0.801	95% Critical H Value (KM-Log)	2.04
KM Standard Error of Mean (logged)	0.0853	95% H-UCL (KM -Log)	5.657
KM SD (logged)	0.801	95% Critical H Value (KM-Log)	2.04
KM Standard Error of Mean (logged)	0.0853		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.033	Mean in Log Scale	0.869
SD in Original Scale	37.68	SD in Log Scale	1.068
95% t UCL (Assumes normality)	10.08	95% H-Stat UCL	5.344

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	21.36

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

delta-BHC

General Statistics

Total Number of Observations	107	Number of Distinct Observations	14
		Number of Missing Observations	7
Number of Detects	1	Number of Non-Detects	106
Number of Distinct Detects	1	Number of Distinct Non-Detects	13

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable F was not processed!

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Dieldrin

General Statistics

Total Number of Observations	107	Number of Distinct Observations	13
		Number of Missing Observations	7
Number of Detects	1	Number of Non-Detects	106
Number of Distinct Detects	1	Number of Distinct Non-Detects	12

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable G was not processed!

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

gamma-Chlordane

General Statistics

Total Number of Observations	107	Number of Distinct Observations	19
		Number of Missing Observations	7
Number of Detects	7	Number of Non-Detects	100
Number of Distinct Detects	7	Number of Distinct Non-Detects	12
Minimum Detect	0.93	Minimum Non-Detect	0.43
Maximum Detect	940	Maximum Non-Detect	9.2
Variance Detects	125447	Percent Non-Detects	93.46%
Mean Detects	136.8	SD Detects	354.2
Median Detects	1.9	CV Detects	2.589
Skewness Detects	2.645	Kurtosis Detects	6.999
Mean of Logged Detects	1.63	SD of Logged Detects	2.422

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.459	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.499	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.304	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	9.358	KM Standard Error of Mean	9.439
KM SD	90.4	95% KM (BCA) UCL	26.92
95% KM (t) UCL	25.02	95% KM (Percentile Bootstrap) UCL	26.88
95% KM (z) UCL	24.88	95% KM Bootstrap t UCL	1936
90% KM Chebyshev UCL	37.68	95% KM Chebyshev UCL	50.5
97.5% KM Chebyshev UCL	68.31	99% KM Chebyshev UCL	103.3

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.478	Anderson-Darling GOF Test	
5% A-D Critical Value	0.815	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.434	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.341	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.22	k star (bias corrected MLE)	0.221
Theta hat (MLE)	620.7	Theta star (bias corrected MLE)	618.5
nu hat (MLE)	3.086	nu star (bias corrected)	3.097
Mean (detects)	136.8		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	8.959
Maximum	940	Median	0.01
SD	90.86	CV	10.14
k hat (MLE)	0.124	k star (bias corrected MLE)	0.126
Theta hat (MLE)	72.48	Theta star (bias corrected MLE)	70.9
nu hat (MLE)	26.45	nu star (bias corrected)	27.04
Adjusted Level of Significance (β)	0.0478		
Approximate Chi Square Value (27.04, α)	16.19	Adjusted Chi Square Value (27.04, β)	16.07
95% Gamma Approximate UCL (use when n>=50)	14.97	95% Gamma Adjusted UCL (use when n<50)	15.08

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	9.358	SD (KM)	90.4
Variance (KM)	8171	SE of Mean (KM)	9.439
k hat (KM)	0.0107	k star (KM)	0.0166
nu hat (KM)	2.293	nu star (KM)	3.562
theta hat (KM)	873.2	theta star (KM)	562.1
80% gamma percentile (KM)	4.82E-04	90% gamma percentile (KM)	0.571
95% gamma percentile (KM)	15.07	99% gamma percentile (KM)	265

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.56, α)	0.557	Adjusted Chi Square Value (3.56, β)	0.542
95% Gamma Approximate KM-UCL (use when n>=50)	59.86	95% Gamma Adjusted KM-UCL (use when n<50)	61.49

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.726	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.276	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	8.955	Mean in Log Scale	-9.932
SD in Original Scale	90.86	SD in Log Scale	5.427
95% t UCL (assumes normality of ROS data)	23.53	95% Percentile Bootstrap UCL	26.5
95% BCA Bootstrap UCL	44.09	95% Bootstrap t UCL	2047
95% H-UCL (Log ROS)	7819		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.676	KM Geo Mean	0.509
KM SD (logged)	0.842	95% Critical H Value (KM-Log)	2.074
KM Standard Error of Mean (logged)	0.0885	95% H-UCL (KM -Log)	0.859
KM SD (logged)	0.842	95% Critical H Value (KM-Log)	2.074
KM Standard Error of Mean (logged)	0.0885		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.325	Mean in Log Scale	-1.064
SD in Original Scale	90.83	SD in Log Scale	1.105
95% t UCL (Assumes normality)	23.89	95% H-Stat UCL	0.813

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	0.859

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Heptachlor epoxide

General Statistics

Total Number of Observations	107	Number of Distinct Observations	10
		Number of Missing Observations	7
Number of Detects	1	Number of Non-Detects	106
Number of Distinct Detects	1	Number of Distinct Non-Detects	9

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable I was not processed!

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Methoxychlor

General Statistics

Total Number of Observations	107	Number of Distinct Observations	14
		Number of Missing Observations	7
Number of Detects	1	Number of Non-Detects	106
Number of Distinct Detects	1	Number of Distinct Non-Detects	13

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable J was not processed!

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

PCB-1254 (Aroclor 1254)

General Statistics

Total Number of Observations	114	Number of Distinct Observations	11
Number of Detects	3	Number of Non-Detects	111
Number of Distinct Detects	3	Number of Distinct Non-Detects	8
Minimum Detect	32	Minimum Non-Detect	22
Maximum Detect	590	Maximum Non-Detect	470
Variance Detects	98841	Percent Non-Detects	97.37%
Mean Detects	227.3	SD Detects	314.4
Median Detects	60	CV Detects	1.383
Skewness Detects	1.717	Kurtosis Detects	N/A
Mean of Logged Detects	4.647	SD of Logged Detects	1.534

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.788	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.369	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	27.43	KM Standard Error of Mean	6.087
KM SD	53.06	95% KM (BCA) UCL	N/A
95% KM (t) UCL	37.52	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	37.44	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	45.69	95% KM Chebyshev UCL	53.96
97.5% KM Chebyshev UCL	65.44	99% KM Chebyshev UCL	87.99

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	0.766	k star (bias corrected MLE)	N/A
Theta hat (MLE)	296.9	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	4.594	nu star (bias corrected)	N/A
Mean (detects)	227.3		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	5.992
Maximum	590	Median	0.01
SD	55.54	CV	9.27
k hat (MLE)	0.128	k star (bias corrected MLE)	0.13
Theta hat (MLE)	46.89	Theta star (bias corrected MLE)	45.99
nu hat (MLE)	29.14	nu star (bias corrected)	29.7
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (29.70, α)	18.26	Adjusted Chi Square Value (29.70, β)	18.15
95% Gamma Approximate UCL (use when n>=50)	9.747	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	27.43	SD (KM)	53.06
Variance (KM)	2815	SE of Mean (KM)	6.087
k hat (KM)	0.267	k star (KM)	0.266
nu hat (KM)	60.93	nu star (KM)	60.66
theta hat (KM)	102.6	theta star (KM)	103.1
80% gamma percentile (KM)	40.67	90% gamma percentile (KM)	81.92
95% gamma percentile (KM)	130.3	99% gamma percentile (KM)	258

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (60.66, α)	43.75	Adjusted Chi Square Value (60.66, β)	43.57
95% Gamma Approximate KM-UCL (use when n>=50)	38.03	95% Gamma Adjusted KM-UCL (use when n<50)	38.19

Lognormal GOF Test on Detected Observations Only

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Shapiro Wilk Test Statistic	0.903	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.307	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	6.164	Mean in Log Scale	-6.636
SD in Original Scale	55.53	SD in Log Scale	4.58
95% t UCL (assumes normality of ROS data)	14.79	95% Percentile Bootstrap UCL	16.42
95% BCA Bootstrap UCL	23.49	95% Bootstrap t UCL	112.2
95% H-UCL (Log ROS)	870.8		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	3.133	KM Geo Mean	22.93
KM SD (logged)	0.322	95% Critical H Value (KM-Log)	1.746
KM Standard Error of Mean (logged)	0.0371	95% H-UCL (KM -Log)	25.47
KM SD (logged)	0.322	95% Critical H Value (KM-Log)	1.746
KM Standard Error of Mean (logged)	0.0371		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	24.08	Mean in Log Scale	2.622
SD in Original Scale	63.34	SD in Log Scale	0.675
95% t UCL (Assumes normality)	33.92	95% H-Stat UCL	19.56
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use
95% KM (t) UCL 37.52

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

PCB-1260 (Aroclor 1260)

General Statistics

Total Number of Observations	114	Number of Distinct Observations	15
Number of Detects	10	Number of Non-Detects	104
Number of Distinct Detects	8	Number of Distinct Non-Detects	7
Minimum Detect	24	Minimum Non-Detect	21
Maximum Detect	8000	Maximum Non-Detect	450
Variance Detects	6277719	Percent Non-Detects	91.23%
Mean Detects	877.2	SD Detects	2506
Median Detects	42	CV Detects	2.856
Skewness Detects	3.149	Kurtosis Detects	9.937
Mean of Logged Detects	4.482	SD of Logged Detects	1.77

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.393	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.472	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	96.21	KM Standard Error of Mean	73.5
KM SD	744.5	95% KM (BCA) UCL	238.8
95% KM (t) UCL	218.1	95% KM (Percentile Bootstrap) UCL	235.2
95% KM (z) UCL	217.1	95% KM Bootstrap t UCL	7371
90% KM Chebyshev UCL	316.7	95% KM Chebyshev UCL	416.6
97.5% KM Chebyshev UCL	555.2	99% KM Chebyshev UCL	827.5

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.274	Anderson-Darling GOF Test	
5% A-D Critical Value	0.814	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.415	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.288	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.3	k star (bias corrected MLE)	0.277
Theta hat (MLE)	2920	Theta star (bias corrected MLE)	3167
nu hat (MLE)	6.008	nu star (bias corrected)	5.539
Mean (detects)	877.2		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	76.96
Maximum	8000	Median	0.01
SD	749.7	CV	9.742
k hat (MLE)	0.0997	k star (bias corrected MLE)	0.103
Theta hat (MLE)	772.1	Theta star (bias corrected MLE)	747.9
nu hat (MLE)	22.73	nu star (bias corrected)	23.46
Adjusted Level of Significance (β)	0.0479		
Approximate Chi Square Value (23.46, α)	13.44	Adjusted Chi Square Value (23.46, β)	13.34
95% Gamma Approximate UCL (use when n>=50)	134.3	95% Gamma Adjusted UCL (use when n<50)	135.3

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	96.21	SD (KM)	744.5
Variance (KM)	554273	SE of Mean (KM)	73.5
k hat (KM)	0.0167	k star (KM)	0.0221
nu hat (KM)	3.808	nu star (KM)	5.041
theta hat (KM)	5761	theta star (KM)	4352
80% gamma percentile (KM)	0.103	90% gamma percentile (KM)	21.29
95% gamma percentile (KM)	258.9	99% gamma percentile (KM)	2652

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.04, α)	1.171	Adjusted Chi Square Value (5.04, β)	1.148
95% Gamma Approximate KM-UCL (use when n>=50)	414.1	95% Gamma Adjusted KM-UCL (use when n<50)	422.5

Lognormal GOF Test on Detected Observations Only

Table B1d - ProUCL Output Files - OCPs PCBs 0 -10 feet bgs

Shapiro Wilk Test Statistic	0.664	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.353	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	77.43	Mean in Log Scale	-3.189
SD in Original Scale	749.7	SD in Log Scale	4.038
95% t UCL (assumes normality of ROS data)	193.9	95% Percentile Bootstrap UCL	217.2
95% BCA Bootstrap UCL	294.3	95% Bootstrap t UCL	5005
95% H-UCL (Log ROS)	1408		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	3.173	KM Geo Mean	23.88
KM SD (logged)	0.644	95% Critical H Value (KM-Log)	1.928
KM Standard Error of Mean (logged)	0.0638	95% H-UCL (KM -Log)	33.02
KM SD (logged)	0.644	95% Critical H Value (KM-Log)	1.928
KM Standard Error of Mean (logged)	0.0638		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	91.8	Mean in Log Scale	2.675
SD in Original Scale	748.7	SD in Log Scale	0.892
95% t UCL (Assumes normality)	208.1	95% H-Stat UCL	25.8
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (Chebyshev) UCL 416.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

APPENDIX C
Particulate Action Levels

APPENDIX C

This Appendix describes the methods to estimate action levels for respirable particulate matter, particles 10 microns (PM10) or chemical of potential concern (COPC) adhered dust, that may be present in air along the perimeter of the Site during work hours. The Action Levels are intended to reduce the possibility of adverse health impacts to nearby off-site receptors and were developed using risk-based procedures that are consistent with Environmental Protection Agency (EPA) guidelines to protect human health for intermediate exposures [EPA, 1989]. Procedures will be in place to monitor for the presence of respirable particulate matter along the perimeter of the project Site and samples will be collected to compare concentrations to Action Levels. Appropriate corrective measures will be implemented if the action levels are exceeded.

Particulate Action Level (PM_{10})

Airborne particles can be classified by their particle diameter and health effects. Large particles typically settle out of the air rapidly and pose a limited health risk, but small particles may remain in the air for longer time periods and can penetrate deeply into the human respiratory system where they can cause harmful health effects. Particles 10 microns or smaller in diameter (PM10) and particles 2.5 microns or smaller in diameter ($PM_{2.5}$) (i.e., respirable particles) pose the greatest health risk because they can penetrate deeply into the human respiratory system.

There are two forms of PM standards – annual and 24-hour. The annual standard is designed to cap individuals' total PM exposure; the 24-hour standard is designed to protect individuals' peak PM exposure.

National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standard (CAAQS) are designed to protect the general public from airborne particulates generated in the urban, suburban and rural environments. The current 24-hour standards are:

- National Ambient Air Quality Standard (NAAQS):
    - PM_{10} - 150 micrograms per cubic meter ($\mu g/m^3$) average per 24-hour day (not to be exceeded more than once per year on average over 3 years); and
    - $PM_{2.5}$ - 35 $\mu g/m^3$ average per 24-hour day (98th percentile, averaged over 3 years).
- California Ambient Air Quality Standard (CAAQS):
    - PM_{10} - 50 $\mu g/m^3$ average per 24-hour day; and
    - $PM_{2.5}$ - NA (currently, California has no 24-hour $PM_{2.5}$ standard.).

The recommended action level for respirable dust (PM_{10}), which will trigger a modification in the activity or an increase in dust suppression efforts, is based on the CAAQS of 50 $\mu g/m^3$.

Available data from Bay Area air monitoring stations indicate that annual average regional background PM_{10} concentrations are approximately 20 $\mu g/m^3$ or less [Bay Area Air Quality

Management District (BAAQMD), 2011]. For this evaluation, a concentration of 20 µg/m^3 is a reasonable estimation of average background PM_{10} concentrations at the Site.

Considering background concentrations, average PM10 concentrations up to 0.11 mg/m^3 for an 8-hour workday would likely result in the achievement of the 0.05 mg/m^3 24-hour TWA (50 µg/m^3) standard at the Site perimeter. The calculated value of 0.11 mg/m^3 for an 8-hour work shift (see Equation 1) assumes that the PM10 concentration is 0.02 mg/m^3 (20 µg/m^3) for 16 hours of the non-work day, resulting in a calculated hypothetical 24-hour TWA PM10 concentration of 0.05 mg/m^3. Therefore, the selected 8-hour TWA airborne Action Level for PM10 dust is 0.11 mg/m^3 (**Table C-1**).

Equation 1: Calculation of 8-hour TWA PM10 for an 8-hour Shift

$$PM10_{8-hour-TWA} = \frac{24 * PM10_{24-hour-TWA} - 16 * PM10_{background}}{8}$$

Where:

$PM10_{8\text{-hour-TWA}}$ = 8-hour TWA PM10 for an 8-hour shift [mg/m^3]
$PM10_{24\text{-hour-TWA}}$ = 24-hour TWA PM10 [0.05 mg/m^3]
$PM10_{background}$ = Background PM10 [0.02 mg/m^3]

In the event of high wind days or if the upwind 8-hour PM10 average concentration is greater than 0.11 mg/m^3, the measured upwind concentration will be subtracted from the measured downwind concentration to determine the net ground level (NGL) concentration. The NGL will be compared with the project PM10 action level (0.11 mg/m^3).

COPCs Action Levels in Dust from Soil

For risk-driving COPCs identified in soil from the Site (arsenic, lead, mercury, naphthalene, carcinogenic polyaromatic hydrocarbons [cPAHs], total petroleum hydrocarbons as diesel [TPHd], and polychlorinated biphenyl [PCB-1260], the more stringent of the calculated risk-based airborne Action Levels based on carcinogenic and noncarcinogenic endpoints for off-site receptors, using EPA (2019) and DTSC (2019a) guidance, are selected as the COPC airborne Action Levels. These estimated Action Levels assume direct inhalation and is conservative they do not consider the potential for dilution from chemicals in air between the Site perimeter and off-Site locations.

Available chronic reference exposure levels (REL) for non-carcinogenic hazards, inhalation unit risk (IUR) factors for carcinogenic risk, and exposure parameters are discussed below. The toxicity values were obtained from guidance documents published by the DTSC (HERO Note 10; DTSC 2019b) and the EPA RSLs (EPA, 2019). Short-term (8-hour) RELs published by the California Office of Environmental Health Hazard Assessment (OEHHA; 2019) were used as available (i.e., for arsenic and mercury).

Exposure parameters used to calculate action levels in air were selected based on available DTSC and EPA guidance or on professional judgment for work day exposures (**Table C-2)**.

- Exposure Frequency – The assumed exposure frequency (EF) for the potential off-Site receptors is 60 days/year (i.e., 3 months; 12 weeks; 5 days/week).

- Exposure Time – For the inhalation exposure pathway, a key parameter is the assumed exposure time (ET), expressed as hours per day (hrs/day). The ET indicates the amount of time a member of the hypothetical population may spend each day in an area where airborne COPCs occur in ambient air. The ET is assumed to be 8 hours/day.

- Averaging Time and Exposure Duration – For estimating the chronic daily intake for non-carcinogenic adverse health effects, the averaging time (AT) is assumed to be equal to the exposure duration (ED) in units of days. For this analysis, the assumed time is 60 days/year (3 months, 12 weeks, 5 days/week). The AT and ED are 60 days and 0.23 years, respectively. For estimating carcinogenic risk, averaging time is assumed to be a lifetime of 70 years (EPA, 1989).

Non-Carcinogenic Risk-Based Airborne Exposure Level

The non-carcinogenic risk-based airborne Action Level was calculated using Equation 2 below (EPA, 2009) and a Target Hazard Index (THI) of one (1) (**Table C-2**). The THI is the non-carcinogenic hazard of an individual airborne COPC through a particular exposure pathway, and a total THI less than or equal to one (1) represents an exposure that is unlikely to cause adverse non- carcinogenic health effects, even for sensitive populations (EPA, 1989). In Equation 2, "respirable chemical" is the amount of non-volatile chemical associated with the PM10 fraction of airborne dust:

Equation 2: Respirable Dust Action level for Non-Carcinogenic Airborne COCs

$$AL = \frac{THI * AT_{nc} * (REL\ or\ RfC)}{EF * ED * ET * \left(\frac{1day}{24hours}\right)}$$

Where:

AL = Action Level – respirable chemical concentration in Site ambient air that is unlikely to cause adverse non- carcinogenic health effects [mg/m^3];
THI = Target Hazard Index – target non-carcinogenic hazard of 1 [dimensionless];
AT_{nc} = Averaging time (ED * 365 days/year) [days];
REL = Reference exposure level [µg/m^3]
RfC = Reference concentration [µg/m^3]
EF = Assumed exposure frequency [days/yr]
ED = Assumed exposure duration [yr]
ET = Exposure time [hrs/day]

Carcinogenic Risk-Based Airborne Exposure Level

The carcinogenic risk-based airborne Action Levels for carcinogenic COPCs were calculated using Equation 2 below and a lifetime incremental cancer risk of one-in-one million (1×10^{-6}) (**Table C-2**). An incremental cancer risk of 1×10^{-6} is the lower bound of the incremental cancer risk range of 1×10^{-6} to one in ten thousand (1×10^{-4}) that the EPA defines as "safe and protective" of human health (EPA, 1991). In Equation 2, "respirable chemical" is the amount of non-volatile chemicals associated with the PM10 fraction of airborne dust.

Equation 2: Respirable Dust Action Level for Carcinogenic Airborne COCs

$$AL = \frac{TR * AT_c}{EF * EDc * ET * IUR * \left(\frac{1day}{24hours}\right)}$$

Where:

AL = Action Level – respirable chemical concentration in site ambient air that is unlikely to cause adverse carcinogenic health effects (mg/m^3)
TR = Target lifetime incremental cancer risk of 10^{-6} (dimensionless)
AT_c = Averaging time (70 years * 365 days/year) (days)
EF = Assumed exposure frequency (days/year)
ED = Assumed exposure duration (year)
ET = Exposure time (hours/day)
IUR = Inhalation unit risk ($[\mu g/m^3]^{-1}$)

COPC Airborne Action Level

Concentrations of risk-driving COPCs in dust were calculated using Equation 3 to evaluate whether the 8-hour TWA airborne Action Level for PM10 dust of 0.11 mg/m^3 would be protective of off-site populations.

Equation 3: Respirable Dust Action Level for Identified Airborne COCs

$$D = \frac{AL}{COC_{max}\ or\ COC_{95UCL} * 10^{-6} kg/mg}$$

Where:

D = maximum hypothetical concentration of PM10 Dust [mg/m^3]
AL = airborne Action Level [mg/m^3]
$COPC_{95UCL}$ = estimated 95% UCL of the mean in soil samples from the site [mg/kg]

As indicated in **Table C-2**, the risk-driving COPC with the lowest dust action level is arsenic. Based on the 95% UCL for arsenic (101.6 mg/kg), the calculated action levels for respirable arsenic are 2.9 mg/m^3 and 0.15 mg/m^3 for carcinogenic and non-carcinogenic 8-hr TWA, respectively (**Table C-2)**. Both calculated action levels for respirable arsenic are less stringent than the 8-hour workday TWA of 0.11 mg/m^3 for PM10; therefore, the project respirable action of level of 0.11 mg/m^3 (110 µg/m^3) for PM10 can be used to limit concentrations of non-volatile risk-based COPCs as well as PM10. Maintaining respirable particulates below 0.11 mg/m^3 will ensure that both PM10 emissions and risk-based COPC dust particulates from the project will not reasonably cause the 24-hour TWA for PM10 or the risk-based concentrations to be exceeded.

References

Bay Area Air Quality Management District, "*Trends in Bay Area Ambient Particulates,*" BAAQMD, November 2011.

DTSC, 2019a. Human Health Risk Assessment Note 3, DTSC-Modified Screening Levels, April.

DTSC, 2019b. Human Health Risk Assessment Note 10 – Toxicity Criteria, February.

United States Environmental Protection Agency (EPA), "*Risk Assessment Guidance for Superfund,*" Vol. 1: Human Health Evaluation Manual (Part A), Interim Final, EPA/540/1-89/002," December 1989.

United States Environmental Protection Agency, "*Regional Screening Levels,*" May 2019.

TABLE C-1
COMPARISON OF AIRBORNE ACTION LEVELS FOR PM10 AND OTHER COPCs
UPC OU-SM
Brisbane, California

Airborne Dust	CAAQS or NAAQS Regulatory Level[a] (mg/m^3)	Selected Airborne Action Level	
		Concentration (mg/m^3)	Time Period
Dust			
PM10 Dust[c]	0.05 (24-hour avg)	0.11	8-hour avg
Risk-Driving COPCs			
Arsenic	NA	0.15	8-hour avg
Lead	1.5	2.19	8-hour avg
Carcinogenic PAHs and other COPCs	NA	68.4	8-hour avg

Abbreviations:

avg = average

BAAQMD = Bay Area Air Quality Management District

CAAQS = California Ambient Air Quality Standards

NA = Not Available

Notes:

[a] The CAAQS and NAAQS are referenced in California Code of Regulations, Title 17, Section 70200 and in Title 40, Part 50 of the Code of Federal Regulations, respectively.

[b] To account for short-term variations in dust emissions, a 5-minute TWA of 1 mg/m^3, which approximately corresponds to the of visible dust, will serve as stop work Target Level. If this Target Level is exceeded at air monitoring stations during excavation activities, work will be temporarily stopped to reassess Site activities and dust suppression efforts. Additionally, a PM10 cconcentration of approximately two times the PM10 Action Level estimated as a 5-minute TWA during hourly inspections of air monitors will result in an increase in dust suppression efforts.

[c] The respirable dust (PM10) Action Level is established from the CAAQS for PM10, which is a 24-hour TWA, and is calculated for an 8-hour TWA during the workday by using average ambient background concentrations during non-workday hours.

TABLE C-2
ACTION LEVELS FOR RISK-DRIVING COCs[1]
UPC OU-SM
Brisbane, California

Risk-Driving Constituents of Concern (COC)	Soil Concentration[2] (mg/kg)	Toxicity Value	Toxicity Value (units)	Source of Toxicity Value	Risk-Based Airborne Action Level or REL [1] ($\mu g/m^3$)	Source[(a)]	Dust Action Level[3] (mg/m^3)
Arsenic (noncancer)	101.6	1.5E-02	($\mu g/m^3$)	OEHHA	0.02	calculated	0.15
Arsenic (cancer)	101.6	4.3E-03	$(\mu g/m^3)^{-1}$	IRIS	0.30	calculated	2.92
Lead	685.6	NA			1.5	CAAQS	2.19
Mercury	3.6	3.0E-02	($\mu g/m^3$)	OEHHA	0.06	calculated	16.8
Naphthalene (noncancer)	6.7	3.0E+00	($\mu g/m^3$)	IRIS	164.25	calculated	24442.0
Naphthalene (cancer)	6.7	3.4E-05	$(\mu g/m^3)^{-1}$	OEHHA	37.57	calculated	5591.3
PAHs (noncancer)	1.6	2.0E-03	($\mu g/m^3$)	IRIS	0.11	calculated	68.4
PAHs (cancer)	1.6	1.1E-03	$(\mu g/m^3)^{-1}$	OEHHA	1.16	calculated	725.9
TPHd	665.8	2.6E+02	($\mu g/m^3$)	OEHHA	14235.00	calculated	21380.3
PCB-1260	1.1	5.7E-04	$(\mu g/m^3)^{-1}$	OEHHA	2.24	calculated	2094.6

Notes and Abbreviations:

mg/kg - milligrams per kilogram

$\mu g/m^3$ - micrograms per meter cubed

mg/m^3 - milligrams per meter cubed

IRIS = Integrated Risk Information System

OEHHA = Office of Environmental Health Hazard Assessment Reference Exposure Levels

NA = Not Available

[1] Risk-based concentrations calculated based on a target hazard index and carcinogenic risk using the toxicity values and exposure parameters presented below.

[2] The 95 percent upper confidence limit of the mean is presented.

[3] Respirable dust action levels for individual chemical compounds were calculated using the following equation:

Dust action level = $(RBC_{air} / 1000\ \mu g/mg) / (C_{soil} \times 10^{-6}\ kg/mg)$

Exposure Parameter	Symbol	Value	Units	Notes
Target Hazard Index	THI	1	unitless	Default point of departure
Target Cancer Risk	TR	1E-06	unitless	Default point of departure
Averaging Time noncancer	ATnc	60	days	acute total duration - (3 months; 12 weeks, 5 days/week)
Averaging Time carcinogenic	ATc	25,550	days	Default - lifetime exposure
Exposure Frequency	EF	60	days/year	acute total duration - (3 months; 12 weeks, 5 days/week)
Exposure Duration - noncancer	EDnc	0.164	year	acute duration - 12 weeks / 52 weeks
Exposure Duration - carcinogen	EDc	1	year	chronic - conservative 1-year duration
Exposure Time	ET	0.33	hrs/day	8 hour work day over 24 hours
Conversion Factor	CF	1.00	day/hr	Conversion factor

APPENDIX D
Trench Model

APPENDIX D

For a hypothetical future construction worker, inhalation of volatiles in ambient air within a trench is potentially complete. Therefore, transport of volatile organic compounds (VOCs) detected in soil vapor to outdoor air in a trench was evaluated using a modified version of the Virginia Department of Environmental Quality (VDEQ) model (VDEQ, 2019). This transport process is characterized by a "volatilization factor" (VF), which is defined as the volatile chemical concentration in outdoor air in a trench ($C_{OA,\ trench}$) divided by the volatile chemical concentration in soil vapor (C_{SV}). Thus, the concentration of a VOC in outdoor air in a trench can be expressed as a function of the chemical concentration in soil vapor and the VF:

$$C_{OA\ trench} = C_{SV} \times VF_{trench}$$

Where:

$C_{OA\ trench}$	=	chemical concentration in outdoor air in a trench (mg/m^3);
C_{SV}	=	chemical concentration in soil vapor (mg/m^3); and
VF_{trench}	=	volatilization factor from soil vapor into outdoor air in a trench (unitless).

Chemical-specific trench VFs were developed as described below and are applied to the results of soil vapor. The estimated 95% UCLs and maximum concentrations of each detected VOC in soil vapor were used to estimate trench air exposure point concentrations.

Trench Model

The VDEQ published a model which predicts exposure of workers to volatile chemicals in construction and utility trenches (VDEQ, 2019). The model includes two different approaches for estimating volatilization of a contaminant from groundwater to a trench: one based on groundwater pooling in the trench, and the other based on chemical transport through the vadose zone. The soil vapor VF is based on a modification of the VDEQ model for chemical transport through the vadose zone. A box model is then used to estimate dilution within the trench. The VDEQ model does not account for potential transport of chemicals through the sidewalls of a trench. To account for chemical transport through the sidewalls as well as the bottom of the trench, the area of the trench (A) (which represents the area of the bottom of the trench in the VDEQ model) was modified to include the total area of the four sides and the bottom of the trench.

Trench air concentrations based on a groundwater source below the bottom of the trench are estimated by the VDEQ (2019) model as follows:

$$C_{trench} = C_{GW} \times VF$$

$$VF = \frac{H \times Dair \times Pa^{3.33} \times A \times F \times 10^{-3} \times 10^{4} \times 3600}{R \times T \times Ld \times ACH \times V \times Pt^{2}}$$

Where:

C_{trench}	=	chemical concentration in outdoor air in a trench ($\mu g/m^3$)
C_{GW}	=	chemical concentration in groundwater (micrograms per liter [µg/L])
VF	=	volatilization factor (liters per cubic meter [L/m^3])
H	=	Henry's law constant (atmosphere-cubic meter per mole [$atm\text{-}m^3/mol$])
D_{air}	=	diffusion coefficient in air (cm^2/sec)
Pa	=	air-filled porosity (unitless)
A	=	area of trench (m^2)
F	=	fraction of floor through which chemical can enter (unitless)
R	=	gas constant ($8.2x10^{-5}$ atmosphere-cubic meter per Kelvin [$atm\text{-}m^3/mol\text{-}K$)
T	=	average temperature (kelvin [K])
Ld	=	distance between trench bottom and soil vapor source (cm)
ACH	=	air exchanges per hour (hr^{-1})
V	=	volume of trench (m^3)
Pt	=	total soil porosity (unitless)
10^{-3}	=	conversion factor (liter per cubic centimeter [L/cm^3])
10^4	=	conversion factor (square centimeter per square meter [cm^2/m^2])
3600	-	conversion factor (seconds per hour [sec/hr])

Combining the above equations provides the following:

$$C_{trench} = C_{GW} \times \frac{H \times Dair \times Pa^{3.33} \times A \times F \times 10^{-3} \times 10^{4} \times 3600}{R \times T \times Ld \times ACH \times V \times Pt^{2}}$$

Soil vapor concentrations can be estimated from groundwater concentrations using the following equation (DTSC, 2011):

$$C_{SV} = H' \times C_{GW}$$

$$H' = H / R \times T$$

Where:

Csv	=	chemical concentration in soil vapor ($\mu g/m^3$)
H'	=	dimensionless Henry's Constant (unitless)

Rearranging the equations above to solve for groundwater concentrations (C_{GW}):

$$C_{GW} = Csv \times (R \times T) / H$$

Substituting C_{GW} into the VDEQ model provides the following:

$$C_{trench} = C_{SV} \times [(R \times T) / H] \times \frac{H \times Dair \times Pa^{3.33} \times A \times F \times 10^{-3} \times 10^4 \times 3600}{R \times T \times Ld \times ACH \times V \times Pt^2}$$

Finally, the above equation can be simplified to the following equations to estimate the concentrations in trench air from soil vapor.

$$C_{trench} = C_{SV} \times \frac{Dair \times Pa^{3.33} \times A \times F \times 10^4 \times 3600}{Ld \times ACH \times V \times Pt^2 \times 10^6}$$

$$C_{trench} = C_{SV} \times VF_{trench}$$

$$VF_{trench} = \frac{Dair \times Pa^{3.33} \times A \times F \times 10^4 \times 3600}{Ld \times ACH \times V \times Pt^2 \times 10^6}$$

Where:

VF_{trench}	=	volatilization factor from soil vapor into outdoor air in a trench (unitless)
Ld	=	distance between trench bottom and soil vapor (cm)
10^4	=	conversion factor (cm^2/m^2)
3600	=	conversion factor (sec/hr)
10^6	=	conversion factor (cubic centimeter per cubic meter [cm^3/m^3])

Model Input Parameters

A summary of the model input parameters for the trench is presented in Table C1. In the absence of any site-specific information regarding trench dimensions for a hypothetical future construction worker, it is assumed that on average, trench dimensions are: 12 feet in length, 4 feet wide, and 10 feet deep, which is consistent with the depth of soil used for direct exposures. The fraction of the trench floor and sides through which chemicals can enter (F) was conservatively assumed to be 1, indicating the entire base of the trench and sides of the trench are within the contaminated zone and exposed. An air exchange rate of 2 air exchanges (ACH) per hour was used (VDEQ, 2019). Finally, default U.S. EPA soil property values was used for air-filled porosity (0.28) and total porosity (0.43) in the vadose zone.

For the distance between the trench sides/bottom and the soil vapor source (L_d), a L_d value of 0.5 cm was selected as a reasonable distance between the sides/bottom of the trench and the vapor source. Default chemical-specific physicochemical properties were used in calculating the VFs for the COPCs in soil vapor.

Table C1 presents the VF_{trench} values estimated for COPCs in soil vapor. Table 13 present the chemical concentrations in outdoor air in a trench for soil vapor COPCs.

References

Department of Toxic Substances Control. 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air. Final. October.

Virginia Department of Environmental Quality. 2019. Voluntary Remediation Program Risk Assessment Guidance.

TABLE D1
SUMMARY OF TRENCH MODEL[1] INPUTS AND VOLATILIZATION FACTORS
UPC OU SM
Brisbane, California

Parameter	Symbol	Value	Units	Reference
Fraction of floor through which chemical can enter	F	1	unitless	VDEQ default, (VDEQ, 2019)
Length of trench	L	12	feet	reasonable assumption
Width of trench	W	4	feet	reasonable assumption
Depth of Trench	D	10	feet	reasonable assumption
Area of side walls and floor of trench	A	34.19	m^2	calculated; 4 walls and floor
Volume of trench	V	13.59	m^3	calculated; height x width x depth
Air exchange	ACH	2	1/hour	VDEQ default, (VDEQ, 2019)
Distance between trench sides/bottom and soil vapor source	L_d	15.24	cm	0.5 foot - reasonable assumption
Volumetric air content in vadose zone	θ_A	0.28	cm^3/cm^3	U.S. EPA default values (RSLs, 2019)
Total porosity in vadose zone	θ_T	0.43	cm^3/cm^3	U.S. EPA default values (RSLs, 2019)

Notes and Abbreviations::
[1] Virginia Department of Environmental Quality (VDEQ). 2019. Voluntary Remediation Program - Risk Assessment Guidance

VOCs	CAS Number	Diffusivity in Air Dia (cm^2/s)	Volatilization Factor VF_{trench} (unitless)
Tetrachloroethylene	127-18-4	5.0E-02	1.2E-02
Trichloroethylene	79-01-6	6.9E-02	1.6E-02
cis-1,2-Dichloroethene	156-59-2	8.8E-02	2.0E-02
trans-1,2-Dichloroethene	156-60-5	8.8E-02	2.0E-02
Vinyl Chloride	75-01-4	1.1E-01	2.5E-02
1,1-Dichloroethene	75-35-4	8.6E-02	2.0E-02
Freon 12	75-71-8	7.6E-02	1.8E-02
Freon 114	76-14-2	3.8E-02	8.8E-03
Chloromethane	74-87-3	1.2E-01	2.8E-02
Bromomethane	74-83-9	1.0E-01	2.3E-02
Chloroethane	75-00-3	1.0E-01	2.3E-02
Trichlorofluoromethane	75-69-4	6.5E-02	1.5E-02
Freon 113	76-13-1	3.8E-02	8.8E-03
Acetone	67-64-1	1.1E-01	2.5E-02
Carbon Disulfide	75-15-0	1.1E-01	2.5E-02
Methylene Chloride	75-09-2	1.0E-01	2.3E-02
1,1-Dichloroethane	75-34-3	8.4E-02	1.9E-02
2-Butanone	78-93-3	9.1E-02	2.1E-02
Chloroform	67-66-3	7.7E-02	1.8E-02
1,1,1-Trichloroethane	71-55-6	6.5E-02	1.5E-02
Benzene	71-43-2	9.0E-02	2.1E-02
4-Methyl-2-Pentanone	108-10-1	7.0E-02	1.6E-02
Toluene	108-88-3	7.8E-02	1.8E-02
2-Hexanone	591-78-6	7.0E-02	1.6E-02
1,2-Dibromoethane	106-93-4	4.3E-02	1.0E-02
Chlorobenzene	108-90-7	7.2E-02	1.7E-02
Ethylbenzene	100-41-4	6.8E-02	1.6E-02
m,p-Xylene	108-38-3	6.9E-02	1.6E-02
o-Xylene	95-47-6	6.9E-02	1.6E-02
Styrene	100-42-5	7.1E-02	1.6E-02
4-Ethyltoluene	toluene	7.8E-02	1.8E-02
1,3,5-Trimethylbenzene	108-67-8	6.0E-02	1.4E-02
1,2,4-Trimethylbenzene	95-63-6	6.1E-02	1.4E-02
1,3-Dichlorobenzene	541-73-1	6.9E-02	1.6E-02
Benzyl chloride	98-07-7	6.3E-02	1.5E-02
Xylene (total)	1330-20-7	6.9E-02	1.6E-02

APPENDIX C
Estimated Cost Summary Tables for Remedial Alternatives

Appendix C
Estimated Cost Summary Tables for Remedial Alternatives
UPC OU-SM
Brisbane, California

REMEDIAL ALTERNATIVE	CAPITAL COST	O&M COST	TOTAL COST
ALTERNATIVE 1 No Action	$0	$0	$0
ALTERNATIVE 2 Land Use Restrictions / Vapor Intrusion Mitigation	$840,000	$3,590,000	$4,430,000
ALTERNATIVE 3 Land Use Restrictions / Vapor Intrusion Mitigation / Soil Capping / Excavation with Onsite Relocation and Offsite Disposal	$9,000,000	$3,600,000	$12,600,000
ALTERNATIVE 4 Land Use Restrictions / Vapor Intrusion Mitigation / Soil Capping / Excavation with Offsite Disposal	$9,400,000	$3,600,000	$13,000,000
ALTERNATIVE 5 Land Use Restrictions / Vapor Intrusion Mitigation / Excavation with Offsite Disposal / Restoring Original Grade	$57,900,000	$3,600,000	$61,500,000

ASSUMPTIONS:

1) These cost estimates are for comparison purposes only, include a contingency rate of 20%, and have an accuracy of +50/-30%.
2) Cost estimates will be refined after the remedial design is completed.
3) Costs to implement and maintain land-use controls and groundwater monitoring will be covered under existing property management programs.

Appendix C-1A
Estimated Cost Summary Table for Remedial Alternative 2
UPC OU-SM
Brisbane, California

TASK		COST ESTIMATE
LAND USE RESTRICTIONS		
1) Land Use Covenant - Years 1 through 30	$	790,000
SUBTOTAL	$	790,000
Contingency (20%)	$	160,000
VAPOR INTRUSION MITIGATION		
2a) Soil Vapor Investigation	$	200,000
2b) Vapor Intrusion Mitigation Design and Construction	$	400,000
2c) Inspection and Monitoring - Years 1 through 30	$	2,303,000
SUBTOTAL	$	2,903,000
Contingency (20%)	$	580,600
TOTAL	**$**	**4,430,000**

ASSUMPTIONS:

1) These cost estimates are for comparison purposes only, and have an accuracy of +50/-30%.
2) Cost estimates will be refined after the remedial design is completed.
3) Costs to implement and maintain land-use restrictions will be covered under existing property management programs.
4) Subtotals may not equal total due to rounding.
5) Import related to redevelopment not included.

Appendix C-1B
Estimated Cost Summary Backup Table for Remedial Alternative 2
UPC OU-SM
Brisbane, California

Task 1 - Land Use Covenant - Years 1 through 30

Preparation of a land use covenant to prevent human exposure to contaminants left in place in soil and soil-gas, for recording by San Mateo County.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Prepare Covenant Including Legal Support (Year 1)	1	each	$100,000	$100,000	$0
LUC Annual Inspections (Years 2 through 30)	1	event/yr	$30,000	$0	$691,000
			Discount Rate:	**1.5%**	
			Total Task 1:	**$790,000**	

Task 2 - Vapor Intrusion Mitigation - Years 1 through 30

Vapor intrusion mitigation through the use of vapor barriers or sub-slab venting systems.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Soil Vapor Investigation	1	each	$200,000	$200,000	$0
VI Mitigation Design	1	each	$100,000	$100,000	$0
Construction of Mitigation System	1	each	$300,000	$300,000	$0
Inspections and Quarterly Monitoring (Years 2 through 30)	4	event/yr	$25,000	$0	$2,303,000
			Discount Rate:	**1.5%**	
			Total Task 2:	**$2,900,000**	

Subtotal	$3,690,000
Contingency (20%)	$738,000
TOTAL	**$4,430,000**

ASSUMPTIONS:

1) Discount rate is based on a 30-Yr Nominal Interest Rate on US Treasure Notes & Bonds (OMB Circular No. A-94, App C, Nov 2019).

2) Subtotals may not equal total due to rounding.

3) Actual scope for vapor intrusion mitigation is unknown until soil sampling is completed. Placeholder in cost estimate for purpose of comparing alternatives.

Appendix C-2A
Estimated Cost Summary Table for Remedial Alternative 3
UPC OU-SM
Brisbane, California

	TASK		COST ESTIMATE
	LAND USE RESTRICTIONS		
1)	Land Use Covenant - Years 1 through 30	$	790,000
	SUBTOTAL	$	790,000
	Contingency (20%)	$	160,000
	VAPOR INTRUSION MITIGATION		
2a)	Soil Vapor Investigation	$	200,000
2b)	Vapor Intrusion Mitigation Design and Construction	$	400,000
2c)	Inspection and Monitoring - Years 1 through 30	$	2,303,000
	SUBTOTAL	$	2,903,000
	Contingency (20%)	$	580,600
	SOIL CAPPING AND EXCAVATION W/ RELOCATION		
3)	Soil Capping	$	6,280,000
4)	Soil Excavation and Onsite Relocation	$	50,000
5)	Soil Excavation and Offsite Disposal	$	440,000
	SUBTOTAL	$	6,770,000
	Contingency (20%)	$	1,350,000
	TOTAL	**$**	**12,600,000**

ASSUMPTIONS

1) These cost estimates are for comparison purposes only and have an accuracy of +50/-30%.
2) Cost estimates will be refined after the remedial design is completed.
3) Costs to implement and maintain land-use restrictions will be covered under existing property management programs.
4) Subtotals may not equal total due to rounding.

Appendix C-2B
Estimated Cost Summary Backup Table for Remedial Alternative 3
UPC OU-SM
Brisbane, California

Task 1 - Land Use Covenant - Years 1 through 30

Preparation of a land use covenant to prevent human exposure to contaminants left in place in soil and soil-gas, for recording by San Mateo County.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Prepare Covenant Including Legal Support (Year 1)	1	each	$100,000	$100,000	$0
LUC Annual Inspections (Years 2 through 30)	1	event/yr	$30,000	$0	$691,000
			Discount Rate:	**1.5%**	
			Total Task 1:	**$790,000**	

Task 2 - Vapor Intrusion Mitigation - Years 1 through 30

Vapor intrusion mitigation through the use of vapor barriers or sub-slab venting systems.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Soil Vapor Investigation	1	each	$200,000	$200,000	$0
VI Mitigation Design	1	each	$100,000	$100,000	$0
Construction of Mitigation System	1	each	$300,000	$300,000	$0
Inspections and Quarterly Monitoring (Years 2 through 30)	4	event/yr	$25,000	$0	$2,303,000
			Discount Rate:	**1.5%**	
			Total Task 2:	**$2,900,000**	

Task 3 - Soil Capping

Placement and compaction clean imported fill (5 feet in depth) over the entire 35-acre site (i.e., 283,000 bank cubic yards [BCY]). Loose imported fill (bulk factor of 1.2) will be compacted in 6-inch lifts. Assume that every 1,000 CY of imported soil will be characterized and that fill can be placed and compacted at a rate of 2,000 CY per day.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Final Volume of Compacted Soil Cap	283,000	BCY	--	--	--
Volume of Loose Import Fill Required	339,600	CY	--	--	--
Loose Import Fill Transportation	339,600	CY	$15	$5,094,000	$0
Loose Import Fill Characterization	340	sample	$1,500	$510,000	$0
Placement and Compaction of Fill	169	days	$4,000	$676,000	$0
			Total Task 2:	**$6,280,000**	

Task 4 - Soil Excavation and Onsite Relocation

In the event the final development plan requires removal of impacted soil prior to capping, for example in an area where placement of 5 feet of cap would exceed design grade, the excavated soil will be relocated onsite and subsequently capped as described in Task 2. For costing purposes, 2,500 CY (bulk) of soil was assumed to require excavation and relocation.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Soil Excavation and Relocation	2,500	CY	$20	$50,000	$0
			Total Task 3:	**$50,000**	

Appendix C-2B
Estimated Cost Summary Backup Table for Remedial Alternative 3
UPC OU-SM
Brisbane, California

Task 5 - Soil Excavation and Offsite Disposal

In the event the final development plan requires removal of impacted soil prior to capping, for example during utility installation or to slope the site for drainage, the excavated soil will be excavated and transported offsite for disposal. Excavations will be backfilled with soil as described in Task 2. For costing purposes, (i) 2,500 CY (bulk) of soil was assumed to require excavation and offsite disposal; and (ii) 2,000 CY was assumed to be non-hazardous and 500 CY was assumed to be non-RCRA California hazardous. Assumed 1.5 tons per CY for surficial soil.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Soil Excavation, Stockpiling, and Characterization	2,500	CY	$15	$37,500	$0
Offsite Disposal (Non-hazardous, Altamont)	3,000	TON	$90	$270,000	$0
Offsite Disposal (Hazardous, Buttonwillow)	750	TON	$170	$127,500	$0
			Total Task 4:	**$440,000**	

Subtotal	$10,460,000
Contingency (20%)	$2,090,000
TOTAL	**$12,600,000**

ASSUMPTIONS:

1) Discount rate is based on a 30-Yr Nominal Interest Rate on US Treasure Notes & Bonds (OMB Circular No. A-94, App C, Nov 2019).
2) Subtotals may not equal total due to rounding.
3) Actual scope for vapor intrusion mitigation is unknown until soil sampling is completed. Placeholder in cost estimate for purpose of comparing alternatives.

Appendix C-3A
Estimated Cost Summary Table for Remedial Alternative 4
UPC OU-SM
Brisbane, California

TASK		COST ESTIMATE	
	LAND USE RESTRICTIONS		
1)	Land Use Covenant - Years 1 through 30	$	790,000
	SUBTOTAL	$	790,000
	Contingency (20%)	$	160,000
	VAPOR INTRUSION MITIGATION		
2a)	Soil Vapor Investigation	$	200,000
2b)	Vapor Intrusion Mitigation Design and Construction	$	400,000
2c)	Inspection and Monitoring - Years 1 through 30	$	2,303,000
	SUBTOTAL	$	2,903,000
	Contingency (20%)	$	580,600
	SOIL CAPPING AND EXCAVATION W/ DISPOSAL		
3)	Soil Capping	$	6,280,000
4)	Soil Excavation and Offsite Disposal	$	870,000
	SUBTOTAL	$	7,150,000
	Contingency (20%)	$	1,430,000
	TOTAL	**$**	**13,000,000**

ASSUMPTIONS

1) These cost estimates are for comparison purposes only and have an accuracy of +50/-30%.
2) Cost estimates will be refined after the remedial design is completed.
3) Costs to implement and maintain land-use restrictions will be covered under existing property management programs.
4) Subtotals may not equal total due to rounding.

Appendix C-3B
Estimated Cost Summary Backup Table for Remedial Alternative 4
UPC OU-SM
Brisbane, California

Task 1 - Land Use Covenant - Years 1 through 30

Preparation of a land use covenant to prevent human exposure to contaminants left in place in soil and soil-gas, for recording by San Mateo County.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Prepare Covenant Including Legal Support (Year 1)	1	each	$100,000	$100,000	$0
LUC Annual Inspections (Years 2 through 30)	1	event/yr	$30,000	$0	$691,000
			Discount Rate:	**1.5%**	
			Total Task 1:	**$790,000**	

Task 2 - Vapor Intrusion Mitigation - Years 1 through 30

Vapor intrusion mitigation through the use of vapor barriers or sub-slab venting systems.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Soil Vapor Investigation	1	each	$200,000	$200,000	$0
VI Mitigation Design	1	each	$100,000	$100,000	$0
Construction of Mitigation System	1	each	$300,000	$300,000	$0
Inspections and Quarterly Monitoring (Years 2 through 30)	4	event/yr	$25,000	$0	$2,303,000
			Discount Rate:	**1.5%**	
			Total Task 2:	**$2,900,000**	

Task 3 - Soil Capping

Placement and compaction clean imported fill (5 feet in depth) over the entire 35-acre site (i.e., 283,000 bank cubic yards [BCY]). Loose imported fill (assuming a bulk factor of 1.2) will be compacted in 6-inch lifts. Assume that every 1,000 CY of imported soil will be characterized and that fill can be placed and compacted at a rate of 2,000 CY per day.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Final Volume of Compacted Soil Cap	283,000	BCY	--	--	--
Volume of Loose Import Fill Required	339,600	CY	--	--	--
Loose Import Fill Transportation	339,600	CY	$15	$5,094,000	$0
Loose Import Fill Characterization	340	sample	$1,500	$510,000	$0
Placement and Compaction of Fill	169	days	$4,000	$676,000	$0
			Total Task 2:	**$6,280,000**	

Appendix C-3B
Estimated Cost Summary Backup Table for Remedial Alternative 4
UPC OU-SM
Brisbane, California

Task 4 - Soil Excavation and Offsite Disposal

In the event the final development plan requires removal of impacted soil prior to capping, for example during utility installation or to slope the site for drainage, the excavated soil will be excavated and transported offsite for disposal. Excavations will be backfilled with soil as described in Task 2. For costing purposes, (i) 5,000 cubic yards of soil was assumed to require excavation and offsite disposal; and (ii) 4,000 cubic yards was assumed to be non-hazardous and 1,000 yards was assumed to be non-RCRA California hazardous. Assumed 1.5 tons per CY for surficial soil.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Soil Excavation, Stockpiling, and Characterization	5,000	CY	$15	$75,000	$0
Offsite Disposal (Non-hazardous, Altamont)	6,000	TON	$90	$540,000	$0
Offsite Disposal (Hazardous, Buttonwillow)	1,500	TON	$170	$255,000	$0
			Total Task 3:	**$870,000**	

Subtotal	$10,840,000
Contingency (20%)	$2,170,000
TOTAL	**$13,000,000**

ASSUMPTIONS:

1) Discount rate is based on a 30-Yr Nominal Interest Rate on US Treasure Notes & Bonds (OMB Circular No. A-94, App C, Nov 2019).
2) Subtotals may not equal total due to rounding.
3) Actual scope for vapor intrusion mitigation is unknown until soil sampling is completed. Placeholder in cost estimate for purpose of comparing alternatives.

Appendix C-4A
Estimated Cost Summary Table for Remedial Alternative 5
UPC OU-SM
Brisbane, California

TASK		COST ESTIMATE
LAND USE RESTRICTIONS		
1) Land Use Covenant - Years 1 through 30	$	790,000
SUBTOTAL	$	790,000
Contingency (20%)	$	160,000
VAPOR INTRUSION MITIGATION		
2a) Soil Vapor Investigation	$	200,000
2b) Vapor Intrusion Mitigation Design and Construction	$	400,000
2c) Inspection and Monitoring - Years 1 through 30	$	2,303,000
SUBTOTAL	$	2,903,000
Contingency (20%)	$	580,600
EXCAVATION W/ DISPOSAL AND RESTORING TO ORIGINAL GRADE		
2) Soil Excavation and Off-Site Disposal	$	42,190,000
3) Restoring to Original Grade	$	5,390,000
SUBTOTAL	$	47,580,000
Contingency (20%)	$	9,520,000
TOTAL	**$**	**61,600,000**

ASSUMPTIONS

1) These cost estimates are for comparison purposes only, and have an accuracy of +50/-30%.
2) Cost estimates will be refined after the remedial design is completed.
3) Costs to implement and maintain land-use restrictions will be covered under existing property management programs.
4) Subtotals may not equal total due to rounding.

Appendix C-4B
Estimated Cost Summary Backup Table for Remedial Alternative 5
UPC OU-SM
Brisbane, California

Task 1 - Land Use Covenant - Years 1 through 30

Preparation of a land use covenant to prevent human exposure to contaminants left in place in soil and soil-gas, for recording by San Mateo County.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Prepare Covenant Including Legal Support (Year 1)	1	each	$100,000	$100,000	$0
LUC Annual Inspections (Years 2 through 30)	1	event/yr	$30,000	$0	$691,000
			Discount Rate:	**1.5%**	
			Total Task 1:	**$790,000**	

Task 2 - Vapor Intrusion Mitigation - Years 1 through 30

Vapor intrusion mitigation through the use of vapor barriers or sub-slab venting systems.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Soil Vapor Investigation	1	each	$200,000	$200,000	$0
VI Mitigation Design	1	each	$100,000	$100,000	$0
Construction of Mitigation System	1	each	$300,000	$300,000	$0
Inspections and Quarterly Monitoring (Years 2 through 30)	4	event/yr	$25,000	$0	$2,303,000
			Discount Rate:	**1.5%**	
			Total Task 2:	**$2,900,000**	

Task 3 - Soil Excavation and Offsite Disposal

Excavation of all soil with constituent of concern (COC) concentrations above cleanup levels to a maximum depth of five feet below ground surface. The excavated soil will be excavated and transported offsite for disposal.
Excavations will be backfilled with soil as described in Task 2. Under this scenario, approximately 242,470 bank cubic yards of soil would be excavated and hauled offsite for disposal; 194,000 bank cubic yards were assumed to be non-hazardous and 48,470 bank yards were assumed to be non-RCRA California hazardous. Assumed 1.5 tons per CY for surficial soil.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Soil Excavation, Stockpiling, and Characterization	242,470	CY	$15	$3,637,050	$0
Offsite Disposal (Non-hazardous, Altamont)	291,000	TON	$90	$26,190,000	$0
Offsite Disposal (Hazardous, Buttonwillow)	72,705	TON	$170	$12,359,850	$0
			Total Task 2:	**$42,190,000**	

Appendix C-4B
Estimated Cost Summary Backup Table for Remedial Alternative 5
UPC OU-SM
Brisbane, California

Task 1 - Land Use Covenant - Years 1 through 30

Preparation of a land use covenant to prevent human exposure to contaminants left in place in soil and soil-gas, for recording by San Mateo County.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Prepare Covenant Including Legal Support (Year 1)	1	each	$100,000	$100,000	$0
LUC Annual Inspections (Years 2 through 30)	1	event/yr	$30,000	$0	$691,000

Task 4 - Restoring to Original Grade

Placement and compaction of clean imported fill to backfill excavations (i.e., 242,470 bank cubic yards [BCY]).
Loose imported fill (assumed bulking factor of 1.2) will be compacted in 6-inch lifts. Assume that every 1,000 CY of imported soil will be characterized and that fill can be placed and compacted at a rate of 2,000 CY per day.

Task	Qty	Unit	Rate	Capital Cost	O&M Cost
Final Volume of Compacted Soil Cap	242,470	BCY	--	--	--
Volume of Loose Import Fill Required	290,964	CY	--	--	--
Loose Import Fill Transportation	290,964	CY	$15	$4,364,460	$0
Loose Import Fill Characterization	291	sample	$1,500	$436,500	$0
Placement and Compaction of Fill	145	days	$4,000	$580,000	$0
			Total Task 3:	**$5,390,000**	

Subtotal	$51,270,000
Contingency (20%)	$10,250,000
TOTAL	**$61,600,000**

ASSUMPTIONS:

1) Discount rate is based on a 30-Yr Nominal Interest Rate on US Treasure Notes & Bonds (OMB Circular No. A-94, App C, Nov 2019).

2) Subtotals may not equal total due to rounding.

3) Actual scope for vapor intrusion mitigation is unknown until soil sampling is completed. Placeholder in cost estimate for purpose of comparing alternatives.

APPENDIX D
Import Fill Acceptance Criteria

BSP
Baylands Soil Processing, llc

Submittal Guidelines for Imported Soil

The following guidelines are provided as a prescriptive step process to ensure the contractual and regulatory requirements for Baylands Soil Processing are met and the appropriate quality control documentation is provided in a timely manner. Please contact info@thebaylands.com for questions.

Soil Review & Acceptance Guidelines

1. **Complete Source Information Form (SIF)**
   a. SIF located at: http://thebaylands.com/import/
   b. Do not leave any area blank.
   c. Submit via email to info@thebaylands.com

2. **Determine Number of Samples by type of project**:
   a. Borrow Area (e.g., one common piece of property with the same use; commonly referred to as a Mass Excavation)
   b. Stockpile (e.g., pipelines, multiple locations, multiple uses on one site)

Sampling Requirements	
Borrow Area (aka Mass Excavation)	
2 acres or less	4 discreet samples
2 to 4 acres	Minimum 1 sample per ½ acre
4 to 10 acres	Minimum 8 samples
Greater than 10 acres	Minimum of 8 locations with 4 subsamples per location
Stockpile[1]	
Up to 1,000 cubic yards (CY)	1 sample per 250 CY
1,000 CY to 5,000 CY	4 samples for first 1,000CY's plus 1 sample for each additional 500 CY
Greater than 5,000 CY	12 samples for first 5,000CY's plus 1 sample for each additional 500 CY

1. Composite samples are acceptable provided they don't exceed 4:1 ratio.
   For example: 2-point (2:1) composite may represent up to 500 CY for stockpile material.
   4-point (4:1) composite may represent up to 1,000 CY for stockpile material.

3. **Testing:**

   a. Normally provided by contractor but can be performed by BSP staff at an additional cost. Contact BSP for pricing.

b. **ONLY** BSP Staff are allowed to conduct sampling and testing for materials located on BSP facilities. This includes materials imported beyond the estimated volume as shown on the Source Information Form.

c. Prior Environmental Reports may be used for preliminary screening; however, BSP requires laboratory testing performed within the past 6 months for purposes of review and approval.

d. Composited soil samples shall be analyzed for the following constituents:
   - VOCs, including MTBE4 and TPH – GRO (EPA Method 8260B);
   - SVOCs (EPA Method 8270C); **8270C SIM may be used to augment 8270C**
   - Organochlorine Pesticides (EPA Method 8081);
   - PCBs (EPA Method 8082);
   - TPH – D and MO7 (EPA Method 8015);
   - Chromium +6 (EPA Method 7199); and
   - 17 CAM metals (EPA Method 6000/7000 series):
     - antimony (EPA Method 6010B);
     - arsenic (EPA Method 200.8);
     - barium (EPA Method 6010B);
     - beryllium (EPA Method 6010B);
     - cadmium (EPA Method 6010B);
     - chromium (EPA Method 6010B);
     - cobalt (EPA Method 6010B);
     - copper (EPA Method 6010B);
     - lead (EPA Method 6010B);
     - mercury (EPA Method 7470A);
     - nickel (EPA Method 6010B);
     - selenium (EPA Method 6010B);
     - silver (EPA Method 6010B);
     - thallium (EPA Method 6010B);
     - tin (EPA Method 6010B);
     - vanadium (EPA Method 6010B); and
     - zinc (EPA Method 6010B).
   - ph (EPA Mthod 9045C)

e. **Additional requirements**
   i. Maximum Detection Limits (MDL's) shall be included in lab reports for tests 8081, 8082 and 8270. MDL's shall be at or below the Environmental Screening Limits (ESL's) shown in Table 1 and Table 2.
   ii. If a CAM-17 TTLC test result is ten (10) times **greater** than its Table 2 value, BSP requires an STLC test to be submitted to determine soluble concentration. Results must be less than the STLC ESL's shown in Table 2 to be accepted.

iii. pH results that are less than 5 or greater than 10 may result in higher dump fees.
iv. Chain of Custody form to state if sample is a composite and the ratio (e.g., 1:2 or 4:1). BSP does not accept composites greater than 4:1.

4. Review Process

a. Submit SIF and Test Results from an ELAP certified laboratory for BSP review via email to: info@thebaylands.com
b. Material Review Notes:
    i. Summary tables are useful to facilitate review, but actual lab reports are required to confirm values.
    ii. If "Background" value in Table 1 is shown, the higher value between Background value and ESL shall be used to determine acceptance.
c. If the materials are deemed acceptable, BSP will issue a unique project ID number, Purchase Order and Soil Acceptance Letter stating conditions of approval including maximum import volume limit.
d. BSP will reply via email if the materials are unacceptable, or if corrective action is required to properly determine material acceptance.

ALTERNATIVE: At the sole discretion of BSP, materials may be imported into BSP's Material Containment Area (MCA) prior to approval provided that the Source Generator submits a letter acknowledging: (1) they are the Generator and (2) responsible for all associated cost should the materials found to be unacceptable. Letter shall be accompanied with preliminary test information sufficient for BSP to determine if materials can be imported into the MCA. All materials imported into the MCA are subject to confirmation testing by BSP at additional costs to the Generator, or as mutually agreed to by BSP and the Generator.

Submittal Guidelines for Imported Soil

Table 1

Environmental Screening Levels (ESLs)

For

Imported Materials

Table 1 Notes:
" -- " not applicable or not available; " mg/kg " milligrams per kilogram

If background value is available, the higher value between background and ESL shall be used.

* ESL not available; USEPA Risk-Based Soil Screening Levels (SSLs) for the protection of groundwater were used (4).

References:
(1) Background Metals Concentrations in Soil in Northern Santa Clara County (Scott, 1995)

(2) Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory (LBNL June 2002, Revised April 2009)

(3) All proposed concentrations are from California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB). Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final. rev June 2016. Minimum ESL between GW protection and Direct contact for soils < 3 meters below ground surface unless highlighted in red.

(4) USEPA, 2011. Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites.

(5) 95% Upper Confidence Limit of the Mean Concentration for Benzo(a)pyrene equivalents from Use of the Northern and Southern California Polynuclear Aromatic Hydrocarbon (PAH) Studies in the Manufactured Gas Plant Site Cleanup Process Draft for Public Comment – Cal-EPA May 8, 2009

(6) SF RWQCB Letter dated 9/14/17 regarding Concurrence with Proposed Revisions to the Baylands Soil Processing Acceptance Criteria, Brisbane Landfill, San Mateo County

Submittal Guidelines for Imported Soil

Table 1

Chemical	Background (mg/kg) [1]	BSP ESL (mg/kg) [3]
Inorganics		
Antimony	22	31
Arsenic [1]	11	11
Barium [2]	410	3000
Beryllium	3.2	42
Cadmium	14	39
Chromium	170	120,000
Chromium VI	-	0.3
Cobalt [2]	25	25
Copper	67	3,100
Lead [2]	54	80
Mercury	1.3	13
Molybdenum [2]	4.8	390
Nickel	145	150
Selenium [2]	4.9	390
Silver	4.8	390
Thallium	3.8	3.8
Vanadium [2]	90	390
Zinc	120	23,000

PAH's		
Chemical	**Background (mg/kg)**	**BSP ESL (mg/kg) [3]**
Acenaphthene	-	1.6
Acenaphthylene	-	13
Anthracene	-	2.8
Benzo[a]anthracene	-	0.16
Benzo[a]pyrene	0.4 [5]	0.4
Benzo[b]fluoranthene	-	0.16
Benzo[g,h,i]perylene	-	2.5
Benzo[k]fluoranthene	-	1.6
Chrysene	-	3.8
Dibenz[a,h]anthracene	-	0.016
Fluoranthene	-	60
Fluorene	-	8.9
Indeno[1,2,3-c,d]pyrene	-	0.16
Methylnaphthalene, 2	-	0.25
Naphthalene	-	0.03
Phenanthrene	-	11
Pyrene	-	85

Submittal Guidelines for Imported Soil

Table 1 Continued

Chemical	Background (mg/kg)	BSP ESL (mg/kg) (3)
Pesticides/PCBs		
4,4'-DDD	-	2.7
4,4'-DDE	-	1.9
4,4'-DDT	-	1.9
Aldrin		0.036
Aroclor 1248	-	0.23
Aroclor 1254	-	0.24
Aroclor 1260	-	0.24
Chlordane	-	0.48
Dieldrin	0.002(6)	0.002
Endosulfan I		0.0046
Endosulfan II		0.0046
Endosulfan sulfate		0.0046
Endrin	0.002(6)	0.002
Endrin aldehyde	0.002(6)	0.002
Endrin ketone	0.002(6)	0.002
Heptachlor	0.002(6)	0.002
Heptachlor epoxide	0.002(6)	0.002
Lindane	-	0.0098
Methoxychlor	-	19

SVOCs		
Chemical	**Background (mg/kg)**	**BSP ESL (mg/kg) (3)**
2,4,6-Trichlorophenol	-	0.21
2,4-Dichlorophenol	-	0.3
2,4-Dinitrotoluene	-	0.0018
Benzoic Acid		34*
Bis(2-Ethylhexyl) Phthalate	-	39
Butyl-benzyl-phthalate		0.51*
Diethyl phthalate	-	0.035
Dimethyl Phthalate	-	0.035
Hexachlorobutadiene		0.68
Hexachloroethane	-	1.1
Phenol	-	0.076

Submittal Guidelines for Imported Soil

Table 1 Continued

TPH	
Chemical	**BSP ESL (mg/kg) [3]**
TPH Gasoline (GRO) C6 - C10	100
TPH Diesel (DRO) C11- C28	230
TPH Motor oil C23 – C36	5,100

Chemical	Background (mg/kg)	BSP ESL (mg/kg) [3]
VOCs		
1,1,1,2-Tetrachloroethane	-	0.01
1,1,1-Trichloroethane	-	7.8
1,1,2,2-Tetrachloroethane	-	0.018
1,1,2-Trichloroethane	-	0.07
1,1-Dichloroethane	-	0.2
1,1-Dichloroethylene	-	0.55
1,2,4-Trichlorobenzene	-	1.5
1,2,4-Trimethylbenzene		0.081
1,2-Dibromo-3-chloropropane	-	0.0045
1,2-Dibromoethane	0.004[6]	0.00033
1,2-Dichlorobenzene	-	1.6
1,2-Dichloroethane	-	0.0045
1,2-Dichloropropane	-	0.12
1,3,5-Trimethylbenzene		0.087*
1,3-Dichloropropene	-	0.059
1,4-Dichlorobenzene	-	0.59
2,2-Dichloropropane		0.25*
2-Chlorotoluene		0.23
4-Isopropyltoluene (p-cymene)		1.1*
4-Methyl-2-pentanone (MIBK)	-	2.8
Acetone	-	0.5
Benzene	-	0.044
Bromodichloromethane	-	0.52
Bromoform	-	1.7
Bromomethane	-	0.3
Butylbenzene, n-		5.9*
Carbon disulfide		0.24
Carbon tetrachloride	-	0.048
Chlorobenzene	-	1.5
Chloroethane	-	1.1
Chloroform	-	0.68
Chloromethane (methyl chloride)	-	2.9
Dibromochloromethane	-	3.8
Dichloroethylene, cis-1,2	-	0.19

Submittal Guidelines for Imported Soil

Table 1 Continued

Chemical	Background (mg/kg)	BSP ESL (mg/kg) (3)
VOCs		
Dichloroethylene, trans-1,2	-	1
Ethylbenzene	-	1.4
Methyl ethyl ketone (2-butanone)	-	5.1
Methyl tert-butyl ether (MTBE)	-	0.023
Methylene chloride	-	0.077
Naphthalene	-	0.033
Propylbenzene, n-		1.2
Styrene	-	1.5
Tetrachloroethylene	-	0.42
Toluene	-	2.9
Trichloroethylene	-	0.46
Trichlorofluoromethane		0.838
Vinyl chloride	-	0.008
Xylene (total)	-	2.3

Table 2
STLC Limits for Imported Materials

Chemical	STLC (mg/L)
Antimony	15
Arsenic	5
Barium	100
Beryllium	0.8
Cadmium	1.0
Chromium	5
Cobalt	80
Copper	25
Lead	5
Mercury	0.2
Molybdenum	350
Nickel	20
Selenium	1
Silver	5
Thallium	7
Vanadium	24
Zinc	250

APPENDIX E
Administrative Record List

Appendix E
Administrative Record List

Date	Author	Title
January 1985	Ecology and Environment, Inc.	Soil and Groundwater Investigation of the Southern Pacific Transportation Company Bayshore Railroad Yard
December 1985	California Department of Toxic Substances Control (DTSC)	Order to Post and Fence
September 1986	The Mark Group	Interim Report – Remedial Action Alternative Feasibility Study Field Investigations
May 1989	Hydrologic Consultants, Inc.	Remedial Investigation Data Study Report
July 1990	Levine Fricke	Draft Supplemental Remedial Investigation, Data Study Report
December 1993	Levine Fricke	Draft Remedial Action Plan
December 1993	DTSC	Final Remedial Action Plan
October 1994	International Technology Corporation	Bayshore Railyard North Area Remediation Report
October 1996	DTSC	Remedial Action Certification
November 1998	Treadwell & Rollo	Field Investigation Report
June 2002	Treadwell & Rollo	Soil Operable Unit, Remedial Investigation Report
September 2002	Burns & McDonnell and Treadwell & Rollo	Remedial Investigation Report
January 2005	Burns & McDonnell and Treadwell & Rollo	Remedial Action Plan
January 2006	Burns & McDonnell	Soil Sampling Summary Report
November 2006	Burns & McDonnell	OU-1 Additional Investigation
May 2008	DTSC	Consent Order
July 2008	DTSC	Letter from Ms. Virginia Lasky of DTSC to Mr. Steven Hanson of Universal Paragon Corporation and Ms. Mary Hashem of BP PLT-I, LLC
April 2009	Lawrence Berkeley National Laboratory	Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory
July 2009	DTSC	Use of the Northern and Southern California Polynuclear Aromatic Hydrocarbon (PAH) Studies in the Manufactured Gas Plant Site Cleanup Process
November 2009	MACTEC	Feasibility Study/Remedial Action Plan
November 2009	DTSC	Approval of the Feasibility Study/Remedial Action Plan for the Schlage OU and UPC OU SF
January 2010	MACTEC	Remedial Design Implementation Plan
May 2010	MACTEC	Groundwater Monitoring Report, First Quarter 2010
April 2011	MACTEC	Phase I Remedial Completion Report
April 2013	AMEC Environmental and Infrastructure, Inc.	Groundwater Remedial Action Implementation Completion Report, Revision 1
June 2013	ESA	Brisbane Baylands Draft Environmental Impact Report, State Clearinghouse #2006022136
August 2013	AMEC Environmental and Infrastructure, Inc.	Summary of Phase II Soil Gas Sampling – Progress Report
January 2014	AMEC Environmental and Infrastructure, Inc.	Amended Operations and Maintenance Plan

Date	Author	Title
July 2014	AMEC Environmental and Infrastructure, Inc.	Revised Groundwater Monitoring Report, Second Quarter 2014
October 2018	Geosyntec Consultants	Final Data Gap Investigation Work Plan
October 2018	Geosyntec Consultants	Groundwater Monitoring Report, 3rd Quarter 2018
December 2018	Geosyntec Consultants	Data Gap Investigation Report
April 2019	DTSC	Human Health Risk Assessment (HHRA) Note 3 – DTSC-Modified Screening Levels
April 2019	US Environmental Protection Agency	Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites
May 2019	SFBRWQCB	Concurrence with the Technical Evaluation of Groundwater Quality Report
August 2019	DTSC	Email from Vivek Mathrani of the Human and Ecological Risk Office at DTSC to Nicole Yuen of DTSC

APPENDIX F
Statement of Reasons and Preliminary Non-Binding Allocation of Responsibility

Statement of Reasons and Preliminary Non-Binding Allocation of Responsibility

Pursuant to California Health and Safety Code Section 25356.1(e), the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) has prepared this Statement of Reasons as part of the Remedial Action Plan (RAP) for the San Mateo County portion of the Universal Paragon Corporation Operable Unit located in Brisbane, San Mateo County, California, also referred to in this document as UPC OU-SM or the Site.

California Health and Safety Code Section 25356.1(d) outlines six additional criteria that need to be addressed for the recommended remedial alternative. As these criteria are addressed within the nine U.S. EPA criteria, a separate analysis has not been conducted. The analysis required under the Health and Safety Code is included within the Feasibility Study/Remedial Action Plan at Section 6.

Preliminary Non-Binding Allocation of Responsibility

Health and Safety Code (HSC) section 25356.1(e) requires the Department of Toxic Substances Control (DTSC) to prepare a preliminary nonbinding allocation of responsibility ("NBAR") among all identifiable potentially responsible parties (PRPs), including those parties which may have been released, or may otherwise be immune, from liability pursuant to Chapter 6.8 of the Health and Safety Code or any other provision of law. A NBAR, which is based on the evidence available to the DTSC, is not binding on anyone, including PRPs and DTSC.[1]

Southern Pacific Transportation Company (SPTC) acquired the land which would later become the Bayshore Railyard in 1896. SPTC operated the former Bayshore Railyard which was used as a railroad switching yard from 1911 through 1982. Railcar maintenance and repair activities, railcar parking, and material transfer operations were also conducted at the railyard. Chemicals that may have been used or generated as waste at these facilities within the UPC OU-SM site include metals, volatile organic compounds (VOCs), semi-volatile organic compounds, polychlorinated biphenyls, and petroleum hydrocarbons, including gasoline-range hydrocarbons, diesel-range

[1] One purpose of the NBAR was to establish which PRPs will have an aggregate allocation in excess of 50% and therefore convene arbitration if they so choose, even though the NBAR is otherwise not binding on anyone, including PRPs, DTSC, or the arbitration panel. However, the arbitration provisions of Chapter 6.8 of Division 20 of the California Health and Safety Code (California Health and Safety Code Sections 25356.2 through 25356.10) were repealed by Senate Bill 1018 (Stats 2012, Chap 39), effective June 27, 2012. Accordingly, all statutory provisions and procedures associated with the arbitration proceeding were repealed.

hydrocarbons, and polynuclear aromatic hydrocarbons. It is also believed that pesticides containing lead and arsenic were sprayed at the railyard for weed control during that period.

SPTC ceased major railyard operations at the Bayshore Railyard in 1982 and the land was unused after 1982. Tuntex USA, Inc. (currently known as Sunquest Properties, Inc., a California corporation and a wholly owned subsidiary of UPC) (Sunquest) acquired most of the land from SPTC in December 1989 after most of the railyard facilities had been abandoned and removed. UPC OU-SM is presently vacant with various foundations and building slabs remaining. Sunquest has not operated any manufacturing activities at UPC OU-SM since acquiring the property, and no disposal of hazardous chemicals to land or water is known to have occurred during its ownership.

In December 1985, the Department of Health Services (DHS), predecessor to DTSC, issued an Order to Post and Fence to SPTC for the Bayshore Railyard. The order noted that there had been a release of a hazardous substance on, under, or into the land on the Bayshore Railyard and that the release did not comply with the terms of a current permit or Interim Status Document or regulation of DHS. The order required SPTC to enclose the entire contaminated area with fences and to post signs warning of the presence of a hazardous substance.

In December 1988, DHS issued a Remedial Action Order (1988 Order) to SPTC for the Bayshore Railyard. The 1988 Order noted that soil and shallow groundwater at the Bayshore Railyard was contaminated with arsenic, barium, chromium, copper, lead, zinc, oil, benzene, trichloroethane, trichlorethylene, dichloroethylene, and vinyl chloride (i.e., metals, petroleum and petroleum related constituents and VOCs). The 1988 Order required the following: a groundwater monitoring program; a remedial investigation data study report to determine the nature and full extent of contamination at the Bayshore Railyard; a community relations plan; a feasibility study workplan and report; a remedial action plan; a remedial design and implementation plan; and operation and maintenance activities, if needed. SPTC submitted to DHS the following for review and approval: a groundwater monitoring program, a remedial investigation data study report, a supplemental remedial investigation sampling plan; and a community relations plan.

In February 1990, DHS issued an Imminent and/or Substantial Endangerment Order and Remedial Action Order (IS&E Order) to SPTC; Tuntex Properties, Inc. (currently also known as Sunquest) (Tuntex); and Oyster Point Properties, Inc. (Oyster Point). The IS&E Order stated that Tuntex and Oyster Point were the current owners and SPTC was the former owner of the Bayshore Railyard. The IS&E Order required the following: continuation of the groundwater monitoring program approved by DHS; a supplemental remedial investigation data study report; a feasibility study workplan; a feasibility study report; a remedial action plan; a remedial design and implementation plan; and operation and maintenance activities if needed. SPTC submitted a feasibility study report, a remedial action plan, a remedial design and implementation plan, and a removal action completion report between 1992 and 1994 to DTSC.

DTSC amended the IS&E Order in February 1995 which divided Bayshore Railyard into two operable units (OUs): OU-1 (the Bayshore Railyard North Area), and OU-2 (the Bayshore Railyard South Area). As such, the feasibility study, remedial action plan, remedial design and implementation plan, as well as operation and maintenance plans would need to be prepared and implemented separately for each OU. In July 1995, DTSC referred lead agency authority for OU-2 to the San Francisco Bay Regional Water Quality Control Board. DTSC amended the IS&E Order in August 1995 to remove OU-2 from the order.

The former Schlage Lock site occupies the adjacent area north of OU-1; volatile organic compounds (VOCs) from previous industrial activities at the former Schlage Lock site migrated offsite in soil vapor and groundwater onto OU-1. DTSC entered into a Consent Order with UPC and BP PLT-I, LLC in May 2008 for the former Schlage Lock site and OU-1. The Consent Order redefined the former Schlage Lock site and OU-1 into Schlage OU and UPC OU. The Schlage OU includes: 1) the entire Schlage Lock site, and 2) the OU-1 areas that contain volatile organic compounds (VOCs) in groundwater and soil. The UPC OU consists of all other portions of the OU-1 not included in Schlage OU. Since UPC OU is located in both San Francisco and San Mateo counties, it was further divided into operable units referred to as UPC OU-SF and UPC OU-SM. This NBAR applies only to UPC OU-SM, the portion of UPC OU located in San Mateo County.

Sunquest is a responsible party or a liable person as defined in Health and Safety Code section 25323.5 by virtue of having acquired title to UPC OU-SM on December 28, 1989 under the name Tuntex. SPTC is a responsible party or a liable person as defined in Health and Safety Code section 25323.5 by virtue of having owned and operated the Rail Yard at the time of disposal.

DTSC sets forth the following preliminary nonbinding allocation of responsibility for UPC OU-SM:

Sunquest currently owns UPC OU-SM and has owned UPC OU-SM since December 28, 1989 (approximately 30 years), and was not the owner at the time of disposal. Therefore, this NBAR allocates 25% responsibility to Sunquest.

SPTC owned UPC OU-SM from approximately 1896 to 1989 (approximately 93 years) and operated at UPC OU-SM from approximately 1914 to 1960 (approximately 56 years). During this time hazardous substances were disposed of at UPC OU-SM. Union Pacific Corporation acquired SPTC in September 1996. Therefore, this NBAR allocates 75% responsibility to Union Pacific Corporation.

APPENDIX G
Responsiveness Summary

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Department of Toxic Substances Control

Responsiveness Summary

Southern Pacific Brisbane
Geneva Avenue and Bayshore Boulevard
Brisbane, California

October 2021

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2. DTSC Community Update, Public Notice, and Postcards
3. Communications
4. Public Meeting Transcript
5. Written Public Comments

1.0 INTRODUCTION

This Responsiveness Summary has been prepared by the California Department of Toxic Substances Control (DTSC) and responds to all public comments received during the 92-day public comment period on the Draft Feasibility Study/Remedial Action Plan (FS/RAP) for the northern 35 acres of the Southern Pacific Brisbane property, located at Geneva Avenue and Bayshore Boulevard in Brisbane, California (Site). The Site is a portion of the larger 650-acre Brisbane Baylands property owned by Sunquest Properties (see Attachment 1, Site Location Map). To help organize investigation and remediation, the Brisbane Baylands was divided into operable units. DTSC has oversight for this Site, which is also known as OU-San Mateo or OU-SM.

This Responsiveness Summary is organized as follows:

- Section 1.0 is the introduction
- Section 2.0 provides a background of the Site
- Section 3.0 discusses the draft FS/RAP
- Section 4.0 provides an overview of the public review process
- Section 5.0 provides responses to comments received in writing and during the public meeting
- Attachment 1 includes a site location map
- Attachment 2 provides copies of the Community Update, Public Notice and Brisbane Baylands Community Advisory Group (BBCAG) postcards where DTSC has presented on this Site
- Attachment 3 provides notifications sent by the community regarding the public comment period
- Attachment 4 provides a copy of the transcript from the public meeting held on January 7, 2021
- Attachment 5 provides copies of written comment letters received during the comment period

2.0 BACKGROUND

The 35-acre Site occupies the northern portion of the former Southern Pacific Brisbane Railyard, which was used as a railroad switching yard from 1914 to 1982. After 1982, the Site was unused and today consists of vacant land with various foundations and building slabs remaining. The Site was purchased in 1989 and is owned by Sunquest Properties (Sunquest). Universal Paragon Corporation (UPC) used to be the property/project manager of the Site for Sunquest. Baylands Development, Inc. (BDI) is the new property/project manager of the Site for Sunquest. These are separate and distinct entities.

Environmental investigations conducted from 1984 through 2018 have found the presence of metals (primarily arsenic, lead and mercury), volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), organochlorine

pesticides (OCPs) and polychlorinated biphenyls (PCBs) in soil. VOCs have also been detected in groundwater. From 1995 to 2008, a groundwater extraction and treatment system operated in the northern portion of the Site to address VOC contaminants that had migrated from the neighboring Schlage Lock site.

In 2008, there was a change made to the operable units. The Schlage Lock site was defined as Schlage Operable Unit (OU) and includes VOCs that may have migrated south to the UPC operable units. Therefore, the UPC operable units in both San Francisco and Brisbane were defined not to include VOC contamination in groundwater because this is being addressed as part of the Schlage OU remedy approved in 2009. From 2010 to 2014, groundwater was injected with microorganisms and carbon sources to naturally break down VOC contamination at the source. In 2014, DTSC certified completion of the Schlage OU remediation and required ongoing groundwater monitoring to document the effectiveness of the remediation. Any residual VOCs detected in groundwater at UPC OU-SM will be treated under the remedy for Schlage OU and therefore are not addressed in the draft FS/RAP.

3.0 DRAFT FEASIBILITY STUDY/REMEDIAL ACTION PLAN

Metals, VOCs, TPH, PAHs, OCPs and PCBs were found in soil at the Site. The remedial action proposed in the draft FS/RAP will include the following:

- Capping of contaminated soil with hardscape or clean soil cap (minimum five-foot thick) and creating clean utility construction corridors.
- Consolidating 2,500 cubic yards (208 truckloads) of contaminated soil underneath a protective cap.
- Transporting 2,500 cubic yards (208 truckloads) of contaminated soil to a permitted disposal facility.
- Conducting soil vapor testing prior to constructing occupied structures and installing soil vapor mitigation systems, if necessary, to protect indoor air.
- Land use restrictions include prohibiting the use of groundwater and strict soil management protocols.
- The VOCs in groundwater at the Site will continue to be addressed under the Schlage OU remedy.
- Establishment of a financial assurance mechanism.

The final FS/RAP will reflect any changes which DTSC determines are appropriate in response to public comments. This Responsiveness Summary will be incorporated as Appendix G to the final FS/RAP. The Notice of Determination, which DTSC prepared in compliance with the California Environmental Quality Act, is included in the final FS/RAP as Appendix H.

The Remedial Design Implementation Plan (RDIP) will be made available for review at a Brisbane Baylands Community Advisory Group (BBCAG) public meeting after DTSC approval and City of Brisbane review. There is no required public comment period for the RDIP, but due to community interest, DTSC will provide opportunity for public review prior to finalizing the document. The RDIP will include pre-construction activities; specific information about the

excavation, stockpiling and staging of soils; haul roads; traffic control plans; dust control and air monitoring programs; and erosion control measures. It is anticipated that work at the Site would begin in 2023 and continue for roughly three years.

4.0 PUBLIC REVIEW PROCESS

The following summarizes the public review process for the draft FS/RAP.

Public Comment Period: DTSC held a 92-day comment period from November 16, 2020 to February 15, 2021.

Public Comment Period Notification: To announce the start of the public comment period and solicit comments on the draft FS/RAP, DTSC published a Spanish public notice in the main section of the *El Observador* newspaper on November 13, 2020, an English public notice in the main section of the *San Francisco Chronicle* and *San Mateo Daily Journal* newspapers on November 16, 2020, and a Chinese public notice in the main section of the *Sing Tao Daily* newspaper on November 16, 2020. Copies of the public notice are included in Attachment 2.

Community Update: On November 12, 2020, DTSC distributed a Community Update in English, Chinese and Spanish via U.S. Mail to 5,172 addresses which included residences and businesses located within an approximately 0.5-mile radius of the Site; key representatives from San Mateo County and the City of Brisbane; local civic/community organizations; and DTSC's mandatory mailing list. Additionally, notification was sent to a total of 245 email addresses. Copies of the Community Update are provided in Attachment 2.

Communications: DTSC staff have presented at the Brisbane Baylands Community Advisory Group for updates on OU-SM as requested on three occasions (May 21, 2019; July 29, 2020, and October 15, 2020). Copies of postcards related to recent updates, Five-Year Reviews, and draft Feasibility Study/Remedial Action Plan are included in Attachment 2. The City of Brisbane distributed notifications and regular updates on the public comment period, including a notice at the start of the comment period in the November 13, 2020 City Manager's Weekly Blast e-newsletter. On February 11, 2021 a reminder of the upcoming close of the comment period was announced in the City Manager's Weekly Blast. Copies of these communications are provided in Attachment 3.

Public Meeting: On January 7, 2021, DTSC held a virtual public meeting on the draft FS/RAP over Zoom due to the COVID-19 pandemic and local stay-at-home-orders. The purpose of the meeting was to provide information regarding the draft FS/RAP, answer questions and accept public comments. All questions were addressed during the public meeting and formal comments are included in Section 5.0. A copy of the public meeting transcript is included in Attachment 4.

Information Repositories: Due to the COVID-19 pandemic, the local library repository was closed. However, the draft FS/RAP and other Site-related documents were made available for public review at the following physical and online locations:

- Brisbane City Hall, 50 Park Place, Brisbane, CA 94005; Mondays and Thursdays, 9 a.m. to 1 p.m.
- FACES SF, 1099 Sunnydale Ave., 2nd Floor, San Francisco, CA 94134; Mondays-Thursdays, 9 a.m. to 4 p.m., by appointment only;
- DTSC's Envirostor database at: https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=41490037

The physical repositories remained open until December 21, 2020 when an increase in COVID-19 transmission necessitated a renewed regional stay at home order. BDI agreed to make hard copies of these documents available upon request for the remainder of the comment period.

The following documents were made available to the public during the 92-day public comment period:

1. DTSC Community Update, November 2020, Public Comment Period for Southern Pacific Brisbane, Draft Feasibility Study/Remedial Action Plan Available for Review

2. DTSC Public Notice was placed as a display advertisement in *El Observador*, November 13, 2020 and in the *San Francisco Chronicle, San Mateo Daily Journal and Sing Tao Daily*, November 16, 2020: Public Comment Period for Southern Pacific Brisbane, Draft Feasibility Study/Remedial Action Plan Available for Review

3. Draft Final Feasibility Study/Remedial Action Plan, San Mateo County Portion of Universal Paragon Corporation Operable Unit (UPC OU-SM), Brisbane, California, Dated September 17, 2020

4. Data Gap Investigation Report, San Mateo County Portion of UPC OU, Brisbane, California, Dated August 5, 2019

5.0 COMMENTS AND RESPONSES

Feasibility Study/Remedial Action Plan – Written Comments Received During the Public Comment Period

1. Commenter: Karen Cunningham, Mayor, City of Brisbane

Comment 1.1. First and foremost, the City wants to make sure that UPC implements a remedy that is (1) protective of human health and the environment and (2) consistent with Measure JJ. In doing so, the cost of remediation should not be the driver in the remedy selection process.

a. Given that the preferred remedy results in most of the contamination being left in place, the City would like to see some mass removal of the most contaminated soil. Therefore, it is the City's preference that material containing chemical concentrations in excess of State of California Total Threshold Limit Concentrations ("TTLC") in the upper two feet of existing soil be excavated and disposed of at an off-site facility in accordance with applicable laws and regulations, rather than simply being left in place and capped.

Response: DTSC's mission is to protect the people, communities and environment of California from harmful chemicals in part by cleaning up contaminated sites. To that end, DTSC reviewed a wide range of remediation scenarios before concurring with the preferred remedy, to ensure that the preferred remedy was both protective of human health and the environment and consistent with Measure JJ (https://www.brisbaneca.org/baylands/page/measure-jj).

DTSC is required to follow a set of criteria established under state and federal law when reviewing remedial options that include: (i) overall protection of human health and the environment; (ii) compliance with state and federal requirements; (iii) long-term effectiveness and performance; (iv) reduction of toxicity, mobility, and volume through treatment; (v) short-term effectiveness; (vi) implementability; (vii) cost; (viii) regulatory agency acceptance; and (ix) community acceptance. Remedial options are not selected based on a single criterion, such as cost alone.

DTSC also appreciates the City sharing its preference for excavating and disposing the upper two feet of existing soil containing chemical concentrations in excess of Total Threshold Limit Concentrations (TTLC). After reviewing this suggestion alongside the proposed remedy, DTSC has determined that the combination of capping, limited soil excavation and treatment as described in the original preferred remedy fully protects public health over the long-term by breaking the exposure pathway to contaminants in the existing soil. TTLC is a threshold concentration that is used along with other criteria to regulate the proper disposal of contaminated soil in a landfill. It is not a criterion that is used to evaluate potential threats to public health at a development site, such as UPC OU-SM. Therefore, the TTLC criterion appropriately applies to soil transported from UPC OU-SM to an off-site landfill. It is also noted that because the TTLC criterion is not based on human health (i.e., health-based cleanup levels in the FS/RAP are lower than corresponding TTLCs), excavating shallow soil based on TTLC exceedance would leave behind residual concentrations in shallow soil that still exceed cleanup levels. Moreover, additional soil excavation and off-site disposal of soil containing chemical concentrations in excess of the TTLCs would have significant downsides such as increasing the number of truck trips involved and the length of the project, thereby increasing short-term air pollution and greenhouse gas emissions.

Comment 1.2. Conceptually, with proper financing and implementation, the proposed remedy in the UPC OU-SM FS/RAP should be protective of current and future City residents and workers (both onsite and offsite) and the environment. Nevertheless, information regarding current soil vapor conditions are not available and specific details about how the remedy will be implemented are not presented in the FS/RAP.

To address potential concerns regarding the protectiveness of the remedial actions to be implemented and their compliance with the City's requirements and standards, including Measure JJ, the City requests to remain engaged with UPC and the California Department of Toxic Substances Control ("DTSC") during the Implementation phase of the environmental remediation process. More specifically, the City would like to be provided the opportunity to review and comment on the future Remedial Design Implementation Plan and other UPC submittals to the DTSC regarding topics such as:

a. Cap and utility corridor design;
b. Soil management plan;
c. Soil vapor sampling;
d. Vapor intrusion evaluation;
e. Vapor intrusion mitigation system design;
f. Indoor air sampling;
g. Construction mitigation measures (e.g., dust control plan, stormwater pollution prevention plans, etc.);
h. Air monitoring;
i. Soil excavation, grading and management;
j. Import fill standards;
k. Haul routes and transportation procedures;
l. Long-term maintenance plans including associated financial assurances;
m. Remediation of impacted groundwater and chlorinated volatile organic compounds from the Schlage Lock Operable Unit;
n. Final sea rise analysis (to confirm that potential impacts due to rising groundwater levels are addressed in addition to potential inundation threats); and
o. Land use restrictions.

Response: DTSC recognizes the City takes an active role in the protection of the health of its citizens. As with the draft FS/RAP, DTSC will continue to work with the City's technical consultant, EKI, to make sure the City and their consultant have the opportunity to review and comment on the appropriate plan(s) that address the specifics raised in your comments prior to DTSC's approval of these plan(s).

2. Commenter: Brisbane Baylands Community Advisory Group (BBCAG) via Clara Johnson

Comment 2.1. The BBCAG has noticed similarities between the draft Remedial Action Plan for Brisbane Baylands OU-SM regulated by DTSC and the draft Remedial Action Plan for Brisbane Baylands OU-2 regulated by BARWQCB. The Data Gap Reports were prepared by the same company, Geosyntec, in the same year, 2018. They both relied on a 100 ft best boring hole grid to obtain additional data. The remedial actions in the alternatives chosen are similar.

Response: Thank you for your comments. Since UPC OU-SM and OU-2 represent the northern and southern portions of the former Southern Pacific Brisbane railyard property, both sites had similar former industrial operations and impacts. UPC used the same consultant, Geosyntec, to prepare both draft cleanup plans which they submitted to both DTSC and the San Francisco Bay Regional Water Quality Control Board for review. DTSC regularly coordinates with our sister agency, the San Francisco Bay Regional Water Quality Control Board, on the investigation and remediation activities for these sites given their shared history.

Comment 2.2. We are community members. We are not trained scientists and we are keenly aware that we cannot read the Data Gap Investigation Report, the Draft FS/RAP and the Lab reports with the comprehension that a technician or a scientist would. There are techniques used to try to determine the amount of a particular metal or chemical of concern in a particular sample. If these techniques e.g. dilution, spikes, dupes etc. or elements that were, supposed to accompany the sample are missing then the test results in estimates rather than exact values. The Overall Assessment section features check marks to indicate all is well but it uses a crossed circle to indicate that there are "issues". The draft plan uses phrases like "qualified as meeting project objectives" and "qualified data should be used within limitations of the qualifications".

The problem that we see is that with these procedures, there are a lot of educated guesses being made that could result in adverse impacts on human health and environmental quality. The individual who must decide what to do with the test results needs more specific information about the "limitations" than is provided in the report.

There should be a range to describe how much confidence there is in the accuracy of the estimate being made. Sometimes the estimated information is not included in the EDD (Electronic Data Delivered). There should be an analysis of the cumulative impact of all the estimates with regard to each chemical or metal of concern. There should also be an assessment of what the additive and synergistic impacts there are when all of the COC's and MOC's are considered. Examples of these issues are found on pages 691-709, 710-711, 1170-1172, 1402-1417 and on other Lab report pages.

Response: Laboratories are required by state law to be certified through the Environmental Laboratory Accreditation Program (ELAP), administered by the State Water Resources Control Board. ELAP provides evaluation and accreditation of environmental testing laboratories to ensure the quality of analytical data used for regulatory purposes meet the requirements of California's drinking water, wastewater, shellfish, food, and hazardous waste programs. The ELAP-certified labs have demonstrated capability analyzing samples using federally approved methods outlined by the United States Environmental Protection Agency (USEPA) in SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. The laboratory has to conduct an evaluation of its data for accuracy using methods outlined in USEPA's EPA QA/G-8, Guidance on Environmental Data Verification and Data Validation, which is summarized in the Analytical Reports.

We have high confidence in the accuracy of the estimates that you refer to. The consultant reviews the data using established USEPA validation methods (pages 691 -709, 710-771, 1170-1172, 1402-1417 cited in the comment show Geosyntec's memos documenting their own internal evaluation of the data). Reliance on certified laboratory data, USEPA test methodologies and data validation guidance document, among other authoritative sources, ensure that the data and analysis are of high quality and usable. Finally, DTSC exercises expert judgment from toxicologists and its Environmental Chemistry Laboratory staff in its review of the laboratory data for acceptability, as well.

The health risk assessment (HRA) in Appendix B of the FS/RAP assesses the individual and cumulative impact of all the contaminants of concern at the Site. [See Comment **Number 2.3**]

Comment 2.3. The BBCAG thinks it is important that the synergistic and additive impacts of the chemicals of potential concern and the metals of concern present on the site be determined and be considered in assessing the harm it will cause to human health and to the environment. If that information is not available, then the evaluation of potential harm should be included as soon as it becomes available. There was a reference to these impacts but it did not appear to be thoroughly researched.

Response: The risk assessment in the FS/RAP appropriately considers the cumulative impacts of the chemicals of concern. Five-Year Reviews will be required for this Site and the exposure assumptions, toxicity data, and Remedial Action Objectives (RAOs) used at the time of the remedy selection will be reevaluated for validity. This is in accordance with federal requirements set out in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which is also known as Superfund, §121(c) and the National Contingency Plan 40 Code of Federal Regulations Part 300.430(f)(4)(ii).

Comment 2.4. The European Union list of Chemicals of Concern that was adopted by California, If it lists chemicals that are present on UPC OU-SM but which were not investigated and evaluated then those chemicals should be added to the DRAP, evaluated and remediated.

Response: DTSC only has jurisdiction over releases of hazardous substances, which are defined in California Health and Safety Code (HSC) Section 25316 as modified by HSC Section 25321. DTSC's Safer Consumer Products (SCP) program, which was established in

2013, aims to reduce toxic chemicals in consumer products and create safer substitutes for hazardous ingredients in consumer products sold in California. SCP is currently identifying Priority Products that contain one or more chemicals, known as Candidate Chemicals, that have a hazard trait that can harm people or the environment. The list of Candidate Chemicals is based on 23 established authoritative lists, which include several developed by the European Union.

While both the Site Mitigation and Restoration Program and the Safer Consumer Products Program are housed under DTSC, the Site Mitigation and Restoration Program (which handles remediation sites, such as this) and the SCP operate under separate legal authority and have different scopes. The investigations, data gap investigation, and the FS/RAP approved by DTSC appropriately considered each of the hazardous substances defined in HSC Section 25316 that are present at the Site.

Comment 2.5. You have chosen Alternative 3 as the proposed action plan. It contains a provision to place “Chemicals of Concern” and metals of concern under hardscape (concrete or asphalt). Hardscape is porous and will, over time, allow vapors from these chemicals to escape into the air. It is possible that the volume of COC’s could be so large in one area of hardscape or simply be, under so much hardscape, multiple acres of it that it would create a pathway to inhalation by the people who visit, work there or who live nearby.

A second concern about the placement of the COC’s that are volatile chemicals is the margin of error that is used to make sure the chemicals are not too close to the edge of the hardscape. There should be a specific distance from the edge of the chemical placement and the edge of the hardscape that cannot be decreased no matter what the conditions are. If there is no hardscape between the VOCs and the soil cap then once again there will be a pathway to human inhalation.

Response: The soils to be consolidated under a hardscape and/or minimum of five feet of clean soil are not known to contain chemicals of concern (COCs) that will volatilize. The COCs in these soils are metals, which are not known to volatilize, so vapors containing these COCs will not accumulate under the hardscape. Selection of a remedial action is based on how a person might be exposed to a chemical. The primary routes of exposure to metals at the site include incidental ingestion of soil, dermal contact with soil, and inhalation of particulates in ambient air if contaminated soil were left uncovered.

If the chemicals of concern in this area included volatile chemicals, any potential degradation of the hardscape would still present less of a concern. Volatile chemicals present in vapor are a more significant concern for indoor spaces due to the possible accumulation of contaminants in air within a confined space (e.g., residence, office). If chemicals volatilize into outdoor air, dilution decreases those concentrations and the risk associated with exposure. The FS/RAP requires that the Site be evaluated for vapor intrusion concerns after remediation and initial site grading, and prior to construction of new buildings. Vapor intrusion mitigation systems will be installed beneath buildings where necessary after this evaluation.

Regarding the placement of the contaminated soils being offset from the edge of the surface cap (e.g., hardscape), this typically happens to different degrees based on the type of contamination and the surface cap material. An engineered cap has to take into account the potential for surface water ponding and stability of the cap. The design of an engineered cap takes into account the COCs and the routes of exposure associated with those chemicals. The best means to protect future occupants and workers is to carefully define the extent of the cap and capped material so that any future site development factors in the location of these areas.

Comment 2.6. A third concern is the possibility is that the hardscape will be disturbed by workers for road repair, landscaping, utility installation or repair or intrusion of surface water. One of these events happens fairly frequently. The contamination is found in various areas on the site and there may be a substantial amount of chemicals to be sequestered under the hardscape. You mention placing a brightly colored geotextile

will clearly mark the many areas that should not be disturbed. What happens after the first disturbance? Will you replace the geotextile every time there is a disturbance so that all the people involved in the numerous types of activity mentioned, will be aware? You need to review this plan because there isn't sufficient protection of human health and the environment.

Response: As part of the land use covenant requirements, a DTSC-approved soil management plan (SMP) will need to be prepared which outlines how contaminated soil will be handled. The SMP will also include a health and safety plan (HASP) and dust control plan. In addition, a DTSC-approved Operation and Maintenance Plan (O&M Plan) will be prepared that documents how the cap is to be inspected, maintained, and repaired, if damaged, so that it can be restored and remain protective. The O&M Plan will also document what measures will be taken if the geotextile fabric is damaged. Repairs to the cap or geotextile fabric will be documented by the contractor in a technical memorandum which will be uploaded to Envirostor after review by DTSC. The O&M Plan will specify when the technical memorandum needs to be submitted to DTSC. Land use covenants (LUCs) will also be placed on the Site, which require the SMP and O&M Plan be implemented to protect the cap and create and effective barrier between future users and existing soils. These LUCs require annual inspections, Five-Year Reviews, and DTSC to be notified when ground-disturbing activities in the restricted areas are planned.

Sites with land use covenants are also monitored by DTSC through Terradex's LandWatch service. LandWatch monitors excavation via a national network of Call-Before-You-Dig systems, building permits, drilling permits, among others, and sends DTSC an alert through email when work is planned in or near the restricted areas.

Comment 2.7. Soil Vapor Monitoring Systems should be placed in all buildings, residential, commercial and public. Soil Vapor barriers should be placed below all buildings. The systems should be monitored once a quarter to make sure they are functioning. Soil Vapor barriers could be disturbed by earthquakes, liquefaction, grading, pressure from salt water intrusion or groundwater pathway shifting due to any of the above causes.

Response: The FS/RAP requires that a soil vapor investigation be conducted in the area of all future buildings. The need for mitigation systems will be evaluated after remediation and initial site grading is complete and prior to constructing future buildings. The timing of the assessment ensures that the future structures are protective of environmental health given conditions present at the time of construction and expected conditions in the future. The results of the soil vapor investigation will be uploaded to Envirostor after review by DTSC and presented to the Brisbane Baylands Community Advisory Group. The soil vapor investigation will be presented as part of the RDIP. All vapor intrusion mitigation systems will have O&M Plans, specifying the frequency of monitoring and inspections to ensure the system is not damaged and functioning as designed. The O&M Plans will also have provisions for repairing any damages to the vapor intrusion mitigation systems.

Comment 2.8. The soil cap should be more than five feet deep at its thinnest. It should be at least ten feet deep in order to provide a margin of error. The public should be notified within a week if the soil cap has had its integrity compromised or if any other safety system has been compromised. The public should be told within a week what has happened, what the risks are and when the integrity of the safety system is restored. There should be an agreed upon method of notification. The operational monitoring systems semi-annual reports should be easily available and any changed conditions should be transmitted to the public including anyone who regularly visits, lives or works on OU-2. Interested parties should be able to request to have summaries of changes that occur from one monitoring period to the next be sent to them by email or U.S. mail.

Response: A five-foot cap exceeds typical remedial design requirements. DTSC's Proven Technologies and Remedies Guidance for Metals in Soil, (https://dtsc.ca.gov/wp-content/uploads/sites/31/2016/01/Guidance_Remediation-Soils.pdf), states that a minimum cover thickness of approximately two feet is adequate for most sites. All the details of future

monitoring and inspection of the soil cap will be included in the O&M Plan that will be prepared after the remedy is implemented.

Thank you for your feedback on methods and frequency of notification; we will take that into consideration. We welcome requests from the public for email and mail notification. The O&M Plan will contain details regarding how to notify DTSC and the public. DTSC will request the monitoring reports include a summary of changes that have occurred from one monitoring period to the next. These reports along with the annual cap inspection reports will be posted to DTSC's website, Envirostor, which can be accessed at https://www.envirostor.dtsc.ca.gov/public [Search for "Southern Pacific – Brisbane (North Area)"]. Interested parties can also sign up for email alerts every time something is posted to Envirostor by clicking the "Sign Up for Email Alerts" link at the top right hand corner of the project-specific page on Envirostor.

Please also see our response to **Comment 3.6.**

Comment 2.9. The RDIP should be presented to the public when it is in draft form. It provides a more specific description of exactly what will be done to carry out the Remedial Action Plan. The public should have a chance to ask questions and offer comments. A public meeting must be held to explain the RDIP to the public and to allow public comments.

Response: DTSC has committed to presenting the RDIP to the public for their chance to ask questions and comment. As requested, we will hold a public meeting to go over the RDIP.

Comment 2.10. The BBCAG restates our view that there should not be any residential uses on any part of the Baylands including OU-SM.

Response: DTSC encourages you to work with your elected representatives to express these concerns. Future land use decisions for all DTSC sites are decided by the local authority (usually the city or county). DTSC does not have any jurisdiction over determining the future land use of a site. The remedy included in the FS/RAP is designed to be protective of future anticipated users, consistent with applicable law.

Comment 2.11. There is a statement on page 67 of the RWQCB FS/DRAP for OU-2 that says, "...to ensure the protection of future users of the site by breaking the pathway to impacted soil". It is made within a section on soil capping. We look at the many toxic contaminants that are found on UPC OU-SM and we conclude that whatever buildings that are built here should be separated from the ground level by pillars (on the perimeter and within It) that would allow air to flow between the ground level and the floor of the structure. The pathway from impacted soil would be broken. We think that this is necessary to protect human health even with all the remedial actions that are called for in Alternative 3.

Response: The exposure pathway to impacted soil will be broken with the minimum 5-foot thick clean soil cover and/or the roadways, building foundations, or other hardscape which will act as a cap. We can pass on this recommendation for the future development to UPC and their engineers. However, we cannot specify any particular construction design in the FS/RAP as that is outside the jurisdiction of DTSC. We will review any mitigation plans to ensure that the technology selected will be appropriate to mitigate the concentrations of contaminants identified.

Comment 2.12. The information on truck trips to either import soil for the soil cap or export contaminated soil indicates that all of these trips will have a significant impact on traffic in the area. It will also generate greenhouse gases. The rules and routes used must be carefully designed to lessen the disruption caused by this project on surrounding communities and U.S. 101. The trucks used for the soil hauling must be zero emissions vehicles. These activities are projected to take place three to six years into the future and the efforts to blunt the effects of Climate Change will be even more of a priority than they are today. There are other remedial activities that occur totally within the boundaries of the Baylands. These internal trips must be taken into account when

calculating greenhouse gas emissions and noise and what must be done to mitigate impacts.

Response: The effects of traffic and greenhouse gas emissions for site development will be evaluated in the Brisbane Baylands Specific Plan Environmental Impact Report (SP EIR) currently being prepared by the City of Brisbane. The haul routes and traffic control measures will be outlined in the RDIP. These routes will also need to be approved by the City of Brisbane. We will pass on your comment that zero emissions vehicles be used; however, DTSC does not have the authority to mandate this.

Comment 2.13. In Section 2.2 of the Health Risk Assessment, it states that deep groundwater that meets standards for drinking water should be considered a potential source of drinking water. The BBCAG strongly opposes this decision. There is no guarantee that this deep groundwater will remain untainted there are many activities on the e.g. excavating, pile driving and other disturbance caused by construction that could disturb the path of the groundwater. Another possibility is salt water intrusion from rising sea water

Response: Legally, all groundwater in the Bay Area is considered an existing or potential source of drinking water, unless exempted. The Visitacion Valley groundwater basin is listed as a potential source of municipal and domestic water supply in the Water Quality Control Plan for the San Francisco Bay Basin (the table identifying existing and potential beneficial uses can be found here: https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/tab/tab_2-02.pdf.

Therefore, DTSC evaluated the groundwater at UPC OU-SM and is including a deed restriction prohibiting the use of the shallow groundwater as part of the remedy. DTSC will continue to monitor the groundwater at UPC OU-SM as part of the groundwater monitoring program to ensure that the Schlage OU remedy is functioning as designed (see response to **Comment 2.21**).

Comment 2.14. The RWQCB or Cal EPA should suggest to the California Legislature that new laws more protective of human health and the environment be put in place. Laws that are based on more recent research that is expansive rather than narrow in its scope of possible additive and synergistic effects from the combination of many toxic chemicals and metals. Perhaps, the loss of diversity of animal and plant species and the expectation that 1 in 2 men will get cancer in their lifetime and 1 in three women will get cancer result from the current regulatory approach. The laws we have now that allow from 1 to 100 extra cases of cancer to result from one project are helping drive those rates.

Response: Thank you for your recommendation. DTSC encourages you to work with your elected representatives to express these concerns. The remedy included in the FS/RAP is designed to be protective of future anticipated users, consistent with applicable law.

Comment 2.15. (Appendix F1) What happened to Oyster Point Properties? It was shown as one of the owners when CA DHS was the regulator prior to DTSC issued an Imminent and/or Substantial Endangerment Order in February 1990. The other owner was Tuntex aka Sunquest that became UPC.

Response: Sunquest Properties, Inc. is the successor in interest to Tuntex Properties, Inc., which is the successor in interest to Oyster Point Properties, Inc. In short, Oyster Point Properties, Inc. became part of Sunquest Properties, Inc.

Comment 2.16. (Appendix F1-F3) The Non-Binding Assessment of Responsibility was made by DTSC. It states that 25% of responsibility is assigned to current owner, Sunquest (UPC) and 75% is assigned to Union Pacific Corp, the successor to Southern Pacific Transportation Company. We realize that this is non-binding but it seems to be a place to start a discussion of financial responsibility for the effects on BBCAG Comments contamination. DTSC has said that there will be a bond to assure payment by the responsible parties. The bulk of the financial burden, 75%, is belongs to a railroad and railroads can have a unique status under the law that dates back to the

19th century and so there may be an angle relating to financial responsibility that may give an incentive to litigants to look for another party for responsibility. For example, the City of Brisbane that approved development on this contaminated and partially remediated land. Has this possible eventuality been researched and has a legal opinion been given by DTSC?

Response: The preliminary nonbinding allocation of responsibility (NBAR) is required by California Health and Safety Code 25356.1(e), which states "the remedial action plan shall also include a nonbinding preliminary allocation of responsibility among all identifiable potentially responsible parties at a particular site, including those parties which may have been released, or may otherwise be immune, from liability pursuant to this chapter or any other provision of law." As noted in Appendix F in the FS/RAP, the purpose of the NBAR was to establish which potentially responsible parties (PRPs) have an aggregate allocation in excess of 50% and could convene arbitration if they so choose. DTSC's Remedial Action Plan Policy, notes that "the NBAR, which is based on the evidence available to the DTSC, is not binding on anyone, including PRPs, DTSC, or the arbitration panel."

The 2008 Consent Order between UPC and DTSC regarding Schlage OU, UPC OU-SF, and UPC OU-SM, applies to and is binding on UPC and its subsidiary and parent corporations. No change in ownership relating to the Site will affect UPC's obligations under the Order. DTSC can also fine UPC penalties of up to $25,000 for each day out of compliance with any term or condition set forth in the Consent Order. Once the remedy, or any phase of the remedy, has been implemented at the Site, DTSC will enter into an Operation and Maintenance (O&M) Agreement with UPC to ensure the remedy (or remedy for that phase) is maintained. A financial assurance mechanism that will cover the projected costs of maintaining the remedy (or remedy for the completed phase) over 30 years will also be required to be put in place prior to signing the O&M Agreement. The cost estimate is based on what it would cost the property owner to hire a third party to maintain the remedy or remedy for the phase. This mechanism ensures that financial resources are available for DTSC to take over the management and stewardship of the site in case UPC fails to meet its obligations due to financial insolvency or other reasons. This also ensures that DTSC protects human health and the environment without placing a burden upon California taxpayers. Upon DTSC approval the financial assurance mechanism may be assumed by a site management organization or community facilities district. However, any such assumption would be subject to the same requirements of the Health & Safety Code as applicable to UPC or any other responsible party.

Comment 2.17. (Appendix D) Why do the Submittal Guidelines for Imported Soil in Table 1 allow some Baylands Soil Processing Environmental Screening Levels(BSPESL) to be so much higher than Background For example, Chromium's background level is 120mg/kg and BSPESL is 120,000 mg/kg while for other chemicals/metals e.g. Cobalt and Endrin, the numbers match? It seems like you are importing soil contamination.

Response: USEPA defines background as constituents or locations that are not influenced by the releases from a site and is usually described as naturally occurring or anthropogenic. Anthropogenic constituents can include natural and man-made substances present in the environment as a result of human activities (not related to the release at the Site). Naturally occurring substances are present in the environment without the influence of human activity (generally limited to metals). DTSC does not require cleanup below natural background concentrations. Background concentrations vary from site to site based on the geology and the environment.

One of the purposes of sampling import fill is to ensure that nothing being imported exceeds any of the cleanup goals or naturally occurring background levels established for the Site. Cleanup goals are developed based on the risk chemicals pose to human health and the environment and can often differ from background concentrations. When evaluating import fill, chemical concentrations are compared to cleanup goals to ensure the project is protective of human health and the environment. As fill material is typically coming from a different area with a different geology, the fill material is evaluated based on cleanup goals so that the fill can meet the standard that is protective of the future use of the site.

For chromium, the 120,000 mg/kg value is from the San Francisco Bay Regional Water Quality Control Board's Environmental Screening Levels (ESLs), which are considered to be protective for typical Bay Area sites. The presence of a chemical in soil below the corresponding ESL can be assumed to not pose a significant threat to human health, water resources, or the environment. Soil that has concentrations of chromium at 120,000 mg/kg or lower will be allowed to be imported to the Site. Further information regarding ESLs can be found here:
https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.html.

Comment 2.18. (Appendix C) Alternative 3, 2A-2B

> The cost estimate is $12,600,000. Footnote 3 states the actual cost for soil vapor intrusion mitigation is unknown until soil sampling is complete. The placeholder in cost estimate is for the purpose of comparing alternatives. The only soil vapor mitigation in this estimate are the vapor barriers or the sub-slab venting systems. It does not include any above slab alarm alerting systems that would assure the health of the building occupants if the under slab barrier or sub slab venting systems fail.

Response: Current vapor mitigation systems typically do not have alarms that go off when concentrations of volatile organic compounds (VOCs) exceed the threshold. This is because such real time monitoring equipment is not presently available. The O&M Plans for the vapor mitigation systems require routine monitoring, sampling, and testing by a certified laboratory to verify the system is operating as designed and vapors are not migrating into the building air space. (See Response to **Comment 2.7**).

Comment 2.19. (Appendix C) HRA

> The Particulate Matter Exposure Frequency for nearby offsite individuals, 60 days/yr. seems low. There may be 12 hr. and 24hr, workdays and there may be 6 day weeks. The exposure level requires more specific information for this project.

Response: The Health Risk Assessment (HRA) includes a baseline assessment based on the projected exposure to receptors should no mitigating actions be taken. The exposure frequency was developed based on the project schedule and the anticipated number of days ground-disturbing activities will take place. The HRA documents the need for mitigation measures and action thresholds. The Remedial Design Implementation Plan (RDIP) will include an air monitoring plan, which will include action levels at which work must be stopped and specific mitigation measures. Further, dust monitors will be placed strategically along the fence line of the boundary to ensure dust is not migrating off-Site. The dust control measures, which will be included in the RDIP, will be consistent with the California Ambient Air Quality Standards and DTSC's Community Air Monitoring Plan guidance released in January 2020. Here is the direct link to the document: https://dtsc.ca.gov/wp-content/uploads/sites/31/2020/10/2020-CAMP-Guide-FINAL-w-appendices-072020-A.pdf. The mitigation measures would prevent exposure for nearby offsite individuals that you have referenced above.

Comment 2.20. (Appendix B) Health Risk Assessment Pg. 196/628

> Tables 9-14a are about excess Cancer risk and non- Cancer health risk from Chemicals of Concern, e.g. Vinyl Chloride or Metals of Concern, e.g. Arsenic for future residents or workers and Construction Workers in different settings (soil, soil vapor or groundwater). There are values that are shown in red on the Tables. It appears that those are values of concern. There needs to be an expression in the DRAP of the risk that is easily understood by members of the public e.g. 1 in 10,000,000 or 1 in 100 in the DRAP.
>
> There should also be a requirement that the property owner to notify potential residents and potential construction workers and other workers of the health risk they are being exposed to. The risk should be described in terms as shown above, 1 in 1000, for example. The warning should be under separate cover from other admonitions. It should be in at least 14 point type, show the name of the contaminant, what type of risk it represents, and it should be signed that it has been reviewed. A copy should be given

to the signer. We consider these health risks to be important pieces of information to those who will bare them and fairness dictate that they be well informed. BBCAG believes that current law is not as protective of human health and environmental as it should be. We therefore wish the enforcement of current law to be vigorous and exacting.

Response: The values shown in red in the tables included with the Health Risk Assessment are the assessed risk or hazard quotients that exceed DTSC's point of departure (i.e., 1 in 1,000,000 risk or a hazard quotient equal to 1). The health risk assessment is for current site conditions prior to remedial actions and will not be representative of the site conditions for future site users, including, but not limited to site workers. The scope of the remedy has been developed so that exposure conditions for residential users post-remediation are below the point of departure for residential land uses.

Moreover, as provided in the FS/RAP, DTSC will prepare a land use covenant (LUC) which establishes that the remedy components must remain in place and functional (e.g. the cap must remain in place). The standard language in DTSC's LUCs requires that their requirements be incorporated by reference in all leases and deeds for the restricted property. The property owner is required to disclose that there is contamination remaining in place at the site as part of the documentation for leasing or purchasing a property.

Comment 2.21. Why weren't more tests made in the lower groundwater flow in the Merced and Colma formations. The Young Bay Mud may provide some level of protection against migration from higher groundwater but it would be prudent to have more information about the presence of Chemicals and Metals of Concern in the lower groundwater. More testing should be done there. Neither the upper nor lower groundwater should ever be considered a potential source for drinking water.

Response: Groundwater samples have been collected from numerous locations across the site from the Merced and Colma formations since 1997 and have been analyzed for the chemicals of concern during that time. Based on the extensive record of data created, sampling of these wells was appropriately paused in anticipation of remedy implementation and the proposed development. After the remedy has been implemented, new groundwater monitoring wells will be installed to further monitor potential impacts to the Fill, Merced, and Colma formations.

Regarding the potential source of drinking water, while the Water Board's San Francisco Bay Basin Plan may consider the deeper groundwater formations for potential beneficial uses, this does not imply that the groundwater will be used for drinking water or other beneficial uses. The determination of potential beneficial use is intended to protect groundwater and provide a mechanism to establish remediation objectives for contaminated groundwater. The Water Board's San Francisco Bay Basin Plan is identified as an Applicable or Relevant and Appropriate Requirement (ARAR) for the Site and had to be considered in the FS/RAP under CERCLA (the Comprehensive Environmental Response, Compensation, and Liability Act which is also known as Superfund). ARARs are federal or state laws, regulations, standards, criteria or requirements which would apply to the cleanup of hazardous substances at a particular site. If the groundwater were to be considered as a drinking water supply, the water would have to undergo chemical analysis and aquifer testing to identify for which uses it would be appropriate. (See also Response to **Comment 2.13**).

Comment 2.22. Figure 9 of the HRA is puzzling. It shows the "Water Table" in UPC OU-SM to be located above the existing fill and below the existing grade. I understood that the upper groundwater (which we thought was the water table) was located just above the Young Bay Mud. Does this Figure need to be corrected?

Response: There is no Figure 9 in the HRA. The only Figure 9 in the entire FS/RAP depicts the distribution of lead concentrations throughout the Site. Figure 21 of the FS/RAP, which depicts the Conceptual Cross-Section of Redevelopment with Preferred Alternatives, is likely the figure referenced by this comment as it shows the Water Table, Existing Fill, and Bay Mud. The dashed line depicting the water table runs through the existing fill layer – in other words, the water table is encountered about halfway through the layer of existing fill.

However, we will direct Geosyntec to make edits to the figure to clarify the locations of the Water Table and boundaries of the Existing Fill and Young Bay Mud.

Comment 2.23. On page 15 of the Draft FS/RAP, Section 1, the following is confusing. This "site" does not address CVOC's that migrate from Schlage because that is being taken care of by FS/RAP Schlage OU, 2009 primarily addressing groundwater.

Does that mean that all of the CVOC's listed in the Data Gap Investigation of 2018 come from somewhere else? The soil and soil vapor contamination come from a source other than Schlage? What is the source? Is it Southern Pacific TC? It isn't clear how or whether the contamination coming from Schlage is being included in the Health Risk Assessment or the totals of the contamination that is present and needs to be remediated. Statements are made that CVOC's are not considered here but other statements say it is in this DRAP. This RAP covers soil, soil vapor and groundwater from non-Schlage sources. The Schlage RAP covered CVOC's in groundwater. How do you differentiate where the COVC's in groundwater came from?

On page 30 of the Draft FS/RAP, it states "CVOC's in soil appear to be representative of CVOC's in soil vapor occupying the unsaturated pore space and
not CVOC's adsorbed into the soil as a result of spill or release from past activity on site also groundwater extraction from Schlage OU remedy from extraction wells on the site likely resulted in distribution of CVOC's within fill that is not representative of groundwater flow patterns."

Also on page 30, "VOC concentration in groundwater detected in fill at the site are likely from upgradient Schlage and UPC OU site"

On page 33, section 6, it says "..metals in groundwater may not be from be from historical activities at the site."

Does Draft FS/RAP include Schlage OU RAP as historical data? It seems like it should in order to assess the human health and environmental risk in order to perform the feasibility study and to develop remediation or mitigation strategies.

Response: The 2008 Consent Order between DTSC and UPC redefined the former Schlage Lock and Southern Pacific Brisbane Railyard sites. The Southern Pacific Brisbane Railyard site was no longer referred to as OU-1 (North and South) and became UPC OU-San Francisco (UPC OU-SF) and UPC OU-San Mateo (UPC OU-SM). The former Schlage Lock property became the Schlage OU, defined as the former Schlage Lock property in addition to the soil and groundwater impacted with chlorinated volatile organic compounds (CVOCs) located within UPC OU-SF and UPC OU-SM that have migrated from the Schlage OU.

The CVOCs discussed in the 2018 Data Gap Investigation for UPC OU-SM have migrated south from the Schlage OU; Schlage OU is the source of the CVOCs. Based on its previous site use, chlorinated solvents were unlikely to have been used at UPC OU-SM. There is no evidence of a release of CVOCs to the soil at UPC OU-SM, unlike at Schlage OU. The draft FS/RAP does not use the Schlage OU FS/RAP as historical data, as the data in the Schlage OU FS/RAP is outdated by 12 years, does not take into consideration, e.g., remedial actions to address groundwater, and is no longer representative of current Site conditions. The 2018 Data Gap Investigation provides more recent information about current Site conditions.

CVOCs are included in the Health Risk Assessment prepared for the UPC OU-SM FS/RAP as they are present at the Site due to the plume migrating south from Schlage OU. However, as discussed above, the CVOCs are considered part of the Schlage OU and are being remediated under the Schlage OU remedy.

Comment 2.24. The draft FS/RAP on this and all other projects should be subject to peer review by a qualified independent outside company or institution, without conflicts of interest before the draft is released to the public. This review would help to prevent influences from the political trends of any given time that the Draft FS/RAP is created. It would prevent the agency from downplaying past questionable agency decisions. It

would help convince the public that the agency was not working so closely with the developer that their regulatory role was being co-opted. Peer review and more transparency improve the work product and consequently human health and the health of the environment. This same idea should be applied to RWQCB, BAAQCB and the Integrated Waste Management Board.

Response: The preparation and DTSC's review of the FS/RAP complies with the requirements outlined in California HSC Section 25356.1. California law and Government Code Section 87200 requires all DTSC employees who have a Conflict-of-Interest designation (the entire DTSC project team for UPC OU-SM) to complete a biennial ethics course run by the California Department of Justice. Every elected official and public employee who makes or influences government decisions must also submit a Statement of Economic Interest, also known as the Form 700, which provides information to the public about an official's personal financial interests and any potential conflict of interests. DTSC has thoroughly reviewed the FS/RAP.

Moreover, the City of Brisbane hired their own independent consultant to review and comment on the FS/RAP and their feedback was taken into consideration and incorporated where appropriate prior to releasing the draft FS/RAP for public review and comment. California HSC Section 25358.9 states that "A community advisory group established pursuant to Section 25358.7.1 may request, in writing, and a potentially responsible party or parties may fund, a technical assistance grant for a site for the purpose of providing technical assistance to the community advisory group."

DTSC encourages you to work with your elected representatives to express concerns regarding changes beyond the scope of this project.

3. Commenter: Dana Dillworth, Community Member

Comment 3.1. This CEQA document reads like an "Alice in Wonderland" riddle, or a shell game. It's connected, but it's not. It will get cleaned up, but maybe not. Unacceptable levels, are acceptable now. How can this be an adequate environmental feasibility study? Maybe it's not.

Response: The preparation and DTSC's review of the FS/RAP complies with the requirements outlined in California HSC Section 25356.1. The City of Brisbane also hired their own independent consultant to review and comment on the document and their feedback was taken into consideration and incorporated where appropriate prior to releasing the draft FS/RAP for public review and comment. DTSC staff are always willing to walk you through this document or other Site-related documents to aid in understanding.

Comment 3.2. I have a concern that the greatest portion of this introductory history is about the Schlage Lock site. In reality, the OU-SM (OU-1 Brisbane) has lain fallow with one modest injection test, while 25 years of INTERMEDIATE, experimental in-situ remediation techniques were taking place off site. You mention that the COVC's are part of the Schlage Plan and defer any additional information. For this document to be adequate, we need to know how the remediation techniques on the northern part of this site will impact cleanup levels and future receptors going southward.

Response: As discussed in the response to **Comment 2.23**, CVOCs are defined as part of the Schlage OU and must be addressed under the remedy for the Schlage OU. The CVOCs are migrating downgradient from the source at Schlage OU. Treating the source of the CVOCs at Schlage OU would thus address the presence of CVOCs at UPC OU-SM. Pilot studies were conducted at Schlage OU in 2008 to test the efficacy of two different groundwater remedial methods prior to selecting the remedy in the Schlage FS/RAP. The Schlage FS/RAP selected in-situ injections of emulsified vegetable oil and bacterial cultures to encourage biodegradation of the CVOCs in groundwater. This remedy is neither an intermediate step nor is it experimental; in-situ bioremediation of CVOCs has been conducted at Superfund sites effectively for over two decades. The Schlage 5-Year Review Report, available on Envirostor, discusses the continuing efficacy of the in-situ injections and

additional work to be done to facilitate the biodegradation. Here is the direct link to the document:
https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/3859021842/Schlage_First5YrRevRpt_2020Apr.pdf

Comment 3.3. A dotted line is not adequate. Is this a FOREVER-contaminated site? Will this become one of the locations that you stockpile all the other contaminated soils? Will there be fencing to indicate this area is more toxic than others? Present protective signage is inadequate on the Baylands.

Response: The Site will be safe for residential and commercial use after the remedy is implemented and fencing and signage will not be necessary after the remedy is implemented. The metal COCs will not break down as they are already in their elemental form. DTSC uses the most up to date technology in applying mandatory state and federal criteria found in the National Contingency Plan when evaluating cleanup alternatives. Only remedies that are protective of human health and the environmental can be considered eligible for selection. Excavation and capping or off-site disposal of soil is a remedy that has been implemented at numerous sites by USEPA at Superfund sites. This method is also identified in DTSC's Proven Technologies and Remedies Guidance – Remediation of Metals in Soil for remediating metals and organochlorine pesticides in soil. This guidance document can be found here: https://dtsc.ca.gov/wp-content/uploads/sites/31/2016/01/Guidance_Remediation-Soils.pdf

All soil will be screened against the Submittal Guidelines for Imported Soil in Appendix D of the FS/RAP prior to being brought to the Site. As this Site is not a permitted landfill, it would be against local, state, and federal regulations to stockpile contaminated soils from other sites here.

Comment 3.4. The Nature and Extent of Contamination (pgs 17-26) reads like a toxic soup label. Hard to believe that 404 out of 414 samples contain arsenic, 410 out of 414 contain barium, 400 out of 405 contain chromium, 407 out of 414 contain lead, 374 out of 387 contain mercury, 293 out of 331 samples contain antimony, 336 out of 338 samples contained cobalt, all 338 samples contained nickel…but because of one reason or another, it's not worthy of any more than five feet of clean fill to protect the public? No cumulative impact comment?

Response: Arsenic, barium, chromium, lead, mercury, antimony, cobalt, and nickel, are all naturally-occurring metals and are commonly found in soil and the Franciscan Complex bedrock that underlies most of the Bay Area. Most of these samples contained concentrations of metals below the relevant risk-based screening levels. However, there are metals like arsenic that are commonly present across the State, including the Bay Area, at concentrations above typical screening levels. Soils at and around the site are typically derived from rocks (i.e., the Franciscan Complex) known to contain naturally-occurring elevated concentrations of arsenic.

Metals are typically not mobile in soil. Therefore, to address the condition, an orange delineation geotextile fabric will be placed over the contaminated soil (to warn of impacted soil below it), and a minimum of five feet of clean fill or hardscape will cover the capped areas. There will be no exposure to the contaminated soil after the remedy is implemented. Land use covenants, annual land use inspections, and Five-Year Reviews will be required and will ensure long-term protectiveness of the remedy.

The health risk assessment (HRA) included in Appendix B of the FS/RAP assesses the individual and cumulative impact of all the contaminants of concern at the Site. The results of the HRA found that present Site conditions are protective for current populations (i.e., site visitors, commercial/industrial workers at neighboring facilities, and residents of adjacent neighborhoods) but future action to remediate or mitigate potential exposure to chemicals of concern (COCs) in soil and soil vapor are necessary to protect future workers and residents at the Site. The risk assessment in the FS/RAP appropriately considers the cumulative impacts of the chemicals of concern.

Comment 3.5. The Data Gap tests are merely one moment in time, they lack the benefit of yearly observations including wet and dry seasonal variations. They are not adequate to ascertain whether there are no longer COC's or where they are coming from. To help us prepare for safe housing and future development assurances that everything is fine or it will be decided later, is not acceptable. This document does not meet the environmental standards required.

Response: Once the remediation work is complete, the Site will be safe for residential use. Soil samples have been collected at UPC OU-SM since 1984. The 2018 Data Gap Investigation was conducted to address the following four data gaps:

1. To assess potential impacts to soil and groundwater from historical industrial activities at the Site, especially in the central and south areas, where sampling had been limited.
2. To analyze for chemicals that could reasonably be present at the Site based on its past use, including PAHs, TPH, PCBs, and OCPs, and asbestos.
3. To have a finer understanding of spatial distribution of metals in soil for the health risk assessment and to develop remedial alternatives.
4. And to update the groundwater model of the Site, given that samples had been collected mainly from the northern portion of the Site as part of the groundwater monitoring program for the Schlage OU.

The 2018 Data Gap Investigation met DTSC's standards, and the results of the 2018 Data Gap Investigation are consistent with past findings and UPC OU-SM's prior industrial use. Metals, PAHs, TPH, PCBs, and OCPs are not very mobile and tend to adhere to soil and would not be significantly affected by wet and dry seasonal variations. The RDIP will include further details for the purposes of remedial soil excavation, and post excavation confirmation sampling will be conducted to ensure that the cleanup levels have been met.

Comment 3.6. Five feet of clean fill is not an adequate remediation, it only serves as a temporary barrier to ONE path of exposure. Where is the protective barrier to signal to anyone who drills that they shouldn't dig any deeper? Where is the protective barrier during an earthquake, where the poorly lain soils become jelly underfoot? Where are the TRUE dangers of poorly consolidated man-made fill atop old bay mud during an earthquake discussed in this document?

Response: A five-foot cap exceeds typical remedial design requirements. DTSC's Proven Technologies and Remedies Guidance for Metals in Soil, Section 8.4.1, (https://dtsc.ca.gov/wp-content/uploads/sites/31/2016/01/Guidance_Remediation-Soils.pdf), states that a minimum cover thickness of approximately two feet is adequate for most sites. The fill will be placed at the Site under the direction of a licensed geotechnical engineer and compacted for strength and stability. Soil liquefaction happens when poorly consolidated and waterlogged soil loses its strength in response to strong ground shaking. All structures at UPC OU-SM will be designed following the requirements of the California Building Code (CBC) and the guidelines established by the US Geological Survey and the California Geological Survey. Building permits, which are required prior to construction, will be issued only after the building designs are reviewed by the City of Brisbane's building department. There will be an Operation and Maintenance (O&M) Plan prepared for UPC OU-SM after the implementation of the FS/RAP and RDIP which will include requirements for inspecting and repairing the cap after a natural disaster. There will also be a brightly color geotextile fabric that will serve as a visual delineation of the fill from the capped soil.

Please also see our responses to **Comments 2.6** and **2.11**.

Comment 3.7. You heard through multiple questions from the public, queries about the depth of your testing, about different levels of cleanup standards that were alluded to by the circular riddles of how deep did you test and who decides our CUL's, our acceptable background levels, and dilution factors? The one-time sampling in 2018 seems inadequate. Tests were primarily shallow and some parts of the property, on the eastern end, the waste-fill is greater than 20 feet deep. The incomplete study seems to create a

piecemealed response, especially if you consider lateral groundwater movement and the artesian effect of slumping of land when dewatered. No mention, curious.

Response: Drilling and extraction of groundwater will be prohibited by the land use covenants (LUCs) without prior approval from DTSC. However, there are no plans to use the groundwater at the Site; the General Plan as amended by Measure JJ requires that a reliable water supply be identified and approved by the City of Brisbane prior to development at the Brisbane Baylands. Many of the groundwater wells in the Colma and Merced Formation exhibit artesian conditions, which indicates that there is little to no communication between the Fill and the deeper groundwater layers (zones).

DTSC's Human Health Risk Assessment Note 4 (https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/05/HHRA-Note-Number-4-May-14-2019.pdf) recommends that soil samples from the 0 to 10 foot below ground surface interval be collected to evaluate current and future residential land use scenarios. USEPA recommends that subsurface samples be collected from the ground surface until no contamination is detected or groundwater is encountered. The Health Risk Assessment, located in Section 4 of the RAP, indicates that exposure at depth is unlikely due to the proposed uses at the Site. Please also see the Response to **Comments 2.21** and **3.5**.

The cleanup levels identified in the FS/RAP – with the exception of arsenic and polycyclic aromatic hydrocarbons (PAHs) – are all based on screening levels in DTSC's Human Health Risk Assessment Note 3 (https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf) or USEPA's Regional Screening Levels. Given the geological makeup of the Bay Area, naturally-occurring arsenic is widespread in the Bay Area and the cleanup goal is set to the background level (see the response to **Comment 2.17** for further discussion about background). PAHs are associated with the combustion of fossil fuels, industrial and commercial activities, and natural sources such as wildfires and volcanic activity. Because of their ubiquitous nature, the cleanup level for PAHs was set to the 95th percentile of background concentration of PAHs in Northern California.

Comment 3.8. Only five tests along Bayshore Boulevard and simultaneously ignoring the "castle" (northwest corner, a former gas station?) aren't adequately tested. You cleaned up a slop it and call detection of hydrocarbons done? 100% remediated? Your environmental assessment of up-gradient COC's from Visitacion Valley's known contaminated former industrial sites (Midway Village, PG&E, multiple gas stations along the western border) are completely lacking. How can this be an adequate environmental review when trouble could be brewing and constantly moving below?

Response: Gas stations are remediated under the jurisdiction of the Water Board and information regarding nearby Underground Storage Tank (UST) cases is available on the Water Board's Geotracker database (https://geotracker.waterboards.ca.gov/).

If upgradient sites were impacting UPC OU-SM, then UPC OU-SM would be treated as an extension of the upgradient site under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act which is also known as Superfund). There is no requirement that nearby sites be discussed in the remedy decision document (i.e., FS/RAP) unless they were known to be affecting the Site. Here the referenced sites do not appear to be impacting UPC OU-SM.

The contaminants of concern at Midway Village and the neighboring PG&E sites are primarily PAHs from historical manufactured gas plants. Most PAHs stick to soil and do not dissolve easily in water. While groundwater contamination at Midway Village is still under evaluation, groundwater monitoring at the PG&E Martin Service Center has shown that PAHs in groundwater in wells along Bayshore Boulevard do not exceed screening levels. Additionally, a groundwater remedy was installed along Bayshore Boulevard for the PG&E Martin Service Center to protect downgradient groundwater.

Comment 3.9. There is also a lack of mention that a toxic mold or fungus affects the few remaining buildings, our fire station, and the former ARCO building on the southern end. A protective barrier may be mandatory for ALL buildings and enclosures rather than decided on a case by case basis. Full disclosure please.

Response: There are no currently existing buildings on UPC OU-SM. Please contact the Brisbane Fire Department directly or the San Mateo County Health Department regarding your concerns about their building.

Comment 3.10. Lack of alternatives have been considered. You mention truck trips while failing to see the rail cars as a way to get it cleaner, rather than leave a calculated 50% of the toxins in place.

Response: The truck haul routes have not been established yet and will be determined in the RDIP. DTSC will encourage UPC to use the most efficient technology available at the time to reduce greenhouse gas emissions. Alternative 5 in the FS/RAP, which considered excavating all soil with COC concentrations exceeding cleanup levels to a maximum of 5 feet below ground surface or to the depth where COC concentrations were below screening levels, assumed a total of 291,000 cubic yards to be off-hauled and disposed off-Site. The off-haul would take about 3 years, and then clean fill would need to be imported to the Site, which would involve additional truck traffic and time. The extensive excavation and off-haul associated with Alternative 5 had the highest risk of exposure and the greatest impacts to air quality, noise, and traffic during implementation. As Alternative 3 met the Primary Balancing Criteria with less impact to the environment and neighboring community, Alternative 5 was not selected in the FS/RAP.

The transportation method used to off-haul soil from the Site does not alter the evaluation of the primary balancing criteria for the remedial alternatives. Regardless of how the soil is transported off-site, the remedial alternatives will still require excavation of the soil, off-site disposal of the soil at a permitted landfill, and the import of clean backfill material to the Site. The transportation method used for the soil has no effect on the long-term effectiveness and permanence or reduction of toxicity, mobility, or volume through treatment for the remedial alternatives. The transportation method used at the Site will also not affect the amount of time required to excavate soil. There are no permitted landfill facilities located in California that can accept the soil from the Site via rail. Therefore, the railroad diesel trains will have to travel significantly further to reach permitted landfill facilities (closest facilities permitted to accept hazardous waste via rail are located in Utah).

Since the transportation method does not affect the quantity of soil requiring off-site disposal and the quantity of clean backfill material required to replace the soil, the implementability of the alternatives using rail is not significantly modified; permits and local agency approvals would still be required to implement the work.

Comment 3.11. The proposed remedy of vapor intrusion systems are guesstimated science. It should be clearly indicated that there are receptors of concern, that children, elders and folks with compromised immune systems will experience greater impacts to toxins you choose to leave in place. Your HRA seems to miss some important details when it claims that current folks aren’t at risk by the current conditions. The surfaces have been bulldozed and what minor cover was placed 25 years ago has blown away. The assumptions in this study need to be carefully questioned.

Response: DTSC’s default exposure factors for use in HRAs include exposure parameters tailored to children. As the future users of UPC OU-SM are unknown, the exposure assumptions for future residents included children in order to have the most stringent standards in place. The HRA in the FS/RAP relied on the most recent data collected during the 2018 Data Gap Investigation, so if there have been changes at the site in the last 25 years, the current site conditions have been considered. Moreover, a soil vapor assessment will be performed in advance of constructing occupied structures. DTSC will evaluate the results and determine whether a vapor intrusion mitigation system will be required. Therefore, the evaluation of vapor intrusion risk will be based on current conditions for future residents. The HRA found that present Site conditions are protective for neighboring

populations (because the site is vacant) but that future remediation is necessary to protect future workers and residents at the Site.

Comment 3.12. Truck entry behind the fire station should be prohibited. It is not a properly maintained street and will degrade from the weight and movement of multiple trucks. It will cause dust in areas with known protected species. Your environmental document has not considered the impacts of the remediation techniques you propose and is inadequate in its site description. You have failed to meet the needs of future planners.

Response: The traffic routes will be outlined in the Remedial Design Implementation Plan (RDIP) and will also need to be approved by the City of Brisbane. The RDIP will also include dust control measures and will need to follow DTSC's Community Air Monitoring Program Guidance. DTSC will have a meeting to present the RDIP. While sensitive habitat was not identified as being present at UPC OU-SM in the EIR certified by the City of Brisbane in 2018, caution will be taken during construction to minimize any impacts to on-site and off-site biological receptors.

Comment 3.13. Brisbane residents were promised independent review of the clean up. It doesn't seem to be presented here and therefore, we have been lied to. I hope you do not certify this as adequate and require additional review. Playing the riddle that this is handled in the previous EIR is preposterous.

Response: The City of Brisbane certified the EIR in 2018 to analyze the environmental effects of the proposed development of the Brisbane Baylands. The City of Brisbane is the lead agency for CEQA and DTSC is a responsible agency that has regulatory authority of the Site. DTSC reviewed the EIR and concluded that the FS/RAP would not result in new significant environmental impacts due to the mitigation measures that will be in place. The City of Brisbane gave notice in February 2020 that it is currently preparing an EIR for the Brisbane Baylands Specific Plan.

DTSC provided an independent review of the FS/RAP beginning in April 2019 when the first draft of the FS/RAP was submitted. The FS/RAP has since gone through many rounds of edits incorporating DTSC's comments before this draft final version of the document was made available to the public. The City of Brisbane also hired an independent consultant, EKI, to review the FS/RAP and they have provided comments as well.

Please also see our response to **Comment 2.24**.

Feasibility Study/Remedial Action Plan – Comments Received and Project Team Responses Provided During the Public Meeting (Extracted from Transcript and Edited for Readability; see Attachment 4 for Full Transcript)

4. **Commenter: Clara Johnson, BBCAG Chair**

Comment 4.1. If I understand correctly, the means of remediation will be by way of the cap, excavation and removal and that there isn't any other type of remediation that's going to be carried on. Is that right?

Response from DTSC: Yes, excavation and capping are very common and proven technologies that are approved by USEPA and DTSC for projects like this where the soil and contaminants are not mobile. For the CVOCs, with the way the site was defined in 2008, those must be addressed under the remedy for the Schlage Lock site. Hence, we identified that further work must be done in the Five-Year Review. That work will affect those CVOCs because they are moving south from the Schlage site into the UPC OU-SM site. If you treat the source, it will address the off-site migration and there will be less work and disruption.

As for the operation and maintenance plan, the primary goal of it is to maintain the integrity of the cap and if we do have any vapor intrusion, maintain any mitigation systems that we find necessary to be put into buildings. The operation and maintenance plan also covers inspection and maintenance of those mitigation systems as well.

Comment 4.2. You said that the CVOCs that are there don't move very easily. Does that includes the PAHs? Of the different categories of contaminants, which ones are being removed by which method? In other words, are all of these being taken care of by being capped or are some being removed by excavation?

Response from DTSC: It depends on the future grading plan, the placement of the buildings, and how the site is laid out. It is not so much that one specific contaminant is being addressed by capping or by excavation - it is more about the layout of the site and which specific area of the site we are talking about.

Comment 4.3. So, is anything besides the CVOCs being transported by groundwater?

Response from DTSC: The other contaminants are generally not mobile in water. CVOCs are the main thing that we are concerned about being transported by groundwater.

Comment 4.4. On slide 11, you use the word "generally" in describing what would happen to a particular type of COC, and the word "generally" seems to me to be one that is difficult to understand what it actually means. What is the non-general portion of organochlorine pesticides (OCPs) that is above the reporting limit?

Response from DTSC: There were only a few locations with samples across the entire site that had the OCPs above screening levels. The reporting limits are pretty much what an analytical lab would say: they are confident that it is at the location at this concentration, which is the minimum concentration at which they can be sure it is there – it is a measure of accuracy. If we say it is generally below reporting limits, it is non-detectable, which essentially means it is not in the soil. What I meant by this is that the distribution is very low across the entire site and if they were detected, the concentrations detected are low. To paraphrase, at most of the locations, the concentrations were so low that the lab could not see that they were there.

Comment 4.5. You're going to be testing the materials coming out of the Schlage site for 30 years or however long they need to be to be tested, correct?

Response from DTSC: Correct.

Comment 4.6. I wondered if it might help with the public acceptance if you were to send out a short report that would say something to the effect of "according to the groundwater monitoring report, the following things or the following class of chemicals has not changed." Or "this has changed and it's going up and this is what we're going to do about it" I wonder if it could be sent out to like all the addresses that you think are relevant and should have it. It is asking you to do a lot, but you'd reach a lot of people and it would be reassuring to people to show that, as the years go on you still know this work is happening. I know this might be expensive, but it would allow people to passively receive information, even if you could do it once a year rather than the five-year review. Of course, they could always get it by going on Envirostor, but most people are never going to do that. It might affect future decisions if the public must weigh in on anything because they would feel as though they would be given an opportunity to see it easily and in-brief, which is probably as much as most people would want or more than they would want.

Response from DTSC: DTSC will include an executive summary in plain language in our plans or notices, so that the information is easily available. Envirostor also lets interested parties sign up for email alerts. Whenever new information is uploaded, be it a report or DTSC letter, an email will be sent. Community members would still have to go to Envirostor to access the documents, but DTSC can provide a tutorial to make that as easy as possible.

Comment 4.7. Since so many trucks are going to be excavating, I wanted to know if you could mandate trucks that were either electric or trucks that didn't spew out greenhouse gases, like those that are run on hydrogen, to make the trucks trips back and forth less of a burden on the region.

Response from DTSC: Unfortunately, DTSC does not have that kind of power. We can certainly make that suggestion and you can suggest that to the city, but we cannot mandate such a thing.

Comment 4.8. I just wanted to ask about the soil that is going to be placed on the land. How often are you going to test that soil to make sure it has the constituents that are the best for that cap? Will you be testing that soil at intervals to make sure it satisfies your criteria?

Response from DTSC: DTSC has soil import criteria to prevent contaminated soil being brought onto a remediated site. We will have soil import criteria included in the Remedial Design Implementation Plan and the geotechnical engineers have their own specifications. All soil that is going to be imported will be selected for its purpose as fill.

As far as testing intervals, this is a topic DTSC is invested in and we follow standard guidance that we use to evaluate what the appropriate frequencies are. We will include that information in the Remedial Design Implementation Plan (RDIP), alongside other information like how many samples we are going to take from the fill and what criteria we are sampling for.

5. Commenter: Nancy Lacsamana

Comment 5.1. Do you have information on the percentage of contaminants found in relation to the area they are found in? Would remediation vary within an area based on those percentages? I think you answered my question a bit with Clara – that some of these percentages are very small. I would imagine that you have measuring levels. Obviously, you have a remediation plan that has a lot of choices. Will you use different choices for different areas? How will you decide from the list of cleanup alternatives shown on the slide, what do to in what area? Cap, excavate – how do you decide that?

Response from DTSC: It can be difficult to know at this time because the development cannot be planned out until the report is approved. Essentially, the grading plan, as it is now, calls for 20 feet of soil up in some areas and a minimum of five feet of soil across the site. In some areas, the team is planning to excavate and in other areas, they are going to cap with 20 feet of soil. Areas that are excavated, but which are determined to have elevated concentrations will be covered by colored geotextile fabric and a minimum of five feet of soil.

Comment 5.2. You're saying that the design will determine the remediation plan based on end use?

Response from BDI: Correct. The roads will have one depth that will provide for clean corridors and buildings or open spaces would have different depths and different remedies, as well.

Comment 5.3. I read somewhere on a local site that part of the removing and moving of contaminants may be underneath roads. Is that a normal procedure? Is that suggested procedure or is that a plan or both?

Response from BDI: It is common procedure to excavate contaminated materials in the roadways to provide for clean corridors, unless there is enough clean soil that is placed over the top of the existing contaminated soil. It depends on the profile of the road, the location, and the depth of fill at a particular location on the site.

Comment 5.4. From a personal perspective, my number one concern is end use and what is going to be there for people who are going to live there or work and will it be safe? I want to make sure that we aren't signing off on something before we know where it's going and how it's going to be remediated.

Response from BDI: The FS/RAP outlines the general remedies and the actual construction drawings. How these remedies will be implemented will be shown with greater detail in the RDIP.

Comment 5.5. So you're saying the remedies will be basically reviewed at the same time or presented at the same time?

Response from BDI: Correct, that is the next step in the RDIP. DTSC is planning on presenting the RDIP to the community, so there will be opportunities for you to review it and share your feedback on the proposal.

6. Commenter: Prem Lall

Comment 6.1. On the slide that states the depth of the hole borings being up to 21 or 20 feet - how many of those borings are actually going to go 20 or 21 feet and how many of them are something like six inches or one to two feet? Do you have a 3D version of this map, so that anyone interested can see how deep these borings go? The reason I'm asking is because of the disastrous Midway Village project, which is about 1000 feet away from this locality. All these residences were built on that property, which was poorly tested as far as soils are concerned, and all kinds of cancers resulted in the families who lived there and it was a big mess. When government officials came to check the soil, they wore hazmat suits and never told the people that the soil was contaminated despite the fact they were living on contaminated soil. I would like to get a better idea of how deep these hole borings actually are and a chart that shows how many are actually going down to 21 feet.

Response from Developer and DTSC: The data gap investigation has elaborate detail on the locations of each one of those green dots, which represent the boreholes. Some of the boreholes had multiple samples taken and the data gap will show you the depth of each one of the samples. You can find the whole report and appendices, including a 3D map, on Envirostor.

Comment 6.2. Will the previously mentioned proposed access bridge over the train tracks be located near the intersection of Beatty Avenue and Tunnel Avenue? That intersection is in very close proximity to these proposed construction sites. You mentioned that there might be permits requested for a bridge over the train tracks to reach the construction sites and keep the trucks away from the residential areas. If that's something that you're thinking about, it would probably be fairly less complicated to put that bridge in that area right between the intersection of Beatty Avenue and Tunnel Avenue as the site approximately the same distance on the other side of the train tracks. You could easily access that construction site with the roads and the entrance and exit ramps that already exist to 101.

Response from BDI: Those are all good points. A lot of work must be done to put together a bridge and the project team will take that into consideration.

7. Commenter: Russell

Comment 7.1. Where will the trucks leave and enter the site?

Response from BDI: That information would be provided in the RDIP. However, the current entry points to the site are on Sunnydale, Geneva and the roadway that runs behind the fire station. Ideally, BDI would like to build a bridge over the railroad tracks so that we could avoid all the surface streets. However, that might be difficult due to the permitting process.

Comment 7.2. Please direct truck traffic away from residential areas.

Response from DTSC: DTSC has noted that comment and as the design is prepared, encourage that to be a consideration. The city also must approve the truck route and it is doubtful that they will approve anything that goes through primarily residential neighborhoods.

Comment 7.3. Can you talk a little bit about how you’re securing the property? There's a concern that the fencing currently there is useless and an eyesore.

Response from BDI: BDI is responsible for securing site fencing so that people cannot access the site. This has been an issue in the past on both the San Francisco side of the property and the Brisbane side. BDI will have their operations department examine the property and patch up any holes in the fence.

We have had problems with homeless people accessing the site in the past and we have flagged that to the police on both the San Francisco side of the property and the Brisbane side. We will have our operations department examine the property and patch up any holes in the fence.

8. Commenter: Zack

Comment 8.1. What is currently going on at the site? This is where we need some clarification. I've seen vehicles, generally a pickup truck with a trailer that appears to

have a white tank, go to a spot on the North West area of the site, but that is apparently unrelated to the company with trucks near the sculpture store that appears to be intake or expel liquid.

Response from BDI: BDI is currently leasing the site to a trucking company and they are using the area as storage. However, BDI also has a subcontractor, Blaine Tech, that conducts quarterly groundwater monitoring at the site. They take the samples from the groundwater monitoring wells using white pickup trucks. That is likely what you are referring to. The last time they did sampling was in November 2020 and the next one is scheduled for February 2021.

9. Commenter: Nelson Gutierrez

Comment 9.1. When is the proposed start of the removal of the contaminated soil? How about the clean soil being re-kept over the land?

Response from DTSC: Our tentative plan right now is to start work in 2023. The public comment period will close on February 15, 2021 then DTSC must respond to all comments that we received during this public comment period. After that, BDI must develop the master plan, specific plan, environmental impact report and finally the remedial design implementation plan. So, we are not planning on breaking ground until 2023 at earliest.

Comment 9.2. If work starts in 2023, that means a three-year span of cleaning up or capping that land, right?

Response from DTSC: Yes. The current development plan is assuming five to 20 feet of soil will be brought in for the final grade - the 2023 to 2026 period will include the remediation work and all the time spent bringing in the soil and regrading the property.

Comment 9.3. There are going to be some locations of the Baylands where there is going to be 20 feet of new soil and some areas of 5 feet. Is that what you're saying?

Response from DTSC: Correct.

Comment 9.4. The last day to submit a comment is 15th of February, correct? Will the comments be answered sometime later in the year?

Response from DTSC: Correct, the 15th is the final day. DTSC's response will depend on how many comments we receive, but we hope to summarize them and get a response out as quickly as reasonable.

Comment 9.5. Will the truck travel through Tunnel Avenue on their access route?

Response from DTSC: DTSC does not have specifics on the truck route currently. That will be in the remedial design implementation plan. However, the city will have significant input on how the trucks are going to be moving on- and off-site.

Comment 9.6. Is the cleanup based on the whole Baylands or just a particular residence or where potential resident homes can be built?

Response from DTSC: This is a common question because it can be confusing. There are four parcels of land featured on our map (see **Attachment 1 Site Location Map**). The yellow portion located near the top of the map, known as UPC OU-SF, is considered part of San Francisco and is on the Schlage site. Tonight specifically, we are just discussing the green portion, which is known as UPC OU-SM and is located south of UPC OU-SF – this is the only area that DTSC regulates. The pink portion is known as OU-2 and is located south of UPC OU-SM. OU-2 as well as the blue section, which is the Brisbane Landfill, are regulated by the Water Board. For reference, OU-2 is also under public comment currently, but again, that is regulated through the Water Board.

Comment 9.7. Is there any way that the high speed rail under construction could in any way impact this whole remediation of these parcels?

Response from BDI: The High Speed Rail Authority is currently putting together an environmental impact report for the site that may impact our remediation plans. We do not have more information currently but will keep you informed when we do.

Comment 9.8. I'm just curious about what you said earlier about the soil. I know UPC has a business where they take soil from other construction sites - is that the good soil that can be used as part of the capping of that land?

Response from BDI: As we mentioned earlier, all imported soil will be tested for the DTSC-approved soil import criteria list that is part of the FS/RAP and will have to meet those standards.

Comment 9.9. Is there going to be another Zoom meeting or is this the last one?

Response from DTSC: DTSC noted during the meeting that if there was enough interest, they would be happy to host another Zoom session. However, an additional Zoom session was not needed. The public meeting recording was also sent via email and posted on DTSC's website.

Prepared by: Nicole Yuen 10/04/2021

Nicole Yuen **Date**
Project Manager, DTSC Berkeley Office

Reviewed by: Juliet C. Pettijohn 10/04/2021

Julie Pettijohn, MPH, CIH **Date**
Branch Chief, DTSC Berkeley Office

Attachment 1 – Site Location Map



Attachment 2 – DTSC Community Update, Public Notice and Postcards

CLEANUP PROGRAM NOVEMBER 2020

COMMUNITY UPDATE

Department of Toxic Substances Control – Our mission is to protect the people, communities, and environment of California from harmful chemicals by cleaning up contaminated sites, enforcing hazardous waste laws, and compelling the development of safer products.

Public Comment Period for Southern Pacific Brisbane
Draft Feasibility Study/Remedial Action Plan Available for Review

The California Department of Toxic Substances Control (DTSC) invites you to review and comment on the proposed environmental remediation (cleanup) plan for the northern 35 acres of the Southern Pacific Brisbane property, located at Geneva Avenue and Bayshore Boulevard in Brisbane, California (Site). The Site is a portion of the larger 650-acre Brisbane Baylands property owned by the Universal Paragon Corporation (UPC). To help organize investigation and remediation, the Brisbane Baylands was divided into operable units (OUs). DTSC has oversight for OU-San Mateo (OU-SM); see Figure 1 on last page. The proposed remedy would address the following chemicals of concern in soil: metals, volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), polynuclear aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), and polychlorinated biphenyls (PCBs). The remedy proposed in the draft FS/RAP would ensure long-term protection of human health and the environment under future mixed residential, commercial, and public uses as allowed under the voter-approved Measure JJ.

PUBLIC COMMENT PERIOD
NOVEMBER 16, 2020 TO FEBRUARY 15, 2021

DTSC invites you to review and comment on the draft Feasibility Study/Remedial Action Plan (FS/RAP) for the remediation of the Southern Pacific Brisbane (UPC OU-SM) Site. All comments must be mailed or emailed by February 15, 2021 to: Nicole Yuen, DTSC Project Manager, 700 Heinz Avenue, Berkeley, CA 94710 or Nicole.Yuen@dtsc.ca.gov.

REMOTE PUBLIC MEETING: DTSC will hold a remote public meeting to provide information on the draft FS/RAP, answer questions and receive public comments.
Date: **Thursday January 7, 2021**
Time: **6:30 to 8:30 p.m.** Join early from 6:00-6:30 to check audio/video.
Online: https://bit.ly/38vWZCH and enter Passcode **DTSC**
By Phone: Call **(669) 900-6833** and enter Meeting ID **871 9044 6419#**
Contact Asha Setty, Public Participation Specialist, at (510) 540-3910, toll-free at (866) 495-5651, or Asha.Setty@dtsc.ca.gov for assistance.

Site Location and History
The 35-acre Site occupies the northern portion of the former Southern Pacific Brisbane Railyard (green area in Figure 1), which was used as a railroad switching yard from 1914 to 1960. After 1960, the Site was unused; today it is currently vacant with various foundations and building slabs remaining. The Site was purchased in 1989 and is owned by Sunquest Properties, a subsidiary of UPC.

Environmental Investigations and Past Remediation Activities
Environmental investigations conducted from 1984 through 2018 have found the presence of metals (primarily arsenic, lead, and mercury), VOCs, TPH, PAHs, OCPs and PCBs in soil. VOCs have also been detected in groundwater. In 1993, approximately 3,500 cubic yards of soil contaminated with VOCs and TPH was removed from the northwest portion of the Site and disposed of at a permitted facility. From 1995 to 2008, a groundwater extraction and treatment system operated in the northern portion of the Site to address VOC contaminants that had migrated from the Schlage Lock site (see Figure 1 on last page).

In 2008, there was a change made to the operable units. The Schlage Lock site was defined as Schlage OU and includes VOCs that may have migrated south to the UPC operable units. Therefore, the UPC operable units in both San Francisco and Brisbane were defined to not include VOC contamination in groundwater because this is being addressed as part of the Schlage OU remedy approved in 2009. From 2010 to 2014, groundwater was injected with microorganisms and carbon sources to naturally break down VOC contaminants at the source. In 2014, DTSC certified completion of the Schlage OU remediation and required ongoing groundwater monitoring to document the effectiveness of the groundwater remediation. Any residual VOCs detected in groundwater at UPC OU-SM will be treated under the remedy for Schlage OU and therefore are not addressed in this FS/RAP.

Proposed Remedy
The draft FS/RAP describes the remediation alternatives being proposed. Based on an evaluation of the alternatives, DTSC has proposed the following remedy to ensure the long-term protection of public health and the environment:

- Capping of contaminated soil with hardscape or clean soil cap (minimum five-foot thick).
- Consolidating 2,500 cubic yards (208 truckloads) of contaminated soil underneath a protective cap
- Transporting 2,500 cubic yards (208 truckloads) of contaminated soil to a permitted disposal facility.
- Conducting soil vapor testing and installing soil vapor mitigation systems, if necessary, to protect indoor air.
- Land use restrictions include prohibiting the use of groundwater and strict soil management protocols
- The VOCs in groundwater at the Site will continue to be addressed under the Schlage OU remedy.

Ongoing maintenance and monitoring of the protective caps and vapor mitigation systems would be required to ensure the long-term effectiveness of the remedy. A land use covenant would be recorded with the County documenting these restrictions. There would be annual inspections and a review of the effectiveness of the remedy every five years. After approval of the FS/RAP, the specific details of the project would be designed. This document is called a Remedial Design Implementation Work Plan (RDIP) and includes pre-construction activities; specific information about the excavation, stockpiling, and staging of soils; haul roads; traffic control plans; dust control and air monitoring programs; and erosion control measures. The preparation of the RDIP would start after the City of Brisbane approves the Specific Plan and would likely take around eighteen months to prepare. The RDIP would be

available for review prior to the start of remediation. If the FS/RAP is approved, the work would begin in 2023 and continue for roughly three years. A work notice would be mailed to the community prior to the start of remediation work.

Truck Route
Disposal of contaminated soil would occur over approximately 10 days for a total of 208 truckloads. Clean soil import would occur over approximately 240 days for a total of 22,640 truckloads, with an average of 95 truck trips daily. Truck trips would occur between the hours of 7 a.m. and 5 p.m., Monday through Friday. The proposed remedy would limit truck trips through local neighborhoods. Trucks would exit the Site along a City-approved truck route traveling along Bayshore Boulevard and onto US 101.

Safety Measures
This work would be performed in accordance with project-specific plans detailed in the RDIP including a Health and Safety Plan, Dust/Air Monitoring Plan, Transportation and Traffic Control Plan and Storm Water Pollution Prevention Plan. The following safety measures would be used to protect public health and the environment during remediation work:

- Active work areas would be fenced off;
- Air and dust monitoring would occur upwind and downwind of excavation areas and along the Site perimeter;
- Various methods will be used to control dust and odors during excavation and loading of soil onto trucks;
- Truck loads will be covered, tires cleaned, and trucks inspected prior to leaving the Site;
- Flaggers will be on-site to safely manage automobile and pedestrian traffic while trucks enter and exit the Site.

California Environmental Quality Act (CEQA)
As required by CEQA, the City of Brisbane certified an Environmental Impact Report (EIR) in 2018 to evaluate potential impacts of the proposed Brisbane Baylands development (State Clearinghouse Number 2006022136). As the responsible agency having regulatory authority over the Site, DTSC prepared an addendum to the EIR, which concluded that the FS/RAP would not result in new significant environmental impacts and no substantial increase in the severity of impacts identified in the EIR. No additional mitigation measures are required for the FS/RAP. DTSC will file a Notice of Determination with the State Clearinghouse upon approval of the FS/RAP.

Next Steps
DTSC will review and consider all public comments before making a final decision on the draft FS/RAP. At the end of the public comment period, DTSC will evaluate comments received and make any necessary changes to the draft FS/RAP. DTSC will send a Responsiveness Summary document to all those who commented and provided contact information. A copy of the final FS/RAP, including the Responsiveness Summary, will be available to the public.

Information Repositories
You can view the documents online at: www.envirostor.dtsc.ca.gov/public
[Enter "**Southern Pacific - Brisbane (North Area)**" or Site code **41490037** and select from the drop-down menu. Click on the Community Involvement tab for documents to review.]

Department of Toxic Substances Control

You can review a hard copy of the draft FS/RAP and EIR Addendum at the following locations:

- **Brisbane City Hall**, 50 Park Place, Brisbane, CA 94005; Mondays and Thursdays; 9 a.m. to 1 p.m.; ask for documents at the front desk; (415) 508-2120
- **FACES SF**, 1099 Sunnydale Ave, 2nd Floor, San Francisco, CA 94134; Mondays-Thursdays; 9 a.m. to 4 p.m.; by appointment only; (415) 239-8705 x1

To make arrangements for additional locations/hours, please contact Asha Setty at (510) 540-3910 or Asha.Setty@dtsc.ca.gov.

DTSC Contact Information

- Nicole Yuen, Project Manager at (510) 540-3881 or Nicole.Yuen@dtsc.ca.gov
- Asha Setty, Public Participation Specialist at (510) 540-3910, toll-free at (866) 495- 5651 or Asha.Setty@dtsc.ca.gov
- For media requests, please contact: Barbara Zumwalt, Public Information Officer at (916) 445-2964 or Barbara.Zumwalt@dtsc.ca.gov



Figure 1 – Aerial view of the Southern Pacific Brisbane (UPC OU-SM) Site and adjacent San Francisco properties with DTSC oversight.

Hearing impaired individuals may use the California Relay Service at 711 or 800-735-2929 TTY/VCO/HCO to voice.

Additional information on DTSC sites can be found through our **EnviroStor**. (rev. 5-2020)

清理項目 2020 年 11 月

社區進展通報

有毒物質控制局– 我們的使命是通過清潔受污染的場地、實施危險廢棄物相關法律、並强制製造化學屬性安全的產品來保護加利福尼亞州人民、社區和環境免受有害化學物質的影響。

可供審查的南太平洋運輸公司布里斯班場地可行性研究/整治行動計劃草案的公眾意見徵詢期

加利福尼亞州有毒物質控制局（DTSC）邀請您審查並評論提議的南太平洋運輸公司布里斯班物業北部35英畝場地的環境修復（清理）計劃，該場地位於加利福尼亞州布里斯班市的Geneva大道和Bayshore大道（以下簡稱場地）。該場地是由Universal Paragon Corporation （UPC）公司擁有的佔地650英畝的布里斯班Baylands中較大物業的一部分。 為了幫助組織調查和整治行動，布里斯班Baylands地區被劃分為幾個可操作單元（OU）。加利福尼亞州有毒物質控制局（DTSC）負責監督可操作單元-聖馬刁（OU-SM）； 請參閱最後一頁上的圖1。擬議的整治措施將解決所關注的土壤中的以下化學物質：金屬、揮發性有機化合物 (VOCs), 石油烴總量 (TPH), 多核芳香烴 (PAHs), 有機含氯殺蟲劑 (OCPs), 和多氯聯苯 (PCBs). 可行性研究/整治行動計劃草案中擬議的整治措施將確保按照選民投票通過的JJ提案的規定，在未來含住宅、商家、以及公共場所的混合用途場地使用中長期保護人類健康和環境。

公眾意見徵詢期
2020年11月16日至2021年2月15日

加利福尼亞州有毒物質控制局（DTSC）邀請您審查及評論可行性研究/整治行動計劃（FS/RAP）草案以便對南太平洋運輸公司布里斯班（UPC OU-SM）場地採取整治措施。請在 2021 年 2 月 15 日之前將所有意見發送至：Nicole Yuen, DTSC Project Manager, 700 Heinz Avenue, Berkeley, CA 94710，或通過電子郵件發送至 Nicole.Yuen@dtsc.ca.gov。

線上公開會議： 加利福尼亞州有毒物質控制局（DTSC） 將舉行一次**線上**公開會議，以提供有關**可行性研究/整治行動計劃**（FS/RAP）草案的信息，回答問題並接收公眾意見。

日期：2021 年 1 月 7 日，週四
時間：下午 6:30 至 8:30 從 6：00-6：30 儘早上線以檢查音頻/視頻性能。
線上登陸：https://bit.ly/38vWZCH 然後輸入訪問代碼 DTSC
通過電話：致電 (669) 900-6833, 然後輸入訪問代碼 871 9044 6419#
請撥打公眾參與專家 Asha Setty 的聯繫電話為（510）540-3910，免費電話為（866）495-5651，或電郵 Asha.Setty@dtsc.ca.gov 尋求幫助。

場地位置和歷史

35英畝的場地位於前南太平洋運輸公司布里斯班鐵路場的南部，該場地於1914年至1982年被用作鐵路調度場。1982年後，該場址停止使用，如今空置並堆放了各種剩餘的地基用料和水泥預製板（圖1中的綠色區域）該場地由UPC的子公司Sunquest Properties 於1989年購買並至今擁有。

有毒物質控制局

環境調查和以往的整治行動

1984年至2018年進行的環境調查發現土壤中存在金屬（主要是砷，鉛和汞）、VOC、TPH、PAH、OCP和PCB。在地下水中也發現了揮發性有機化合物。 1993年，從場地的西北部分清除了約3500立方碼的被VOC和TPH污染的土壤，並在許可的設施內進行了處置。從1995年到2008年，在該場地的北部運作了一個地下水提取和處理系統，以處理從Schlage Lock場地遷移來的VOC污染物（請參見最後一頁的圖1）。

2008年，對可操作單元進行了更改。 Schlage Lock 場地定義為 Schlage OU，其中包括可能已經向南遷移到UPC可操作單元的VOC。因此，舊金山和布里斯班的UPC可操作單元被定義為不包含地下水中的VOC污染，因為這已作為2009年批准的Schlage OU整治措施的一部分予以解決。從2010年到2014年，在地下水中註入了微生物和碳源以自然分解源頭上的VOC污染物。在2014年，加利福尼亞州有毒物質控制局（DTSC）認證了Schlage OU修復的完成，並要求持續進行地下水監測以記錄地下水整治的有效性。在UPC OU-SM的地下水中檢測到的任何殘留VOC將根據Schlage OU的整治措施進行處理，因此在本可行性研究/整治行動計劃（FS/RAP）中未加以解決。

擬議的整治措施

本可行性研究/整治行動計劃 (FS/RAP)草案描述了擬議的整治措施。 在對替代方案進行評估的基礎上，加利福尼亞州有毒物質控制局（DTSC）提出了以下整治措施，以確保對公共衛生和環境的長期保護：

- 用硬景觀或乾淨的土壤層（最小五英尺厚）覆蓋被污染的土壤。
- 在保護層下鞏固2,500立方碼（208輛卡車裝載量）的被污染土壤
- 將2,500立方碼（208輛卡車裝載量）的受污染土壤運輸到許可的設施處置。
- 進行土壤蒸氣測試，並在必要時安裝土壤蒸氣緩解系統以保護室內空氣。
- 土地使用限制措施包括禁止使用地下水和嚴格的土壤管理規定
- 根據Schlage OU整治措施，將繼續解決現場地下水中的VOC。

將需要對保護性覆蓋層和蒸汽緩解系統進行持續的維護和監控，以確保該整治措施的長期有效性。土地使用章程將由縣府記錄下來以記錄這些限制措施。將進行年度檢查，並且每五年一次對整治措施的有效性進行審查。在本可行性研究/整治行動計劃 (FS/RAP) 批准之後，將設計項目的具體細節。該文件稱為整治設計實施工作計劃（RDIP），其中包括施工前的活動、有關土壤開挖、堆積和處理的具體信息；搬運路徑；交通管制計劃；灰塵控制和空氣監測程序；和侵蝕控制措施。 整治設計實施工作計劃 (RDIP) 的準備工作將於 2021 年開始，大約需要 18 個月的準備時間。 在 整治開始之前，可以對整治設計實施工作計劃 (RDIP) 進行審查。 如果本可行性研究/整治行動計劃 (FS/RAP) 獲得批准，則整治工作將於 2023 年開始，並將持續大約三年。 在整治工作開始之前，將向社區發送工作通知。

卡車路線

總共 208 輛卡車裝載量的受污染土壤處置工作將在大約 10 天之內進行。 清潔土壤的載入大約需要 240 天，總共需要 22,640 卡車次，平均每天有 95 輛卡車次。 週一至週五上午 7 點至下午 5 點之間會安排卡車通行。 擬議的整治措施將限制卡車通過當地社區的次數。 卡車將沿著城市批准的卡車路線沿 Bayshore Boulevard 駛出場地並駛入 US 101 高速公路。

有毒物質控制局

安全措施

這項工作將根據整治設計實施工作計劃（RDIP）中詳細介紹的特定項目計劃進行，包括健康與安全計劃，粉塵/空氣監測計劃，運輸和交通控制計劃以及雨水污染預防計劃。 在整治工作期間，將使用以下安全措施來保護公共健康和環境：

- 進行作業的工作區域將被圍起來；
- 空氣和灰塵監測將在挖掘區域的上，下風口以及工地周邊進行；
- 在開挖並將土壤裝載到卡車上時，將採用各種方法來控制粉塵和異味；
- 在離開場地之前，將對卡車的車廂進行覆蓋，清潔輪胎並檢查卡車；
- 當卡車進出場地時，舉棋指揮交通者將在場地管理汽車和行人的交通安全。

加州環境質量法案（CEQA）

根據加州環境質量法案（CEQA）的要求，布里斯班市於 2018 年對環境影響報告（EIR）進行了認證，以評估擬議中的布里斯班 Baylands 開發的潛在影響（加州信息交換所編號第 2006022136 號）。 作為負責該場地監管的責任機構，加利福尼亞州有毒物質控制局（DTSC）編寫了環境影響報告（EIR）的附錄，該附錄得出結論，可行性研究/整治行動計劃 （FS/RAP） 不會導致新的重大環境影響，也不會顯著增加環境影響報告（EIR）中確定的影響的嚴重性。 可行性研究/整治行動計劃 (FS/RAP)不需要採取其他緩解措施。 可行性研究/整治行動計劃 （FS/RAP） 得到批准後，加利福尼亞州有毒物質控制局（DTSC）將向加州信息交換所提交決定通知書。

後續步驟

在對可行性研究/整治行動計劃 (FS/RAP)草案做出最終決定之前，加利福尼亞州有毒物質控制局（DTSC）將審查並考慮所有公眾意見。 在公眾意見徵詢期結束時，加利福尼亞州有毒物質控制局（DTSC）將評估收到的意見，並對可行性研究/整治行動計劃 (FS/RAP)草案進行必要的更改。 加利福尼亞州有毒物質控制局（DTSC）將向所有發表評論並提供聯繫信息的人士發送一份“回應摘要”文檔。 最終的可行性研究/整治行動計劃 (FS/RAP)副本，包括回應摘要，將向公眾開放。

信息庫

您也可以在以下網址在線查看文檔：www.envirostor.dtsc.ca.gov/public
[輸入“Southern Pacific - Brisbane (North Area)”或場地代碼41490037，然後從下拉菜單中選擇。 單擊“Community Involvement（社區參與）”選項以查看文檔。]
您可以在以下地址查看可行性研究/整治行動計劃 (FS/RAP)和環境影響報告（EIR）附錄草案的紙質副本：

- 布里斯班市市政廳，地址：50 Park Place, Brisbane, CA 94005
  週一和週四 ，上午 9 點至下午 1 點； 在前台索取文件； 電話：（415）508-2120

- FACES SF，地址：1099 Sunnydale Ave，2nd Floor, San Francisco，CA 94134
  週一至週四，上午 9 點至下午 4 點； 僅接受預約訪客；預約電話 （415）239-8705 x1

如需安排其他地點/時間，請致電（510）540-3910 或電郵 Asha.Setty@dtsc.ca.gov 與 Asha Setty 聯繫。

有毒物質控制局

聯繫方式

有關更多信息，請聯繫以下加利福尼亞州有毒物質控制局（DTSC）工作人員：

- 項目經理 Nicole Yuen，電話：（510）540-3881 或電郵地址：Nicole.Yuen@dtsc.ca.gov
- 公眾參與專家 Asha Setty（510）540-3910，免費電話（866）495-5651 或電郵地址：Asha.Setty@dtsc.ca.gov
- 媒體質詢請聯繫公共信息官 Barbara Zumwalt電話：（916）445-2964 或電郵地址 Barbara.Zumwalt@dtsc.ca.gov

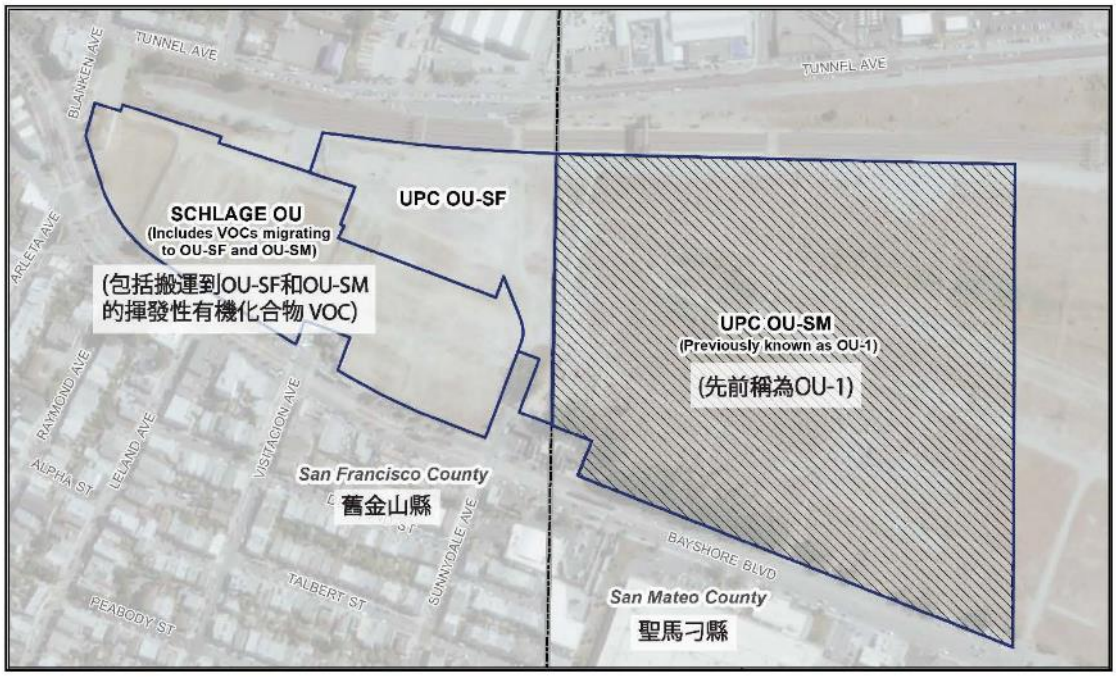


圖 1 – 受加利福尼亞州有毒物質控制局（DTSC）監管的南太平洋運輸公司布里斯班（UPC OU-SM）場地和鄰近的舊金山物業的鳥瞰圖。

聽力有障礙的人士可以撥打711或800-735-2929（聾啞人電話 / 只聽不說 / 只說不聽的加利福尼亞中繼服務）來發聲。

有毒物質控制局負責監管場地的其他信息可以通過我們的EnviroStor查詢。 (rev. 5-2020)

PROGRAMA DE LIMPIEZA NOVIEMBRE DE 2020

AVISO COMUNITARIO

Departamento de Control de Sustancias Tóxicas, Nuestra misión es proteger a la gente, las comunidades y el medio ambiente de California de los productos químicos nocivos, limpiando los sitios contaminados, haciendo cumplir las leyes sobre residuos peligrosos y obligando a desarrollar productos más seguros.

Período de comentarios públicos para Southern Pacific Brisbane
Borrador del Estudio de factibilidad/Plan de acción disponible para revisión

El Departamento de Control de Sustancias Tóxicas de California (DTSC) lo invita a revisar y comentar sobre el plan de remediación (limpieza) ambiental propuesto para los 35 acres en el norte de la propiedad de *Southern Pacific Brisbane*, ubicada en *Geneva Avenue* y *Bayshore Boulevard* en Brisbane, California (Sitio). El Sitio es una parte de la propiedad más grande de *Brisbane Baylands* de 650 acres propiedad de *Universal Paragon Corporation* (UPC). Para ayudar a organizar la investigación y la remediación, *Brisbane Baylands* se dividió en unidades operativas (OUs). El DTSC supervisa la OU-San Mateo (OU-SM); vea la Figura 1 en la última página. La remediación propuesta abordaría los siguientes productos químicos de preocupación en los suelos: metales, compuestos orgánicos volátiles (VOC), hidrocarburos totales de petróleo (TPH), hidrocarburos aromáticos polinucleares (PAH), pesticidas organoclorados (OCP) y bifenilos policlorados (PCB). El remedio propuesto en el borrador FS/RAP garantizaría la protección a largo plazo de la salud humana y el medio ambiente bajo usos mixtos residenciales, comerciales y públicos futuros según lo permitido por la Medida JJ aprobada por los votantes.

PERÍODO DE COMENTARIOS PÚBLICOS
16 DE NOVIEMBRE DE 2020 AL 15 DE FEBRERO DE 2021

El DTSC lo invita a revisar y comentar el borrador del Estudio de factibilidad/Plan de acción de remediación (FS/RAP) para la remediación del Sitio de *Southern Pacific Brisbane* (UPC OU-SM). Todos los comentarios deben enviarse por correo o por correo electrónico antes del 15 de febrero de 2021 a: *Nicole Yuen, DTSC Project Manager, 700 Heinz Avenue, Berkeley, CA 94710* o Nicole.Yuen@dtsc.ca.gov.

REUNIÓN PÚBLICA REMOTA: El DTSC llevará a cabo una reunión pública remota para proporcionar información sobre el borrador de FS/RAP, responder preguntas y recibir comentarios públicos.
Fecha: **jueves 7 de enero de 2021**
Hora: **6:30 a 8:30 p.m.** Únase temprano de 6:00-6:30 para verificar el audio/video.
En línea: https://bit.ly/38vWZCH e ingrese el código de acceso **DTSC**
Por teléfono: llame al **(669) 900-6833** e ingrese el código de acceso **871 9044 6419#**
Comuníquese con Asha Setty, Especialista en Participación Pública, al (510) 540-3910, llamada gratuita al (866) 495-5651, o Asha.Setty@dtsc.ca.gov para obtener ayuda.

Ubicación e historia del Sitio
El Sitio de 35 acres ocupa la parte norte de la antigua estación ferroviaria de *Southern Pacific Brisbane* (área verde en la Figura 1), que se usó como patio de cambio de ferrocarril de 1914 a 1982. Después de 1982, el Sitio no se usó. Hoy en día, está vacante con varios cimientos y losas de construcción restantes. El Sitio fue comprado en 1989 y es propiedad de *Sunquest Properties*, una subsidiaria de UPC.

Investigaciones ambientales y actividades de remediación pasadas
Las investigaciones ambientales realizadas de 1984 a 2018 han encontrado la presencia de metales (principalmente arsénico, plomo y mercurio), VOC, TPH, PAH, OCP y PCB en el suelo. También se han detectado COV en aguas subterráneas. En 1993, aproximadamente 3,500 yardas cúbicas de suelos contaminados con VOC y TPH se retiraron de la parte noroeste del Sitio y se eliminaron en una instalación autorizada. De 1995 a 2008, operó en la parte norte del Sitio un sistema de extracción y tratamiento de aguas subterráneas para abordar los contaminantes VOC que habían migrado desde el sitio *Schlage Lock* (ver Figura 1 en la última página).

En 2008, se realizó un cambio en las unidades operables. El sitio de *Schlage Lock* se definió como *Schlage OU* e incluye VOC que pueden haber migrado hacia el sur a las unidades operativas de UPC. Por lo tanto, tanto en San Francisco como en Brisbane se definieron para no incluir la contaminación de VOC en las aguas subterráneas porque esto se está abordando como parte del remedio *Schlage OU* aprobado en 2009. De 2010 a 2014, las aguas subterráneas se inyectaron con microorganismos y fuentes de carbono para descomponer de forma natural los contaminantes VOC en la fuente. En 2014, el DTSC certificó la finalización de la remediación de *Schlage OU* y requirió un monitoreo continuo de las aguas subterráneas para documentar la efectividad de la remediación de las aguas subterráneas. Cualquier VOC residual detectado en las aguas subterráneas en UPC OU-SM se tratará bajo el remedio para *Schlage OU* y, por lo tanto, no se trata en este FS/RAP.

Remedio propuesto
El borrador de FS/RAP describe las alternativas de remediación que se proponen. Basado en una evaluación de alternativas, el DTSC ha propuesto el siguiente remedio para asegurar la protección a largo plazo de la salud pública y el medio ambiente:

- Recubrimiento de los suelos contaminados con un revestimiento duro o una capa de suelo limpia (mínimo cinco pies de espesor).
- Consolidar 2,500 yardas cúbicas (208 camionadas) de suelos contaminados debajo de una capa protectora.
- Transporte de 2,500 yardas cúbicas (208 camionadas) de suelos contaminados a una instalación de eliminación autorizada.
- Realización de pruebas de vapor del suelo e instalación de sistemas de mitigación de vapor del suelo, si es necesario, para proteger el aire interior.
- Las restricciones de uso de la tierra incluyen la prohibición del uso de aguas subterráneas y protocolos estrictos de manejo del suelo.
- Los VOC en las aguas subterráneas en el Sitio continuarán siendo tratados bajo el remedio de *Schlage OU*.

Se requeriría un mantenimiento y monitoreo continuo de las capas protectoras y los sistemas de mitigación de vapor para asegurar la efectividad a largo plazo del remedio. Se registraría un convenio de uso de la tierra con el condado documentando estas restricciones. Habría inspecciones anuales y una revisión de la efectividad del remedio cada cinco años. Después de la aprobación del FS/RAP, se diseñarían los detalles específicos del proyecto. Este documento se denomina Plan de trabajo de implementación de diseño correctivo (RDIP) e incluye actividades previas a la construcción; información específica sobre la excavación, acopio y estadificación de suelos; caminos de acarreo; planes de control de tráfico; programas de control de polvo y monitoreo del aire; y medidas de control de la erosión. La preparación del RDIP comenzaría en 2021 y tardaría alrededor de 18 meses en prepararse. El RDIP estaría disponible para su revisión antes del inicio de la remediación. Si se aprueba el FS / RAP, los trabajos de remediación

comenzarían en 2023 y continuarían durante aproximadamente tres años. Se enviaría por correo un aviso de trabajo a la comunidad antes del inicio de los trabajos de remediación.

Ruta de camiones
La eliminación de los suelos contaminados se realizaría durante aproximadamente 10 días con un total de 208 camionadas. La importación de suelos limpios se realizaría durante aproximadamente 240 días con un total de 22,640 camiones cargados, con un promedio de 95 viajes diarios. Los viajes de los camiones se realizarían entre las 7 a.m. y las 5 p.m., de lunes a viernes. El remedio propuesto limitaría los viajes de camiones por los vecindarios locales. Los camiones saldrían del Sitio a lo largo de una ruta de camiones aprobada por la Ciudad, que va a lo largo de *Bayshore Boulevard* y hacia *US 101*.

Medidas de seguridad
Estos trabajos se realizarían de acuerdo con los planes específicos del Proyecto detallados en el RDIP, incluyendo un Plan de salud y seguridad, un Plan de monitoreo de polvo/aire, un Plan de control de transporte y tráfico y un Plan de prevención de la contaminación por aguas pluviales. Las siguientes medidas de seguridad se utilizarían para proteger la salud pública y el medio ambiente durante los trabajos de rehabilitación:

- Las áreas de trabajo activas estarían cercadas;
- El monitoreo del aire y el polvo se llevaría a cabo a favor y en contra del viento de las áreas de excavación y a lo largo del perímetro del Sitio;
- Se utilizarán varios métodos para controlar el polvo y los olores durante la excavación y carga de tierra en camiones;
- se cubrirán las cargas de los camiones, se limpiarán los neumáticos y se inspeccionarán los camiones antes de salir del Sitio;
- Trabajadores con banderines estarán en el sitio para manejar de manera segura el tráfico de automóviles y peatones mientras los camiones entran y salen del Sitio.

Ley de Calidad Ambiental de California (CEQA)
Como lo requiere la CEQA, la Ciudad de Brisbane certificó un Informe de impacto ambiental (EIR) en 2018 para evaluar los impactos potenciales del desarrollo propuesto de *Brisbane Baylands* (*State Clearinghouse* número 2006022136). Como la agencia responsable que tiene autoridad reguladora sobre el Sitio, el DTSC preparó un anexo al EIR, que concluyó que el FS/RAP no daría lugar a nuevos impactos ambientales significativos ni a un aumento sustancial de la gravedad de los impactos identificados en el EIR. No se requieren medidas de mitigación adicionales para el FS/RAP. El DTSC presentará un Aviso de determinación ante el *State Clearinghouse* tras la aprobación del FS/RAP.

Próximos pasos
El DTSC revisará y considerará todos los comentarios públicos antes de tomar una decisión final sobre el borrador FS/RAP. Al final del período de comentarios públicos, el DTSC evaluará los comentarios recibidos y realizará los cambios necesarios al borrador del FS/RAP. El DTSC enviará un documento de resumen de capacidad de respuesta a todos aquellos que comentaron y proporcionaron información de contacto. Una copia del FS/RAP final, incluyendo el Resumen de capacidad de respuesta, estará disponible para el público.

Repositorios de información
Puede ver los documentos en línea, en: www.envirostor.dtsc.ca.gov/public

Department of Toxic Substances Control

[ingrese "**Southern Pacific - Brisbane (North Area)**" o código del Sitio **41490037** y seleccione del menu desplegable. Haga clic en la pestaña Participación comunitaria para ver los documentos que desee visitar.]

Puede revisar una copia impresa del borrador de FS/RAP y el Anexo EIR en:

- **Brisbane City Hall**, 50 Park Place, Brisbane, CA 94005
  De lunes y jueves, de 9 a.m. a 1 p.m.; pida los documentos en la recepción; (415) 508-2120
- **FACES SF**, 1099 Sunnydale Ave, 2nd Floor, San Francisco, CA 94134
  De lunes a jueves, 9 a.m. a 4 p.m.; únicamente con cita; (415) 239-8705 x1

Para hacer arreglos en ubicaciones adicionales/horas, por favor ponerse en contacto con Asha Setty (510) 540-3910 o Asha.Setty@dtsc.ca.gov.

Información de contactos
Para obtener más información, comuníquese con el siguiente personal del DTSC:

- Nicole Yuen, Jefe de Proyecto al (510) 540-3881 o Nicole.Yuen@dtsc.ca.gov
- Asha Setty, Especialista en Participación Pública al (510) 540-3910, llamada gratuita al (866) 495-5651 o Asha.Setty@dtsc.ca.gov
- Para solicitudes de los medios, comuníquese con: Barbara Zumwalt, Oficial de Información Pública al (916) 445-2964 o Barbara.Zumwalt@dtsc.ca.gov

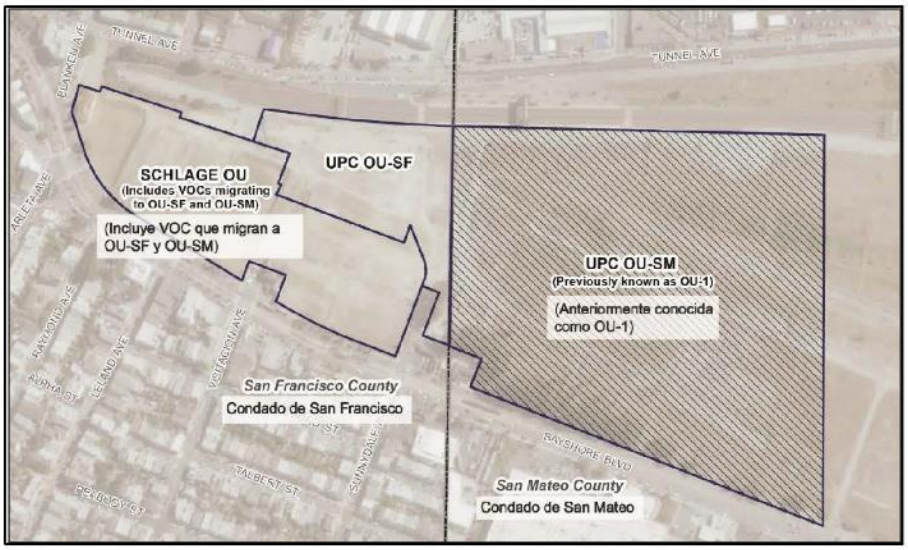


Figura 1 – Vista aérea del Sitio Southern Pacific Brisbane (UPC OU-SM) y propiedades adyacentes de San Francisco con supervisión del DTSC.

NOVEMBER 2020

DTSC PUBLIC NOTICE

Department of Toxic Substances Control – Our mission is to protect the people, communities, and environment of California from harmful chemicals by cleaning up contaminated sites, enforcing hazardous waste laws, and compelling the development of safer products.

Public Comment Period for Southern Pacific Brisbane

Draft Feasibility Study/Remedial Action Plan Available for Review

WHAT IS BEING PROPOSED? The California Department of Toxic Substances Control (DTSC) invites you to review and comment on the proposed environmental remediation (cleanup) plan for the northern 35 acres of the Southern Pacific Brisbane property, located at Geneva Avenue and Bayshore Boulevard in Brisbane, California (Site). The proposed remedy would address the following chemicals of concern in soil: metals, volatile organic compounds, total petroleum hydrocarbons, polynuclear aromatic hydrocarbons, organochlorine pesticides, and polychlorinated biphenyls. The proposed remedy would ensure long-term protection of human health and the environment under future uses as allowed under the voter-approved Measure JJ. It would require on-site encapsulation (2500 cubic yards/ 208 truckloads) or off-site disposal (2500 cubic yards/ 208 truckloads); protective caps consisting of clean soil or hardscape; soil vapor mitigation systems as part of future building construction, if necessary; and land use restrictions that prohibit the use of groundwater and establish a Soil Management Plan.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA): As the responsible agency having regulatory authority over the Site, DTSC prepared an addendum to the City of Brisbane's Environmental Impact Report (State Clearinghouse Number 2006022136), which concluded that the remedy would not result in new significant environmental impacts or increase in severity of impacts.

HOW DO I PARTICIPATE? During the public comment period, from **November 16, 2020 to February 15, 2021**, we encourage you to review the draft FS/RAP and EIR Addendum. Please send comments to: Nicole Yuen, Project Manager, DTSC Berkeley Office, 700 Heinz Avenue, Berkeley, CA 94710 or by email to Nicole.Yuen@dtsc.ca.gov. **You are invited to attend a remote public meeting on Thursday January 7, 2021 from 6:30 p.m. to 8:30 p.m. at** https://bit.ly/38vWZCH and Passcode DTSC or call **(669) 900-6833** and Meeting ID 871 9044 6419#.

WHERE DO I GET MORE INFORMATION? You may view the documents at Brisbane City Hall, 50 Park Place, Brisbane, CA 94005 [call for more information (415) 508-2120] or at FACES SF, 1099 Sunnydale Ave, 2nd Floor, San Francisco, CA 94134 [call for appointment (415) 239-8705 x1] or online at: www.envirostor.dtsc.ca.gov/public (search for Site code 41490037)
Contact the following DTSC staff for more information: Nicole Yuen, Project Manager at (510) 540-3881 or Nicole.Yuen@dtsc.ca.gov; Asha Setty, Public Participation Specialist at (510) 540-3910, toll-free at (866) 495- 5651 or Asha.Setty@dtsc.ca.gov; For media requests, please contact: Barbara Zumwalt, Public Information Officer at (916) 445-2964 or Barbara.Zumwalt@dtsc.ca.gov

Hearing impaired individuals may use the California Relay Service at 711 or 800-735-2929 TTY/VCO/HCO to voice.

Additional information on DTSC sites can be found through our **EnviroStor**. (rev. 5-2020)

2020 年 11 月

有毒物質控制局通告

有毒物質控制局 – 我們的使命是通過清潔受污染的場地、實施危險廢棄物相關法律、並强制製造化學屬性安全的產品來保護加利福尼亞州人民、社區和環境免受有害化學物質的影響。

可供審查的南太平洋運輸公司布里斯班場地可行性研究/整治行動計劃草案的公眾意見徵詢期

提議內容是什麼？加利福尼亞州有毒物質控制局（DTSC）邀請您審查並評論提議的南太平洋運輸公司布里斯班物業北部35英畝場地的環境修復（清理）計劃，該場地位於加利福尼亞州布里斯班市的Geneva大道和Bayshore大道（以下簡稱場地）。擬議的整治措施將解決所關注的土壤中的以下化學物質：金屬、揮發性有機化合物、石油烴總量、多核芳香烴、有機含氯殺蟲劑和多氯聯苯。擬議的整治措施將確保按照選民投票通過的JJ提案的規定，在未來場地使用中長期保護人類健康和環境。它將需要現場封裝（2500立方碼/208輛卡車裝載量）或異地處置（2500立方碼/ 208輛卡車裝載量）；由乾淨的土壤或硬景觀組成的防護性覆蓋層；必要時，將土壤所含物質揮發緩解系統作為未來房屋建築的一部分；以及禁止使用地下水和製定土壤管理計劃的土地使用限制措施。

加州環境質量法案（CEQA）：作為負責該場地的監管機構的加利福尼亞州有毒物質控制局（DTSC），為布里斯班市的環境影響報告（州信息交換所編號第 2006022136 號）編制了一份附錄，該結論認為該整治措施不會導致新的重大環境影響或增加影響的嚴重性。

我如何參與？在從 2020 年 11 月 16 日至 2021 年 2 月 15 日的公眾意見徵詢期內，我們鼓勵您審查**可行性研究/整治行動計劃**和環境影響報告附錄的草案。請在 2021 年 2 月 15 日之前將評論發送至：Nicole Yuen, Project Manager, DTSC Berkeley Office, 700 Heinz Avenue, Berkeley, CA 94710，或通過電子郵件發送至 Nicole.Yuen@dtsc.ca.gov。邀請您參加 2021 年 1 月 7 日下午 6:30 到晚上 8:30 舉行的線上公開會議，鏈接是 https://bit.ly/38vWZCH 然後輸入訪問代碼 DTSC 或致電 (669) 900-6833, 然後輸入訪問代碼 871 9044 6419#。

我在哪裡可以獲得更多信息？您可以在布里斯班市市政廳審閱文件（地址： 50 Park Place, Brisbane, CA 94005）或致電（415）508-2100）索取更多信息，或在 FACES SF 審閱文件（地址： 1099 Sunnydale Ave，2nd Floor, San Francisco，CA 94134，致電預約（415） 239-8705 x1），或上網瀏覽，網址：www.envirostor.dtsc.ca.gov/public 搜索場地代碼41490037）

- 項目經理Nicole Yuen，電話：（510）540-3881或電郵地址 Nicole.Yuen@dtsc.ca.gov
- 公眾參與專家Asha Setty，電話：（510）540-3910，免費電話：（866）495-5651或電郵地址 Asha.Setty@dtsc.ca.gov
- 媒體質詢請聯繫公共信息官 Barbara Zumwalt電話：（916）445-2964 或電郵地址 Barbara.Zumwalt@dtsc.ca.gov

聽力有障礙的人士可以撥打711或800-735-2929 （聾啞人電話 / 只聽不說 / 只說不聽的加利福尼亞中繼服務）來發聲。

有毒物質控制局負責監管場地的其他信息可以通過我們的EnviroStor查詢。

(rev. 5-2020)

NOVIEMBRE DE 2020

DTSC AVISO PÚBLICO

Departamento de Control de Sustancias Tóxicas, Nuestra misión es proteger a la gente, las comunidades y el medio ambiente de California de los productos químicos nocivos, limpiando los sitios contaminados, haciendo cumplir las leyes sobre residuos peligrosos y obligando a desarrollar productos más seguros.

Período de comentarios públicos para Southern Pacific Brisbane
Borrador del Estudio de factibilidad/Plan de Acción disponible para revisión

¿QUÉ SE PROPONE? El Departamento de Control de Sustancias Tóxicas (DTSC) lo invita a revisar y comentar sobre el plan de remediación (limpieza) ambiental propuesto para los 35 acres en el norte de la propiedad de *Southern Pacific Brisbane*, ubicada en *Geneva Avenue* y *Bayshore Boulevard* en Brisbane, California (Site). El remedio propuesto abordaría los siguientes productos químicos de preocupación en los suelos: metales, compuestos orgánicos volátiles, hidrocarburos totales de petróleo, hidrocarburos aromáticos polinucleares, plaguicidas organoclorados y bifenilos policlorados. El remedio propuesto garantizaría la protección a largo plazo de la salud humana y el medio ambiente bajo usos futuros según lo permitido en virtud de la Medida JJ aprobada por los votantes. Requeriría la encapsulación *in situ* (2500 yardas cúbicas/208 camionadas) o la eliminación fuera del sitio (2500 yardas cúbicas/208 camionadas); capas protectoras que consisten en tierra limpia o en superficies duras; sistemas de mitigación de vapor del suelo como parte de la futura construcción de edificios, si es necesario; y restricciones de uso de suelo que prohíben el uso de aguas subterráneas y establecer un Plan de manejo de suelos.

LEY DE CALIDAD AMBIENTAL DE CALIFORNIA (CEQA): Como agencia responsable que tiene autoridad reguladora sobre el Sitio, el DTSC preparó un apéndice al Informe de impacto ambiental de la Ciudad de Brisbane (*State Clearinghouse* número 2006022136), que concluyó que el remedio no daría como resultado nuevos cambios ambientales significativos o el aumento en la gravedad de los impactos.

¿CÓMO PARTICIPO? Durante el período de comentarios públicos, del **16 de noviembre de 2020 al 15 de febrero de 2021**, lo animamos a revisar el borrador de FS/RAP y el Anexo EIR. Envíe sus comentarios a más tardar el **15 de febrero de 2021** a: *Nicole Yuen, Project Manager, DTSC Berkeley Office, 700 Heinz Avenue, Berkeley,CA 94710* o por correo electrónico a Nicole.Yuen@dtsc.ca.gov. **Se le invita asistir a una reunión pública remota el jueves, 7 de enero de 2021 de 6:30 p.m. a 8:30 p.m. en** https://bit.ly/38vWZCH **e ingrese el código de acceso DTSC o llame al (669) 900-6833 e ingrese la ID de la reunión 871 9044 6419#.**

¿DÓNDE OBTENGO MÁS INFORMACIÓN? Puede ver los documentos en Brisbane City Hall, 50 Park Place, Brisbane, CA 9005 [llame para obtener más información (415) 508-2120 o en FACES SF, 1099 Sunnydale Ave, 2nd Floor, San Francisco, CA 94134 [llame para hacer una cita (415) 239-8705 x1] o en línea en: http://www.envirostor.drsc.ca.gov/public (busque el código del sitio 41490037)

Si tiene preguntas o necesita información adicional sobre el Sitio, comuníquese con:

- Nicole Yuen, Gerente del Proyecto al (510) 540-3881 o Nicole.Yuen@dtsc.ca.gov
- Asha Setty, Especialista en Participación Pública al (510) 540-3910, llamada gratuita al (866) 495- 5651 o Asha.Setty@dtsc.ca.gov
- Para solicitudes de los medios, comuníquese con: Barbara Zumwalt, Oficial de Información Pública al (916) 445-2964 o Barbara.Zumwalt@dtsc.ca.gov

Las Personas con Discapacidad Auditiva pueden usar el Servicio de Retransmisión de California en el 711 o en el 800-735-2929 TTY/VCO/HCO para expresar su opinión.

Se puede encontrar información adicional sobre los sitios del DTSC a través de nuestro **EnviroStor**. (rev. 5-2020)

BRISBANE BAYLANDS COMMUNITY ADVISORY GROUP

WEDNESDAY, JULY 29, 2020 • 6:00 P.M. TO 7:30 P.M.

MEETING WILL TAKE PLACE ONLINE AT THE FOLLOWING LINK:
https://bluejeans.com/282612317?src=join_info
For Audio: Call 1.408.317.9254 and enter meeting ID: 282 612 317#
Virtual doors open starting at 5:30. Contact Asha.Setty@dtsc.ca.gov for assistance.

Nicole Yuen, Project Manager for the Department of Toxic Substances Control, will be providing an update on the following sites:

- **Schlage Lock Company (San Francisco): Update on Five-Year Review**
- **Operable Unit – San Mateo (OU-SM / Brisbane): Update on Draft Remedial Action Plan**

Following the presentation, there will be time for questions and answers.

The purpose of the Brisbane Baylands Community Advisory Group (BBCAG) is to provide a forum for discussion with the communities of Brisbane, Daly City and San Francisco and to advise the agencies overseeing the investigation and cleanup actions on the Brisbane Baylands. The Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board are the lead regulatory agencies for these properties. We invite speakers to present information about issues concerning the cleanup activities at the Brisbane Baylands. If you are interested in more information, please contact Asha Setty, DTSC Public Participation Specialist at (510) 540-3910, toll-free at (866) 495-5651 or *Asha.Setty@dtsc.ca.gov*. Information, minutes, and agendas can be found at *https://bbcag94005.wixsite.com/bbcag*. If you would like to know how you can join the BBCAG, please contact Clara Johnson at (415) 468-4195 or *clara-a-johnson@sbcglobal.net*.

BRISBANE BAYLANDS COMMUNITY ADVISORY GROUP

TUESDAY, OCTOBER 15, 2019 • 7:00 P.M. TO 9:00 P.M.

NOTE: CHANGE OF LOCATION - Brisbane City Hall, 50 Park Place, Brisbane

You are invited to learn about:

- **Sea Level Rise: Adapting to Rising Tides Program**
  Dana Brechwald, Program Manager, Bay Conservation and Development Commission (BCDC)
  For more information, visit https://www.adaptingtorisingtides.org

- **Schlage Site (San Francisco) and Operable Unit - San Mateo (OU-1 Brisbane): update**
  Nicole Yuen, Project Manager, California Department of Toxic Substances Control (DTSC)

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BRISBANE BAYLANDS COMMUNITY ADVISORY GROUP

TUESDAY, MAY 21, 2019 • 7:00 P.M. TO 9:00 P.M.

Brisbane Community Center, 250 Visitacion, Brisbane

You are invited to learn about:

- **Schlage OU and UPC OU-SF (San Francisco) and UPC OU-SM (Brisbane, previously referred to as OU-1): Updates including Data Gap Investigation and overview of Remedial Action Plan process**

  Nicole Yuen, Project Manager, California Department of Toxic Substances Control

The purpose of the Brisbane Baylands Community Advisory Group (BBCAG) is to provide a forum for discussion with the communities of Brisbane, Daly City and San Francisco and to advise the agencies overseeing the investigation and cleanup actions on the Brisbane Baylands. The Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board are the lead regulatory agencies for these properties. We invite speakers to present information about issues concerning the cleanup activities at the Brisbane Baylands. If you are interested in more information, please contact Asha Setty, DTSC Public Participation Specialist at (510) 540-3910, toll-free at (866) 495-5651 or *Asha.Setty@dtsc.ca.gov*. Information, minutes, and agendas can be found at *bbcag.org*. If you would like to know how you can join the BBCAG, please contact Clara Johnson at (415) 468-4195 or *clara-a-johnson@sbcglobal.net*.

Attachment 3 – Communications

City of Brisbane Updates

2/24/2021 Weekly Blast 11-13-20

DTSC
Department of Toxic Substances Control

Public Comment Period:
November 16 –
February 15, 2020



The California Department of Toxic Substances Control (DTSC) has announced the draft Feasibility Study/Remedial Action Plan (FS/RAP) for the environmental/soils cleanup of the OU-SM portion of the Brisbane Baylands site will be available for public comment from November 16 - February 15, 2021.

Click Here for More Information

Farmers' Market New Hours: 1-6pm

https://spark.adobe.com/page/S4ejzUx6KOu3O/ 1/1

Baylands Update



Public Comment Period: Now Open but Closing Monday, 2/15, for OU-SM

The draft cleanup plan and recommended remedies for cleaning up the Baylands site northern portion (OU-SM) is currently out for public review and comment. **The deadline to submit comments is February 15th.** See below for the button to the draft cleanup plan. Submit comments to nicole.yuen@dtsc.ca.gov.

The City submitted its formal comments on the draft cleanup plan for OU-SM, which can be found below:

City's Comments on Draft Feasibility Study/Remedial Action Plan for OU-SM Site

WHAT HAPPENS AFTER THE PUBLIC COMMENT PERIODS CLOSE?

State regulatory agencies will evaluate the draft cleanup plans to ensure residential units at ground level (in OU-SM and the northern portion of OU-2, per preliminary plans) are able to be built and future residents housed safely. The developer will then submit design documents as well as monitoring plans to the regulatory agencies which will provide the details of the proposed remedies. The state agencies will review and must approve the documents before anything moves forward. See an overview of the Brisbane Baylands review and approval process here.

Attachment 4 – Public Meeting Transcript

Asha Setty: Well, good evening, everyone. And welcome to our public meeting tonight.

Asha Setty: Before we get started, I just wanted to acknowledge that this is a challenging time with a pandemic and current events so

Asha Setty: We especially appreciate you taking the time to join us tonight for this meeting. We will be focusing on the northern 35 acre portion of the Brisbane Baylands

Asha Setty: That's known as Operable Unit San Mateo. My name is Asha Setty and I'm a Public Participation Specialist with the California Department of Toxic Substances Control.

Asha Setty: We are part of CalEPA and committed to restoring contaminated resources around the state.

Asha Setty: I'll be facilitating the public comment portion of this meeting and encourage you to provide us with feedback. Now, this meeting is being recorded and will be posted on our website.

Asha Setty: We do have Spanish and Chinese interpretation available for this meeting, just click on the interpretation icon at the bottom of the screen to select a language.

Asha Setty: Next I'll go over some zoom basics for this online meeting, please do keep yourself on mute. Unless you'd like to speak. And let me now introduce you to my colleague, Gerry Dietrich. Can you say hi, Gerry.

Gerry.Dietrich@DTSC.CA.GOV: Everyone good evening. Gerry Dietrich public participation specialist for the Office of Environmental equity. Very nice to meet you all.

Asha Setty: Thanks, Gerry. She'll provide us with tech support if needed, including keeping us muted. And so we avoid background noise for the recording.

Asha Setty: So in case we do encounter any technical difficulties. Let's try and have patience with each other, and if you're new, like me to online meetings. We will have a group of folks who can assist you.

Asha Setty: And if you have a question or comment, you can click the raise hand icon at the bottom of the screen and then unmute yourself when we call on you.

Asha Setty: And if you prefer to have your comment read out loud. You can type it into the chat. And for anyone who's calling in, or who decides to call in

Asha Setty: There is a way you can raise your hand and unmute yourself. And that's by dialing star nine to raise your hand and then to unmute yourself. You'll have to dial star six

Asha Setty: And we'll go ahead and take time during the presentation to answer questions that may come up along the way and if they require a more in-depth response and we may hold it to the end, but we want it to be as interactive as possible.

Asha Setty: I'll go over the agenda. Next I'd like to introduce you to the other DTC staff that are part of today's meeting. First we have Nicole you and can you say Hi Nicole.

Asha Setty: She's the project manager for the site and then next we have Cheryl Prowl. Can you say hi, Cheryl.

Cheryl Prowell: Hello. I'm Cheryl Prowell.

Asha Setty: And she's the unit chief for the mitigation and restoration program and our Berkeley office.

Asha Setty: And Nicole will go over the site remediation process, the background for the project, the proposed remediation plan.

Asha Setty: Then the remedial design and implementation plan and next steps and after the presentation will have additional time for public input and

Asha Setty: I do want to acknowledge that there's a Brisbane City Council meeting tonight.

Asha Setty: I know they have a closed session. Currently, but folks may be planning on joining session at some 45 so anyone who needs to leave early. We just want to make sure that we get your input and early on before we leave.

Asha Setty: We are open to being as flexible as possible to make sure we receive your feedback and we're open to scheduling a follow up meeting if requested and for those who weren't able to join us tonight, we will be sharing the recording as soon as it's ready.

Asha Setty: There's still plenty of time in the public comment period. So that's it for my opening announcements. And now I'll turn it over to Nicole for tonight's presentation.

Nicole Yuen - DTSC: Thanks for that introduction. Additional DTC project team members that I would like to include Vivek Mathrani, who's the toxicologist who's been reviewing the FS/RAP.

Nicole Yuen - DTSC: And Marikka Hughes, the DTSC geologist. The owner/developer of this project is Universal Paragon Corporation, also known as UPC

Nicole Yuen - DTSC: And the consultants for this project include Geosyntec, Craig Communications, and GrafCon. Before we get started, I'd like to note that there are a lot of acronyms in this presentation, so please ask if a term isn't clear.

Nicole Yuen - DTSC: Excuse me. So here's a map showing the Brisbane Baylands, as well as the Schlage Site. As you can see the DTSC is overseeing the Schlage operable unit or OU, seen here in yellow.

Nicole Yuen - DTSC: And UPC OU-SF which is also in yellow.

Nicole Yuen - DTSC: And in green we have UPC OU-SM, which is the subject of tonight's meeting and I will also refer to it as the site throughout

Nicole Yuen - DTSC: And in pink and blue, we have OU-2 and the Brisbane Landfill, which are under the jurisdiction of the San Francisco Waterboard

Nicole Yuen - DTSC: So a refresher on the history of names for the site. The site is divided into operable units, which essentially split the site into more manageable pieces and it's generally based on the types of contaminants found or the geographic location.

Nicole Yuen - DTSC: UPC OU-SM was previously known OU-1 but was redefined in a 2008 consent order issued by DTSC.

Nicole Yuen - DTSC: The 2008 order also defined volatile organic compounds, also known as VOCs in soil, soil vapor and groundwater as part of the Schlage site. This will be discussed further in a later slide, but essentially any VOCs that may be present at UPC OU-SM will have to be addressed under the Schlage remedy.

Nicole Yuen - DTSC: Here's a quick timeline of the site’s history. Southern Pacific acquired the land in 1896 and began adding fill to extend the buildable land surface.

Nicole Yuen - DTSC: A good portion of the fill came from rubble created by the 1906 San Francisco earthquake. The site was used by the railroad until 1982 and it has remained vacant until now.

Nicole Yuen - DTSC: Measure JJ, which passed in 2018, allowed for the site and surrounding properties to be redeveloped for mixed residential, commercial and public uses.

Nicole Yuen - DTSC: Previous environmental investigations have occurred at the site between 1982 and 2018

Nicole Yuen - DTSC: Found the following constituents in soil and groundwater. Many of these metals were detected that background concentrations or below screening levels.

And thus, are not identified as contaminants a concern in the FS/RAP, which we'll discuss further in this presentation.

Nicole Yuen - DTSC: Previous remedial activities that have taken place at UPC OU-SM.

Nicole Yuen - DTSC: In 1993 approximately 3500 cubic yards of soil contaminated with VOCs and petroleum hydrocarbons was excavated and disposed off site.

Nicole Yuen - DTSC: At the Gibson environmental facility in Bakersfield, California. From 1995 to 2008 a groundwater extraction and treatment system operated at Schlage OU and UPC OU-SM to treat the chlorinated VOCs in groundwater.

Nicole Yuen - DTSC: Approximately 5800 pounds of tetrachloroethene, also known as PCE and trichloroethylene, also known as TCE, were removed. The ground water extraction and treatment system was discontinued in 2008.

Nicole Yuen - DTSC: Three rounds of groundwater injections to promote in-situ biodegradation then occurred between 2010 to 2011 and quarterly groundwater monitoring has occurred at the site since 2012 to track the progress of the biodegradation.

Nicole Yuen - DTSC: In 2018 Geosyntec conducted a data gap investigation at the site. 333 soil samples were collected from 149 soil borings at depths up to 20 feet.

Nicole Yuen - DTSC: Soil samples were then analyzed for metals, VOCs and petroleum hydrocarbons, polycyclic aromatic hydrocarbons, organochlorine pesticides, polychlorinated biphenyls, and asbestos.

Nicole Yuen - DTSC: 31 groundwater samples from 19 soil borings and 12 monitoring wells were also collected and analyzed for VOCs, petroleum hydrocarbons, and metals.

Nicole Yuen - DTSC: Results of the data gap investigation. Arsenic and lead were detected at elevated concentrations mainly along the railroad tracks in Bayshore Boulevard.

Nicole Yuen - DTSC: Arsenic and lead were historically applied as an herbicide along railroad tracks and railroad ties were also treated with arsenic to prevent decomposition.

Nicole Yuen - DTSC: Diesel was detected across the site at low concentrations, but had elevated concentrations at several locations.

Nicole Yuen - DTSC: Organochlorine pesticides are only detected at a few locations and were generally below reporting limits.

Nicole Yuen - DTSC: PCBs were detected in two locations, seen here on this figure in orange.

Nicole Yuen - DTSC: PAHS, seen as these green dots, had some scattered detections across the site as well.

Nicole Yuen - DTSC: In groundwater, metal detections were generally low and localized. VOCs are moving south from the Schlage OU. So from up here. Source is known to be Schlage from its former operations and the extent of the VOC plume is outlined by the dashed lines on this figure.

Nicole Yuen - DTSC: So a feasibility study remedial action plan which is what we're discussing tonight, and I will be referring to as an FS/RAP from now on, is a remedy selection document.

Nicole Yuen - DTSC: It identifies the preferred remedial action alternative and explains why this alternative was selected. The FS/RAP also describes the other alternatives that were considered and solicits public review and comment.

Nicole Yuen - DTSC: FS/RAPs are, by their nature conceptual and therefore do not contain all the specific engineering design details of the proposed remedial action.

Nicole Yuen - DTSC: However, FS/RAPs must set out specific remedial action objectives, including cleanup levels and time frames for completing these remedial actions.

Asha Setty: Nicole, can I stop you before you go to the next slide. Clara had a chat, she said.

Asha Setty: She says page eight, the Community Update Notice mentioned COCs that are not included here. They include -- Clara. Do you want to ask your question or clarify what you were trying to get at.

Clara: Yes, please. I was asking about the PAHs, the PCBs aren't on the list. The OCPs and the poly [sic] and the PCBs.

Clara: Why aren’t they on the list on this page.

Clara: I realized there, there, there, I realized that they're shown on the diagram, but they aren't on the list. And I wondered, I guess I wondered why they weren't called out on

Clara: Your slide where it says eight soil and groundwater investigations and then it shows in the soil and then the groundwater, but it doesn't mention the PCBs, the PAHs, the OCPs…

Nicole Yuen - DTSC: Yeah. So this slide essentially includes the historical investigations as well. So the 1982 investigations. So OCPS, the PCBs, PAHs is

Nicole Yuen - DTSC: We did find those in the 2018 data gap, but since this slide was also taking into account everything from the early 80s to now, these were the common factors that we found in all of those reports.

Clara: I see.

Nicole Yuen - DTSC: So yeah, so I do have them here on this slide and we discussed them. We do talk about them further as contaminants of concern. Some of them are contaminants of concern, um, excuse me

Clara: Thank you.

Nicole Yuen - DTSC: Sorry about that.

Asha Setty: No, that's great. Yeah, that's good Snuggles made an appearance.

Nicole Yuen - DTSC: Sorry about the cat.

Nicole Yuen - DTSC: Okay.

Nicole Yuen - DTSC: So alternatives identified in a RAP have to be evaluated by the nine criteria and these criteria are laid out in the California Health and Safety Code and the National Contingency Plan.

Nicole Yuen - DTSC: DTSC has to use these nine criteria for any RAP regardless of the complexity of the project or the proponent

Nicole Yuen - DTSC: Because it’s state and federal law. The two most important criteria are number one, overall protected overall protection of human health and the environment and number two, compliance with state and federal requirements.

Nicole Yuen - DTSC: These are essentially deal breakers. So, if it doesn't meet these two then alternative cannot be selected.

Nicole Yuen - DTSC: And there are what are known as the primary balancing criteria. These five include long term effectiveness and permanence.

Nicole Yuen - DTSC: Reduction of toxicity mobility and volume through treatment, short term effectiveness, implementability, and cost. The final two criteria are whether the regulatory agency or agencies, accept identified remedy and whether the community accepts it as well.

Nicole Yuen - DTSC: So the FS/RAP considered five remedial alternatives.

Nicole Yuen - DTSC: Number one, you'll notice is no action and this is the required alternative that every decision document must use. It's kind of a control and it shows what the implications are if nothing further is done.

Nicole Yuen - DTSC: As you can see, alternative one and two

Nicole Yuen - DTSC: not involve any remediation of the contaminants at the site and therefore fail the most important criteria, protection of human health and the environment.

Nicole Yuen - DTSC: Alternative three

Nicole Yuen - DTSC: Calls for soil capping across most of the site as required by the proposed development grading plan.

Nicole Yuen - DTSC: And also entails the excavation of soil and relocation on site to be placed under streets or building foundations.

Nicole Yuen - DTSC: excavation of soil and offsite disposal and land use restrictions. Half of the assumed 5000 bulk cubic yards, which is to be excavated, would be transported off site for disposal and the other half will be relocated onsite.

Nicole Yuen - DTSC: Alternative four is similar to alternative three except the entirety of the same 5000 bulk cubic yards would be transported off site for disposal at a permitted waste management facility, rather than half of it being relocated on site.

Nicole Yuen - DTSC: And alternative five has all soil with COC concentrations exceeding cleanup levels.

Nicole Yuen - DTSC: Excavated to a maximum of five feet below ground surface or to the depth of a sample with all contaminants of concern concentrations below screening levels.

Nicole Yuen - DTSC: All excavated soil would be transported off site to a permanent facility. This assumes about 291,000 bulk cubic yards to be offhauled.

Nicole Yuen - DTSC: The offhaul will take about three years. Clean fill would then have to be imported to the site, which involves additional truck traffic and time.

Nicole Yuen - DTSC: Extensive excavation offhaul associated with the alternative five had the highest risk of exposure and greatest impacts the air quality noise and traffic during implementation. It also had the greatest risk of traffic accidents due to the high traffic volumes.

Nicole Yuen - DTSC: High local traffic volumes, exhaust, and noise would pose conflicts with the local community. Alternative five also had the greatest environmental impact of the five alternatives considered.

Nicole Yuen - DTSC: Alternatives three through five would also include vapor intrusion mitigation systems installed underneath buildings where necessary.

Nicole Yuen - DTSC: So here are the contaminants of concern which you might also see referred to as COCs in this presentation in the FS rap for the site. In soil we have arsenic, lead,mercury, polycyclic aromatic hydrocarbons (PAHs), aroclor 1260 which is a kind of PCB, naphthalene and diesel.

Nicole Yuen - DTSC: In soil gas and groundwater, we have the chlorinated VOCs which include tetrachloroethene (PCE), trichloroethene (TCE), and their breakdown products (cis-1,2-DCE, trans-1,2-DCE, 1,1-DC, and vinyl chloride.

Nicole Yuen - DTSC: For the 2008 consent order between DTSC and UPC, CVOCs were defined to be as part of the Schlage OU seen here, because they originated in this area due to their former industrial operations.

Nicole Yuen - DTSC: CVOCs in soil vapor and groundwater at UPC OU-SM are thus being addressed under the 2009 FSRAP that was prepared for Schlage.

Nicole Yuen - DTSC: 2025-year review for this Schlage OU identified areas where further work needs to be done. Additional injections near four wells where the CVOC breakdown process stalled and the development of a work plan to assess potential causes of PCE and TCE increases as well as the development of a work plan to optimize groundwater remediation and monitoring.

Nicole Yuen - DTSC: This additional work being done in the Schlage OU will have the benefit of reducing CVOC concentrations in UPC OU-SM.

Nicole Yuen - DTSC: The proposed remedy has several components. Capping a minimum of five feet of clean soil or other durable hardscape protective cover will be placed over soil with contaminant concentrations exceeding cleanup levels in areas of future development.

Nicole Yuen - DTSC: Excavation. In the areas where protective caps can't be placed, the soil will be excavated and consolidated in a new location under a protective cap or disposed off-site at a permitted facility.

Nicole Yuen - DTSC: The soil will be excavated and consolidated in a new location under a protective cap or disposed offsite out of permitted facility soil vapor and groundwater will be sampled for VOC is prior to building construction. Soil vapor and groundwater will be sampled for vocs prior to building construction.

Nicole Yuen - DTSC: Limbs will be installed underneath. Sorry. Vapor intrusion mitigation systems will be installed underneath buildings where needed. Institutional controls will be used for ongoing monitoring and maintenance. The proposed remedy will be protective of the health of future site users once each parcel has been developed as well as the health of the general public and the environment.

Nicole Yuen - DTSC: Land use covenants, also known as LUCs for short, are recorded with the county assessor's office and run with the land in perpetuity unless DTSC rescinds the land use covenant.

Nicole Yuen - DTSC: And if the owner of the land changes, LUC is still active and there are provisions in the LUC that require DTSC to be notified when one, the ownership changes; two, there's been a disturbance at the site that wasn't previously approved by DTSC; three, requires inspections after a major natural disaster or something like it; four, will be recorded with pterodex which is an alert system which notifies DTSC if there is work occurring near the restricted areas; and five, require annual land use inspections and five-year reviews.

Nicole Yuen - DTSC: A five-year review is required for sites where contamination was left in place at concentrations above unrestricted use levels. They're done every five years, and they're meant to ensure that a remedy is still functioning as designed and remains protective of human health in the environment. They're also required by federal law.

Nicole Yuen - DTSC: Land use covenant restrictions must be laid out in the decision document and the restrictions outlined in the FSRAP for this site are to maintain the integrity of the cap and include the following.

Nicole Yuen - DTSC: No extraction or use of underlying groundwater without a groundwater management plan previously approved by DTSC.

Nicole Yuen - DTSC: Any excavation or other earth-moving activities in the cap must be done under a soil management plan previously approved by DTSC and no buildings may be occupied in areas where CVOC concentrations in soil vapor exceed cleanup levels without prior DTSC approval based on either a risk assessment or engineering controls.

Nicole Yuen - DTSC: The future use of the site also cannot affect the integrity of the cap or the vapor intrusion mitigation systems and any plants or vegetables meant for consumption may be grown in raised beds at the site.

Nicole Yuen - DTSC: DTSC is also providing notice in this public meeting that we intend to remove the 1995 land use covenant covering a portion of the site after these new land use covenants are recorded with the county of San Mateo. The groundwater extraction treatment system which operated at Schlage OU and the site from 1995 to 2008 was discontinued with DTSC approval in order to conduct a pilot study for in-situ

biodegradation, a degradation which was selected as the groundwater remedy in the 2009 FSRAP Schlage OU.

Nicole Yuen - DTSC: The majority of the restrictions in the 1995 land use covenant were to protect the groundwater extraction and treatment system and to ensure that it was properly maintained. Because the system was removed in 2008, the 1995 extraction and treatment system land use covenant is now redundant.

Nicole Yuen - DTSC: The remedial design and implementation plan also known as the RDIP is essentially the blueprint for how the FSRAP will be done.

Nicole Yuen - DTSC: it includes details like pre-construction activities, excavation, stockpiling and staging of soils, traffic control plans and truck routes, construction drawings, a storm water pollution prevention plan, erosion control measures, a dust control and air monitoring programs, soil import criteria, and a site-specific health and safety plans that protect on-site construction workers, the community, and the environment during remediation work.

Nicole Yuen - DTSC: Truck management and traffic plans are common elements of RDIPs and are details that are very important to local communities. These truck trips are estimated over the course of the project and were pulled from the environmental impact report prepared by the city. More concrete numbers will be included with the RDIP.

Nicole Yuen - DTSC: The amount of clean soil to be imported to the site is in part due to the master grading development plan and also for capping purposes.

Nicole Yuen - DTSC: Dust control is usually the number one concern of the local community when it comes to excavation projects and DTSC takes dust control very seriously.

Nicole Yuen - DTSC: RDIP includes a dust control plan which will include the following methods for controlling dust generation and off-site dust movement: dampening areas with water or some kind of binding agent, installing rumble strips or something similar to prevent site soils from being tracked out.

Nicole Yuen - DTSC: So these are rumble strips trucks drive over them and it helps knock any dirt off.

Nicole Yuen - DTSC: And trucks and equipment will be cleaned prior to leaving the site to make sure there's no dirt being stuck to the tires or sides of the trucks. Stockpiles will be covered and or stabilized. The height from which soil can be dropped from an excavator bucket onto a truck bed will also be restricted. Work will be stopped if wind speeds exceed a predetermined threshold and the stormwater pollution prevention plan will be in place to minimize runoff from the site.

Nicole Yuen - DTSC: As part of the dust control, there will be an air monitoring plan included in the RDIP. The plan will be reviewed by DTSC's health and safety team for compliance with DTSC's community air monitoring plan guidance which came out in January 2020. The guidance requires site-specific action levels for site contaminants of concern in ambient air, meteorological action levels such as wind speeds, fugitive dust action levels, and visual assessment of the site during any earth moving. And these are common air monitoring units that may be used in the field.

Nicole Yuen - DTSC: Here are some other topics that we know are important to communities and to this project in particular. For sea level rise, the Brisbane general plan amendment requires that the development be designed to protect uses from the hundred year flood including hundred years of projected sea level rise as determined based on regulatory standards or guidelines in effect at the time of project construction. These guidelines and sea level

Nicole Yuen - DTSC: and sea level rise guidances must also be approved by the city director and the city engineer. The director of public works and the city engineer. This way, the project will incorporate the most up-to-date guidances.

Nicole Yuen - DTSC: Geotechnical considerations.

Nicole Yuen - DTSC: The site will be covered with 5 to 20 feet of clean fill as outlined in the development grading plan. Local faction takes place when loosely packed waterlogged sediments at or near the ground surface lose their strength in response to strong ground shaking. All fill at the site will be placed and compacted under the direction of state licensed geotechnical engineers who have experience with earthquake engineering. All structures at the site will also be designed following the provisions of the California building code and the guidelines established by the univer

Nicole Yuen - DTSC: the US geological survey and California geological survey. The designs of the structure will need to be reviewed by the city's building department prior to building permits being issued.

Nicole Yuen - DTSC: Operation and maintenance plan and land use covenants will also include provisions for inspecting and repairing the site if needed after a natural disaster or if something um happens.

Nicole Yuen - DTSC: Financial assurance. The operation and maintenance agreement for this site will require financial assurance.

Nicole Yuen - DTSC: Financial assurance essentially includes the costs associated with managing operating, inspecting, and maintaining the cleanup system or systems including LUCs for a minimum of 30 years and or until remedial goals are met. A cost estimate prepared by the proponent will be reviewed by DTSC's internal cost estimate group prior to getting the financial assurance mechanism in place to ensure that all the costs and assumptions are accurate.

Nicole Yuen - DTSC: In addition to the annual inspection and five year reviews required by land use covenants, the O&M agreement also has provisions for five-year reviews and for the proponent to implement the operation maintenance plan which also include regular inspection and maintenance requirements.

Nicole Yuen - DTSC: So the next steps after this public meeting.

Nicole Yuen - DTSC: DTSU is accepting comments on the draft FSRAP through February 15, 2021. Responses to all comments will be compiled in a response to comments document and distributed to all of those who commented after the close of the comment period. The RDIP will be prepared after the approval of the FSRAP.

Nicole Yuen - DTSC: Prior to the start of remediation, DTSC will issue a work notice. UPC will also have to submit the specific plan for the Brisbane Baylands project to the City of Brisbane as outlined in measure JJ. The specific plan can only be submitted after the decision documents for OU-SM, OU-2 and the landfill are approved by their respective agencies. Permits will also need to be secured from the city before any groundbreaking can occur.

Nicole Yuen - DTSC: And here is a very tentative schedule of the activities that will occur following this public comment period. The public comment period will end February 15, 2021. DTSC will begin compiling responses to all comments after February and we hope to get out responses in early 2021.

Nicole Yuen - DTSC: In 2021 to 2022, UPC hopes to have the master plan, specific plan, the EIR, and the RDIP prepared during this time. And prior to construction, DTSC will submit

Nicole Yuen - DTSC: will send out a work notice to the local community. And then remedy and building construction is estimated to start 2023.

Nicole Yuen - DTSC: And now i'm going to end my presentation and turn everything over to Asha.

Asha Setty: Thanks so much for the presentation, Nicole. That was a lot of information to digest.

Asha Setty: We wanted to remind you that in addition to providing comments during tonight's meeting, you can also send them to us through email, mail or voicemail.

Asha Setty: And then we'll be providing written responses after the close of the comment period. So please bear with us. It can take some time, but we will acknowledge that we received your comment.

Asha Setty: We do have hard copies of the proposed remedies stored at two different repositories. One in Brisbane City Hall and one in San Francisco at the nonprofit FACES SF.

Asha Setty: Unfortunately due to the lockdown, neither are currently open to the public. But if you would like to access a hard copy, please get in touch with us and we'll figure out a way to get one to you. Otherwise all documents are available online on our Envirostor website. And if you need help navigating the system, please don't hesitate to get in touch. And you know I can show you walk you through how to get to the documents or I can just send you the direct link.

Asha Setty: So that takes us to the end of our presentation and I'd like to open it up for questions or comments. You know please feel free to either raise your hand or type into the comment

Asha Setty: to the chat if you, you know, want me to read it out loud or you can just unmute yourself if we don't have anyone who's jumping at the opportunity.

Asha Setty: I'll give folks a couple of minutes to think about any questions or comments they have. Again this was just an opportunity for us to hear from you. And I see Clara, you have your hand up. So go ahead and unmute yourself.

Clara: I just wanted to ask Nicole. If I understand correctly the means of remediation will be by way of the cap and the excavation and removal and that's

Clara: there isn't any other type of remediation that's going to be carried on. Is that right?

Nicole Yuen - DTSC: Yes for this site. I'm going to go back to the Contaminants of Concern page. I have a lot of slides.

Clara: I just wanted to ask. So the om plan is there is as watching over the repair and the state of the CAP, as well as the means by which they're excavating and moving the soil, is that right?

Nicole Yuen - DTSC: Okay, so

Clara: Sorry I just wanted to ask. So the O&M plan is there

Clara: is watching over the repair and the state of the cap as well as the means by which they're excavating and removing the soil, is that right?

Nicole Yuen - DTSC: Okay, yeah. So for your question about the excavation. All of these contaminants and soil are not very

Nicole Yuen - DTSC: Not very mobile. So excavation and capping are.

Nicole Yuen - DTSC: I'm sorry. My cat. If I lock him out. He cries.

Nicole Yuen - DTSC: So excavation and capping are very common and proven technologies that are approved by EPA and DTSC for projects like this. For the CVOCs, with the way the site was defined in 2008, those have to be addressed under the remedy for Schlage. And so that's why in the five-year review we did identify, you know, further work that can be done.

Nicole Yuen - DTSC: And so that work will affect those CVOCs because they are moving south from Schlage operable unit into our site. So if you treat the source then the off-site migration like flowing down will be less.
Nicole Yuen - DTSC: For your question about the operation and maintenance plan that's mainly to maintain the integrity of the CAP and if we do have any vapor intrusion mitigation systems that we find necessary to be put into buildings.

Nicole Yuen - DTSC: The operation maintenance plan. I'm gonna refer to it as an owner plan.

Nicole Yuen - DTSC: Also covers inspection and maintenance of those mitigation systems as well. So it's kind of just makes sure that you know once we did the initial step that we're still taking care of it. It's kind of like a car. You buy a car but you still have to take care of it over the years as pieces break down. So the O&M plan is just kind of

Nicole Yuen - DTSC: it keeps your site together

Clara: I have one more question. Does

Clara: you said that they weren't. They didn't move very easily, the CVOCs. I'm sorry the CVOCs that are there. And that includes the PAHs? Which of the different categories of contaminants, which ones are being removed by which method or are being remediated or kept separate from human beings by which method? In other words so all are all of these being taken care of by being

Clara: by being capped or which ones are being removed by excavation?

Nicole Yuen - DTSC: Yeah, so the capping and the excavation

Nicole Yuen - DTSC: It depends on the future grading plan.

Nicole Yuen - DTSC: So they're adding about five to 20 feet of film across the entire site.

Nicole Yuen - DTSC: And it also depends on the placement of the buildings and how the site is laid out. So it's it’s not so much that one specific contaminant is being

addressed by capping or by excavation. It's more about the layout of the site and which specific area of the site we're talking about.

Clara: So, is anything besides groundwater besides CVOCs being transported by groundwater or all these other things are not transported by groundwater?

Nicole Yuen - DTSC: There, they're not really mobile in the groundwater. Yeah.

Cheryl Prowell: You're right. CVOCs are the main thing that we're worried about being transported by groundwater.

Clara: And on page 11 Nicole, you used the word generally in describing what would happen to a particular type of CVOC. And the word generally seems to me to be one that is kind of hard to understand what it actually means and I'm trying to find it.

Nicole Yuen - DTSC: Yeah, do you know which side this was or the overall context?

Clara: I think it was on slide 11 but.

Nicole Yuen - DTSC: This is slide 11 on my end. I'm not sure.

Cheryl Prowell: Was it about where they hire tech support?

Randy Brandt: I guess the fourth bullet down Nicole organic chlorine pesticides. Oh no. I'm sorry. That is not it.

Nicole Yuen - DTSC: Oh, generally below reporting limits?

Clara: Yeah so. So what is the non general portion that is above the reporting unit?

Nicole Yuen - DTSC: I believe there are only a few locations like only a couple samples across the entire site had it above screening level. So reporting limits is pretty much what an analytical lab would say is, they're confident that it's there and this concentration. So that's like the minimum
concentration that they're sure it's there. So it's just kind of a measure of accuracy. So if we say it's generally below reporting limits. It's non detect which essentially means it's not there.

Nicole Yuen - DTSC: It's not in the soil. So what I meant by this bullet and I apologize if it's unclear it's just that the pesticides.

Nicole Yuen - DTSC: The distribution is very low across the entire site. Or if they were detected, the concentrations detected are low.

Cheryl Prowell: Just to paraphrase, and most of the locations, the concentrations were so low that the lab couldn't even see that they were there?

Nicole Yuen - DTSC: Yes.

Cheryl Prowell: So they're only detectable in a few places.

Howard Pearce: Sometimes the word trace amounts is used where it's below the detectable.

Nicole Yuen - DTSC: Yeah.

Asha Setty: Does that answer your questions, Clara?

Clara: It absolutely did. I'm sorry. I thank you very much to both of you for having responded to it.

Nicole Yuen - DTSC: No, thank you for asking. I forget sometimes, you know, you read so many of these reports and you forget that not everyone else reads these on a daily basis.

Cheryl Prowell: There's also a question from Nancy in the chat.

Asha Setty: Yeah, so I'm going to read Nancy's out loud. Unless Nancy, you wanna jump in and ask yourself? But I'm assuming you want it read out loud.

Asha Setty: She asked, are contaminants on any available form and percentages of the amounts found in relation to area found and would remediation vary within area based on those percentages?

Cheryl Prowell: Nancy, if you can jump on, unmute yourself and explain the question. I think it would help if you could ask it again in your words?

Nancy Lacsamana: And I again I'm not as well versed as everybody else. I just wondered. I mean I think you sort of answered it a little bit with Claire. That some of these are very small but I would still.

Nancy Lacsamana: I would imagine you have measuring levels. But again you just said that you thought they were very small. But obviously you have a remediation plan that has a lot of different choices. So will you use different choices for different areas or is it a combination of everything? How will you decide when you get to that middle column there what to do in what area?

Nicole Yuen - DTSC: Okay

Nancy Lacsamana: Burn. Move. I mean, how do you decide that?

Nicole Yuen - DTSC: Yeah. The FSRAP.

Nicole Yuen - DTSC: It's kind of hard because the development can't really be planned out until you approve this report.

Nicole Yuen - DTSC: But essentially, the grading plan, as it is now, calls for, you know, 20 feet of soil up in some areas and a minimum of five feet of soil across the site.

Nicole Yuen - DTSC: And in some areas, they are going to excavate. And in some areas, they're going to cap with 20 feet of soil.

Cheryl Prowell: Can you explain the criteria that they use to decide when to excavate Nicole?

Nicole Yuen - DTSC: They're excavating when it's above cleanup levels. And so cleanup levels in this case are for unrestricted use. So we have risk-based screening levels which essentially is like if the concentration is below this level then the land is okay for unrestricted use. And so that's the threshold we're using at the site.

Nicole Yuen - DTSC: I can't really speak to the exact areas that are being excavated because that’s the goal.

Howard Pearce: Nicole, would you like me to jump in and help you?

Nicole Yuen - DTSC: Yeah.

Howard Pearce: They're generally speaking the areas that we would expect to have to excavate are the lower line areas that would be adjacent to the Bayshore Boulevard, where we will need to provide clean corridors for utilities that get buried in the roads.

Howard Pearce: So that's, that's the most likely location. But all of this gets detailed during the RDIP design.

Nancy Lacsamana: So you're saying that the design will determine the remediation plan based on end use?

Howard Pearce: Right. Exactly. Yeah. So, so the roads will have one particular depth that will provide for clean corridors and buildings and open spaces would have different depths and different remedies as well.

Nancy Lacsamana: So I read somewhere on a local site that part of the removing and moving of it may be underneath roads. Is that a normal procedure? Is that a suggested or is that a plan or both?

Howard Pearce: No, that's, that's a pretty normal procedure is to excavate contaminated materials in the roadways to provide for clean corridors unless there's enough clean soil that is placed over the top of the existing contaminated soil. So it's a combination of.

Howard Pearce: It depends on the profile of the road and the location and the depth of fill at a particular location on the site.

Nancy Lacsamana: Yeah I mean. From a personal perspective. I mean that's my number one concern is end use and what is going to be there for people who are going to live there or work and will it be safe.

Nancy Lacsamana: So that to me is the number one question that I have and that is to make sure that we aren't signing off on something before we know where it's going, how it's going to be remediated. So you know it's that or what the horse or the cart first right? But I think that's my concern.

Howard Pearce: So this FSRAP outlines the general remedies. And then the actual construction drawings.

Howard Pearce: How these remedies get implemented are shown with great detail in the remedial design and implementation plan.

Nancy Lacsamana: So you're saying they'll be basically reviewed at the same time or presented at the same time?

Howard Pearce: Well, that's the next step is the RDIP.

Nancy Lacsamana: Right, right. Okay.

Howard Pearce: So we will be developing that following the development of our master plan. Right now, we haven't fully laid out all the roadways and all the lots and the park. All haven't established the different uses for it for those areas.

Nancy Lacsamana: For sure. Thank you.

Nicole Yuen - DTSC: Yeah.

Asha Setty: Yeah. And for you just sorry, Nicole. I was just going to jump in and say that you know we are planning on presenting the RDIP to the community. So there'll be opportunities for you to, you know, take a look at that and will present it and get your feedback. So it's just.

Asha Setty: It's a little ways out, but we want to make sure that you know that there's, there'll be a public input process for that as well.

Cheryl Prowell: There's a question from Prem in the chat.

Cheryl Prowell: He has a question about the varying depth of the hole borings for the purposes of documentation.

Prem: Hi there. Can you hear me?

Nicole Yuen - DTSC: Yeah.

Prem: Okay. So let me just jump in. This is Prem Lall and so maybe we can move back to the slide that states the depth of the hole borings being up to I think 21 or 20 feet. I can't remember which it was. But my question is,

Prem: What

Prem: How many of those borings are actually going to 20 or 21 feet and how many of them are something like six inches or one foot or two feet or something like that? Do you have a 3D version of this map so that

Prem: anyone who wants to observe can see how many of these borings are actually as deep as 20 or 21 feet and how many are just

Prem: Much less than that? The reason I'm asking is because of the disastrous Midway Village project, which is about 1000 feet away from this locality.

Prem: And all these residences were built on that property, which was poorly tested as far as soils are concerned, and that all kinds of cancers resulted in the children who live there and their parents and all kinds of things and it was just a big mess. And when government officials came to check the soil, they wore hazmat suits.

Prem: And they never told the people that the soil was actually contaminated, but they were living there on contaminated soil. So I would like to get a better idea of how deep these hole borings actually are, and a chart that shows us how many are actually going down to 21 feet.

Howard Pearce: So Prem if you're interested, the data gap investigation has elaborate detail on the locations of each one of those green dots and it also has the, some of the boreholes

Howard Pearce: had multiple samples taken and it will show you the depth of each one of the samples that was taken

Nicole Yuen - DTSC: It’s on Envirostor.

Nicole Yuen - DTSC: The whole left. Sorry. The whole report and the appendices are on our database but I can also send that to you.

Prem: So, but the question was, do you have something like a 3D kind of.

Howard Pearce: Yes we do. It's, it's, it's all in that data gap.

Prem: It is. Okay. Great. Thank you.

Nicole Yuen - DTSC: I'll send you a link by email after this meeting.

Prem: Alright, I appreciate it.

Clara: I'm wondering if I might ask a question? Clara Johnson.

Nicole Yuen - DTSC: Sure.

Clara: The question is about the.

Clara: Going back to the O&M plan. But I wanted to know about

Clara: You're going to be testing the materials coming out of the Schlage site for who knows 30 years or however long they need to be to be tested correct?

Nicole Yuen - DTSC: We as you can see. I wanted to show you know the title page of what an O&M agreement looks like. This is the one we assigned with UPC back in december. We already had one but we had to include another piece of schlage because we finally finished um remediating it. So yeah. So we did just update the O&M agreement. I did go through the entire financial assurance process again last year.

Nicole Yuen - DTSC: So, so actually.

Clara: I'm sorry I wanted to ask about the semi-annual report that comes out from that.

Nicole Yuen - DTSC: The groundwater reports.

Clara: Right. Groundwater monitoring report. And I wondered if uh if it might help with the public if uh if it were possible and I guess this is kind of expensive but to send out a very short um kind of uh I'm trying to say just a brief discussion of what that shows.

Clara: It was one that would simply say, like your letter say, that when you're

Clara: When you accept the groundwater monitoring report is that, you know, the following things or the following class of chemicals has not changed. Or this has changed and it's going up and this is what we're going to do. Just so that it would be only a few pages from you. But I wonder if it could be sent out to like all the addresses that you think are relevant and should be to have it sent to. It is asking you to do kind of a lot, but you'd reach a lot of people.

Clara: And I think it would be reassuring to people as the years go on that you know yes this is going on and this is a brief discussion of what this report shows. I know that has expense but it would really allow people to passively receive information even if you

could do it once a year rather than the five-year review. And of course they could always get it by going on Envirostor but most people are never going to do that. And it would you know in a way it would

Clara: It might affect future decisions if the public ever has to weigh in on anything because they would feel as though they'd be given an opportunity to see it easily and in brief which is probably as much as most people would want or more than they would want.

Asha Setty: That's a great suggestion, Clara. Yeah, we can we can consider.

Asha Setty: So are you suggesting like sending out a mailer like we do with the community updates but just basically a summary and we send it to everybody and so they they know and they understand kind of the year-to-year kind of updates on the site?

Clara: And if you tell them things like once in a while something does

Clara: It does something that's an anomaly it's like

Clara: That kind of shows them for sure you're watching and you're adjusting for what the conditions are. And that I just think that would reassure the public and make the relationship between the developer, the regulator, and the public a better one because they've feel better about it.

Asha Setty: Yeah that's a great idea. I think we can figure out a way to get the information out there and that's yeah

Asha Setty: That's a great idea, Clara.

Clara: Thank you.

Cheryl Prowell: One of the features of Envirostor that you mentioned people can go to. Envirostor and get the information. One of the relatively new features of Envirostor is you can sign up for email alerts and then whenever new information is uploaded whether it's a report or a letter from us, an email will be sent. So it'll remind you to go and look for the new information.

Clara: That’s good.

Cheryl Prowell: And we definitely could have a mailing list of people who would prefer to get it via paper mail not just electronically

Clara : Thank you. Thanks very much.

Asha Setty: Let me know if anyone has an interest in signing up to get the alerts. I do need to look into whether

Asha Setty: From what I've seen there's the email alerts that come up don't provide a direct link. So you still have to have a tutorial on how to get into Envirostor. But that's actually something that you know we could do that

Asha Setty: We could just schedule a tutorial for anyone who's interested. But I think Clara what you were saying is you would really like a summary because you know who wants to really go through and read the whole report and what are you even looking at anyways. So yeah

Cheryl Prowell: We could either ask the the consultants to put an executive summary at the beginning of each report or we could put it in our comment letters.

Asha Setty: That's a great idea. A readable, yeah, an executive summary that's kind of in plain language. Yeah.

Cheryl Prowell: Right, yeah.

Clara: Sounds good.

Clara: Thank you.

Asha Setty: This is a great brainstorming here. Do we have any other questions or comments? You know anything specific to the proposed remedy or even you know if you have general questions about the remediation process or you know some of the terms that we've used that you want clarification on? You know because they're

Asha Setty: It's pretty technical language and we're happy to just you know break down some of those concepts even further if you've been wondering or meaning to ask we're happy to go back to a slide and you know go back to any anything you want to take a look at again.

Asha Setty: I'll give you all a couple of minutes to think about if you have any other questions. And yeah Nicole maybe you can kind of go through some of the slides. Maybe the proposed remediation slides and see if any

Asha Setty: That generates any interest in asking questions.

Clara: I have one more.

Asha Setty: Go for it.

Clara: The trucks. The many, many trucks that are gonna be excavating. I wanted to know if at some point since you this doesn't start for a while and that you could mandate

trucks that were either electric or trucks that didn't spew out greenhouse gases, electric, hydrogen. Or I guess the city could try to do that. But in other words to make the trucks trips back and forth less of a burden on the region.

Nicole Yuen - DTSC: Yeah. I don't think we have that kind of power. We can certainly make that suggestion and you can suggest to the city. But I don't think we can mandate such a thing.

Clara: Okay. I. That kind of make. That makes sense that it wouldn't. You wouldn't be able to.

Clara: But so we should tell you if you're selling the city and we should tell the city we'd like to see that happen. That's where that should go?

Nicole Yuen - DTSC: Yeah I certainly don't. DTSC does not have the jurisdictions to make that kind of call.

Clara: Thank you.

Cheryl Prowell: And i'm not sure if the type of trucks that would be used to haul the soil off-site are available as electric trucks yet. I know there's work to make. Trucks that ship containers of goods there some of those are becoming electric. But those are different types of trucks than trucks that haul booster.

Clara: Thanks.

Asha Setty: We do have a question from Russell, he asks where the trucks will enter or leave the site.

Cheryl Prowell: And we don't know that yet. Again that would be in the remedial design, the RDIP. Howard, do you have any preliminary ideas of where that would be?

Howard Pearce: There's the current entry points to the site. Right now there's Sunnydale. There is Geneva and then there is a roadway to the south that goes kind of behind the fire station under that bridge there. What we would really like to do and you know there's a lot to put together.

Howard Pearce: Lots of permissions and permits to get it there. It is to build some kind of a bridge over the railroad tracks so that we could avoid all the surface streets. However I

Howard Pearce: That's what we would love to do but I think that the permitting may be difficult. So I just leave it at that. It's likely to go on the surface streets.

Howard Pearce: Yeah and enter at Geneva, Sunnydale and that roadway that goes behind the fire station.

Cheryl Prowell: And so Russell's added into the chat to please direct truck traffic away from the residential areas and yes we will we will note that comment and as the design is prepared encourage that to be a consideration.

Nicole Yuen - DTSC: Yeah, and I believe the city also has to approve the truck route and I do not think they would approve anything that goes through primarily residential neighborhoods.

Cheryl Prowell: Oh, go ahead Asha.

Asha Setty: Oh, it's just going to say we have a chat from Zach. So, did you want to, was there an add on to the previous comment? Okay. All right.

Asha Setty: Zack do you want to unmute yourself and say in your own words what you're getting at here? Would you like me to read it out for you?

Asha Setty: Okay.

Asha Setty: I'll read. Read out

Asha Setty: You jump in.

Zack P.: Oh yeah, sorry.

Asha Setty: Oh there you are. Okay go for it.

Zack P.: I guess if you just read it because

Zack P.: and then if anybody needs clarification, I can respond.

Asha Setty: So Zack’s asking you what is currently going on on this site. I’ve got question mark. This is where we need some clarification. I've seen vehicles generally a pickup truck with a trailer that appears to have a white tank go to a spot on the north central west area of the site near but apparently unrelated to the company with trucks near the sculpture store that appears to be either intake or expel liquid.

Howard Pearce: There is a

Howard Pearce: I don't know what they

Howard Pearce: Exactly what they do. We’re leasing an area to a trucker that has

Howard Pearce: I think it's cement related. He doesn't have i don't know what if he's doing any work. It's really more of a just trucking. It's just storage and the area that's

directly in back of the statue. I'm drawing a blank what it's called there. Right there at the you know the Daly City, San Francisco city limits. Right at the cinema.

Zack P.: Right, right.

Zack P.: Yeah, yeah, that statute place right. I can't remember the name of it either. But you know, it's been there forever. I'm sure Russell. Somebody knows. But I've seen those trucks. Right, but it seems separate from that. There's a truck that kind of goes near where those trucks are stored

Zack P.: And like I said, it seems to have a tank on it.

Zack P.: Guys, so go out, pull out a hose and

Zack P.: Do something.

Howard Pearce: So it might also likely to be something that Caltrain is is working on

Howard Pearce: They are putting together their electrification project.

Howard Pearce: And so there.

Zack P.: Yeah it seems away from that. Because what Caltrans seems to be by

Zack P.: You know the tracks and the trucking company is by the statuary and this is kind of slightly to the west, but kind of in the center.

Zack P.: You know where it seems to be nothing else is going on. I just maybe next time I try to take a picture or something. I don't have a telephoto lens, but I can definitely see this truck go out there.

Zack P.: And I don't know whether he's like you know taking samples occasionally to see if

Zack P.: You know the liquids are flowing down from the schlage lock site, you know, to the

Zack P.: because it would seem to be in that dotted area where the, you know, there's talked about the runoff or whatever from.

Howard Pearce: Well okay I think I know what you're talking about.

Howard Pearce: We do quarterly groundwater monitoring and we have Blaine Tech.

Howard Pearce: They actually are

Howard Pearce: It's a company subcontractor to Geosyntek that goes and takes the sample from the groundwater monitoring wells and they have white pickups. So that might also be what you're talking about. So again they do that quarterly. The last time they did that I think was in November. The next one's scheduled for February.

Zack P.: Okay, okay yeah. It seems to be a little more frequent than that. But I guess. I mean. Yeah that's comforting that they're testing the soil and not somebody's going out there dumping something. So hopefully that's what we're talking about the same people.

Cheryl Prowell: There is another comment in the chat from Russell asking if we can talk a little bit about securing the property. There's a concern that the fencing now is useless and an eyesore. Howard, could you address that?

Howard Pearce: I know that there's

Howard Pearce: I know that there's still

Howard Pearce: There's times when the hopeless homeless people and you

Howard Pearce: All kinds of crazy people are

Howard Pearce: Have been accessing the site. We have had problems with that and we've addressed that with police on both the San Francisco side of the property and the Brisbane side of the property. So I will have our operations department take a look at that though and have them patch up the fence.

Asha Setty: Thank you. We have a question from Prem. He's asking if the previously mentioned proposed access bridge over the train tracks located near the intersection of Beatty Avenue and Tunnel Avenue.

Howard Pearce: Not sure what that would be.

Asha Setty: Do you want to unmute yourself and provide some clarification?

Prem: Okay, so I was just looking at the map of that area and Beatty is over by Recology.

Prem: It's south of the border between San Francisco and Brisbane and there are entrance and

Prem: There is an entrance to

Prem: Entrance ramp to 101 south from Beatty and there is an exit ramp from 101 north that winds to Harney Way then Alana way then Beatty avenue to that intersection with Beatty and Tunnel avenue. And that intersection is in very close proximity to these uh proposed construction sites. So I think Howard you mentioned that there might be

permits requested for a bridge over the train tracks to reach the construction sites and keep the trucks away from the residential areas. And if that's something that you're thinking about um it would probably be fairly, well compared to other site, it would probably be fairly less complicated to put that bridge in that area right between the intersection of Beatty avenue and Tunnel avenue and the site approximately the same equidistant on the other side of the train tracks. So that you could easily access that construction site with the roads and the entrance and exit ramps that already exist to 101.

Howard Pearce: Yeah, there's, there's a lot of work to be done to put together a bridge and we'll take all that into consideration.

Prem: Okay.

Asha Setty: Do we have any other questions or comments, again, you know, related to the proposer remediation or

Asha Setty: You know anything, just you know generally related to the site? We'd be happy to take those. Just unmute yourself and speak or type it in the chat. We'd love to hear from you.

Nelson Gutierrez: Hello, I came extremely late to the meeting.

Asha Setty: No problem.

Nelson Gutierrez: One might think when is the start of the proposed start of the removal of the contaminated soil and and then the clean soil being re-kept over the land. Is there a particular date they started or.

Nicole Yuen - DTSC: Yeah. So here's the very very tentative schedule. So the public comment period won't end until February 15, 2021. DTSC also has to respond to all of the comments that we received during this public comment period. And then UPC still has the master plan, the specific plan, the environmental impact report and then the remedial design implementation plan also needs to be written. So long in short, we're not planning on breaking ground until 2023 at earliest.

Nelson Gutierrez: The start of the removal of contaminants was 2023.

Nicole Yuen - DTSC: Yes.

Nelson Gutierrez: Yes. Okay. That's the start. And 26. That means a three year span of cleaning up or capping that land or the bay lands right? Is that what is what i'm seeing here?

Nicole Yuen - DTSC: Yeah it's because the current development plan is assuming 5 to 20 feet of soil will be brought in h for the final grade. So 2023 to 2026 is not just you

know us doing our cleanup. It also includes all of that time to bring in the soil and regrade the entire property.

Nelson Gutierrez: Okay. there are going to be some locations of the bay lands where they're going to be 20 feet of new soil some areas of 5 feet. Is that what you're saying?

Nicole Yuen - DTSC: Yes.

Nelson Gutierrez: Okay. Okay. And then I guess Mit like I said, are they going through Tunnel avenue? All these trucks are. Is that their access?

Nicole Yuen - DTSC: So the truck route and all of that will be in the remedial design implementation plan but we can't start writing that until we approve this document and we get some other stuff done with the city. So and the truck route has to be approved by the city as well. So I don't have specifics on what the truck route is. But given that the city is going to have significant input on how the trucks are going to be moving on and off the site, I'm sure we will also the public know at that point.

Nelson Gutierrez: Okay.

Asha Setty: Okay do you have any other questions Nelson? I can

Asha Setty: If you came in mid-presentation, we'd be happy to send you a copy of the presentation and recording. Are you on our email list?

Nelson Gutierrez: I should be. I received your email.

Asha Setty: Okay, great.

nelson Gutierrez: So if you can email it to me. I got in, like, maybe, like, seven, eight minutes ago. So I missed

Asha Setty: Oh I see.

Nelson Gutierrez: I missed a lot.

Asha Setty: You missed the presentation so

Nelson Gutierrez: Pretty much. Missed a lot. A lot of the juicy parts.

Asha Setty: Yeah, so you should have that presentation already in your email. I sent it out a couple hours ago.

Nelson Gutierrez: Okay.

Asha Setty: So yeah, so you could, you know, pull it up right now. And, you know, if you haven't questions will be happy to answer.

Nelson Gutierrez: So

Asha Setty: We believe

Cheryl Prowell: We are recording this and so we will post that on the web page, so we can make sure you get the full recording to get all of the dialogue that goes with the slides.

Cheryl Prowell: And this is a reminder to everyone. If you have additional comments or questions after tonight through the whole comment period, you can send comments to Nicole either paper mail to the address shown there or email or phone call.

Nelson Gutierrez: Okay and that's to the 15th of February, correct?

Cheryl Prowell: Yes.

Nelson Gutierrez: The last days to submit a comment. And then they

Nelson Gutierrez: And what would the comments will be answered the public comments sometime later in the year?

Nicole Yuen - DTSC: That's a good question.

Cheryl Prowell: It depends somewhat on how many we get. But yes we do hope to summarize them and get a response to comments out as quickly as reasonable.

Nelson Gutierrez: You don't have much of an excuse as the COVID 19. You’re stuck at home. So you got plenty of time.

Asha Setty: No but we seem to be busier than ever like go figure.

Nelson Gutierrez: Yeah.

Nicole Yuen - DTSC: It’s strange.

Clara: It's strange I just wanted to ask about the soil that's going to be placed on the land. How often are you going to

Clara: What are you going to test that soil to make sure it has the constituents that are the

Clara: You know that your criteria say are the best for that cap?

Nicole Yuen - DTSC: Yeah, so we're going to

Cheryl Prowell: Go ahead, Nicole.

Nicole Yuen - DTSC: Oh, I was just gonna say we're gonna have soil import criteria because there's no point in cleaning up a site and then bringing in contaminated soil. So we will have soil import criteria included in the remedial design and implementation plan and the geotechnical engineers have their own specifications. But yeah all the soil that is going to be imported will be selected for its purpose as fill.
Clara: Will it

Clara: Will you be testing that soil at intervals to make sure it satisfies your criteria?

Nicole Yuen - DTSC: Yeah. Yeah. So all of that will be included in the remedial design implementation file like how many samples we're going to take from the fill at the regularity of all of that, what criteria are we sampling for, all of that will be included in the RDIP.

Clara: Thank you.

Cheryl Prowell: And there's some fairly standard guidance that we use to evaluate what the appropriate frequencies are

Cheryl Prowell: Yeah.

Nicole Yuen - DTSC: And I was just on an internal work group discussing soil import criteria. So it is something we are discussing internally just kind of how we approach it on different sites and what we've seen and things like that. So it is a topic that DTSC is invested in.

Clara: Thanks.

Asha Setty: Oh I should check with you Gerry. Do we have any emails that came in? You had put in your email address folks who weren't able to get to the chat or the phone.

Gerry.Dietrich@DTSC.CA.GOV: We do not.

Asha Setty: Okay. Thanks for checking

Asha Setty: Okay. Any final questions or thoughts for us before we wrap up?

Nelson Gutierrez: I got another one.

Asha Setty: Ya please do.

Nelson Gutierrez: Again apologize for coming so late but it might be something you already answered. Now is the cleanup is it based on the whole baylands or just a particular residence or maybe resident homes can be built? Are we including? Are you guys including?

Nelson Gutierrez: Okay. Okay Yeah okay.

Nicole Yuen - DTSC: So this is a question we know it's a common question. So don't feel bad about asking. It's because it's so confusing. So this yellow portion in yellow it's the schlage side. So this is San Francisco. Tonight we're just discussing this green portion which is also known as UPC OU-SM and then in pink it's OU-2 which is under the Water Board and the entire blue section is the Brisbane landfill which is also under the Water Board. So all I have is this green bit. That's my piece. DTSC's piece.

Nelson Gutierrez: Okay, so

Asha Setty: Just so you know the pink area the OU-2 is also under public comment currently.

Nelson Gutierrez: Okay so these two parcels I should say, the green and the pink, are from

Nelson Gutierrez: Okay even though they say waterboard it's still up for a discussion here.

Cheryl Prowell: It's not up for discussion tonight but there is a public comment period open through the water board.

Nelson Gutierrez: Oh through the Water Board. Oh I don't know is there like a separate

Asha Setty: Yeah, Nelson. So we should be using the exact same mailing list. So you should have received a separate mailer from the Water Board and an email notification. So I'll make sure you get that and I think Craig Communications is on this meeting. So they should be able to get that information to you. If you don't mind sending me your contact info in the chat there and just direct it to me and I'll pass that on to them so they get that information.

Nelson Gutierrez: And then just curious. Now is any way that high speed rails done anyway impact this whole remediation of these, these two parcels here that's still like kinda like in the air?

Nicole Yuen - DTSC: DTSC doesn't have any

Nicole Yuen - DTSC: High speed rail and we don't know. If that use is really dependent on the county and city I believe. Howard maybe you would know better.

Howard Pearce: The High Speed Rail Authority is putting together an EIR for the site that may impact what we do and so that's a work in progress .

Nelson Gutierrez: And just curious what the madam that spoke earlier about the soil. I know UPC have a business where they take soil from other construction sites and bring is that the good that can be used as well as part of the capping of that land.

Howard Pearce: That's, that's right. And so the

Howard Pearce: All that soil will be tested as nicole said for whatever the however that's soil import criteria list that's part of the FSRAP we'll have to meet those standards

Nelson Gutierrez: Okay.

Nelson Gutierrez: All right. Be careful of Hunters Point soil. Don't touch it.

Howard Pearce: Nothing from that. Right.

Nelson Gutierrez: No, definitely. Okay.

Nelson Gutierrez: Thank you.

Asha Setty: Great. Thanks, everyone.

Asha Setty: Any final lingering questions or thoughts for us?

Asha Setty: Okay then.

Asha Setty: This is not your last opportunity as we've mentioned. We do want to hear from you. There's a lot of information to digest. We do encourage you to take a look at the proposed remedy. If anyone is not on our email list please do send me your contact information in the chat and we'll add you to it and you know that way we can send you direct links to any of the documents for review. And then after reviewing those documents if you have further questions you know we'd be happy to provide you with additional information and again we're open to you know setting up another meeting you know prior to the close of the comment period.

Nelson Gutierrez: Is there going to be another zoom meeting by any chance or is the last one?

Asha Setty: Yeah that's what we're looking into that. If there's enough interest yeah we'd be happy to do that. So what I'll do is once the recording is ready I hope to get that pretty soon so I'll send that out by email and we'll also post it to our website and then if we hear from folks like hey you know I wasn't able to attend.

Asha Setty: You know I would like another opportunity I wasn't able to ask these questions. We'd be happy to host another meeting and I know Clara you had mentioned that perhaps there would be interest by the CAG to have another meeting. I think that was something that you were gonna look into correct? So that would be something that would be open to if we were to present at another CAG meeting then that would be open to the public?

Clara: it would be open to everyone who would like to come and I'm going to ask them, the membership, this weekend to see whether they're

Clara: they want to have another meeting.

Clara: Could you hear me?

Asha Setty: Yes. Yeah, thank you Clara.

Asha Setty: Yeah, we'll follow up with you.

Clara: Well I we appreciate that you would allow us to have another meeting with your hosting. Thank you.

Asha Setty: Absolutely.

Asha Setty: Okay, anything else. I think that gets us to the end of our meeting and the public input portion of the meeting. So I think we will just wrap it up here. Thank you everyone for joining. Stay safe, stay healthy and we look forward to seeing you in person, one day soon.

Attachment 5 – Comment Letters

City of Brisbane
50 Park Place
Brisbane, CA 94005-1310
(415) 508-2100
(415) 467-4989 Fax

January 6, 2021

Nicole Yuen, Project Manager
Department of Toxic Substances Control
700 Heinz Avenue
Berkeley, CA 94710

Subject: Draft Feasibility Study/Remedial Action Plan for UPC OU-SM Site

Dear Ms. Yuen:

Thank you for the opportunity to review and comment on the draft Feasibility Study/Remedial Action Plan ("FS/RAP") for San Mateo County Portion of the Universal Paragon Corporation ("UPC") Operable Unit ("UPC OU-SM"), an approximately 35-acre parcel of land located in the northern portion of the former Southern Pacific railyard located in Brisbane, California. In reviewing the draft FS/RAP, the City of Brisbane ("City") offers the following comments:

1. First and foremost, the City wants to make sure that UPC implements a remedy that is (1) protective of human health and the environment and (2) consistent with Measure JJ. In doing so, the cost of remediation should not be the driver in the remedy selection process.
    a. Given that the preferred remedy results in most of the contamination being left in place, the City would like to see some mass removal of the most contaminated soil. Therefore, it is the City's preference that material containing chemical concentrations in excess of State of California Total Threshold Limit Concentrations ("TTLC") in the upper two feet of existing soil be excavated and disposed of at an off-site facility in accordance with applicable laws and regulations, rather than simply being left in place and capped.

2. Conceptually, with proper financing and implementation, the proposed remedy in the UPC OU-SM FS/RAP should be protective of current and future City residents and workers (both onsite and offsite) and the environment. Nevertheless, information regarding current soil vapor conditions are not available and specific details about how the remedy will be implemented are not presented in the FS/RAP.

To address potential concerns regarding the protectiveness of the remedial actions to be implemented and their compliance with the City's requirements and standards, including Measure JJ, the City requests to remain engaged with UPC and the California Department of Toxic Substances Control ("DTSC") during the Implementation phase of the environmental remediation process. More specifically, the City would like to be provided the opportunity to review and comment on the future Remedial Design Implementation Plan and other UPC submittals to the DTSC regarding topics such as:

a. Cap and utility corridor design;
b. Soil management plan;
c. Soil vapor sampling;
d. Vapor intrusion evaluation;
e. Vapor intrusion mitigation system design;
f. Indoor air sampling;
g. Construction mitigation measures (e.g., dust control plan, stormwater pollution prevention plans, etc.);
h. Air monitoring;
i. Soil excavation, grading, and management;
j. Import fill standards;
k. Haul routes and transportation procedures;
l. Long-term maintenance plans including associated financial assurances;
m. Remediation of impacted groundwater and chlorinated volatile organic compounds from the Schlage Lock Operable Unit;
n. Final sea rise analysis (to confirm that potential impacts due to rising groundwater levels are addressed in addition to potential inundation threats); and
o. Land use restrictions.

Thank you for your consideration of these comments. Please contact me at 415-508-2120 should you have any questions regarding this letter.

Sincerely,

Karen Cunningham
Mayor, City of Brisbane

Cc: Clay Holstine, City Manager
John A. Swiecki, AICP, Community Development Director
Randy Breault, P.E., Director Public Works
Kiana Amiri-Davani, Edgcomb Law Group LLP

February 15, 2021

TO: Nicole.Yuen@dtsc.ca.gov

FROM: Brisbane Baylands Community Advisory Group (BBCAG)
Via Clara Johnson, Vice Chair and Acting Chair
clara-a-johnson@sbcglobal.net ph. 415-4684195

SUBJECT: BBCAG COMMENTS ON DRAFT FS/REMEDIAL ACTION PLAN FOR BRISBANE BAYLANDS 0U-SM

BBCAG appreciates the opportunity to comment on the Brisbane Baylands OU-SM FS/DRAP.

The BBCAG has noticed similarities between the draft Remedial Action Plan for Brisbane Baylands OU-SM regulated by DTSC and the draft Remedial Action Plan for Brisbane Baylands OU-2 regulated by BARWQCB. The Data Gap Reports were prepared by the same company, Geosyntec, in the same year, 2018. The both relied on a 100 ft best boring hole grid to obtain additional data. The remedial actions in the alternatives chosen are similar.

We are community members. We are not trained scientists and we are keenly aware that we cannot read the Data Gap Investigation Report, the Draft FS/RAP and the Lab reports with the comprehension that a technician or a scientist would. There are techniques used to try to determine the amount of a particular metal or chemical of concern in a particular sample. If these techniques e.g. dilution, spikes, dupes etc. or elements that were, supposed to accompany the sample are missing then the test results in estimates rather than exact values. The Overall Assessment section features check marks to indicate all is well but it uses a crossed circle to indicate that there are “issues”. The draft plan uses phrases like “qualified as meeting project objectives” and “qualified data should be used within limitations of the qualifications”. The problem that we see is that with these procedures, there are a lot of educated guesses being made that could result in adverse impacts on human health and environmental quality. The

individual who must decide what to do with the test results needs more specific information about the “limitations” than is provided in the report.

There should be a range to describe how much confidence there is in the accuracy of the estimate being made. Sometimes the estimated information is not included in the EDD (Electronic Data Delivered). There should be an analysis of the cumulative impact of all the estimates with regard to each chemical or metal of concern. There should also be an assessment of what the additive and synergistic impacts there are when all of the COC’s and MOC’s are considered.
Examples of these issues are found on pages 691-709, 710-711, 1170-1172, 1402-1417 and on other Lab report pages.

The BBCAG thinks it is important that the synergistic and additive impacts of the chemicals of potential concern and the metals of concern present on the site be determined and be considered in assessing the harm it will cause to human health and to the environment. If that information is not available, then the evaluation of potential harm should be included as soon as it becomes available. There was a reference to these impacts but it did not appear to be thoroughly researched.

The European Union list of Chemicals of Concern that was adopted by California, If it lists chemicals that are present on UPC OU-SM but which were not investigated and evaluated then those chemicals should be added to the DRAP, evaluated and remediated.

You have chosen Alternative 3 as the proposed action plan. It contains a provision to place “Chemicals of Concern” and metals of concern under hardscape (concrete or asphalt). Hardscape is porous and will, over time, allow vapors from these chemicals to escape into the air. It is possible that the volume of COC’s could be so large in one area of hardscape or simply be, under so much hardscape, multiple acres of it that it would create a pathway to inhalation by the people who visit, work there or who live nearby.

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A second concern about the placement of the COC's that are volatile chemicals is the margin of error that is used to make sure the chemicals are not too close to the edge of the hardscape. There should be a specific distance from the edge of the chemical placement and the edge of the hardscape that cannot be decreased no matter what the conditions are. If there is no hardscape between the VOCs and the soil cap then once again there will be a pathway to human inhalation. A third concern is the possibility is that the hardscape will be disturbed by workers for road repair, landscaping, utility installation or repair or intrusion of surface water. One of these events happens fairly frequently. The contamination is found in various areas on the site and there may be a substantial amount of chemicals to be sequestered under the hardscape. You mention placing a brightly colored geotextile will clearly mark the many areas that should not be disturbed. What happens after the first disturbance? Will you replace the geotextile every time there is a disturbance so that all the people involved in the numerous types of activity mentioned, will be aware? You need to review this plan because there isn't sufficient protection of human health and the environment.

Soil Vapor Monitoring Systems should be placed in all buildings, residential, commercial and public. Soil Vapor barriers should be placed below all buildings. The systems should be monitored once a quarter to make sure they are functioning. Soil Vapor barriers could be disturbed by earthquakes, liquefaction, grading, pressure from salt water intrusion or groundwater pathway shifting due to any of the above causes.

The soil cap should be more than five feet deep at its thinnest. It should be at least ten feet deep in order to provide a margin of error. The public should be notified within a week if the soil cap has had its integrity compromised or if any other safety system has been compromised. The public should be told within a week what has happened, what the risks are and when the integrity of the safety system is restored. There should be an agreed upon method of notification. The operational monitoring systems semi-annual reports should be easily available

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and any changed conditions should be transmitted to the public including anyone who regularly visits, lives or works on OU-2. Interested parties should be able to
request to have summaries of changes that occur from one monitoring period to the next be sent to them by email or U.S. mail.

The RDIP should be presented to the public when it is in draft form. It provides a more specific description of exactly what will be done to carry out the Remedial Action Plan. The public should have a chance to ask questions and offer comments. A public meeting must be held to explain the RDIP to the public and to allow public comments.

The BBCAG restates our view that there should not be any residential uses on any part of the Baylands including OU-SM.

There is a statement on page 67 of the RWQCB FS/DRAP for OU-2 that says, "..to ensure the protection of future users of the site by breaking the pathway to impacted soil". It is made within a section on soil capping. We look at the many toxic contaminants that are found on UPC OU-SM and we conclude that whatever buildings that are built here should be separated from the ground level by pillars (on the perimeter and within It) that would allow air to flow between the ground level and the floor of the structure. The pathway from impacted soil would be broken. We think that this is necessary to protect human health even with all the remedial actions that are called for in Alternative 3.

The information on truck trips to either import soil for the soil cap or export contaminated soil indicates that all of these trips will have a significant impact on traffic in the area. It will also generate greenhouse gases. The rules and routes used must be carefully designed to lessen the disruption caused by this project on surrounding communities and U.S. 101. The trucks used for the soil hauling must be zero emissions vehicles. These activities are projected to take place three to six years into the future and the efforts to blunt the effects of Climate Change will be even more of a priority than they are today.

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There are other remedial activities that occur totally within the boundaries of the Baylands. These internal trips must be taken into account when calculating greenhouse gas emissions and noise and what must be done to mitigate impacts.

In section 2.2 of the Health Risk Assessment, it states that deep groundwater that meets standards for drinking water should be considered a potential source of drinking water. The BBCAG strongly opposes this decision. There is no guarantee that this deep groundwater will remain untainted there are many activities on the e.g. excavating, pile driving and other disturbance caused by construction that could disturb the path of the groundwater. Another possibility is salt water intrusion from rising sea water

The RWQCB or Cal EPA should suggest to the California Legislature that new laws more protective of human health and the environment be put in place. Laws that are based on more recent research that is expansive rather than narrow in its scope of possible additive and synergistic effects from the combination of many toxic chemicals and metals. Perhaps, the loss of diversity of animal and plant species and the expectation that 1 in 2 men will get cancer in their lifetime and 1 in three women will get cancer result from the current regulatory approach. The laws we have now that allow from 1 to 100 extra cases of cancer to result from one project are helping drive those rates.

(Appendix F1) What happened to Oyster Point Properties? It was shown as one of the owners when CA DHS was the regulator prior to DTSC issued an Imminent and/or Substantial Endangerment Order in February 1990. The other owner was Tuntex aka Sunquest that became UPC.

(Appendix F1-F3) The Non-Binding Assessment of Responsibility was made by DTSC. It states that 25% of responsibility is assigned to current owner, Sunquest (UPC) and 75% is assigned to Union Pacific Corp, the successor to Southern Pacific Transportation Company. We realize that this is non-binding but it seems to be a place to start a discussion of financial responsibility for the effects on

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contamination. DTSC has said that there will be a bond to assure payment by the responsible parties. The bulk of the financial burden, 75%, is belongs to a railroad and railroads can have a unique status under the law that dates back to the 19th century and so there may be an angle relating to financial responsibility that may give an incentive to litigants to look for another party for responsibility. For example, the City of Brisbane that approved development on this contaminated and partially remediated land. Has this possible eventuality been researched and has a legal opinion been given by DTSC?

(Appendix D) Why do the Submittal Guidelines for Imported Soil in Table 1 allow some Baylands Soil Processing Environmental Screening Levels(BSPESL) to be so much higher than Background For example, Chromium's background level is 120mg/kg and BSPESL is 120,000 mg/kg while for other chemicals/metals e.g. Cobalt and Endrin, the numbers match? It seems like you are importing soil contamination.

(Appendix C) Alternative 3, 2A-2B

The cost estimate is $12,600,000. Footnote 3 states the actual cost for soil vapor
Intrusion mitigation is unknown until soil sampling is complete. The placeholder in cost estimate is for the purpose of comparing alternatives. The only soil vapor mitigation in this estimate are the vapor barriers or the sub-slab venting systems. It does not include any above slab alarm alerting systems that would assure the health of the building occupants if the under slab barrier or sub slab venting systems fail.

(Appendix C) HRA

The Particulate Matter Exposure Frequency for nearby offsite individuals, 60 days/yr. seems low. There may be 12 hr. and 24hr, workdays and there may be 6 day weeks. The exposure level requires more specific information for this project.

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(Appendix B) Health Risk Assessment Pg. 196/628

Tables 9-14a are about excess Cancer risk and non- Cancer health risk from Chemicals of Concern, e.g. Vinyl Chloride or Metals of Concern, e.g. Arsenic for future residents or workers and Construction Workers in different settings (soil, soil vapor or groundwater). There are values that are shown in red on the Tables. It appears that those are values of concern. There needs to be an expression in the DRAP of the risk that is easily understood by members of the public e.g. 1 in 10,000,000 or 1 in 100 in the DRAP.

There should also be a requirement that the property owner to notify potential residents and potential construction workers and other workers of the health risk they are being exposed to. The risk should be described in terms as shown above, 1 in 1000, for example. The warning should be under separate cover from other admonitions. It should be in at least 14 point type, show the name of the contaminant, what type of risk it represents, and it should be signed that it has been reviewed. A copy should be given to the signer. We consider these health risks to be important pieces of information to those who will bare them and fairness dictate that they be well informed. BBCAG believes that current law is not as protective of human health and environmental as it should be. We therefore wish the enforcement of current law to be vigorous and exacting.

Why weren't more tests made in the lower groundwater flow in the Merced and Colma formations. The Young Bay Mud may provide some level of protection against migration from higher groundwater but it would be prudent to have more information about the presence of Chemicals and Metals of Concern in the lower groundwater. More testing should be done there. Neither the upper nor lower groundwater should ever be considered a potential source for drinking water.

Figure 9 of the HRA is puzzling. It shows the "Water Table" in UPC-OU-SM to be located above the existing fill and below the existing grade. I understood that the upper groundwater (which we thought was the water

table) was located just above the Young Bay Mud. Does the Figure need to be corrected?

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On page 15 of the Draft FS/RAP, Section1, the following is confusing. This "site" does not address CVOC's that migrate from Schlage because that is being taken care of by FS/RAP Schlage OU, 2009 primarily addressing groundwater.

Does that mean that all of the CVOC's listed in the Data Gap Investigation of 2018 come from somewhere else? The soil and soil vaper contamination come from a source other than Schlage? What is the source? Is it Southern Pacific TC? It isn't clear how or whether the contamination coming from Schlage is being included in the Health Risk Assessment or the totals of the contamination that is present and needs to be remediated. Statements are made that CVOC's are not considered here but other statements say it is in this DRAP. This RAP covers soil, soil vapor and groundwater for non-Schlage sources. The Schlage RAP covered CVOC's in groundwater. How do you differentiate where the CVOC's in groundwater came from?

On page 30 of the Draft FS/RAP, it states "CVOC's in soil appear to be representative of CVOC's in soil vapor occupying the unsaturated pore space and
not CVOC's adsorbed into the soil as a result of spill or release from past activity on site also groundwater extraction from Schlage OU remedy from extraction wells on the site likely resulted in distribution of CVOC's within fill that is not representative of groundwater flow patterns."

Also on page 30, "VOC concentration in groundwater detected in fill at the site are likely from upgradient Schlage and UPC OU site"

On page 33, section 6, it says "..metals in groundwater may not be from be from historical activities at the site."

Does Draft FS/RAP include Schlage OU RAP as historical data? It seems like it should in order to assess the human health and environmental risk in

order to perform the feasibility study and to develop remediation or mitigation strategies.

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The draft FS/RAP on this and all other projects should be subject to peer review by a qualified independent outside company or institution, without conflicts of interest before the draft is released to the public. This review would help to prevent influences from the political trends of any given time that the Draft FS/RAP is created. It would prevent the agency from downplaying past questionable agency decisions. It would help convince the public that the agency was not working so closely with the developer that their regulatory role was being co-opted. Peer review and more transparency improve the work product and consequently human health and the health of our environment. This same idea should be applied to RWQCB, BAAQCB and the Integrated Waste Management Board.

We appreciate that this document is the result of considerable effort on the part of DTSC. We thank you for considering our comments. Please acknowledge the receipt of these comments.

Sincerely

Clara Johnson
Acting Chair, Vice Chair
Brisbane Baylands Community Advisory Group (BBCAG)

Comments from Dana Dillworth, Dated February 15, 2021

OUSM DFS/RAP September 17, 2020

Dear Nicole Yuen, Asha Setty, DTSC, and others,

Thank you for the opportunity to comment on the FS/RAP for Brisbane OU-SM.

This CEQA document reads like an "Alice in Wonderland" riddle, or a shell game. It's connected, but it's not. It will get cleaned up, but maybe not. Unacceptable levels, are acceptable now. How can this be an adequate environmental feasibility study? Maybe it's not.

I have a concern that the greatest portion of this introductory history is about the Schlage Lock site. In reality, the OU-SM (OU-1 Brisbane) has lain fallow with one modest injection test, while 25 years of INTERMEDIATE, experimental in-situ remediation techniques were taking place off site. You mention that the CVOC's are part of the Schlage Plan and defer any additional information. For this document to be adequate, we need to know how the remediation techniques on the northern part of this site will impact cleanup levels and future receptors going southward.

A dotted line is not adequate. Is this a FOREVER-contaminated site? Will this become one of the locations that you stockpile all the other contaminated soils? Will there be fencing to indicate this area is more toxic than others? Present protective signage is inadequate on the Baylands.

The Nature and Extent of Contamination (pgs 17-26) reads like a toxic soup label. Hard to believe that 404 out of 414 samples contain arsenic, 410 out of 414 contain barium, 400 out of 405 contain chromium, 407 out of 414 contain lead, 374 out of 387 contain mercury, 293 out of 331 samples contain antimony, 336 out of 338 samples contained cobalt, all 338 samples contained nickel.... but because of one reason or another, it's not worthy of any more than five feet of clean fill to protect the public? No cumulative impact comment?

The Data Gap tests are merely one moment in time, they lack the benefit of yearly observations including wet and dry seasonal variations. They are not adequate to ascertain whether there are no longer COC's or where they are coming from. To help us prepare for safe housing and future development assurances that everything is fine or it will be decided later, is not acceptable. This document does not meet the environmental standards required.

Five feet of clean fill is not an adequate remediation, it only serves as a temporary barrier to ONE path of exposure. Where is the protective barrier to signal to anyone who drills that they shouldn't dig any deeper? Where is the protective barrier during an earthquake, where the poorly lain soils become jelly underfoot? Where are the TRUE dangers of poorly consolidated man-made fill atop old bay mud during an earthquake discussed in this document?

You heard through multiple questions from the public, queries about the depth of your testing, about different levels of cleanup standards that were eluded to by the circular riddles of how deep did you test and who decides our CUL's, our acceptable background levels, and dilution factors? The one-time sampling in 2018 seems inadequate. Tests were primarily shallow and some parts of the property, on the eastern end, the waste-fill is greater than 20 feet deep. The incomplete study seems to create a piecemealed response, especially if you consider lateral groundwater movement and the artesian effect or slumping of land when dewatered. No mention, curious.

Only five tests along Bayshore Boulevard and simultaneously ignoring the "castle" (northwest corner, a former gas station?) aren't adequately tested. You cleaned up a slop pit and call detection of hydrocarbons done? 100% remedied? Your environmental assessment of up-

gradient COC's from Visitacion Valley's known contaminated former industrial sites (Midway Village, PG&E, multiple gas stations along the western border) are completely lacking. How can this be an adequate environmental review when trouble could be brewing and constantly moving below?

There is also a lack of mention that a toxic mold or fungus affects the few remaining buildings, our fire station, and the former ARCO building on the southern end. A protective barrier may be mandatory for ALL buildings and enclosures rather than decided on a case by case basis. Full disclosure please.

Lack of alternatives have been considered. You mention truck trips while failing to see the rail cars as a way to get it cleaner, rather than leave a calculated 50% of the toxins in place.

The proposed remedy of vapor intrusion systems are guesstimated science. It should be clearly indicated that there are receptors of concern, that children, elders and folks with compromised immune systems will experience greater impacts to toxins you choose to leave in place. Your HRA seems to miss some important details when it claims that current folks aren't at risk by the current conditions. The surfaces have been bulldozed and what minor cover was placed 25 years ago has blown away. The assumptions in this study need to be carefully questioned.

Truck entry behind the Firestation should be prohibited. It is not a properly maintained street and will degrade from the weight and movement of multiple trucks. It will cause dust in areas with known protected species. Your environmental document has not considered the impacts of the remediation techniques you propose and is inadequate in its site description. You have failed to meet the needs of future planners.

Brisbane residents were promised independent review of the clean up. It doesn't seem to be presented here and therefore, we have been lied to. I hope you do not certify this as adequate and require additional review. Playing the riddle that this is handled in the previous EIR is preposterous.

APPENDIX H
California Environmental Quality Act – Notice of Determination

CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF DETERMINATION

To: Office of Planning and Research
State Clearinghouse
P.O. Box 3044, 1400 Tenth Street, Room 212
Sacramento, CA 95812-3044

From: Department of Toxic Substances Control
Site Mitigation and Restoration Program
700 Heinz Avenue
Berkeley, CA 94710

Subject: FILING OF NOTICE OF DETERMINATION IN COMPLIANCE WITH SECTION 21108 OF THE PUBLIC RESOURCES CODE

Project Title: Southern Pacific Brisbane, also known as UPC Operable Unit – San Mateo (UPC OU-SM)

State Clearinghouse Number: 2006022136

Project Location: Geneva Avenue and Bayshore Boulevard, Brisbane

County: San Mateo

Project Applicant: Baylands Development, Inc.

Project Description: The project consists of approval by the Department of Toxic Substances Control (DTSC) of a Feasibility Study/Remedial Action Plan (FS/RAP) for the UPC OU-SM (Site) prior to its development. DTSC's oversight of the project and approval of the FS/RAP is being undertaken pursuant to the regulatory authority granted under Chapter 6.8, Division 20 of the Health and Safety Code. The purpose of the FS/RAP, which constitutes the project subject to approval by DTSC, is to mitigate potential risk to human health and the environment from contaminants of concern in the soil at the Site, which was formerly used as a railroad switching yard. Anticipated future land use for the Site is mixed residential and commercial.

Cleanup activities to be conducted pursuant to the FS/RAP include the following:

- Excavation of approximately 5,000 cubic yards of soil from the Site, approximately half of which may be relocated to one or more on-site consolidation cell(s) and the other half to be transported off-site to an appropriately permitted waste disposal facility
- Establish caps over impacted soils consisting of a minimum of five feet of clean compacted fill or building foundations, roads, or hardscaped areas.
- Approximately 340,000 cubic yards of imported clean fill will be placed over existing fill with geotextile fabric or similar demarcation material between imported fill and existing fill.
- Conducting soil vapor testing prior to constructing occupied structures and installing soil vapor mitigation systems, if necessary, to protect indoor air.
- Land use restrictions include prohibiting the use of groundwater and strict soil management protocols.
- Capping of contaminated soil with hardscape or clean soil cap (minimum five-foot thick) and creating clean utility construction corridors

As Responsible Agency under the California Environmental Quality Act (CEQA), DTSC approved the above-described project on October 5, 2021 and has made the following determinations:

1. The project will not have a significant effect on the environment.
2. An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures were made a condition of project approval.
4. A Statement of Overriding Considerations was adopted for this project.
5. Findings were made pursuant to the provisions of CEQA.

The administrative record for this project is available to the public by appointment at the following location:

Department of Toxic Substances Control
Site Mitigation and Restoration Program
700 Heinz Avenue
Berkeley, CA 94710

Additional project information is available on EnviroStor:
https://envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=41490037

Contact Person	Contact Title	Phone Number
Nicole Yuen	Project Manager	510-540-3881

Approver's Signature:



Date:

October 5, 2021

Approver's Name	Approver's Title	Approver's Phone Number
Julie Pettijohn	Branch Chief	510-516-5894

TO BE COMPLETED BY OPR ONLY

Date Received for Filing and Posting at OPR: