AECOM Environment

Prepared for:
Sacramento Municipal Utility District
Sacramento, CA

Prepared by:
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December 2019

Site Characterization Report

SMUD 59th Street Corporation Yard

Final

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Prepared for:

Sacramento Municipal Utility District
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PREFACE

This Site Characterization Report was prepared by AECOM Technical Services, Inc. (AECOM) for the Sacramento Municipal Utility District (SMUD) under Contract 4500095958, Task Number 18-005. The work was initiated by SMUD in accordance with the requirements of the Corrective Action Consent Agreement, Docket Number HWCA P1-13/14-007 between SMUD and the California Department of Toxic Substances Control (DTSC). The work partially relies on information provided by SMUD and information in reports available on the DTSC EnviroStor website. Assumptions based on this data, although believed reasonable and appropriate based on the data provided herein, may not prove to be true in the future as new data are collected.

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List of Acronyms and Abbreviations

°	degree
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
’	minute (in the context of latitude and longitude)
#	number
%	percent
”	second (in the context of latitude and longitude)
AECOM	AECOM Technical Services, Inc.
AOC	area of concern
APN	Assessor’s Parcel Number
ASG	active soil gas
ASTM	ASTM International
bgs	below ground surface
CACA	Corrective Action Consent Agreement
COC	chemical of concern
COPC	chemical of potential concern
CPT	cone penetrometer test
DCA	dichloroethane
DCE	dichloroethene
DOT	Department of Transportation
DQO	data quality objective
DRO	diesel-range organics
DTSC	California Department of Toxic Substances Control
e.g.	*exempli gratia*, for example
EMD	Environmental Management Department
ESA	Environmental Site Assessment
ESL	Environmental Screening Level
et al.	*et alia*, and others
f_s	fourth spread
GRO	gasoline-range organics
HERO	Human and Ecological Risk Office
HHRA	Human Health Risk Assessment
i.e.	*id est*, that is
IDW	investigation-derived waste
J&E	Johnson & Ettinger
Kleinfelder	Kleinfelder, Inc.
LLC	limited liability corporation
MCL	Maximum Contaminant Level
MDL	method detection limit
mg/kg	milligrams per kilogram
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PG&E	Pacific Gas and Electric
PID	photoionization detector
ppm	parts per million
PQL	practical quantitation limit

List of Acronyms and Abbreviations (continued)

PSG	passive soil gas
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RL	reporting limit
SAP	Sampling and Analysis Plan
SCR	Site Characterization Report
SF RWQCB	San Francisco Bay Regional Water Quality Control Board
Site	59th Street Corporation Yard
SL	screening level
SMUD	Sacramento Municipal Utility District
Soil Gas Advisory	*Advisory – Active Soil Gas Investigations*
SVOC	semi-volatile organic compound
SWMU	solid waste management unit
SWRCB	California State Water Resources Control Board
TCA	trichlorothane
TCE	trichoroethene
TEG	TEG Northern California
TPH	total petroleum hydrocarbons
U.S.	United States
UCL	upper confidence limit
USA North 811	Underground Service Alert of Northern California and Nevada
USEPA	United States Environmental Protection Agency
VI	vapor intrusion
VOC	volatile organic compound

Executive Summary

The Sacramento Municipal Utility District (SMUD) is conducting a corrective action at the SMUD 59th Street Corporation Yard (Site) in accordance with the *Scope of Work for Phase II* within the *First Amendment to Corrective Action Consent Agreement*, Docket HWCA P1-13/14-007 (California Department of Toxic Substances Control [DTSC], 2018). SMUD conducted soil gas, soil, and groundwater sampling in support of selecting and implementing a corrective action for the Site. This Site Characterization Report was prepared by AECOM Technical Services, Inc. (AECOM) on behalf of SMUD to summarize the work performed and summarize the results from the site investigation activities.

The Site encompasses 19.74 acres in an area of varied land use. Residential neighborhoods are situated to the west, commercial developments are situated to the north, and United States Highway 50 is located south of the Site. The SMUD headquarters and other buildings are located east of the Site. The yard is bisected by a Sacramento Regional Transit light rail line.

The purpose of the site investigation was to further characterize the lateral and vertical extent of arsenic in soil and tetrachloroethene (PCE) in soil gas, soil, and groundwater. The site investigation activities were conducted in December 2018 and March 2019.

PCE in soil gas is considered a chemical of concern (COC) because it is present at concentrations exceeding the residential and commercial/industrial screening levels (SLs) of 460 and 2,000 micrograms per cubic meter ($\mu g/m^3$), respectively. The presence of PCE in soil gas at concentrations exceeding vapor intrusion (VI) SLs could have the potential to result in unacceptable indoor air risk to occupants of buildings within 100 feet of PCE contamination. Arsenic is considered a COC because it is present in soil at concentrations exceeding its 0.11 and 0.36 milligram per kilogram (mg/kg) residential and commercial/industrial SLs, respectively, and the 17.53 mg/kg Site-specific background concentration.

The lateral extent of PCE concentrations in soil gas exceeding the 460 $\mu g/m^3$ residential SL covers an area of approximately 0.9 acre that partially underlies the Tool Issue Building. The lateral extent of PCE concentrations in soil gas exceeding the 2,000 $\mu g/m^3$ commercial/industrial SL covers an area of approximately 0.2 acre that also partially underlies the Tool Issue Building. PCE concentrations were typically higher in soil gas samples collected from 14.5 feet below ground surface (bgs) when compared to those collected from 5.5 feet bgs, possibly indicating a source or secondary source deeper than 5.5 feet bgs.

Based on previous and current investigations, the arsenic concentrations detected above the 17.53 mg/kg site-specific background concentration were generally limited to the southern portion of the North Corporation Yard (north of the Sacramento Regional Transit light rail line). Within this area, the arsenic concentrations exceeding background in soil at a depth of 3 feet bgs or less covers approximately 2.4 acres in the vicinity of the Tool Issue and Salvage Buildings (0.8 acre) and the south side of the Warehouse Building (1.6 acres); however, the full extent of these areas is not fully defined. There are also two smaller areas covering approximately 0.2 acre combined beneath the parking lot to the west of the Hazardous Material Building and south of the Garage Building. Arsenic concentrations that exceed background (17.53 mg/kg) in soil between a depth of greater than 3 feet to 6 feet bgs occur in two localized areas: in the vicinity of the Tool Issue Building (approximately 0.2 acre) and in the vicinity of the eastern end of the Warehouse Building, including the area between the building and the light rail line (approximately 0.3 acre). In the vicinity of the Tool Issue Building, the vertical extent of arsenic concentrations exceeding background appears to extend down to a depth of at least 6 feet bgs, but does not exceed 11 feet bgs. In the vicinity of the eastern end of the Warehouse Building, the vertical extent of arsenic concentrations exceeding background also extends down to a depth of at least 6 feet bgs, but the total depth is unknown.

Based on groundwater data from 2015 and 2018, PCE was not detected in groundwater at concentrations exceeding the California primary MCL of 5.0 micrograms per liter.

Based on the understanding of site conditions following the 2018-2019 site characterization effort and regulatory SLs in effect at the time, recommended next steps include:

- Evaluating buildings within 100 feet of PCE contamination to determine VI potential. Conduct indoor air sampling within buildings evaluated to have the highest VI potential. Conduct indoor air sampling within additional buildings, if warranted based on the initial indoor air sampling results. Note: SMUD has since completed this step and determined the Tool Issue Building (Building H) had the highest VI potential. SMUD conducted indoor air sampling within the Tool Issue Building in April 2019 (Appendix E). PCE and its breakdown products were not detected above residential SLs; therefore, indoor air sampling within additional buildings was not deemed to be necessary since the other buildings are considered to have lower VI potential.
- Implementing a corrective action to address arsenic concentrations in soil above naturally-occurring levels. Re-evaluate the range of Site-specific arsenic background concentrations to select an appropriate arsenic cleanup goal.

1.0 Introduction

The Sacramento Municipal Utility District (SMUD) is conducting a corrective action at the SMUD 59th Street Corporation Yard (Site) in accordance with the *Scope of Work for Phase II* within the *First Amendment to Corrective Action Consent Agreement (CACA)*, Docket HWCA P1-13/14-007 (California Department of Toxic Substances Control [DTSC], 2018). Under the CACA, DTSC is the lead regulatory agency and SMUD is the responsible party for corrective action at the Site. SMUD conducted soil gas, soil, and groundwater sampling in support of selecting and implementing a corrective action for the Site. The laboratory analytical data produced from this effort are considered valid and usable for their intended purposes within the constraints of the final usability qualifiers assigned in data quality assessment as detailed in Section 4.2.1. In accordance with Attachment 4 of the CACA, this Site Characterization Report (SCR) meets the requirements of preparing and submitting to DTSC an SCR that presents the data, summarizes the findings of the investigation, validates the data, and includes recommendations and conclusions.

This SCR was prepared by AECOM Technical Services, Inc. (AECOM) on behalf of SMUD to summarize the work performed and the results from the site investigation activities, which included:

- Installing temporary vapor wells and collecting and analyzing soil gas samples;
- Advancing shallow boreholes and collecting and analyzing soil samples; and
- Advancing boreholes to groundwater and collecting and analyzing groundwater samples.

The site investigation was performed according to the methods, protocols, and requirements specified in the *Site Characterization Sampling and Analysis Plan, SMUD 59th Street Corporation Yard* (SAP)(AECOM, 2018), except as noted in Section 3.5.

1.1 Site Description

The SMUD 59th Street Corporation Yard is the Site addressed in this SCR. The DTSC EnviroStor website identifies the Site as the SMUD Corporation Yard (EnviroStor Identification Number 34490015). The Site is located at 1708 59th Street in Sacramento, California, approximately 5 miles east of downtown Sacramento (Figure 1-1). The Site is located on the Sacramento East United States Geological Survey Quadrangle Map in Township 8 North, Range 5 East, Section 9 (Mount Diablo Baseline and Meridian). The Site's approximate coordinates are 121 degrees (˚) 26 minutes (') 18 seconds (") West longitude, 38˚ 33' 22" North latitude.

The Site encompasses 19.74 acres in an area of varied land use. Residential neighborhoods are situated to the west, commercial developments are situated to the north, and United States (U.S.) Highway 50 is located south of the Site. The SMUD headquarters and other buildings are located east of the Site. The yard is bisected by a Sacramento Regional Transit light rail line (Figure 1-1).

The main portion of the Site is Assessor's Parcel Number (APN) 008-0010-009-000 (12.89 acres). The wedge shaped portion of the Site situated south of the light rail line and north of U.S. Highway 50 consists of the following 10 parcels listed west to east: APN 011-0073-001-0000 (0.45 acre), APN 011-0073-002-0000 (1.11 acres), APN 011-0073-003-0000 (0.2 acre), APN 011-0073-004-0000 (0.39 acre), APN 011-0073-006-0000 (0.1 acre), APN 011-0073-008-0000 (1.79 acres), APN 011-0081-001-0000 (0.86 acre), APN 011-0081-002-0000 (0.86 acre), APN 011-0081-003-0000 (0.86 acre), APN 011-0081-008-0000 (0.23 acre). The described wedge-shaped area totals 6.85 acres.

There are eight permanent buildings located on the Site including an office building, inventory warehouse, tool issue warehouse, vehicle maintenance garage, shops building, hazardous materials building, salvage building,

and a pre-fabricated building (Figure 1-2). In addition, there are designated areas for the storage of new and refurbished electrical transformers, power poles, power cable, and hazardous wastes. However, since the relocation of SMUD's equipment yard to their East Campus Operations Center, the Site was subsequently used for office space and warehouse storage. The Site lies approximately 30 feet above mean sea level. The Site is within a reclaimed floodplain and is, therefore, flat and generally lacking in any notable natural landform relief. The majority of the Site is surfaced with a minimum of 4-inch thick asphalt or concrete (SMUD, 1989).

1.2 Purpose and Objectives

The purpose of the site investigation was to further characterize the lateral and vertical extent of arsenic in soil and tetrachloroethene (PCE) in soil gas, soil, and groundwater. The media-specific objectives are described in Section 1.2.1 through 1.2.3.

1.2.1 Soil Gas

PCE was previously detected in soil gas at concentrations exceeding the 460 and 2,000 microgram per cubic meter (µg/m^3) screening levels (SLs) for future residential and existing commercial/industrial indoor air exposure, respectively, derived using DTSC Human and Ecological Risk Office (HERO) human health risk assessment (HHRA) Note 3 ambient SLs (DTSC, 2018a; 2019) and applying a 0.001 attenuation factor (DTSC, 2011) for samples collected at the contaminant source. However, the lateral extent of PCE-impacted soil gas was not fully delineated and the source was unknown. Therefore, the objective for soil gas was to further delineate the lateral extent of soil gas impacted by PCE and its degradation products at concentrations exceeding the future residential and existing commercial/industrial indoor air exposure SLs, and attempt to identify the PCE source.

1.2.2 Soil

Arsenic was previously detected in soil at concentrations exceeding the 0.11 and 0.36 milligram per kilogram (mg/kg) DTSC HERO HHRA Note 3 residential and commercial/industrial SLs (DTSC, 2019), respectively. Arsenic is a naturally-occurring substance, but a site-specific background concentration had not been established. The highest arsenic concentrations in soil were detected in the northern portion of the Site (i.e., north of the Sacramento Regional Transit light rail line); however, the lateral and vertical extent of arsenic-impacted soil in this area was not fully delineated. Therefore, the objective for soil was to further delineate the lateral extent of arsenic-impacted soil within the northern portion of the Site and to further delineate the vertical extent of arsenic-impacted soil to a maximum depth of 5.5 feet below ground surface (bgs). An additional objective was to establish a Site-specific arsenic background concentration for soil using data from current and past investigations, so the extent of arsenic impacts to soil due to anthropogenic sources could be determined.

1.2.3 Groundwater

PCE was previously detected in groundwater at concentrations below the 5 microgram per liter (µg/L) primary Maximum Contaminant Level (MCL) (California State Water Resources Control Board [SWRCB], 2018); however, no groundwater samples were previously collected in the area where the highest PCE concentration was detected in soil gas. Therefore, the objective for groundwater was to collect and analyze groundwater samples from the location where the highest PCE concentration was detected in soil gas and at a location hydraulically downgradient to determine if PCE and/or associated degradation products are present in groundwater at concentrations exceeding MCLs. PCE degradation products include chloroethane, 1,1-dichloroethane (DCA), 1,2-DCA, 1,1-dichloroethene (DCE), *cis*-1,2-DCE, *trans*-1,2-DCE, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,1,1-trichloroethane (TCA), 1,1,2-TCA, trichloroethene (TCE), and vinyl chloride.

2.0 Background

The following subsections present the Site history, summarize previous site investigations, describe the local geology and hydrogeology, and identifies potential exposure pathways for human and ecological receptors.

2.1 Site History

SMUD has operated the 59th Street Corporation Yard since 1947, when it was purchased from the Pacific Gas and Electric Company (PG&E). The Corporation Yard served as a central storage area for hazardous and non-hazardous wastes generated on-site and at other off-site SMUD facilities or sites. Historical uses of the yard by SMUD and PG&E appear to have been the same (Ecology and Environment, 1989).

The SMUD Corporation Yard managed three waste streams. The major waste stream consisted of polychlorinated biphenyls (PCBs) and associated electrical transformers. A second waste stream consisted of Resource Conservation and Recovery Act (RCRA)-regulated wastes, which primarily consisted on spent solvents. A third waste stream consisted of wastes generated at SMUD's various service areas located off-site.

Waste oils from electrical transformers, including PCB-contaminated waste oils, accounted for approximately 95 percent (%) of wastes managed on-site. All waste oils were analyzed for PCBs prior to final off-site disposal. Transformers that were removed from service were brought to the Corporation Yard for maintenance. The transformer oil was drained into the tank, and then into 55-gallon drums. The drums were then stored in steel hoppers at the PCB Storage Area pending analytical results. After determination of the PCB content in oil from each drum, the drums were sorted for final disposal. Waste oil that contained less than 5 parts per million (ppm) PCB was recycled. Waste oil that contained between 5 and 10,000 ppm PCB was sent off-site for treatment by decomposition (dechlorination). Waste oil that contained more than 10,000 ppm PCB was sent off-site for incineration (Ecology and Environment, 1989).

RCRA-regulated wastes included spent solvents which were generated by several shops on-site. These wastes were stored on-site for less than 90 days in United States Department of Transportation (DOT) approved drums prior to shipment to off-site facilities. All drums were appropriately labeled and marked with the start date of accumulation. An inventory identifying the location and date of pickup of each drum was maintained. On or before the 90-day accumulation time limit, the drums were collected and transported to the off-site facility. Transportation of RCRA and PCB wastes was done by SMUD or an independent licensed hauler. As of 1981, waste solvents were sent to recyclers. Prior to 1981, the final disposition of the waste solvents is unknown (Ecology and Environment, 1989).

The third waste stream consisted of wastes which were generated at off-site service areas and were transferred to the main yard for appropriate disposal. These wastes included asbestos used for insulation of underground electric lines, herbicides, and pesticides used for right-of-way weed control and pest management, wood products (poles and cross members) treated with pentachlorophenol and creosote, and occasional sulfur wastes from SMUD's geothermal projects. Asbestos wastes were stored in double plastic bags, and dampened to inhibit mobility of the fibers. Waste solvents were stored in drums in the designated area at the Corporation Yard. Herbicide and pesticide containers were triple rinsed in the field, and empty containers were disposed of at the county landfill. Treated wood products were given away to the public for landscape uses (Ecology and Environment, 1989).

Over the years, SMUD has upgraded both equipment and processes. As a result, PCB fluids and related wastes are no longer generated in significant quantity. The former PCB Storage Area is empty, but was previously used for the storage of surplus equipment like insulators, cables, and construction equipment. Hazardous waste activities were primarily conducted at the HazMat Building, a 90-day storage area for hazardous waste and for the processing and segregation of PCB and non-PCB transformers.

2.2 Previous Investigations

The previous investigations conducted at the Site are summarized below.

2.2.1 RCRA Facility Assessment and Investigation

From 2009 to 2012, DTSC conducted a RCRA Facility Assessment to identify and evaluate solid waste management units (SWMUs) and areas of concern (AOCs) at the SMUD Corporation Yard. DTSC identified the following 19 SWMUs and 2 AOCs.

SWMUs

- Vehicle Oil/Water Separator at the Garage Building
- Parts Washer west of the Garage Building
- Lube Room in the Garage Building
- Parts Washers in the Garage Building
- Used Oil Tank at the Garage Building
- Battery Room in the Garage Building
- Diesel Filter Pulse Cleaner along the southwest side of the Garage Building
- Former Waste Oil Underground Storage Tank near northeast corner of the Garage Building
- Former Waste Oil Underground Storage Tank along the north side of the Garage Building
- Paint Booth and Paint Storage Room in the Carpenter Shop
- HazMat Used Battery Storage Area
- HazMat Building
- Oil Storage Tanks along the west side of the HazMat Building
- Drained Transformer Staging Area and Universal Waste Storage Area
- Former Fuel Underground Storage Tank near the southeast corner of the Tool Shop Building
- Former PCB Storage Area
- Treated Wood Waste Area and Storage Containers
- Vehicle Oil/Water Separator near the Treated Wood Waste Area
- Satellite Accumulation Areas

AOCs

- Vehicle Fueling Station
- Utility Pole Storage Area

The following operating hazardous waste generator areas are subject to the closure requirements of California Code of Regulations, Title 22, Section 66262.34:

- Vehicle Oil/Water Separator at the Garage Building
- Vehicle Oil/Water Separator near the Treated Wood Waste Area
- Parts Washer west of the Garage Building
- Used Oil Tank at the Garage Building
- HazMat Used Battery Storage Area
- HazMat Building
- Treated Wood Waste Area and Storage Containers
- Satellite Accumulation Areas

DTSC recommended that the Vehicle Oil/Water Separator at the Garage Building, the Vehicle Oil/Water Separator near the Treated Wood Waste Area, and the Utility Pole Storage Area be included in a RCRA Facility Investigation (RFI). DTSC recommended no further RCRA corrective action for the other SWMUs and AOC (DTSC, 2012).

In 2015, Kleinfelder, Inc. (Kleinfelder) performed an RFI for the Utility Pole Storage Area. The RFI assessed whether chemicals applied during wood treatment processes may have migrated from the treated poles to the subsurface. Thirty soil samples were analyzed for total petroleum hydrocarbons (TPH); semi-volatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons and phthalates; metals, and organochlorine pesticides. The RFI Report (Kleinfelder, 2015) concluded that no further investigation is required at the Utility Pole Storage Area. DTSC concurred with the conclusion (DTSC, 2016). Investigation of the two oil/water separators is pending their decommissioning and removal.

2.2.2 Phase II Environmental Site Assessment

In 2015, Kleinfelder performed a Phase II Environmental Site Assessment (ESA) to evaluate areas of the SMUD Corporation Yard where past and/or current activities may have chemically-impacted soil gas, soil, or groundwater, in preparation for possible property redevelopment (Kleinfelder, 2016). Field activities were conducted from April through December 2015 and included passive soil gas (PSG), active soil gas (ASG), soil, and groundwater sampling and analysis.

Passive Soil Gas Sampling. PSG sampling locations are shown on Figure 2-1. Kleinfelder conducted a PSG survey at 37 locations (PSG-01 through PSG-15 and PSG-17 through PSG-38) selected in areas most likely to have been impacted based on past Site practices. PSG modules were used to collect soil gas in an absorbent material to obtain preliminary data for potential soil gas contamination and to select locations to be included in an ASG survey should soil gas contamination be identified. The PSG modules were installed at a depth of 2 to 3 feet bgs in native soil on April 8 and 9, 2015. The PSG modules were retrieved on April 13 and 14, 2015 and submitted for laboratory analysis. Amplified Geochemical Imaging, LLC of Newark, Delaware, analyzed the PSG samples for select volatile organic compounds (VOCs), SVOCs, TPH, and PCBs by USEPA Method 8260.

Fifteen VOCs, six SVOCs, TPH, and two PCBs were detected in the PSG samples. The majority of these analytes had a lower frequency of detection (e.g., less than half the samples) and the detected concentrations were generally at or near the laboratory reporting limit (RL). Analytes with a higher frequency of detection (e.g., more than half the samples) included benzene, toluene, octane, PCE, *m*,*p*-xylene, and TPH. Of these analytes, PCE and TPH were detected at the highest concentrations.

Active Soil Gas Sampling. ASG sampling locations are shown on Figure 2-1. Following review of the PSG results, Kleinfelder selected six locations for ASG sampling (KA-2, KA-8, KA-11, KA-17, KA-19, and KA-31). Temporary soil gas tips and tubes were installed as sampling probes. The probes were installed in boreholes advanced to 5 feet bgs using a hand auger. Prior to installing each probe, approximately 6 inches of #3 sand was added to the borehole. The probe was then lowered into the borehole and placed at approximately 4.5 feet bgs, then another 6 inches of sand was added to the borehole. The remaining borehole annulus was filled with bentonite to just below ground surface and hydrated in 1-foot increments. ASG sampling was conducted on June 18 and 19, 2015. ASG samples were collected in 6-liter stainless steel Summa canisters following shut-in testing of sampling equipment, and purging air equivalent to a minimum of three times the volume of the tubing void space and sand pack pore space. Eurofins Air Toxics of Folsom, California analyzed the ASG samples for VOCs including TPH as gasoline-range organics (GRO) by United States Environmental Protection Agency (USEPA) Method TO-15 SIM and helium (leak-check compound) by ASTM Method D-1946.

On July 1, 2015, additional soil gas samples were collected from each probe using glass sorbent tubes. Prior to sampling, approximately one volume of air was purged from each sample location. Samples were collected by

connecting the sample tubing to a glass sorbent tube with new silicone tubing. Approximately 1 liter of soil gas was pulled through the sorbent tube using a 60 milliliter syringe. BC Laboratories of Bakersfield, California, analyzed the sorbent tubes for TPH as diesel-range organics (DRO) by USEPA Method TO-17.

Table 2-1 presents the analytes detected in ASG samples and a comparison of the maximum detected concentrations to California residential and commercial/industrial SLs (DTSC, 2019). TPH as GRO and 22 VOCs were detected in the ASG samples. Of the analytes detected, only PCE was detected at concentrations exceeding one or more regulatory screening criteria. Figure 2-1 presents the PCE concentrations detected in soil gas. PCE was detected in 7 of 7 ASG samples collected from six locations. Two of the detected concentrations exceeded the 460 and 2,000 µg/m^3 California residential and commercial/industrial SLs, respectively. Both concentrations exceeding SLs were associated with duplicate samples collected from location KA-17, where PCE was detected at concentrations of 15,000 and 14,000 µg/m^3.

Soil Sampling. Soil sampling locations are shown on Figure 2-2. On May 18 through 20, 2015, 22 boreholes (KA-10, KA-11, KA-16, KA-17, KA-20 through KA-22, KA-28 through KA-34, and KA-43 through KA-50) were advanced to a maximum depth of 5 feet bgs using hand auger methods. Soil samples were collected at 1 foot and 5 feet bgs using a slide hammer with a barrel lined with stainless steel sleeves unless refusal was encountered, in which case the deeper sample was collected from the depth at which the borehole was terminated.

On May 21 through 29, 2015, Taber Drilling advanced nine boreholes (KA-5, KA-6, KA-7, KA-9, KA-15, KA-26, KA-27, KA-41, and KA-42) to groundwater with a hollow-stem auger drill rig equipped with 6-inch diameter augers. Soil samples were collected at 5-foot intervals using stainless steel sleeves to a depth of approximately 5 feet into first encountered groundwater.

On June 1 through 3, 2015, Taber Drilling advanced 17 boreholes (KA-1 through KA-4, KA-8, KA-13, KA-14, KA-18, KA-19, KA-23 through KA-25, KA-35 through KA-38, and KA-40) to a total depth of 20 feet bgs with a hollow-stem auger drill rig equipped with 6-inch diameter augers. Soil samples were collected at 5-foot intervals using stainless steel sleeves.

BC Laboratories analyzed the soil samples for one or more of the following: VOCs including TPH as GRO by USEPA Method 8260B; TPH as DRO and oil-range organics (ORO) by USEPA Method 8015B; oil and grease by USEPA Method 1664; SVOCs by USEPA Method 8270C; PCBs by USEPA Method 8082; organochlorine pesticides by USEPA Method 8081B; and California Administrative Manual (CAM) 17 metals by USEPA Methods 6010B and 7471A.

Table 2-2 presents the analytes detected in soil samples collected during the 2015 Utility Pole Storage Area RFI (Section 2.2.1) and 2015 Phase II ESA, and a comparison of the maximum detected concentrations to California residential and commercial/industrial SLs (DTSC, 2019) and groundwater protection Environmental Screening Levels (ESLs) (SWRCB, 2019). One VOC, two SVOCs, and 17 metals were detected in the soil samples. Of the analytes detected, only methylene chloride, arsenic, and thallium were detected at concentrations exceeding one or more regulatory screening criteria. Figure 2-2 presents the arsenic and thallium concentrations detected in soil. Due to the limited number of methylene chloride detections in soil, these data are not shown on Figure 2-2. Arsenic, thallium, and methylene chloride are discussed in greater detail in the following bullets.

- Arsenic was detected in all 136 soil samples. All detected arsenic concentrations exceeded the 0.11 and 0.36 mg/kg residential and commercial/industrial SLs, respectively. A groundwater protection ESL is not established for arsenic. Arsenic was detected at a maximum concentration of 110 mg/kg in the sample collected at 3 feet bgs from borehole KA-50.

- Thallium was detected in 55 of 132 soil samples collected from 21 of 54 boreholes. Thallium was detected above the 0.78 mg/kg residential SL in 49 of 132 samples from 19 of 54 boreholes. Thallium was not detected above the 12 mg/kg commercial/industrial SL. A groundwater protection ESL is not established for thallium. Thallium was detected at a maximum concentration of 7.3 mg/kg in the sample collected at 1 foot bgs from borehole P-2.
- Methylene chloride, a common laboratory contaminant, was detected in 6 of 102 soil samples. None of the detected methylene chloride concentrations exceeded the 1.8 and 350 mg/kg residential and commercial/industrial human health SLs, and only one concentration exceeded the 0.12 mg/kg groundwater protection ESL. Methylene chloride was detected at a maximum concentration of 0.15 mg/kg in one of two duplicates samples collected at 11 feet bgs from borehole KA-38. Methylene chloride was not detected in the other duplicate sample.

Groundwater Sampling. Groundwater sampling locations are shown on Figure 2-3. Temporary wells were installed in each of the nine boreholes (KA-5, KA-6, KA-7, KA-9, KA-15, KA-26, KA-27, KA-41, and KA-42) described under Soil Sampling that were advanced to groundwater. Each temporary well consisted of new, 2-inch diameter polyvinyl chloride (PVC) casing with 2 feet of 0.020-inch slotted screen at the bottom of the casing surrounded by a filter pack consisting of #3 sand. A 2- to 3-foot thick bentonite seal was placed above the filter pack. On June 1 and 2, 2015, single-use bailers were used to collect groundwater samples from each temporary well and transfer the water into sample containers. The groundwater samples were analyzed BC Laboratories for VOCs including TPH as GRO by USEPA Method 8260B; TPH as DRO and ORO by USEPA Method 8015B; oil and grease by USEPA Method 1664; SVOCs by USEPA Method 8270C; PCBs by USEPA Method 8082; and CAM 17 total and dissolved metals by USEPA Methods 6010B and 7470A. Following completion of groundwater sampling, the temporary casings were removed and the boreholes were backfilled using neat cement grout.

Additional groundwater sampling was performed on December 9, 10, and 11, 2015 to further characterize metals in groundwater. Cone penetration test (CPT) equipment was hydraulically driven to groundwater at the same locations as the nine former temporary wells. A Hydropunch™ sampler was used to collect groundwater samples. The samples were field-filtered using a 0.45 micron filter prior to transferring the water into sample containers. Following completion of groundwater sampling, the boreholes were backfilled using neat cement grout.

Table 2-3 presents the analytes detected in groundwater and a comparison of the maximum detected concentrations to California primary MCLs (SRWCB, 2018). TPH as DRO, TPH as GRO, TPH as oil-range organics, three VOCs, and nine dissolved metals were detected in the groundwater samples. No analytes were detected at concentrations exceeding California primary MCLs.

2.3 Geology

The Site lies within the southern portion of the Sacramento Valley, which was formed from sedimentary deposits that were carried as erosion debris from the surrounding mountain ranges. Much of the area near the Site consists of ancient American River deposits. These sedimentary deposits are of Cretaceous to Quaternary age and are quite deep in the general area (SMUD, 1989). The American River is located approximately 1 mile northeast. The American River is confined on the north by steep bluffs, and its ancient course was likely south of its present course, including the area now occupied by the Site (Ecology and Environment, 1989).

Borehole logs from the Phase II ESA indicate that several layers of clay, silty clay, clayey silt, silt, silty sand, and sand underlie the Site to a depth of at least 37.5 feet bgs.

2.4 Hydrogeology

Based on data obtained during the Phase II ESA, the depth to first groundwater beneath the Site is approximately 35 feet bgs and flows in a south to southeasterly direction, at a gradient of approximately 0.001 foot per foot (Kleinfelder, 2016). Municipal drinking water wells draw from depths of approximately 100 to 400 feet bgs. Although many municipal wells are located between 2 and 3 miles from the Site, no active drinking water wells were confirmed to exist within 2 miles of the Site. Several private domestic wells were installed within 2 miles of the Site during the 1950s. Well logs for these installations are generally incomplete. Available information indicates that the wells were completed to depths of approximately 75 to 200 feet. The area where these wells are located is now served by the City of Sacramento, which derives its water from groundwater sources more than 2 miles away from the Site and from surface water from the American River and the Sacramento River. Groundwater generally flows in a southwest direction, although it may be affected by the American River. The shallow aquifer has a groundwater flow velocity of approximately 50 to 60 feet per year. The deeper aquifer has a groundwater flow velocity of approximately 10 to15 feet per year (DTSC, 2012).

2.5 Potential Exposure to Human and Ecological Receptors

The Site is not open to public access, so exposure to contaminated media would be restricted to SMUD personnel. The Site is covered with buildings and pavement with little bare soil, which minimizes the potential for direct human contact. Site groundwater is at least 35 feet deep and no groundwater wells are present; therefore, incidental ingestion, dermal contact, and potable water use are not expected. The Site is considered to be unsuitable habitat for ecological receptors due to its highly developed nature.

Based on the Phase II ESA results, the PCE concentrations detected in the ASG samples collected from location KA-17 exceeded the commercial/industrial SL for indoor air exposure. Therefore, occupants inside buildings within 100 feet of this location have the potential for exposure via the VI pathway. These buildings include the Tool Issue Building, Warehouse Building, and Trailer 1. All of these buildings were occupied at the time of the Phase II ESA. Trailer 1 is a temporary structure on a raised foundation.

Surface runoff from the Site is collected by the storm drain and transported by the sewer system for off-site treatment. Residential neighborhoods are located adjacent to the Site on the western boundary, north of Folsom Boulevard north of the Site, and south of U.S. Highway 50 south of the Site. Seven schools are located within approximately 0.5 mile from the Site (DTSC, 2012).

3.0 Site Investigation Scope, Approach, and Methods

The following subsections describe the site investigation scope and approach, field and analytical methods, quality assurance (QA)/quality control (QC) measures, and SAP deviations.

3.1 Scope and Approach

The site investigation activities conducted in December 2018 and March 2019 included soil gas, soil, and groundwater sampling (hereinafter referred to as the current investigation). Table 3-1 lists samples collected during the current investigation, their respective sample depths, and analyses performed. Sampling locations are shown on Figure 3-1. The current investigation scope and approach for soil gas, soil, and groundwater sampling are described in Sections 3.1.1 through 3.1.2.

3.1.1 Soil Gas Sampling

As discussed in Section 2.2.2, PCE was detected in soil gas at a maximum concentration of 15,000 µg/m^3 during the Phase II ESA, which exceeded the 460 and 2,000 µg/m^3 residential and commercial/industrial SLs, respectively. Although the PCE concentrations exceeding SLs was limited to one sampling location (KA-17), PCE in soil gas warranted further investigation due to the order of magnitude of the SL exceedance and limited number of soil gas samples collected. Additional characterization was performed as part of the current investigation to further define the lateral and vertical extent of PCE-impacted soil gas and attempt to identify the potential PCE source.

The current investigation soil gas sampling approach was to initially collect soil gas samples from 11 temporary vapor well locations (VW01 through VW11). Temporary vapor monitoring well location VW05 corresponded to the location where PCE was detected in soil gas at a maximum concentration of 15,000 µg/m^3 during the Phase II ESA. Dual-completion temporary vapor monitoring wells were installed at VW05 and at six step-out locations (VW02, VW04, VW06, VW08, VW10, and VW11) immediately surrounding VW05 with sampling probes placed at 5.5 and 14.5 feet bgs. Soil gas samples were analyzed by an on-site mobile laboratory for PCE and associated degradation products in accordance with modified USEPA Method SW8260B or modified Method TO-15.

Subsequently, temporary single-completion vapor monitoring wells with sampling probes placed at 5.5 feet bgs or dual-completion vapor monitoring wells with sampling probes placed at 5.5 and 14.5 feet bgs were proposed to be installed at step-out locations VW01, VW03, VW07, and VW09. The decision to install a single-completion or dual-completion vapor monitoring well at VW01, VW03, VW07, and VW09 was based on the soil gas analytical results from vapor monitoring wells at VW02, VW04, VW05, VW06, VW08, VW10, and VW11. If the PCE concentrations detected at 5.5 feet bgs exceeded the 460 µg/m^3 residential SL and higher PCE and/or associated degradation product concentrations were detected in the samples collected from 14.5 feet bgs, then dual-completion vapor monitoring wells were installed at step-out locations. If the PCE concentrations detected at 5.5 feet bgs did not exceed the 460 µg/m^3 residential SL, then single-completion vapor monitoring wells with sampling probes placed at 5.5 feet bgs were installed, regardless of whether higher PCE and/or associated degradation product concentrations were detected in the samples collected from 14.5 feet bgs. Based on the soil gas analytical results from VW02, VW04, VW05, VW06, VW08, VW10, and VW11, dual-completion vapor monitoring wells with vapor probes at 5.5 and 14.5 feet bgs were installed at VW01, VW07, and VW09, and a single-completion vapor monitoring well with a vapor probe at 5.5 feet bgs was installed at VW03.

Two additional temporary vapor monitoring wells (locations VW12 and VW13) were installed to further define the area of impact by stepping out from VW04 where elevated PCE concentrations were detected. Vapor monitoring wells at VW12 and VW13 were originally constructed as dual-completion wells with vapor probes at 5.5 and

14.5 feet bgs. As discussed further in Section 3.2.5, replacement vapor monitoring wells installed at VW12 and VW13 were constructed as single-completion wells with a vapor probe at 5.5 feet bgs.

The soil gas sampling approach included a contingency in the event that the soil cores collected during vapor well borehole advancement suggested the presence of PCE-impacted soil (e.g., staining or elevated photoionization detector [PID] readings). If the presence of PCE-impacted soil was suspected, the proposed sampling probe depth would be modified so that the actual sampling probe depth corresponded to the depth of suspected PCE-impacted soil. However, no suspected PCE-impacted soil was observed; therefore, the soil vapor probes were installed at their default depths of 5.5 and 14.5 feet bgs.

3.1.2 Soil Sampling

As discussed in Section 2.2.2, arsenic, thallium, and methylene chloride were detected at concentrations exceeding one or more SLs during previous investigations. Arsenic warranted further investigation due to its high frequency of detection (all 136 samples) and exceedances of both residential and commercial/industrial SLs. Additional characterization was performed as part of the current investigation to further define the lateral and vertical extent of arsenic-impacted soil.

Thallium in soil did not warrant further investigation because it is not a primary risk driver due to its relatively low frequency of detection (55 out of 132 samples) and no exceedances of the commercial/industrial SL. Methylene chloride was not detected at concentrations exceeding residential and commercial/industrial SLs. Although one detected methylene chloride concentration (0.15 mg/kg) exceeded the 0.12 mg/kg groundwater protection ESL, methylene chloride was not detected in the corresponding duplicate sample. Considering methylene chloride is a common laboratory contaminant, was detected in a relatively small number of samples (6 out of 102 samples), and the one exceedance of the groundwater protection SL was not corroborated by the corresponding duplicate sample, it did not warrant further investigation in soil.

Although PCE was not detected in soil during previous investigations, PCE in soil warranted further investigation due to the presence of PCE in soil gas and to attempt to identify the PCE source. Additional characterization was performed as part of the current investigation to determine if soil is impacted by PCE and attempt to identify the potential source of PCE in soil gas.

The current investigation soil sampling approach consisted of collecting soil samples for both laboratory analysis and lithological description from all boreholes, including temporary vapor monitoring well boreholes. Soil samples from approximately 1.5 to 2.0 and 5.0 to 5.5 feet bgs were collected from each temporary vapor monitoring well location and analyzed for PCE and associated degradation products in accordance with USEPA Method SW8260B. The sampling plan was flexible such that if the soil cores collected during vapor monitoring well borehole advancement suggested the presence of PCE-impacted soil (e.g., staining or elevated PID readings), the proposed soil sampling depths could be modified so that the actual soil sampling depth for laboratory analysis corresponded to the depth of suspected PCE-impacted soil. However, as noted in Section 3.1.1, no suspected PCE-impacted soil was observed.

The soil sampling approach included collection of soil samples from 17 borehole locations (B01 through B17) to further characterize the lateral and vertical extent of arsenic-impacted soil. Boreholes B01, B02, and B03 were advanced to 2 feet bgs with a soil sample collected from each borehole at approximately 1.5 to 2.0 feet bgs. The remaining boreholes (B04 through B17) were advanced to 5.5 feet bgs, unless a temporary vapor monitoring well was intended to be constructed in the borehole, in which case the borehole was advanced to either 6 feet bgs or 15 feet bgs depending on whether a single- or dual-completion vapor monitoring well was to be installed. Locations where arsenic characterization boreholes were co-located with temporary vapor monitoring well boreholes included VW03/B07, VW04/B06, VW05/B09, VW09/B13, and VW12/B05. Soil samples were collected from boreholes B04

through B17 at approximately 1.5 to 2.0 and 5.0 to 5.5 feet bgs and analyzed for arsenic in accordance with USEPA Method SW6020.

3.1.3 Groundwater Sampling

Although PCE was detected at a maximum concentration of 2.1 µg/L, which is below the 5.0 µg/L primary MCL (SWRCB, 2018), no groundwater samples were collected in the immediate vicinity or directly down gradient of the location where PCE was detected in soil gas at a maximum concentration of 15,000 µg/m^3 during the Phase II ESA. Therefore, further investigation was warranted to determine whether higher PCE concentrations are present in groundwater in the immediate vicinity of Phase II ESA location KA-17 where PCE-impacted soil gas was identified.

The current investigation groundwater sampling approach was to a collect a groundwater sample from the location corresponding to where the highest PCE concentration was detected in 14.5-foot deep soil gas samples, and to collect a second groundwater sample from a location hydraulically downgradient from the first location. Initially, boreholes VW05 and B13 were proposed for collection of groundwater samples. Location VW05 was adjacent to Phase II ESA location KA-17 where PCE was detected in soil gas at a maximum concentration of 15,000 µg/m^3. However, the current investigation soil gas sampling results indicated the highest PCE concentration detected in the 14.5-foot deep samples was associated with the sample collected from vapor well VW04; therefore, a groundwater sample was collected from borehole B06 immediately adjacent to vapor well VW04. The downgradient groundwater sample was collected from borehole B13 as originally proposed. Groundwater samples were analyzed for PCE and associated degradation products in accordance with USEPA Method SW8260B.

3.2 Field Methods

This section provides an overview of the field methods used to conduct the site investigation. Detailed procedures are presented in the SAP (AECOM, 2018). The field investigation was performed by AECOM with support from Subtronic Corporation (Subtronic), Confluence Environmental (C-57 License #913194), TEG Northern California (TEG) (C-57 License #706568), Enprobe, Inc. (Enprobe) (C-57 License #1012248), and Sierra West Consultants. Subtronic provided subsurface utility locating services. Confluence Environmental provided pavement coring, hand augering, soil sampling, borehole destruction, vapor well installation/destruction, and pavement patching services. TEG provided direct push technology [DPT]; vapor well installation; soil gas, soil and groundwater sampling; mobile laboratory; and borehole destruction services. Enprobe provided hand augering, DPT/solid-stem auger, soil sampling, and borehole and vapor well destruction services. Sierra West Consultants provided the services of a professional geologist.

3.2.1 Site Reconnaissance and Proposed Sample Location Marking

In preparation for the field investigation, AECOM met with SMUD's project manager and in-house utility clearance personnel on November 19, 2018 to review and mark sampling locations. The asphalt or pavement was marked using white paint to indicate the proposed borehole and vapor well locations. Prior to marking the locations, reconnaissance was performed in the area surrounding each proposed borehole or vapor well location to look for surface evidence of subsurface utilities (e.g., utility vaults, manholes, light poles) or other possible hazards such as overhead utility lines. If a potential hazard was identified, the affected proposed borehole or vapor well location was adjusted to avoid the hazard.

3.2.2 Subsurface Utility Clearance

AECOM contacted Underground Service Alert of Northern California and Nevada (USA North 811) at least 2 working days prior to initiation of subsurface activities to notify utility service providers of the work to be performed and allow them to mark any utility lines that may be present on Site. USA North 811 Ticket Numbers W831800654-00W (valid November 28 through December 12, 2018), X83500005-00X (valid December 27, 2018 through January

21, 2019), X903001468-00X (valid February 1 through 27, 2019), and X909201926-00X (valid April 8 through 30, 2019) were issued during the course of the site investigation. Additionally, AECOM reviewed as-built drawings of the Site provided by SMUD. Subtronic conducted subsurface utility clearances at proposed borehole and vapor well locations. If a subsurface utility line or unknown subsurface hazard was identified during the subsurface utility clearance, the affected proposed borehole or vapor well location was adjusted to avoid the hazard.

3.2.3 Permitting

AECOM obtained two well permits from the Sacramento County Environmental Management Department (EMD). Permit 60364 applied to the initial 11 temporary vapor wells (VW01 through VW11) and up to 18 additional temporary vapor wells, if needed. Two of the 18 potential additional temporary vapor wells were installed (VW12 and VW13). Permit 60365 applied to two boreholes advanced to groundwater, initially identified as B09 and B13, but later changed to B06 and B13. AECOM coordinated with Sacramento County EMD to schedule an inspector when required, and provided Sacramento County EMD with daily status updates while work covered by the well permits was being performed.

3.2.4 Borehole Advancement and Soil and Groundwater Sampling

Boreholes intended for soil sampling only (i.e., no groundwater sampling or vapor well installation) were advanced to total depth using a 3.5-inch diameter hand auger. This included boreholes B01 through B04, B08, B10 through B12, and B14 through B17, which were all advanced by Confluence Environmental from December 4 through 6, 2018. Borehole B12 was initially advanced by Confluence Environmental to a depth of 5 feet bgs on December 6, 2018, and was later advanced from 5.0 to 5.5 feet bgs by Enprobe on December 31, 2018. Soil lithology was logged by the field geologist using the soil cuttings removed from the borehole. Soil samples intended for arsenic analysis were collected at the target depth intervals using the hand auger bucket and placed into glass sample jars.

Boreholes intended for groundwater sampling (B06 and B13) and vapor well installation (VW01, VW02, VW03/B07, VW04, VW05/B09, VW06 through VW11, VW12/B05, and VW13) were initially advanced by Confluence Environmental to 5 feet bgs using a 3.5-inch diameter hand auger. Soil lithology for the initial 5 feet was logged by the field geologist using the soil cuttings removed from the borehole. Beyond 5 feet bgs, the boreholes were advanced by TEG and Enprobe using a DPT rig. DPT involves advancing a sampling probe by direct hydraulic pressure or percussion using small diameter rods. Continuous soil cores were collected in acetate liners from 5 feet bgs to the total borehole depth for lithologic description. Soil samples intended for arsenic analysis were collected from the acetate sleeves at the target depth intervals and placed into glass sample jars. Soil samples intended for analysis of PCE and its associated degradation products were collected from the acetate sleeves at the target depth intervals using samplesmart™ samplers and field preservation kits. No soil samples were collected from boreholes B06 and B13 for laboratory analysis. Instead the soil samples proposed to be collected from these boreholes were collected from immediately adjacent vapor well boreholes VW04 and VW09, respectively.

Boreholes B06 and B13 were advanced by TEG on December 7, 2018. The depth to first groundwater was anticipated to be approximately 35 feet bgs based on the Phase II ESA. However, groundwater was not initially encountered in boreholes B06 and B13 at 35 feet bgs; therefore, advancement of the boreholes continued until the sample probe encountered refusal and could not be advanced further. Refusal was encountered at depths of 41 and 38 feet at boreholes B06 and B13, respectively. The sampling probe and rods were removed and a temporary well consisting of 1-inch diameter PVC casing and 5-foot long screen was placed in each borehole. Sufficient groundwater entered borehole B13 the same day, and a grab groundwater sample was collected for laboratory analysis. Sufficient groundwater did not enter borehole B06 until December 10, 2019, at which time duplicate groundwater samples were collected for laboratory analysis.

Vapor well boreholes VW01 through VW12 were advanced by Confluence Environmental (hand augering to 5 feet bgs) and TEG (DPT from 5 feet bgs to total depth) from December 3 through 7, 2018. Vapor well borehole VW13 was advanced by Enprobe (hand augering to 5 feet bgs and DPT from 5 feet bgs to total depth) on December 31, 2018. As discussed in Section 3.2.5, replacement vapor monitoring wells were installed at VW12 and VW13. Confluence Environmental advanced boreholes for the replacement vapor monitoring wells using a 2-inch diameter hand auger on February 4 and 19, 2019.

3.2.5 Temporary Vapor Monitoring Well Installation and Soil Gas Sampling

TEG constructed temporary vapor monitoring wells VW01A/B, VW02A/B, VW03A, VW04A/B through VW12A/B on December 4, 5, and 7, 2018. TEG collected soil gas samples from vapor monitoring wells VW01A/B, VW02A/B, VW03A, VW04A/B through VW11A/B, and VW12B on December 5 and 7, 2018 using gas-tight glass syringes.

Enprobe constructed temporary vapor monitoring well VW13A/B on December 31, 2018. AECOM collected soil gas samples from vapor wells VW12A and VW13A/B on January 3, 2019 using 1.4-liter Summa canisters.

All temporary vapor monitoring wells were installed in areas paved with asphalt or concrete of varying thicknesses ranging from 4 to 8.5 inches. To ensure that the shallowest vapor probes were installed at least 5 feet below the top of the soil, all vapor well construction specification depths were referenced to the bottom of pavement/top of soil (i.e., the bottom of pavement/top of soil = 0 feet bgs). Temporary vapor monitoring wells were constructed by placing vapor probes at depths of 5.5 and, if applicable, 14.5 feet bgs within a 1-foot thick sand pack (intervals of 5 to 6 feet bgs and 14 to 15 feet bgs). Vapor well designation “A” was assigned to probes at 5.5 feet bgs, and vapor well designation “B” was assigned to probes at 14.5 feet bgs. Approximately 1 foot of dry granular bentonite was placed above each sand pack. Additional dry granular bentonite was placed in 1-foot lifts and hydrated to form a seal between the lower sampling depth and the upper sampling depth and between the upper sampling depth and the ground surface. Each probe had small diameter tubing (1/8- to 1/4-inch Nylaflow™ or Teflon™) extending to the ground surface to enable sample collection from the target depths.

Vapor wells containing probes at 14.5 feet bgs were allowed to equilibrate for a minimum of 2 hours prior to soil gas sampling consistent with Section 4.1 of the *Advisory – Active Soil Gas Investigations* (California EPA, 2015) (hereinafter referred to as the Soil Gas Advisory) for vapor wells installed using the direct push method. Vapor wells containing probes at 5.5 feet bgs were allowed to equilibrate for a minimum of 48 hours prior to soil gas sampling consistent with Section 4.1 of the Soil Gas Advisory for vapor wells installed using a combination of hand augering and the direct push method with less than 5 feet of direct push borehole below the depth where hand augering ended. A shut-in test was conducted prior to purging/sampling to check for leaks in the aboveground sampling system. In order to remove stagnant air from the sampling system, three volumes of air corresponding to the void space in the sample tubing and pore space of the sand pack were purged prior to sample collection. A leak test was conducted each time a sample was collected to evaluate whether an adequate seal was established in the sampling train and at the soil vapor probe interface with the ground surface. 1,1-Difluoroethane was used to test for ambient air leaks for vapor monitoring wells sampled by TEG (VW01A/B, VW02A/B, VW03A, VW04A/B through VW11A/B, and VW12B). Isopropyl alcohol was used to test for ambient air leaks for vapor monitoring wells sampled by AECOM (VW12A and VW13A/B).

Leak-check compound isopropyl alcohol was detected in the soil gas samples collected from vapor wells VW12A and VW13A/B; therefore, re-sampling was necessary. However, these vapor monitoring wells had been destroyed and replacement vapor wells for VW12A and VW13A were installed adjacent to the original locations. Re-installation of vapor monitoring well VW13B was not performed as a soil gas sample from 14.5 feet bgs at this location was not necessary to achieve project objectives.

Confluence Environmental installed replacement temporary vapor monitoring wells VW13A and VW12A on February 4 and 19, 2019, respectively, with vapor probes placed at 5.5 feet bgs. AECOM collected soil gas samples from replacement vapor wells VW12A and VW13A on March 18, 2019 using 1.4-liter Summa canisters. The timing for installation and sampling of vapor wells VW12 and VW13A was largely dictated by weather conditions due to a series of significant rain events (i.e., 0.5 inch or greater rainfall during a 24-hour period) that took place from January through March 2019. Sampling of vapor wells VW12 and VW13 took place on March 18, 2019 following more than 5 days without a significant rain event.

3.2.6 Borehole and Vapor Well Destruction

Boreholes B01 through B04, B08, B10, B11, and B14 through B17 were destroyed by Confluence Environmental from December 4 through 6, 2018. Borehole B13 was destroyed by TEG on December 7, 2018. Boreholes B06 and B12 and vapor monitoring wells VW01A/B, VW02A/B, VW03A, VW04A/B, VW05A/B, VW10A/B, and VW11A/B were destroyed by Enprobe on December 31, 2018. Vapor wells VW06A/B through VW09A/B, VW12A/B, and VW13A/B were destroyed by Enprobe on January 3, 2019. Replacement vapor monitoring wells VW12A and VW13A were destroyed by Confluence Environmental on April 8, 2019.

A Sacramento County EMD inspector was present on December 7 and 31, 2018 to observe the destruction of the two groundwater boreholes (B06 and B13) and the first vapor well to be destroyed (VW04A/B). After observing the destruction of vapor well VW04A/B, Sacramento County EMD authorized destruction of the remaining vapor monitoring wells without further inspections.

Boreholes less than 7 feet in depth were destroyed by placing clean sand from the bottom of the borehole to the soil surface. In paved areas, the pavement was patched by placing cement from the top of the sand to the top of the surrounding pavement. Boreholes greater than 7 feet in depth were destroyed by placing grout from the bottom of the borehole to within 5 feet of ground surface. If the borehole was greater than 15 feet in depth, a tremie pipe was used to place the grout in lifts ensuring the grout was distributed evenly without voids. The remainder of the borehole was destroyed as described for boreholes 7 feet or less in depth.

Vapor wells were destroyed by overdrilling the vapor wells using an auger to remove the sand pack, bentonite seal and tubing used to construct the well. The resulting borehole was destroyed as described above.

3.2.7 Land Surveying

Borehole and vapor well location coordinates were determined and recorded by AECOM using a hand-held global-positioning system unit.

3.2.8 Investigative-Derived Waste Management and Disposal

Investigative-derived waste (IDW) included soil cores, drill cuttings (e.g., soil, bentonite), equipment decontamination water, acetate liners, disposable personal protective equipment (e.g., nitrile gloves, ear plugs, Tyvek® coveralls), polyvinyl chloride pipe (e.g., temporary groundwater well casing/screen, tremie pipe), Nylaflow® and Teflon™ tubing, and paper towels. Soil cores, drill cuttings, and equipment decontamination water were containerized in 55-gallon drums. Representative samples were collected from the drums for waste characterization purposes. Appendix A contains the IDW sample analytical results with a comparison to total threshold limit concentrations for soil and soluble threshold limit concentrations for water. The contents of the 55-gallon drums were determined to be non-hazardous and will be disposed of through Clean Harbors. All other IDW was disposed of as general refuse in a garbage dumpster located on Site.

3.3 Analytical Methods

Samples collected for laboratory analysis included soil gas, soil, groundwater, and IDW samples. Samples collected by AECOM were submitted to BC Laboratories in Bakersfield, California, following chain-of-custody protocol. Samples collected by TEG were analyzed by TEG within 30 minutes of sample collection at their on-site mobile laboratory.

Soil gas samples collected from vapor monitoring wells VW01A/B through VW11A/B and VW12B were analyzed by TEG for PCE and its associated degradation products using modified USEPA Method SW8260B. Soil gas samples collected from vapor monitoring wells VW12A and VW13A/B and replacement vapor monitoring wells VW12A and VW13A were submitted to BC Laboratories and analyzed for PCE and its associated degradation products following USEPA Method TO-15.

Soil samples were submitted to BC Laboratories and analyzed for arsenic and/or PCE and its associated degradation products. Soil samples collected from boreholes B01 through B04, VW12/B05, VW04/B06, VW03/B07, B08, VW05/B09, B10 through B12, VW09/B13, and B14 through B17 were analyzed for arsenic following USEPA Method SW6020. Soil samples collected from boreholes VW01, VW02, VW03/B07, VW04/B06, VW05/B09, VW06 through VW08, VW09/B13, VW10, VW11, VW12/B05, and VW13 were analyzed for PCE and its associated degradation products following USEPA Method SW8260B.

Groundwater samples were submitted to BC Laboratories and analyzed for PCE and its associated degradation products following USEPA Method SW8260B.

Soil and water waste characterization samples were submitted to BC Laboratories and analyzed for metals following USEPA Methods 6020 and 7470A (water) or 7471A (soil), PCBs following USEPA Method 8082, VOCs following USEPA Method 8260B, SVOCs by USEPA Method 8270C, and TPH following USEPA Method 8015B.

3.4 Quality Assurance/Quality Control

QA/QC samples collected in the field included equipment blanks and field duplicates. Three equipment blanks were collected during soil gas sampling. These included one equipment blank for the glass syringe used to collect the soil gas samples analyzed by the mobile laboratory and two equipment blanks from vapor probes of the type installed in the vapor monitoring wells. No equipment blanks were collected during soil and groundwater sampling.

Three field duplicate sample pairs were collected for soil gas and are listed below. These sample pairs were collected from vapor monitoring wells VW03A, VW05B, and VW13A, respectively and analyzed for PCE and its associated degradation products.

- SG-VW03A-01 and SG-VW03A-02
- SG-VW05B-01 and SG-VW05B-02
- SG-VW13A-01 and SG-VW13A-02

Five field duplicate sample pairs were collected for soil and are listed below. These sample pairs were collected from boreholes B16, B17, VW02, VW08, and VW10, respectively. The sample pairs collected from boreholes B16 and B17 were analyzed for arsenic. The sample pairs collected from vapor well boreholes VW02, VW08, and VW10 were analyzed for PCE and its associated degradation products.

- SO-B16-02 and SO-B16-03
- SO-B17-02 and SO-B17-03
- SO-VW02-02 and SO-VW02-02-Dup

- SO-VW08-01 and SO-VW08-01-Dup
- SO-VW10-02 and SO-VW10-02-Dup

One field duplicate sample pair was collected for groundwater and is listed below. This sample pair was collected from borehole B06 and analyzed for PCE and its associated degradation products.

- GW-B06-01 and GW-B06-02

3.5 Sampling and Analysis Plan Deviations

Deviations from the SAP are described in the bullets below. The SAP deviations are not considered to have affected the project data quality objectives (DQOs) in a negative way, and in some cases were necessary to achieve the project DQOs.

- **No step purge test was performed prior to soil gas sample collection to determine the appropriate purge volume.** SAP Section 6.3.4 states that a step purge test would be performed at the first sampling location; however, SAP Section 6.3.4 also states that well purging would be performed in accordance with Section 4.0 of the Soil Gas Advisory (California EPA, 2015). Section 4.0 of the Soil Gas Advisory states a default of three purge volumes should be used and purge volume testing is no longer recommended. The SAP reference to conducting a step purge test prior to collection of soil gas samples came from an older version of the Soil Gas Advisory. Instead of conducting a step purge test, the default of three purge volumes was used consistent with the current Soil Gas Advisory.
- **Soil gas samples from vapor monitoring wells VW12A and VW13A were collected using 1.4-liter Summa canisters.** SAP Section 6.3.4 states that soil gas samples would be collected using 50 to 60 cubic centimeter gas-tight syringes. Section 5.1.2 of the Soil Gas Advisory allows for use of passivated stainless steel canisters; therefore, collection of soil gas samples using Summa canisters is consistent with the Soil Gas Advisory.
- **Soil gas samples collected from vapor monitoring wells VW12A and VW13A were not analyzed using an on-site mobile laboratory.** SAP Section 5.1 states that soil gas samples would be analyzed by an on-site mobile laboratory with same day turnaround time for analytical results. However, samples collected from vapor wells VW12A and VW13A were the last soil gas samples to be collected. The mobile laboratory had previously been de-mobilized from the Site and there was no longer a need for same day turnaround time for analytical results. Therefore, the soil gas samples collected from vapor monitoring wells VW12A and VW13A were submitted to BC Laboratories in Bakersfield, California, instead of being analyzed on-site by a mobile laboratory.
- **Groundwater samples collected without a sampling probe.** SAP Section 6.3.5 states that DPT would be used to advance a Hydropunch™ sampler or similar sampling probe to within 3 feet of the groundwater table. The screen or sampling ports on the probe would be opened and the sample would be collected using a bailer. However, groundwater was not initially encountered in boreholes B06 and B13 due to the tight formation and sampling using the Hydropunch™ sampler or similar sampling probe was not feasible. The sampling probe and direct push rods were removed from the boreholes and temporary wells consisting of PVC casing and screen were installed to allow groundwater to enter. When groundwater was observed in the temporary wells, groundwater samples were collected using either manual lift or low-flow pump methods.
- **Groundwater field parameters were not measured.** SAP Section 6.3.5 states that field parameters including pH, temperature, specific conductance, oxidation-reduction potential, turbidity, and dissolved oxygen would be measured from additional groundwater volume obtained at each groundwater sample locations. However, due to limited groundwater volume there was only enough groundwater to fill the sample containers and there was insufficient additional groundwater volume available to measure field

parameters. The lack of field parameter measurements is not considered a data gap as the field parameters were not required to achieve the project DQOs.

- **Drive sampler was not used to collect shallow soil samples.** SAP Section 6.3.6 states that a drive sampler containing stainless steel sleeves would be used to collect shallow soil samples. However, a drive sampler was deemed unnecessary due to the tightly packed soil that was recovered with the hand auger at the target sampling depths. Shallow soil samples were obtained directly from the soil contained within the hand auger bucket.
- **Vapor wells were destroyed by overdrilling.** SAP Section 6.3.7 states that vapor wells would be destroyed by excavating down to approximately 3 feet bgs, exposing the upper portion of the tubing. The tubing was to be either cut near the bottom of the excavation or pulled out of the ground by hand. However, the Sacramento County EMD required that all vapor wells be overdrilled and the well materials removed, then destroying the resulting borehole by placing grout from the bottom of the borehole to within 5 feet of ground surface, then placing clean sand or native soil from 5 feet bgs to the ground surface. Vapor wells were destroyed consistent with Sacramento County EMD requirements.

4.0 Investigation Results

This section presents the results of the current investigation conducted in December 2018 and March 2019.

4.1 Geology and Hydrogeology

Based on lithologic logging of boreholes B01 through B17 and VW01 through VW13, the Site soil consists of a heterogeneous combination of coarse- and fine-grained material. The coarse- and fine-grained soil mixture was encountered throughout the areas and depths that were sampled. The coarse-grained soil is predominantly comprised of poorly-graded sand and clayey sand. The fine-grained soil is predominantly comprised of inorganic silts and clays and very fine sands. Bedrock was not encountered in any of the boreholes, the deepest of which was advanced to 41 feet bgs. Appendix B contains the lithologic logs of boreholes

Two boreholes (B06 and B13) were advanced to groundwater. The static groundwater levels measured in boreholes B06 and B13 were 33.73 and 37 feet bgs, respectively.

4.2 Analytical Results

4.2.1 Data Validation and Data Usability

Laboratory analytical data for the soil gas, soil, and groundwater samples collected during the site investigation were validated by the AECOM project chemist. The data validation results and data quality assessment are documented in the data validation summary contained within Appendix C, which also contains the laboratory analytical reports from BC Laboratories and TEG. Validation is performed to ensure the quality of collected data and to assess limitation on usability, as well as to evaluate laboratory compliance with specified methods and protocols. The data are considered valid and usable for their intended purposes within the constraints of the final usability qualifiers assigned in data quality assessment. Data qualified with the “J” qualifier are considered estimated and usable with acceptable quantitative uncertainty. Data qualified with the “U” qualifier are considered non-detected. Non-detected results are reported at the method detection limit (MDL), except for blank-qualified data, which are reported at the measured value.

4.2.2 Soil Gas

Soil gas analytical results for PCE and its associated degradation products are presented in Table 4-1. PCE concentrations detected in soil gas are presented on Figure 4-1. PCE was detected in soil gas samples collected from 5.5 feet bgs at 11 of 13 vapor well locations. The maximum PCE concentration detected in soil gas samples collected from 5.5 feet bgs was 5,100 µg/m^3 in the sample collected from vapor well VW05. PCE was detected in soil gas samples collected from 14.5 feet bgs at all 11 vapor well locations. The maximum PCE concentration detected in soil gas samples collected from 14.5 feet bgs was 5,900 µg/m^3 in the sample collected from vapor well VW04. The highest PCE concentrations were detected in soil gas samples collected from vapor wells located along the north and east sides of the Tool Issue Building.

TCE was the only PCE degradation product detected in the soil gas samples collected. TCE was detected in soil gas samples collected from 5.5 feet bgs at 1 of 13 vapor well locations. The only TCE concentration detected in soil gas samples collected from 5.5 feet bgs was 25 µg/m^3 (estimated) in the sample collected from vapor well VW05. This concentration is considered estimated because it was detected between the laboratory MDL and RL. TCE was detected in soil gas samples collected from 14.5 feet bgs at 2 of 11 vapor well locations. The maximum TCE concentration detected in soil gas samples collected from 14.5 feet bgs was 140 µg/m^3 in the sample collected from vapor well VW05.

4.2.3 Soil

Soil analytical results for arsenic in soil are presented in Table 4-2. Arsenic concentrations detected in soil are presented on Figure 4-2. Arsenic concentrations detected in soil samples collected from boreholes B01 through B17 ranged from 2.7 to 330 mg/kg with the maximum concentration detected in the sample collected from 5 feet bgs at borehole B17. The highest arsenic concentrations were associated with borehole locations at the eastern portion of the Site along the south side of the Warehouse Building.

Soil analytical results for PCE and its associated degradation products are presented in Table 4-3. PCE was detected in only two soil samples. PCE was detected at concentrations of 0.0020 and 0.0048 mg/kg (both estimated values) in the soil samples collected from 1.5 feet bgs at boreholes VW05 and VW11, respectively. These concentrations are considered estimated because they were detected between the laboratory MDL and practical quantitation limit (PQL). No PCE degradation products were detected in soil.

4.2.4 Groundwater

Groundwater analytical results for PCE and its associated degradation products are presented in Table 4-4. PCE was detected at concentrations of 0.33 (estimated value) and 0.73 µg/L in duplicate grab groundwater samples collected from borehole B06. PCE was detected at a concentration of 0.44 µg/L (estimated value) in the grab groundwater sample collected from borehole B13. The 0.33 and 0.44 µg/L concentrations detected in groundwater samples collected from boreholes B06 and B13, respectively, are estimated values because they were detected between the laboratory MDL and PQL. No PCE degradation products were detected in the groundwater samples collected from boreholes B06 and B13.

5.0 Background Arsenic Concentration in Soil

Laboratory analytical results for soil samples collected from the Site during previous and current investigations were used to derive a Site-specific arsenic background concentration. The laboratory analytical data were obtained from 135 soil samples collected from 71 locations. Section 5.1 describes the approaches used to identify a Site-specific arsenic background concentration. Section 5.2 summarizes the range of Site-specific arsenic background concentrations identified and presents the concentration selected for assessment of Site environmental conditions.

5.1 Approaches for Identification of Background

Site-specific arsenic background concentrations in soil were derived for the SMUD Corporation Yard using the methods described in *Arsenic Strategies, Determination of Arsenic Remediation, Development of Arsenic Cleanup Goals* (DTSC, 2009). Although intended for clean-up goals, the guidance states: "The incremental cancer risk difference between background levels and proposed cleanup goals will be very small or insignificant in most cases." This suggests that the methods for deriving clean-up levels also serves for background levels when conservatively evaluated. The methods used in this evaluation results in a range of prospective background concentrations and the selection is based on graphical assessment, statistical interpretation, Site knowledge, and professional judgement.

DTSC (2009) describes the following two methods that can be used for deriving Site-specific background.

- **Graphical Evaluation:** Plotting the data and then visually determining the inflection point (i.e., a break or shift in the pattern) as the background concentration.
- **Statistical Evaluation:** Calculating summary statistics, identifying outliers for omission, and then estimating the appropriate upper bound value as the background concentration. The guidance provides steps for calculating the upper 95% limit for the 0.99 Quartile, but also suggests 95% upper confidence limit (UCL) and the 98th percentile as options.

Both the graphical and statistical methods were used to calculate the Site-specific arsenic background concentration. An optional step of comparing the graphical results (e.g., inflection point) with the statistical results was also performed. Although the Site soil appears to be heterogeneous both laterally and vertically, three data sets were evaluated, which included a combined data set consisting of all the soil types together and separate data sets for the coarse and fine grain soil types (see Appendix D, Table D-1). The data sets were initially reviewed for a depth criterion, but there was no notable difference in concentrations and therefore the data sets were not limited by a specified depth range. Additionally, Duvergé (2011) noted that in a San Francisco Bay Area study, there was no significant relationship observed between sampling depths and background arsenic concentrations. Arsenic background concentrations were calculated for each of the data sets. Statistical software ProUCL Version 5.1 (USEPA, 2016) was used to calculate the summary statistics and 95% UCLs, perform distribution tests, and for graphing.

5.1.1 Graphical Evaluation

The graphical evaluation involved plotting the data and using visual cues, specifically a gap or shift in the slope of the primary line group close to the origin, to identify the background concentration.

First, a general understanding of the data sets and their characteristics (i.e., range, average, spread and distribution pattern) was needed. Using ProUCL, summary statistics were derived for all three data sets (see Appendix D, Table D-2) listing among others, the mean, standard deviation, and coefficient of variation. ProUCL was also used to test the data sets for normality (i.e., do they fit the standard "normal" parametric curve), which was performed for the data set in mg/kg (non-transformed) and $\log_{10}$ (transformed). Normality testing results are presented in Appendix D, Table D-3. The graphical analysis was performed for both non-transformed and transformed data sets.

For each of the data sets, the cumulative probability was plotted for both the non-transformed and transformed data. DTSC (1997) notes that the distribution of common metals (e.g., aluminum, iron, and calcium) typically follows a normal distribution and trace metals, such as arsenic, typically follow a lognormal distribution. Therefore, the transformed data graphs are expected to be more representative for arsenic.

5.1.1.1 All Soil Types Data Set

- The ProUCL normality test showed no discernible distribution, which suggests multiple populations in the data set.
- Figure 5-1 presents the cumulative probability plots for the All Soil data set.
- A visual assessment of the Figure 5-1 non-transformed data plot indicates:
    - a linear pattern displayed by the majority of the data and suggests that the data set follows normal distribution,
    - several data points are well-separated from the bulk of data, which may represent outliers, and
    - inflection points at 8.6, 10, 15 and 29 mg/kg.
- A visual assessment of the Figure 5-1 transformed data plot indicates:
    - a linear pattern displayed by the majority of the data and suggests that the data set follows lognormal distribution,
    - several data points are well-separated from the bulk of data, which may represent outliers,
    - a small jump at approximately 0.39 (2.5 mg/kg) suggests the potential presence of multiple populations, and
    - inflection points at 0.88 (7.5 mg/kg), 1.0 (10 mg/kg) and 1.20 (16 mg/kg).

5.1.1.2 Coarse Soil Types Data Set

- The ProUCL normality test showed no discernible distribution, which suggests multiple populations in the data set.
- Figure 5-2 presents the cumulative probability plots for the Coarse Soil data set.
- A visual assessment of the Figure 5-2 non-transformed data plot indicates:
    - a linear pattern displayed by the majority of the data and suggests that the data set follows normal distribution,
    - several data points are well-separated from the bulk of data, which may represent outliers, and
    - inflection points at 8.2 and 16 mg/kg.
- A visual assessment of the Figure 5-2 transformed data plot indicates:
    - a linear pattern displayed by the majority of the data and suggests that the data set follows lognormal distribution,
    - several data points are well-separated from the bulk of data, which may represent outliers,
    - a small jump at approximately 0.41 (2.5 mg/kg) and 0.62 (4.1 mg/kg) suggests the potential presence of multiple populations, and
    - inflection points at 0.72 (8.2 mg/kg) and 1.20 (16 mg/kg).

5.1.1.3 Fine Soil Types Data Set

- The ProUCL normality test showed no discernible distribution, which suggests multiple populations in the data set.
- Figure 5-3 presents the cumulative probability plots for the Fine Soil data set.
- A visual assessment of the Figure 5-3 non-transformed data plot indicates:
    - a linear pattern displayed by the majority of the data and suggests that the data set follows normal distribution,
    - several data points are well-separated from the bulk of data, which may represent outliers, and
    - inflection points at 10 and 15 mg/kg.
- A visual assessment of the Figure 5-3 transformed data plot indicates:
    - a linear pattern displayed by the majority of the data and suggests that the data set follows lognormal distribution,
    - several data points are well-separated from the bulk of data, which may represent outliers,

- o a small jump at approximately 0.53 (3.4 mg/kg) and 0.64 (4.4 mg/kg) suggests the potential presence of multiple populations, and
- o inflection points at 1.0 (10 mg/kg) and 1.20 (16 mg/kg).

5.1.1.4 Uncertainties of the Graphical Evaluation

The key uncertainty with the graphical method is the subjective nature of visually identifying the inflection point. The relatively consistent findings from the three data sets (all, coarse, and fine soil types) and corroboration by the statistical method mitigates this uncertainty.

5.1.2 Statistical Evaluation

The statistical evaluation assesses the characteristics of the data set, identifies outliers and then re-assesses the data set without the outliers. A UCL is calculated to determine the background concentration.

As shown in the graphical evaluation, neither the non-transformed nor transformed data for the three data sets showed discernible distribution based on multiple statistical tests. An additional step of plotting histograms for both non-transformed and transformed data for the three data sets (all, coarse, and fine soil types) (Figure 5-4) showed that the transformed data set appear to be closer to normal distribution than the non-transformed data set. Therefore, the transformed data sets were carried forward through the statistical evaluation.

Boxplots were created to visually show the most prominent features of a data set (e.g., center, spread, and extent and nature of any departure from symmetry, and outliers) [DTSC, 1997]). Box plots for the transformed data are presented as Figure 5-5.

- The boxplot for the transformed All Soil data (As-All_Log10) shows uniform symmetry around the center and outliers approximately below zero (1.0 mg/kg) and at or above 1.5 (30 mg/kg).
- The boxplot for the transformed Coarse Soil data (As-Coarse_Log10) shows a lack of symmetry around the center and bias towards the lower quartile. The outliers are shown at or above 1.5 (30 mg/kg).
- The boxplot for the transformed Fine Soil data (As-Fine_Log10) shows uniform symmetry around the center and outliers approximately below 0.25 (approximately 1.7 mg/kg) and at or above 1.5 (30 mg/kg).

A box plot is based on measures that are unaffected by the presence of a few outliers, also known as the fourth spread (f_s). The f_s is defined as the measure of spread in a data set that is resistant to outliers (DTSC, 2009). Calculation of f_s uses the summary statistics calculated for the transformed data (Appendix D, Table D-2). Values that are farther than one and a half times the f_s ($1.5f_s$) from the closest fourth are considered outliers.

The following presents the calculations to produce both the low and high end outliers for each of the three data sets:

$$f_s = Q3 - Q1$$

Q3 is the 75% quantile
Q1 is the 25% quantile

Fourth Spread Method					
		Low Range Outliers		**High Range Outliers**	
Data Set	**fs**	**<Q1 - 1.5fs**	**mg/kg**	**>Q3 + 1.5fs**	**mg/kg**
As-All_Log10	0.328	0.046	1.11	1.358	22.80
As-Coarse_Log10	0.326	-0.091	0.81	1.213	16.33
As-Fine_Log10	0.295	0.1935	1.56	1.3735	23.63

The low-end and high-end outliers for the All Soil, Coarse Soil, and Fine Soil data sets are highlighted in Appendix D, Table D-4. The results show that the low-end outliers for the All Soil data set are concentrations below 1.11 mg/kg and the high-end outliers are those above 22.80 mg/kg. For the Coarse Soil data set, the low-end outliers are concentrations below 0.81 mg/kg and the high-end outliers are those above 16.33 mg/kg. For the Fine Soil data set, the low-end outliers are concentrations below 1.56 mg/kg and the high-end outliers are those above 23.63 mg/kg. Table D-3 of Appendix D presents the data sets with the outliers highlighted.

With the outliers removed, the tests for normality of the transformed data sets (Appendix D, Table D-5) now show normal distribution for all three soil types. Given the relatively robust data sets, the method used to calculate the upper limit concentrations is the 95% UCL on the 99th Percentile (DTSC, 2009).

The mean and standard deviation statistics were used with the fixed variable for $K_{0.95,0.99}$ (= 2.40 from Table A3, Gilbert, 1987) in the following calculations (as shown in DTSC, 2009):

$$UL_{1-\propto}(x_p) = \bar{x} + sK_{1-\propto,p}$$

$$UL_{1-\propto}(x_p) = The\ Upper\ Limit\ of\ the\ Data$$

$\bar{x}$= Mean of the data set
S = Standard Deviation of the mean
$K_{1-\propto,p}$ = Statistical tolerance factor for estimating an Upper 100(1-∝) Confidence Limit on the pth Quantile

The results are as follows:

Data Set	$UL_{(1-a)}(x_p)$	mg/kg
Log10_As-All	1.24	17.53
Log10_As-Coarse	1.11	12.98
Log10_As-Fine	1.31	20.62

5.1.2.1 Statistical Evaluation Uncertainties

The statistical evaluation is dependent on the size and representativeness of the data sets. DTSC (2009) does not provide a target sample count as a definition of “large” but offers examples; 651 counts is described as “rather large” and a count of 40 is described as “smaller”. Given the count of 135 samples (All Soil), 64 samples (Coarse Soil), and 74 samples (Fine Soil) and the representativeness of the sample locations for the Site, the data sets are considered acceptable for the statistical evaluation.

5.2 Site-Specific Background Range

The general approach for deriving the Site-specific background concentration for arsenic in soil used Site knowledge and an extensive number of samples that were subjected to multiple graphical and statistical tests. The proposed Site-specific arsenic background concentration is supported by conservative interpretations of these lines of evidence.

The Graphical Evaluation results showed relative consistency between the three data sets for both the non-transformed and transformed data. The non-transformed data sets suggest a range of 7.3 to 29 mg/kg. The

transformed data sets suggest a range of 7.5 to 16 mg/kg. An inflection point concentration of 10 mg/kg was observed in the non-transformed and transformed data sets for both the All and Fine Soil types.

The Statistical Evaluation is more precise and calculates a mathematical result. The transformed data sets showed 17.53 mg/kg for the All Soil, 12.98 mg/kg for the Coarse Soil, and 20.62 mg/kg for the Fine Soil data sets. The Statistical Evaluation results generally corroborate the observations of the Graphical Evaluation. Given the range of prospective values and the mixed distribution of coarse- and fine-grained soil throughout the Site, the All Soil value of 17.53 mg/kg from the Statistical Evaluation is selected and proposed for the arsenic background concentration at the Site.

6.0 Human Risk Evaluations

Section 6.1 includes a comparison of target analyte concentrations to human health based SLs, and Section 6.2 provides a preliminary human health risk evaluation based on the comparison to SL. An ecological risk evaluation was not conducted as the Site does not provide suitable habitat for ecological receptors and thus ecological exposure pathways are considered incomplete.

6.1 Comparison to Health Based Screening Levels

Sections 6.1.1 through 6.1.3 include a comparison of target analyte concentrations to human health based SLs for soil gas, soil, and groundwater, respectively.

6.1.1 Soil Gas

PCE and TCE were the only analytes detected in soil gas samples collected during the current investigation. Table 6-1 presents the PCE and TCE concentrations detected in soil gas samples during previous and current investigations and a comparison of the detected concentrations to California residential and commercial/industrial SLs (DTSC, 2019). Of the two analytes, only PCE was detected at concentrations exceeding one or both human health-based SLs. Figure 6-1 presents the PCE concentrations detected in soil gas, and the lateral extent of PCE concentrations exceeding the residential and commercial/industrial SLs based on the shallower soil gas samples collected from 5.5 feet bgs. PCE was detected in 31 of 34 soil gas samples collected from 19 locations. Of the shallower samples collected from 5.5 feet bgs during the current investigation, four PCE concentrations exceeded the 460 µg/m^3 residential SL, and one PCE concentration exceeded the 2,000 µg/m^3 commercial/industrial SL.

6.1.2 Soil

PCE and arsenic were the only target analytes detected in soil samples collected during the current investigation. Neither of the two PCE concentrations detected in soil during the current investigation exceeded the 0.59 and 2.7 mg/kg residential and industrial SLs, respectively.

Arsenic was detected in all soil samples collected during previous and current investigations at concentrations exceeding the 0.11 and 0.36 mg/kg residential and commercial/industrial SLs. Arsenic is a naturally-occurring element in soil. As described in Section 5.0, a Site-specific arsenic background concentration of 17.53 mg/kg was calculated for soil. Table 6-2 presents the arsenic concentrations detected in soil samples collected during previous and current investigations and a comparison of the detected concentrations to the 17.53 mg/kg Site-specific arsenic background concentration. Figure 6-2 presents the arsenic concentrations detected in soil, and the lateral extent of arsenic concentrations exceeding the 17.53 mg/kg Site-specific arsenic background concentration from 0 to 3 feet bgs and from greater than 3 feet to 6 feet bgs. Arsenic was detected at concentrations exceeding the 17.53 mg/kg background concentration in 16 of 139 soil samples from previous and current investigations. Of the arsenic concentrations exceeding background, 11 were detected in soil at a depth of 3 feet bgs or less and 5 were detected in soil at depths greater than 3 feet but no more than 6 feet bgs.

6.1.3 Groundwater

PCE was the only target analyte detected in groundwater samples collected during the current investigation. Table 6-3 presents PCE concentrations detected in groundwater during previous and current investigations and a comparison to the California tap water SL, a human health-based screening criterion. Table 6-3 also presents a comparison to the California primary MCL, which is the maximum concentration of a contaminant allowed in drinking water. The primary MCL is primarily human health based, but also takes into consideration best available treatment

technologies and cost. Figure 6-3 presents the PCE concentrations detected in groundwater during previous and current investigations.

PCE was detected in all but two groundwater samples collected during previous and current investigations. Of the 10 groundwater samples in which PCE was detected, all concentrations exceeded the 0.082 µg/L tap water SL. Of the two groundwater samples in which PCE was not detected, the laboratory MDL exceeded the tap water SL. No PCE concentrations detected in groundwater samples collected during the previous and current investigations exceeded the 5 µg/L primary MCL.

6.2 Preliminary Human Health Exposure Assessment

The following preliminary human health exposure assessment addresses soil, groundwater, and indoor air exposure media.

6.2.1 Soil

Based on soil sampling performed at the Site, the primary risk driver from soil exposure is arsenic. The low toxicity criterion for arsenic suggests that even at background levels there is substantial risk. Potential exposure routes for soil include inhalation of soil particulates and direct contact via incidental ingestion and dermal contact. The majority of the Site is covered with buildings and pavement; therefore, current Site workers are unlikely to be exposed to soil at the Site unless they are involved in landscape maintenance in unpaved areas or construction activities involving excavation, trenching, or pavement removal. Site personnel engaging in activities that could result in inhalation of soil particulates or direct soil contact can minimize their potential risk by reducing dust generation, wearing personal protective equipment, and following good sanitation practices.

6.2.2 Groundwater

Based on groundwater sampling performed at the Site, the primary risk driver from groundwater exposure is PCE. Potential groundwater exposure routes include direct contact via ingestion and dermal contact. Groundwater is located greater than 35 feet bgs and there are no water wells located on Site; therefore, these exposure pathways are currently incomplete for Site workers. Additionally, PCE concentrations detected in groundwater are below the 5.0 µg/L primary MCL; therefore, the PCE concentrations in groundwater are within acceptable limits for potable use should the groundwater be extracted for such use in the future.

6.2.3 Indoor Air

Current indoor workers may be exposed to volatile chemicals through the VI pathway. In December 2016, SMUD performed an indoor air quality assessment at Building H for VOCs, mold, and dust. PCE was not detected in the indoor air samples collected from Building H. Additional indoor air sampling was not performed as part of the current investigation to further evaluate this potential exposure pathway; however, as described at the end of this section, additional indoor air sampling within Building H was subsequently performed.

In order to evaluate VI with subsurface data (e.g., soil gas), an attenuation factor was applied to the ambient air SL that is applicable to indoor air data to estimate a corresponding SL that is applicable to soil gas data. The attenuation factor represents the ratio between the indoor air concentration and soil gas concentrations. For preliminary screening, DTSC guidance recommends using the default attenuation factor of 0.001 for existing commercial buildings with samples collected at the contamination source, along with the maximum soil gas concentration (DTSC, 2011). Of the VOCs detected in soil gas at the Site, only PCE was detected at concentrations exceeding preliminary soil gas screening criteria. The DTSC commercial/industrial ambient air SL for PCE of 2 µg/m^3 was selected to evaluate vapor inhalation. Applying the default attenuation factor results in an estimated soil gas SL of 2,000 µg/m^3 (2.0 µg/m^3 ÷ 0.001).

Active soil gas sampling has been completed at the Site since 2015 at depths ranging from 4.5 to 14.5 feet bgs. The maximum detected PCE concentration is 15,000 µg/m^3 and was associated with a soil gas sample collected from 4.5 feet bgs at location KA-17 in 2015, and exceeds the commercial/industrial SL by approximately 8 times. More recent data (2018), which are expected to be more representative of current conditions, indicate maximum concentrations in shallow (5.5 feet bgs) samples that also exceed the commercial/industrial SL (shallow maximum: 5,100 µg/m^3 at VW05 [located in close proximity to KA-17]).

Based on the preliminary soil gas screening results for PCE, which indicated current and historical data exceedances of the soil gas SL for commercial/industrial workers, additional evaluation of the potential for VI is warranted. When a preliminary screening evaluation indicates the potential for unacceptable risk, there are several options:

- Conduction a Site-specific VI evaluation,
- Collect indoor air samples,
- Remediate the subsurface contaminants, or
- Institute engineering controls.

VI risk determination has been rapidly evolving in recent years, particularly with regards to attenuation factors and the use of VI models. Several agencies, including USEPA and the San Francisco Bay Regional Water Control Board (SF RWQCB), have developed more stringent attenuation factors that are currently being applied (i.e., USEPA vapor intrusion SLs, SF RWQCB ESLs). These agencies are also moving away from VI models, such as the Johnson and Ettinger (J&E) model, and moving towards developing building-specific attenuation factors and sampling indoor air, but updated guidance documents have not been released to date. DTSC is also currently re-evaluating risk associated with VI and additional guidance documents are expected. Soil gas data are most closely associated with potential emissions from subsurface sources while indoor air data represent actual breathing zone concentrations. Therefore, risks associated with indoor air can be quantified without the need for making assumptions through attenuation factors or J&E modeling. Due to these facts and in conjunction with current/future Site uses, SMUD proceeded with collection of additional indoor air samples from Building H in April 2019 following review of the current investigation findings to determine if there is unacceptable indoor air risk to building occupants from PCE and its associated degradation products. PCE was detected in 2 of 6 indoor air samples collected; however, the detected concentrations were less than the 0.46 µg/m^3 residential ambient air SL (DTSC, 2019). *cis*-1,2-DCE was the only PCE degradation product detected. *cis*-1,2-DCE was detected in 1 of 6 indoor air samples collected, and the detected concentration was less than the 8.3 µg/m^3 residential ambient air SL (DTSC, 2019). Results of the April 2019 indoor air sampling effort are provided in Appendix E.

7.0 Summary and Conclusions

7.1 Chemicals of Concern

PCE in soil gas and arsenic in soil are the chemicals of concern (COCs) at the Site. Additionally, PCE degradation products in soil gas and groundwater are considered chemicals of potential concern (COPCs). Although TCE was the only TCE degradation product detected during the current investigation and the detected TCE concentrations were below SLs, the presence of PCE creates the potential for degradation products to form in the future.

PCE in soil gas is considered a COC due to its presence at concentrations that have the potential to result in unacceptable indoor air risk to occupants of buildings within 100 feet of PCE contamination. Variabilities in building construction and heating, ventilation, and air conditioning use can affect VI potential. The maximum PCE concentration of 5,900 µg/m^3 detected in soil gas during the current investigation was lower than maximum PCE concentration of 15,000 µg/m^3 detected during the Phase II ESA in 2015. Although PCE was not detected in indoor air samples collected from Building H during an indoor air quality assessment in 2016 and the current PCE concentrations in soil gas have decreased compared to those detected in 2015; the potential for VI still exists. Therefore, SMUD proceeded with collection of indoor air samples from Building H in April 2019 as discussed in Section 6.2.3. PCE and one PCE degradation product (*cis*-1,2-DCE) were detected at concentrations less than their respective residential ambient air SLs. No other PCE degradation products were detected. Results of the April 2019 indoor air sampling effort are provided in Appendix E.

Arsenic is considered a COC because it is present in soil at concentrations exceeding its 0.11 and 0.36 mg/kg residential and commercial/industrial SLs, respectively, and the 17.53 mg/kg Site-specific background concentration.

7.2 Extent of Contamination

7.2.1 PCE

The extent of PCE concentrations in soil gas exceeding the 460 and 2,000 µg/m^3 residential and commercial/industrial SLs, respectively, based on soil gas data collected from 5.5 feet bgs is shown on Figure 6-1. The lateral extent of PCE concentrations in soil gas exceeding the 460 µg/m^3 residential SL covers an area of approximately 0.9 acre that partially underlies the Tool Issue Building. The lateral extent of PCE concentrations in soil gas exceeding the 2,000 µg/m^3 commercial/industrial SL covers an area of approximately 0.2 acre that also partially underlies the Tool Issue Building. PCE concentrations were typically higher in soil gas samples collected from 14.5 feet bgs when compared to those collected from 5.5 feet bgs, possibly indicating a source or secondary source deeper than 5.5 feet bgs.

7.2.2 Arsenic

The extent of arsenic concentrations in soil exceeding the 17.53 mg/kg background concentration is shown on Figure 6-2. Based on previous and current investigations, the arsenic concentrations detected above background were generally limited to the southern portion of the North Corporation Yard (north of the Sacramento Regional Transit light rail line). Within this area, the arsenic concentrations exceeding background in soil at a depth of 3 feet bgs or less covers approximately 2.4 acres in the vicinity of the Tool lssue and Salvage Buildings (0.8 acre) and the south side of the Warehouse Building (1.6 acres); however, the full extent of these areas is not fully defined. There are also two smaller areas covering approximately 0.2 acre combined beneath the parking lot to the west of the Hazardous Material Building and south of the Garage Building. Arsenic concentrations exceeding background in soil between a depth of greater than 3 feet to 6 feet bgs occur in two localized areas: in the vicinity of the Tool Issue Building (approximately 0.2 acre) and in the vicinity of the eastern end of the Warehouse Building, including the area between the building and the light rail line (approximately 0.3 acre). In the vicinity of the Tool Issue Building, the

vertical extent of arsenic concentrations exceeding background appears to extend down to a depth of at least 6 feet bgs, but does not exceed 11 feet bgs. In the vicinity of the eastern end of the Warehouse Building, the vertical extent of arsenic concentrations exceeding background also extends down to a depth of at least 6 feet bgs, but the total depth is unknown.

7.3 Recommendations

Based on the understanding of site conditions following the 2018-2019 site characterization effort and regulatory SLs in effect at the time, recommended next steps include:

- Evaluating buildings within 100 feet of PCE contamination to determine VI potential. Conduct indoor air sampling within buildings evaluated to have the highest VI potential. Conduct indoor air sampling within additional buildings, if warranted, based on the initial indoor air sampling results. Note: SMUD has since completed this step and determined the Tool Issue Building (Building H) had the highest VI potential. SMUD conducted indoor air sampling within the Tool Issue Building in April 2019 (Appendix E). PCE and its breakdown products were not detected above residential SLs; therefore, indoor air sampling within additional buildings was not deemed to be necessary since the other buildings are considered to have lower VI potential.
- Implementing a corrective action to address arsenic concentrations in soil above naturally-occurring levels. Re-evaluate the range of Site-specific arsenic background concentrations to select an appropriate arsenic cleanup goal.

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Tables

TABLE 2-1. PREVIOUS INVESTIGATION MAXIMUM ANALYTE CONCENTRATIONS DETECTED IN SOIL GAS COMPARED TO REGULATORY SCREENING CRITERIA

Analyte	Maximum Concentration	Sample ID of Maximum Concentration	Location ID of Maximum Concentration	Sampling Date of Maximum Concentration	Sample Depth (feet bgs)	No. Detections/ Total No. Samples	No. Locations with Detections/ Total No. Locations Sampled	California DTSC HERO HHRA Note 3 Residential SL[(a)]	No. Samples Exceeding Goal/ Total No. Samples	No. Locations Exceeding Goal/ Total No. Locations Sampled	California DTSC HERO HHRA Note 3 Commercial/ Industrial SL[(a)]	No. Samples Exceeding Goal/ Total No. Samples	No. Locations Exceeding Goal/ Total No. Locations Sampled
Petroleum Hydrocarbons (µg/m^3)													
TPH as Gasoline-Range Organics	27,000	KA-2-S-SV	KA-2	6/18/2015	4.5	4/7	4/6	NA*	NA	NA	NA*	NA	NA
Volatile Organics (µg/m^3)													
Acetone	350	KA-2-S-SV	KA-2	6/18/2015	4.5	2/7	2/6	32,000,000	0/7	0/6	140,000,000	0/7	0/6
Benzene	28	KA-2-S-SV	KA-2	6/18/2015	4.5	2/7	2/6	97	0/7	0/6	420	0/7	0/6
Carbon Disulfide	55	KA-19-S-SV	KA-19	6/19/2015	4.5	1/7	1/6	730,000	0/7	0/6	3,100,000	0/7	0/6
Chloroform	48	KA-2-S-SV	KA-2	6/18/2015	4.5	4/7	4/6	120	0/7	0/6	530	0/7	0/6
Cumene	71	KA-2-S-SV	KA-2	6/18/2015	4.5	2/7	2/6	420,000	0/7	0/6	1,800,000	0/7	0/6
Cyclohexane	7.2	KA-8-S-SV	KA-8	6/18/2015	4.5	2/7	2/6	6,300,000	0/7	0/6	26,000,000	0/7	0/6
Dichlorodifluoromethane (Freon 12)	37	KA-8-S-SV	KA-8	6/18/2015	4.5	2/7	2/6	100,000	0/7	0/6	440,000	0/7	0/6
Ethylbenzene	860	KA-2-S-SV	KA-2	6/18/2015	4.5	3/7	3/6	1,100	0/7	0/6	4,900	0/7	0/6
4-Ethyltoluene	1,800	KA-2-S-SV	KA-2	6/18/2015	4.5	3/7	3/6	NE	NA	NA	NE	NA	NA
Heptane	18	KA-2-S-SV	KA-2	6/18/2015	4.5	1/7	1/6	420,000	0/7	0/6	1,800,000	0/7	0/6
Hexane	3.5	KA-19-S-SV	KA-19	6/19/2015	4.5	1/7	1/6	730,000	0/7	0/6	3,100,000	0/7	0/6
Propylbenzene	340	KA-2-S-SV	KA-2	6/18/2015	4.5	2/7	2/6	1,000,000	0/7	0/6	4,400,000	0/7	0/6
Tetrachloroethene	15,000	KA-17-H-SV	KA-17	6/19/2015	4.5	7/7	6/6	460	2/7	1/6	2,000	2/7	1/6
Toluene	1,200	KA-2-S-SV	KA-2	6/18/2015	4.5	5/7	5/6	310,000	0/7	0/6	1,300,000	0/7	0/6
1,1,1-Trichloroethane	41	KA-19-S-SV	KA-19	6/19/2015	4.5	1/7	1/6	1,000,000	0/7	0/6	4,400,000	0/7	0/6
Trichloroethene	210	KA-17-H-SV	KA-17	6/19/2015	4.5	2/7	1/6	480	0/7	0/6	3,000	0/7	0/6
Trichlorofluoromethane (Freon 11)	5.2	KA-19-S-SV	KA-19	6/19/2015	4.5	1/7	1/6	1,300,000	0/7	0/6	5,300,000	0/7	0/6
1,2,4-Trimethylbenzene	1,900	KA-2-S-SV	KA-2	6/18/2015	4.5	2/7	2/6	63,000	0/7	0/6	260,000	0/7	0/6
1,3,5-Trimethylbenzene	920	KA-2-S-SV	KA-2	6/18/2015	4.5	2/7	2/6	63,000	0/7	0/6	260,000	0/7	0/6
2,2,4-Trimethylpentane	76	KA-2-S-SV	KA-2	6/18/2015	4.5	1/7	1/6	NE	NA	NA	NE	NA	NA
m,p-Xylene	2,900	KA-2-S-SV	KA-2	6/18/2015	4.5	4/7	4/6	100,000	0/7	0/6	440,000	0/7	0/6
o-Xylene	1,600	KA-2-S-SV	KA-2	6/18/2015	4.5	4/7	4/6	100,000	0/7	0/6	440,000	0/7	0/6

Notes:

Bold indicates analyte exceeds one or more regulatory screening criteria.
*Refer to individual petroleum hydrocarbon chemical constituents under Volatile Organics.
µg/m^3 = micrograms per cubic meter
bgs = below ground surface
DTSC = Department of Toxic Substances Control
ESA = Environmental Site Assessment
ID = identification
HERO = Human and Ecological Risk Office
HHRA = human health risk assessment
NA = not applicable
NE = not established
No. = number
SL = screening level
TPH = total petroleum hydrocarbons

Goal Compliance:

[(a)] Residential and commercial/industrial air screening levels from HERO HHRA Note 3, DTSC-modified Screening Levels (DTSC, 2019) modified using a 0.001 attenuation factor for future residential and existing commercial (sample location at contaminant source) (DTSC, 2011).

TABLE 2-2. PREVIOUS INVESTIGATION MAXIMUM ANALYTE CONCENTRATIONS DETECTED IN SOIL COMPARED TO REGULATORY SCREENING CRITERIA

Analyte	Maximum Concentration	Sample ID of Maximum Concentration	Location ID of Maximum Concentration	Sampling Date of Maximum Concentration	Sample Depth (feet bgs)	No. Detections/ Total No. Samples	No. Locations with Detections/ Total No. Locations Sampled	California DTSC HERO HHRA Note 3 Residential SL[a]	No. Samples Exceeding Goal/ Total No. Samples	No. Locations Exceeding Goal/ Total No. Locations Sampled	California DTSC HERO HHRA Note 3 Commercial/ Industrial SL[a]	No. Samples Exceeding Goal/ Total No. Samples	No. Locations Exceeding Goal/ Total No. Locations Sampled	California S.F. Bay RWQCB GW Protection ESL[b]	No. Samples Exceeding Goal/ Total No. Samples	No. Locations Exceeding Goal/ Total No. Locations Sampled
Volatile Organics (mg/kg)																
Methylene chloride	0.15	KA-38-S-11 D	KA-38	6/3/2015	11	6/102	4/48	2.2	0/102	0/48	26	0/102	0/48	0.12	1/102	1/48
Semivolatile Organics (mg/kg)																
Bis(2-ethylhexyl)phthalate	0.15	PS-3-16	PS-3	7/9/2015	16	6/30	4/6	39	0/30	0/6	110	0/30	0/6	190	0/30	0/6
Di-n-butyl phthalate	0.041	BK-1-11	BK-1	7/9/2015	11	1/30	1/6	6,300	0/30	0/6	53,000	0/30	0/6	NE	NA	NA
Metals (mg/kg)																
Antimony	1.8	PS-2-6	PS-2	7/10/2015	6	1/132	1/54	31	0/132	0/54	470	0/132	0/54	NE	NA	NA
Arsenic	110	KA-50-H-3	KA-50	5/19/2015	3	136/136	54/54	0.11	136/136	54/54	0.36	136/136	54/54	NE	NA	NA
Barium	210	KA-27-D-46	KA-27	5/22/2015	46	132/132	54/54	15,000	0/132	0/54	220,000	0/132	0/54	NE	NA	NA
Beryllium	0.58	KA-36-S-6 D	KA-36	6/3/2015	6	132/132	54/54	1,600	0/132	0/54	6,900	0/132	0/54	NE	NA	NA
Cadmium	0.11	KA-33-H-1	KA-33	5/19/2015	1	9/132	9/54	910	0/132	0/54	4,000	0/132	0/54	NE	NA	NA
Chromium	63	KA-19-S-16	KA-19	6/2/2015	16	132/132	54/54	120,000[c]	0/132	0/54	1,800,000[c]	0/132	0/54	NE	NA	NA
Cobalt	16	KA-18-S-11	KA-18	6/2/2015	11	132/132	54/54	23	0/132	0/54	350	0/132	0/54	NE	NA	NA
		KA-19-S-16	KA-19	6/2/2015	16											
		KA-19-S-16 D	KA-19	6/2/2015	16											
		PS-1-11	PS-1	7/10/2015	11											
		PS-2-1	PS-2	7/8/2015	1											
Copper	46	KA-18-S-6	KA-18	6/2/2015	6	132/132	54/54	3,100	0/132	0/54	47,000	0/132	0/54	NE	NA	NA
Lead	40	KA-33-H-1	KA-33	5/19/2015	1	132/132	54/54	80	0/132	0/54	320	0/132	0/54	NE	NA	NA
Mercury	0.10	KA-47-H-1.5	KA-47	5/18/2015	1.5	12/132	10/54	1.0	0/132	0/54	4.4	0/132	0/54	NE	NA	NA
Molybdenum	1.1	PS-2-6	PS-2	7/10/2015	6	38/132	14/48	390	0/132	0/54	5,800	0/132	0/54	NE	NA	NA
Nickel	100	KA-9-D-51	KA-9	5/22/2015	51	132/132	54/54	15,000	0/132	0/54	64,000	0/132	0/54	NE	NA	NA
Selenium	5.4	PS-2-1	PS-2	7/8/2015	1	26/132	16/54	390	0/132	0/54	5,800	0/132	0/54	NE	NA	NA
Silver	0.24	PS-1-100	PS-1	7/10/2015	6	11/132	8/54	390	0/132	0/54	5,800	0/132	0/54	NE	NA	NA
Thallium	7.3	PS-2-1	PS-2	7/8/2015	1	55/132	21/54	0.78	49/132	19/54	12	0/132	0/54	NE	NA	NA
Vanadium	79	KA-26-D-51	KA-26	5/26/2015	51	132/132	54/54	390	0/132	0/54	5,800	0/132	0/54	NE	NA	NA
Zinc	84	KA-33-H-1	KA-33	5/19/2015	1	132/132	54/54	23,000	0/132	0/54	350,000	0/132	0/54	NE	NA	NA

Notes:

Bold indicates analyte exceeds one or more regulatory screening criteria.

bgs = below ground surface
DTSC = Department of Toxic Substances Control
ESA = Environmental Site Assessment
ESL = environmental screening level
GW = groundwater
HERO = Human and Ecological Risk Office
HHRA = human health risk assessment
ID = identification
mg/kg = milligrams per kilogram
NA = not applicable
NE = not established
No. = number
RWQCB = Regional Water Quality Control Board
S.F. = San Francisco
SL = screening level
SWRCB = State Water Resources Control Board

Goal Compliance:

[a] Residential and commercial/industrial SLs from HERO HHRA Note 3, DTSC-modified SLs (DTSC, 2019).

[b] Groundwater protection (drinking water) ESLs from Summary of Soil ESLs (SWRCB, 2019).

[c] Value corresponds to chromium III.

TABLE 2-3. PREVIOUS INVESTIGATION MAXIMUM ANALYTE CONCENTRATIONS DETECTED IN GROUNDWATER COMPARED TO REGULATORY SCREENING CRITERIA

Analyte	Maximum Concentration	Sample ID of Maximum Concentration	Location ID of Maximum Concentration	Sampling Date of Maximum Concentration	Sample Depth (feet bgs)	No. Detections/ Total No. Samples	No. Locations with Detections/ Total No. Locations Sampled	California Primary MCL[a]	No. Samples Exceeding Goal/ Total No. Samples	No. Locations Exceeding Goal/ Total No. Locations Sampled
Petroleum Hydrocarbons (mg/L)										
TPH as Diesel-Range Organics	0.33	42-D	KA-42	6/2/2015	34-40	2/7	2/7	NE	NA	NA
TPH as Gasoline-Range Organics	0.011	7-D	KA-7	6/1/2015	40-45	5/7	5/7	NE	NA	NA
TPH as Oil-Range Organics	0.47	42-D	KA-42	6/2/2015	34-40	1/7	1/7	NE	NA	NA
Volatile Organics (µg/L)										
Bromodichloromethane	0.30	41-D	KA-41	6/2/2015	34-40	2/9	2/9	80[b]	0/9	0/9
Chloroform	8.0	26-D	KA-26	6/2/2015	47-49	9/9	9/9	80[b]	0/9	0/9
Tetrachloroethene (PCE)	2.1	9-D	KA-9	6/2/2015	47.5-49.5	7/9	7/9	5.0	0/9	0/9
Metals - Dissolved (mg/L)										
Barium	0.27	41-D	KA-41	12/9/2015	48-50	9/9	9/9	1	0/9	0/9
Chromium, total	0.012	15-D	KA-15	12/9/2015	40-42	7/9	7/9	0.05	0/9	0/9
Cobalt	0.0078	26-D	KA-26	12/10/2015	38-42	6/9	6/9	NE	NA	NA
Copper	0.0073	15-D	KA-15	12/9/2015	40-42	6/9	6/9	1.3[c]	NA	NA
Molybdenum	0.012	26-D	KA-26	12/10/2015	38-42	9/9	9/9	NE	NA	NA
		41-D	KA-41	12/9/2015	48-50					
Nickel	0.030	15-D	KA-15	12/9/2015	40-42	9/9	9/9	0.10	0/9	0/9
Silver	0.0013	9-D	KA-9	12/11/2015	50-52	3/9	3/9	NE	NA	NA
Vanadium	0.019	15-D	KA-15	12/9/2015	40-42	9/9	9/9	NE	NA	NA
Zinc	0.042	42-D	KA-42	12/9/2015	43*-45	4/9	4/9	NE	NA	NA

Notes:
*starting depth is approximate
µg/L = micrograms per liter
bgs = below ground surface
ID = identification
MCL = maximum contaminant level
mg/L = milligrams per liter
NA = not applicable
NE = not established
No. = number
SWRCB = California State Water Resources Control Board
TPH = total petroleum hydrocarbons

Goal Compliance:
[a] California primary MCLs from *MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants* (SWRCB, 2018).
[b] Primary MCL for sum of total trihalomethanes (bromoform, bromodichloromethane, chlorodibromomethane, and chloroform.
[c] Copper Action Level from *MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants* (SWRCB, 2018).

Table 3-1. Current Investigation Soil Gas, Soil, and Groundwater Sample Summary
(Page 1 of 4)

Location ID	Sampling Date	Field Sample ID	Matrix	Sample Type	Depth (feet bgs)	Pavement Thickness (feet)	Depth Below Pavement (feet)	Sample Collection Method	Laboratory	Laboratory Sample ID	Laboratory Analyses		
											Arsenic (SW6020)	VOCs[a] (SW8260B)	VOCs[b] (SW8260B or TO-15)
B01	12/4/2018	SO-B01-01	SO	N	1.75-2.25	0.25	1.5-2.0	Hand Auger	BC Labs	1838101-01	X		
B02	12/5/2018	SO-B02-01	SO	N	1.75-2.25	0.25	1.5-2.0	Hand Auger	BC Labs	1838101-03	X		
B03	12/5/2018	SO-B03-01	SO	N	1.75-2.25	0.25	1.5-2.0	Hand Auger	BC Labs	1838101-02	X		
B04	12/6/2018	SO-B04-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1838186-07	X		
B04	12/6/2018	SO-B04-02	SO	N	5.5-6.0	0.33	5.17-5.67	Hand Auger	BC Labs	1838186-08	X		
B05 (see VW12/B05)													
B06	12/10/2018	GW-B06-01	GW	N	33.73	0.33	33.4	Bladder Pump	BC Labs	1838491-01		X	
B06	12/10/2018	GW-B06-02	GW	FD	33.73	0.33	33.4	Bladder Pump	BC Labs	1838491-02		X	
B06 (also see VW04)													
B07 (see VW03/B07)													
B08	12/5/2018	SO-B08-01	SO	N	1.75-2.25	0.25	1.5-2.0	Hand Auger	BC Labs	1838101-14	X		
B08	12/5/2018	SO-B08-02	SO	N	5.25-5.75	0.25	5.0-5.5	Hand Auger	BC Labs	1838101-15	X		
B09 (see VW05/B09)													
B10	12/5/2018	SO-B10-01	SO	N	2.17-2.67	0.67	1-5-2.0	Hand Auger	BC Labs	1838101-09	X		
B10	12/5/2018	SO-B10-02	SO	N	5.67-6.0	0.67	5.0-5.33	Hand Auger	BC Labs	1838101-10	X		
B11	12/6/2018	SO-B11-01	SO	N	2.5-3.0	1.29	1.21-1.71	Hand Auger	BC Labs	1838186-09	X		
B11	12/6/2018	SO-B11-02	SO	N	5.0-5.5	1.29	3.71-4.21	Hand Auger	BC Labs	1838186-10	X		
B12	12/6/2018	SO-B12-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1838186-03	X		
B12	12/31/2018	SO-B12-02	SO	N	5.0-5.5	0.33	4.67-5.17	Hand Auger	BC Labs	1900019-01	X		
B13	12/7/2018	GW-B13-01	GW	N	37.0	0.5	36.5	Manual Lift	BC Labs	1838293-03		X	
B13 (also see VW09)													
B14	12/4/2018	SO-B14-01	SO	N	2.17-2.67	0.67	1.5-2.0	Hand Auger	BC Labs	1838102-01	X		
B14	12/4/2018	SO-B14-02	SO	N	5.67-6.0	0.67	5.0-5.33	Hand Auger	BC Labs	1838102-02	X		
B15	12/5/2018	SO-B15-01	SO	N	2.17-2.67	0.67	1.5-2.0	Hand Auger	BC Labs	1838101-04	X		
B15	12/5/2018	SO-B15-02	SO	N	5.67-6.0	0.67	5.0-5.33	Hand Auger	BC Labs	1838101-05	X		
B16	12/5/2018	SO-B16-01	SO	N	2.17-2.67	0.67	1.5-2.0	Hand Auger	BC Labs	1838101-06	X		
B16	12/5/2018	SO-B16-02	SO	N	5.67-6.0	0.67	5.0-5.33	Hand Auger	BC Labs	1838101-07	X		
B16	12/5/2018	SO-B16-03	SO	FD	5.67-6.0	0.67	5.0-5.33	Hand Auger	BC Labs	1838101-08	X		
B17	12/5/2018	SO-B17-01	SO	N	1.5-2.0	0	1.5-2.0	Hand Auger	BC Labs	1838101-11	X		
B17	12/5/2018	SO-B17-02	SO	N	5.0-5.5	0	5.0-5.5	Hand Auger	BC Labs	1838101-12	X		
B17	12/5/2018	SO-B17-03	SO	FD	5.0-5.5	0	5.0-5.5	Hand Auger	BC Labs	1838101-13	X		
VW01	12/7/2018	SG-VW01A-01	SG	N	5.83	0.33	5.5	Glass Syringe	TEG	NA			X
VW01	12/5/2018	SG-VW01B-01	SG	N	14.83	0.33	14.5	Glass Syringe	TEG	NA			X
VW01	12/4/2018	SO-VW01-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1838102-06		X	
VW01	12/5/2018	SO-VW01-02	SO	N	5.85-6.33	0.33	5.5-6.0	Direct Push	BC Labs	1838104-07		X	
VW01	12/5/2018	SO-VW01-03	SO	N	9.83-10.33	0.33	9.5-10.0	Direct Push	BC Labs	1838104-08		X	

Table 3-1. Current Investigation Soil Gas, Soil, and Groundwater Sample Summary
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Location ID	Sampling Date	Field Sample ID	Matrix	Sample Type	Depth (feet bgs)	Pavement Thickness (feet)	Depth Below Pavement (feet)	Sample Collection Method	Laboratory	Laboratory Sample ID	Laboratory Analyses		
											Arsenic (SW6020)	VOCs[a] (SW8260B)	VOCs[b] (SW8260B or TO-15)
VW02	12/7/2018	SG-VW02A-01	SG	N	6.17	0.67	5.5	Glass Syringe	TEG	NA			X
VW02	12/5/2018	SG-VW02B-01	SG	N	15.17	0.67	14.5	Glass Syringe	TEG	NA			X
VW02	12/3/2018	SO-VW02-01	SO	N	2.0-2.5	0.67	1.33-1.83	Hand Auger	BC Labs	1837609-08		X	
VW02	12/5/2018	SO-VW02-02	SO	N	6.17-6.67	0.67	5.5-6.0	Direct Push	BC Labs	1838104-01		X	
VW02	12/5/2018	SO-VW02-02-Dup	SO	FD	6.17-6.67	0.67	5.5-6.0	Direct Push	BC Labs	1838104-02		X	
VW02	12/5/2018	SO-VW02-03	SO	N	10.17-10.67	0.67	9.5-10.0	Direct Push	BC Labs	1838104-03		X	
VW03/B07	12/7/2018	SG-VW03A-01	SG	N	6.17	0.67	5.5	Glass Syringe	TEG	NA			X
VW03/B07	12/7/2018	SG-VW03A-02	SG	FD	6.17	0.67	5.5	Glass Syringe	TEG	NA			X
VW03/B07	12/4/2018	SO-B07-01	SO	N	2.0-2.5	0.67	1.33-1.83	Hand Auger	BC Labs	1838102-08	X		
VW03/B07	12/4/2018	SO-VW03-01	SO	N	2.0-2.5	0.67	1.33-1.83	Hand Auger	BC Labs	1838102-07		X	
VW03/B07	12/5/2018	SO-B07-02	SO	N	6.17-6.67	0.67	5.5-6.0	Direct Push	BC Labs	1838104-10	X		
VW03/B07	12/5/2018	SO-VW03-02	SO	N	6.17-6.67	0.67	5.5-6.0	Direct Push	BC Labs	1838104-09		X	
VW04	12/7/2018	SG-VW04A-01	SG	N	5.83	0.33	5.5	Glass Syringe	TEG	NA			X
VW04	12/5/2018	SG-VW04B-01	SG	N	14.83	0.33	14.5	Glass Syringe	TEG	NA			X
VW04	12/3/2018	SO-B06-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1837609-10	X		
VW04	12/3/2018	SO-VW04-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1837609-09		X	
VW04	12/4/2018	SO-B06-02	SO	N	5.33-5.83	0.33	5.0-5.5	Direct Push	BC Labs	1838102-09	X		
VW04	12/4/2018	SO-VW04-02	SO	N	5.33-5.83	0.33	5.0-5.5	Direct Push	BC Labs	1838103-13		X	
VW04	12/4/2018	SO-VW04-03	SO	N	9.83-10.33	0.33	9.5-10.0	Direct Push	BC Labs	1838103-14		X	
VW05/B09	12/7/2018	SG-VW05A-01	SG	N	5.83	0.33	5.5	Glass Syringe	TEG	NA			X
VW05/B09	12/5/2018	SG-VW05B-01	SG	N	14.83	0.33	14.5	Glass Syringe	TEG	NA			X
VW05/B09	12/5/2018	SG-VW05B-02	SG	FD	14.83	0.33	14.5	Glass Syringe	TEG	NA			X
VW05/B09	12/3/2018	SO-B09-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1837609-02	X		
VW05/B09	12/3/2018	SO-VW05-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1837609-01		X	
VW05/B09	12/4/2018	SO-B09-02	SO	N	5.33-5.83	0.33	5.0-5.5	Direct Push	BC Labs	1838103-03	X		
VW05/B09	12/4/2018	SO-VW05-02	SO	N	5.33-5.83	0.33	5.0-5.5	Direct Push	BC Labs	1838103-01		X	
VW05/B09	12/4/2018	SO-VW05-03	SO	N	9.83-10.33	0.33	9.5-10.0	Direct Push	BC Labs	1838103-02		X	
VW06	12/7/2018	SG-VW06A-01	SG	N	6.21	0.71	5.5	Glass Syringe	TEG	NA			X
VW06	12/5/2018	SG-VW06B-01	SG	N	15.21	0.71	14.5	Glass Syringe	TEG	NA			X
VW06	12/3/2018	SO-VW06-01	SO	N	2.0-2.5	0.71	1.29-1.79	Hand Auger	BC Labs	1837609-01		X	
VW06	12/4/2018	SO-VW06-02	SO	N	5.71-6.21	0.71	5.0-5.5	Direct Push	BC Labs	1838103-11		X	
VW06	12/4/2018	SO-VW06-03	SO	N	10.21-10.71	0.71	9.5-10.0	Direct Push	BC Labs	1838103-12		X	
VW07	12/7/2018	SG-VW07A-01	SG	N	6.0	0.5	5.5	Glass Syringe	TEG	NA			X
VW07	12/5/2018	SG-VW07B-01	SG	N	15.0	0.5	14.5	Glass Syringe	TEG	NA			X
VW07	12/4/2018	SO-VW07-01	SO	N	2.0-2.5	0.5	1.5-2.0	Hand Auger	BC Labs	1838102-05		X	
VW07	12/5/2018	SO-VW07-02	SO	N	8.0-8.5	0.5	7.5-8.0	Direct Push	BC Labs	1838104-11		X	

Table 3-1. Current Investigation Soil Gas, Soil, and Groundwater Sample Summary
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Location ID	Sampling Date	Field Sample ID	Matrix	Sample Type	Depth (feet bgs)	Pavement Thickness (feet)	Depth Below Pavement (feet)	Sample Collection Method	Laboratory	Laboratory Sample ID	Laboratory Analyses		
											Arsenic (SW6020)	VOCs[a] (SW8260B)	VOCs[b] (SW8260B or TO-15)
VW07	12/5/2018	SO-VW07-03	SO	N	10.0-10.5	0.5	9.5-10.0	Direct Push	BC Labs	1838104-12		X	
VW08	12/7/2018	SG-VW08A-01	SG	N	5.83	0.33	5.5	Glass Syringe	TEG	NA			X
VW08	12/5/2018	SG-VW08B-01	SG	N	14.83	0.33	14.5	Glass Syringe	TEG	NA			X
VW08	12/3/2018	SO-VW08-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1837609-04		X	
VW08	12/3/2018	SO-VW08-01-Dup	SO	FD	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1837609-05		X	
VW08	12/4/2018	SO-VW08-02	SO	N	5.83-6.33	0.33	5.5-6.0	Direct Push	BC Labs	1838103-09		X	
VW08	12/4/2018	SO-VW08-03	SO	N	9.83-10.33	0.33	9.5-10.0	Direct Push	BC Labs	1838103-10		X	
VW09	12/7/2018	SG-VW09A-01	SG	N	6.0	0.5	5.5	Glass Syringe	TEG	NA			X
VW09	12/5/2018	SG-VW09B-01	SG	N	15.0	0.5	14.5	Glass Syringe	TEG	NA			X
VW09	12/4/2018	SO-B13-01	SO	N	2.0-2.5	0.5	1.5-2.0	Hand Auger	BC Labs	1838102-03	X		
VW09	12/4/2018	SO-VW09-01	SO	N	2.0-2.5	0.5	1.5-2.0	Hand Auger	BC Labs	1838102-04		X	
VW09	12/5/2018	SO-B13-02	SO	N	5.5-6.0	0.5	5.0-5.5	Direct Push	BC Labs	1838104-05	X		
VW09	12/5/2018	SO-VW09-02	SO	N	5.5-6.0	0.5	5.0-5.5	Direct Push	BC Labs	1838104-04		X	
VW09	12/5/2018	SO-VW09-03	SO	N	10.0-10.5	0.5	9.5-10.0	Direct Push	BC Labs	1838104-06		X	
VW10	12/7/2018	SG-VW10A-01	SG	N	5.83	0.33	5.5	Glass Syringe	TEG	NA			X
VW10	12/5/2018	SG-VW10B-01	SG	N	14.83	0.33	14.5	Glass Syringe	TEG	NA			X
VW10	12/3/2018	SO-VW10-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1837609-07		X	
VW10	12/4/2018	SO-VW10-02	SO	N	5.33-5.83	0.33	5.0-5.5	Direct Push	BC Labs	1838103-04		X	
VW10	12/4/2018	SO-VW10-02-Dup	SO	FD	5.33-5.83	0.33	5.0-5.5	Direct Push	BC Labs	1838103-05		X	
VW10	12/4/2018	SO-VW10-03	SO	N	9.83-10.33	0.33	9.5-10.0	Direct Push	BC Labs	1838103-06		X	
VW11	12/7/2018	SG-VW11A-01	SG	N	5.83	0.33	5.5	Glass Syringe	TEG	NA			X
VW11	12/5/2018	SG-VW11B-01	SG	N	14.83	0.33	14.5	Glass Syringe	TEG	NA			X
VW11	12/3/2018	SO-VW11-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1837609-03		X	
VW11	12/4/2018	SO-VW11-02	SO	N	5.33-5.83	0.33	5.0-5.5	Direct Push	BC Labs	1838103-07		X	
VW11	12/4/2018	SO-VW11-03	SO	N	9.83-10.33	0.33	9.5-10.0	Direct Push	BC Labs	1838103-08		X	
VW12/B05	3/18/2019	SG-VW12A-01	SG	N	5.83	0.33	5.5	Summa	BC Labs	1908647-03			X
VW12/B05	12/7/2018	SG-VW12B-01	SG	N	14.83	0.33	14.5	Glass Syringe	TEG	NA			X
VW12/B05	12/6/2018	SO-B05-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1838186-01	X		
VW12/B05	12/6/2018	SO-VW12-01	SO	N	2.0-2.5	0.33	1.67-2.17	Hand Auger	BC Labs	1838186-02		X	
VW12/B05	12/7/2018	SO-VW12-02	SO	N	5.33-5.83	0.33	5.0-5.5	Direct Push	BC Labs	1838293-01	X	X	
VW12/B05	12/7/2018	SO-VW12-03	SO	N	9.83-10.33	0.33	9.5-10.0	Direct Push	BC Labs	1838293-02		X	
VW13	3/18/2019	SG-VW13A-01	SG	N	5.83	0.33	5.5	Summa	BC Labs	1908647-01			X
VW13	3/18/2019	SG-VW13A-02	SG	FD	5.83	0.33	5.5	Summa	BC Labs	1908647-02			X
VW13	12/31/2018	SO-VW13-01	SO	N	1.75-2.25	0.25	1.5-2.0	Hand Auger	BC Labs	1900019-02		X	
VW13	12/31/2018	SO-VW13-02	SO	N	5.25-5.75	0.25	5.0-5.5	Direct Push	BC Labs	1900019-03		X	
VW13	12/31/2018	SO-VW13-03	SO	N	9.75-10.25	0.25	9.5-10.0	Direct Push	BC Labs	1900019-04		X	

Table 3-1. Current Investigation Soil Gas, Soil, and Groundwater Sample Summary
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Location ID	Sampling Date	Field Sample ID	Matrix	Sample Type	Depth (feet bgs)	Pavement Thickness (feet)	Depth Below Pavement (feet)	Sample Collection Method	Laboratory	Laboratory Sample ID	Laboratory Analyses		
											Arsenic (SW6020)	VOCs[a] (SW8260B)	VOCs[b] (SW8260B or TO-15)
NA	12/7/2018	TB-1	WQ	TB	NA	NA	NA	NA	BC Labs	1838293-04		X	
NA	12/10/2018	TB-2	WQ	TB	NA	NA	NA	NA	BC Labs	1838491-03		X	

Notes:

[a] VOCs analytes include PCE and associated degradation products.

[b] VOCs analytes include PCE, associated degradation products, and leak detection compound.

BC Labs = BC Laboratories, Inc.

bgs = below ground surface

FD = field duplicate sample

GW = groundwater

ID = identification

N = normal sample

NA = not applicable

SG = soil gas

SO = soil

TB = trip blank

TEG = TEG Northern California

VOC = volatile organic compound

WQ = water quality control

TABLE 4-1. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL GAS
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			Location ID	VW01	VW01	VW02	VW02	VW03	VW03
			Sample ID	SG-VW01A-01	SG-VW01B-01	SG-VW02A-01	SG-VW02B-01	SG-VW03A-01	SG-VW03A-02
			Sample Date	12/7/2018	12/5/2018	12/7/2018	12/5/2018	12/7/2018	12/7/2018
			Sample Type	Normal	Normal	Normal	Normal	Normal	Field Duplicate
			Sample Depth (feet bgs)	5.83	14.83	6.17	15.17	6.17	6.17
			Pavement Thickness (feet)	0.33	0.33	0.67	0.67	0.67	0.67
			Depth Below Pavement (feet)	5.5	14.5	5.5	14.5	5.5	5.5
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]						
Chloroethane	µg/m^3	10,000,000	44,000,000	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)
1,1-Dichloroethane	µg/m^3	1,800	7,700	ND (<19)	ND (<19)	ND (<19)	ND (<19)	ND (<19)	ND (<19)
1,2-Dichloroethane	µg/m^3	110	470	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)
1,1-Dichloroethene	µg/m^3	73,000	310,000	ND (<15)	ND (<15)	ND (<15)	ND (<15)	ND (<15)	ND (<15)
cis-1,2-Dichloroethene	µg/m^3	8,300	35,000	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)
trans-1,2-Dichloroethene	µg/m^3	83,000	350,000	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)
1,1,1,2-Tetrachloroethane	µg/m^3	380	1,700	ND (<31)	ND (<31)	ND (<31)	ND (<31)	ND (<31)	ND (<31)
1,1,2,2-Tetrachloroethane	µg/m^3	48	210	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)
Tetrachloroethene (PCE)	µg/m^3	460	2,000	**320**	**2,000**	**390**	**970**	ND (<44)	ND (<44)
1,1,1-Trichloroethane	µg/m^3	1,000,000	4,400,000	ND (<29)	ND (<29)	ND (<29)	ND (<29)	ND (<29)	ND (<29)
1,1,2-Trichloroethane	µg/m^3	180	770	ND (<47)	ND (<47)	ND (<47)	ND (<47)	ND (<47)	ND (<47)
Trichloroethene (TCE)	µg/m^3	480	3,000	ND (<22)	ND (<22)	ND (<22)	ND (<22)	ND (<22)	ND (<22)
Vinyl Chloride	µg/m^3	9.5	160	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)

TABLE 4-1. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL GAS
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			Location ID	VW04	VW04	VW05	VW05	VW05	VW06
			Sample ID	SG-VW04A-01	SG-VW04B-01	SG-VW05A-01	SG-VW05B-01	SG-VW05B-02	SG-VW06A-01
			Sample Date	12/7/2018	12/5/2018	12/7/2018	12/5/2018	12/5/2018	12/7/2018
			Sample Type	Normal	Normal	Normal	Normal	Field Duplicate	Normal
			Sample Depth (feet bgs)	5.83	14.83	5.83	14.83	14.83	6.21
			Pavement Thickness (feet)	0.33	0.33	0.33	0.33	0.33	0.71
			Depth Below Pavement (feet)	5.5	14.5	5.5	14.5	14.5	5.5
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]						
Chloroethane	µg/m^3	10,000,000	44,000,000	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)
1,1-Dichloroethane	µg/m^3	1,800	7,700	ND (<19)	ND (<19)	ND (<19)	ND (<19)	ND (<19)	ND (<19)
1,2-Dichloroethane	µg/m^3	110	470	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)
1,1-Dichloroethene	µg/m^3	73,000	310,000	ND (<15)	ND (<15)	ND (<15)	ND (<15)	ND (<15)	ND (<15)
cis-1,2-Dichloroethene	µg/m^3	8,300	35,000	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)
trans-1,2-Dichloroethene	µg/m^3	83,000	350,000	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)
1,1,1,2-Tetrachloroethane	µg/m^3	380	1,700	ND (<31)	ND (<31)	ND (<31)	ND (<31)	ND (<31)	ND (<31)
1,1,2,2-Tetrachloroethane	µg/m^3	48	210	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)
Tetrachloroethene (PCE)	µg/m^3	460	2,000	**1,200**	**5,900**	**5,100**	**3,900**	**3,800**	**99 J**
1,1,1-Trichloroethane	µg/m^3	1,000,000	4,400,000	ND (<29)	ND (<29)	ND (<29)	ND (<29)	ND (<29)	ND (<29)
1,1,2-Trichloroethane	µg/m^3	180	770	ND (<47)	ND (<47)	ND (<47)	ND (<47)	ND (<47)	ND (<47)
Trichloroethene (TCE)	µg/m^3	480	3,000	ND (<22)	**34 J**	**25 J**	**140**	**130**	ND (<22)
Vinyl Chloride	µg/m^3	9.5	160	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)

TABLE 4-1. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL GAS
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			Location ID	VW06	VW07	VW07	VW08	VW08
			Sample ID	SG-VW06B-01	SG-VW07A-01	SG-VW07B-01	SG-VW08A-01	SG-VW08B-01
			Sample Date	12/5/2018	12/7/2018	12/5/2018	12/7/2018	12/5/2018
			Sample Type	Normal	Normal	Normal	Normal	Normal
			Sample Depth (feet bgs)	15.21	6.0	15.0	5.83	14.83
			Pavement Thickness (feet)	0.71	0.5	0.5	0.33	0.33
			Depth Below Pavement (feet)	14.5	5.5	14.5	5.5	14.5
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]					
Chloroethane	µg/m^3	10,000,000	44,000,000	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)
1,1-Dichloroethane	µg/m^3	1,800	7,700	ND (<19)	ND (<19)	ND (<19)	ND (<19)	ND (<19)
1,2-Dichloroethane	µg/m^3	110	470	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)
1,1-Dichloroethene	µg/m^3	73,000	310,000	ND (<15)	ND (<15)	ND (<15)	ND (<15)	ND (<15)
cis-1,2-Dichloroethene	µg/m^3	8,300	35,000	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)
trans-1,2-Dichloroethene	µg/m^3	83,000	350,000	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)
1,1,1,2-Tetrachloroethane	µg/m^3	380	1,700	ND (<31)	ND (<31)	ND (<31)	ND (<31)	ND (<31)
1,1,2,2-Tetrachloroethane	µg/m^3	48	210	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)
Tetrachloroethene (PCE)	µg/m^3	460	2,000	**210**	**96 J**	**560**	**82 J**	**510**
1,1,1-Trichloroethane	µg/m^3	1,000,000	4,400,000	ND (<29)	ND (<29)	ND (<29)	ND (<29)	ND (<29)
1,1,2-Trichloroethane	µg/m^3	180	770	ND (<47)	ND (<47)	ND (<47)	ND (<47)	ND (<47)
Trichloroethene (TCE)	µg/m^3	480	3,000	ND (<22)	ND (<22)	ND (<22)	ND (<22)	ND (<22)
Vinyl Chloride	µg/m^3	9.5	160	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)

TABLE 4-1. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL GAS
(Page 4 of 5)

			Location ID	VW09	VW09	VW10	VW10	VW11	VW11
			Sample ID	SG-VW09A-01	SG-VW09B-01	SG-VW10A-01	SG-VW10B-01	SG-VW11A-01	SG-VW11B-01
			Sample Date	12/7/2018	12/5/2018	12/7/2018	12/5/2018	12/7/2018	12/5/2018
			Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
			Sample Depth (feet bgs)	6.0	15.0	5.83	14.83	5.83	14.83
			Pavement Thickness (feet)	0.5	0.5	0.33	0.33	0.33	0.33
			Depth Below Pavement (feet)	5.5	14.5	5.5	14.5	5.5	14.5
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]						
Chloroethane	µg/m^3	10,000,000	44,000,000	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)
1,1-Dichloroethane	µg/m^3	1,800	7,700	ND (<19)	ND (<19)	ND (<19)	ND (<19)	ND (<19)	ND (<19)
1,2-Dichloroethane	µg/m^3	110	470	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)
1,1-Dichloroethene	µg/m^3	73,000	310,000	ND (<15)	ND (<15)	ND (<15)	ND (<15)	ND (<15)	ND (<15)
cis-1,2-Dichloroethene	µg/m^3	8,300	35,000	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)	ND (<36)
trans-1,2-Dichloroethene	µg/m^3	83,000	350,000	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)	ND (<26)
1,1,1,2-Tetrachloroethane	µg/m^3	380	1,700	ND (<31)	ND (<31)	ND (<31)	ND (<31)	ND (<31)	ND (<31)
1,1,2,2-Tetrachloroethane	µg/m^3	48	210	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)	ND (<3.5)
Tetrachloroethene (PCE)	µg/m^3	460	2,000	ND (<44)	**100**	**1,100**	**4,200**	**740**	**2,600**
1,1,1-Trichloroethane	µg/m^3	1,000,000	4,400,000	ND (<29)	ND (<29)	ND (<29)	ND (<29)	ND (<29)	ND (<29)
1,1,2-Trichloroethane	µg/m^3	180	770	ND (<47)	ND (<47)	ND (<47)	ND (<47)	ND (<47)	ND (<47)
Trichloroethene (TCE)	µg/m^3	480	3,000	ND (<22)	ND (<22)	ND (<22)	ND (<22)	ND (<22)	ND (<22)
Vinyl Chloride	µg/m^3	9.5	160	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)	ND (<2.6)

TABLE 4-1. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL GAS
(Page 5 of 5)

			Location ID	VW12	VW12	VW13	VW13
			Sample ID	SG-VW12A-01	SG-VW12B-01	SG-VW13A-01	SG-VW13A-02
			Sample Date	3/18/2019	12/7/2018	3/18/2019	3/18/2019
			Sample Type	Normal	Normal	Normal	Field Duplicate
			Sample Depth (feet bgs)	5.83	14.83	5.83	5.83
			Pavement Thickness (feet)	0.33	0.33	0.33	0.33
			Depth Below Pavement (feet)	5.5	14.5	5.5	5.5
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]				
Chloroethane	µg/m^3	10,000,000	44,000,000	ND (<4.9)	ND (<26)	ND (<4.9)	ND (<4.4)
1,1-Dichloroethane	µg/m^3	1,800	7,700	ND (<4.3)	ND (<19)	ND (<4.3)	ND (<3.8)
1,2-Dichloroethane	µg/m^3	110	470	ND (<3.2)	ND (<36)	ND (<3.2)	ND (<2.9)
1,1-Dichloroethene	µg/m^3	73,000	310,000	ND (<3.1)	ND (<15)	ND (<3.1)	ND (<2.7)
cis-1,2-Dichloroethene	µg/m^3	8,300	35,000	ND (<3.5)	ND (<36)	ND (<3.5)	ND (<3.1)
trans-1,2-Dichloroethene	µg/m^3	83,000	350,000	ND (<3.1)	ND (<26)	ND (<3.1)	ND (<2.7)
1,1,1,2-Tetrachloroethane	µg/m^3	380	1,700	ND (<8.0)	ND (<31)	ND (<8.0)	ND (<7.1)
1,1,2,2-Tetrachloroethane	µg/m^3	48	210	ND (<17)	ND (<3.5)	ND (<17)	ND (<15)
Tetrachloroethene (PCE)	µg/m^3	460	2,000	**97**	**270**	**400**	**360**
1,1,1-Trichloroethane	µg/m^3	1,000,000	4,400,000	ND (<4.3)	ND (<29)	ND (<4.3)	ND (<3.8)
1,1,2-Trichloroethane	µg/m^3	180	770	ND (<4.3)	ND (<47)	ND (<4.3)	ND (<3.8)
Trichloroethene (TCE)	µg/m^3	480	3,000	ND (<5.8)	ND (<22)	ND (<5.8)	ND (<5.2)
Vinyl Chloride	µg/m^3	9.5	160	ND (<4.4)	ND (<2.6)	ND (<4.4)	ND (<3.9)

Notes:

Concentrations detected above the laboratory MDL shown in **bold**.

Concentration exceeds residential SL.

Concentration exceeds residential and commercial/industrial SLs.

[(a)] SLs for ambient air from HERO HHRA Note 3 (DTSC, 2019) modified using a 0.001 attenuation factor for future residential and existing commercial/industrial indoor air exposure (sample at contaminant source) (DTSC, 2011).

< = less than
µg/m^3 = micrograms per liter
bgs = below ground surface
DTSC = California Department of Toxic Substances Control
ID = identification
HERO = Human and Ecological Risk Office
HHRA = human health risk assessment
J = estimated; detected analyte
MDL = method detection limit
ND = not detected above laboratory MDL
SL = screening level

TABLE 4-2. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR ARSENIC IN SOIL
(Page 1 of 4)

				Location ID	B01	B02	B03	B04	B04	VW12/B05	VW12/B05	VW04/B06	VW04/B06
				Sample ID	SO-B01-01	SO-B02-01	SO-B03-01	SO-B04-01	SO-B04-02	SO-B05-01	SO-VW12-02	SO-B06-01	SO-B06-02
				Sample Date	12/4/2018	12/5/2018	12/5/2018	12/6/2018	12/6/2018	12/6/2018	12/7/2018	12/3/2018	12/4/2018
				Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
				Sample Depth (feet bgs)	1.75-2.25	1.75-2.25	1.75-2.25	2.0-2.5	5.5-6.0	2.0-2.5	5.0-5.5	2.0-2.5	5.0-5.5
				Pavement Thickness (feet)	0.25	0.25	0.25	0.33	0.33	0.33	0.33	0.33	0.33
				Depth Below Pavement (feet)	1.5-2.0	1.5-2.0	1.5-2.0	1.67-2.17	5.17-5.67	1.67-2.17	4.67-5.17	1.67-2.17	4.67-5.17
Analyte	Units	Residential SL[a]	Commercial/ Industrial SL[a]	Leaching to Groundwater ESL[b]									
Arsenic	mg/kg	0.11	0.36	NE	**6.4**	**6.3**	**8.2**	**16**	**3.3**	**3.7**	**3.5**	**3.6**	**5.1**

TABLE 4-2. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR ARSENIC IN SOIL
(Page 2 of 4)

				Location ID	VW03/B07	VW03/B07	B08	B08	VW05/B09	VW05/B09	B10	B10	B11
				Sample ID	SO-B07-01	SO-B07-02	SO-B08-01	SO-B08-02	SO-B09-01	SO-B09-02	SO-B10-01	SO-B10-02	SO-B11-01
				Sample Date	12/4/2018	12/5/2018	12/5/2018	12/5/2018	12/3/2018	12/4/2018	12/5/2018	12/5/2018	12/6/2018
				Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
				Sample Depth (feet bgs)	1.5-2.0	5.0-5.5	1.75-2.25	5.25-5.75	2.0-2.5	5.0-5.5	2.17-2.67	5.67-6.0	2.5-3.0
				Pavement Thickness (feet)	0.67	0.67	0.25	0.25	0.33	0.33	0.67	0.67	1.29
				Depth Below Pavement (feet)	1.33-1.83	4.83-5.33	1.5-2.0	5.0-5.5	1.67-2.17	4.67-5.17	1.5-2.0	5.0-5.33	1.21-1.71
Analyte	Units	Residential SL[a]	Commercial/ Industrial SL[a]	Leaching to Groundwater ESL[b]									
Arsenic	mg/kg	0.11	0.36	NE	**2.7**	**4.9**	**67**	**4.4**	**3.4**	**5.2**	**240**	**9.1**	**260**

TABLE 4-2. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR ARSENIC IN SOIL
(Page 3 of 4)

				Location ID	B11	B12	B12	VW09/B13	VW09/B13	B14	B14	B15	B15
				Sample ID	SO-B11-02	SO-B12-01	SO-B12-02	SO-B13-01	SO-B13-02	SO-B14-01	SO-B14-02	SO-B15-01	SO-B15-02
				Sample Date	12/6/2018	12/6/2018	12/31/2018	12/4/2018	12/5/2018	12/4/2018	12/4/2018	12/5/2018	12/5/2018
				Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
				Sample Depth (feet bgs)	5.0-5.5	1.75-2.25	5.0-5.5	2.0-2.5	5.0-5.5	2.17-2.67	5.67-6.0	2.17-2.67	5.67-6.0
				Pavement Thickness (feet)	1.29	0.33	0.33	0.5	0.5	0.67	0.67	0.67	0.67
				Depth Below Pavement (feet)	3.71-4.21	1.67-2.17	4.67-5.17	1.5-2.0	4.5-5.0	1.5-2.0	5.0-5.33	1.5-2.0	5.0-5.33
Analyte	Units	Residential SL[a]	Commercial/ Industrial SL[a]	Leaching to Groundwater ESL[b]									
Arsenic	mg/kg	0.11	0.36	NE	**190**	**13**	**7.3**	**8.7**	**3.9**	**13**	**4.4**	**140**	**6.3**

TABLE 4-2. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR ARSENIC IN SOIL
(Page 4 of 4)

				Location ID	B16	B16	B16	B17	B17	B17
				Sample ID	SO-B16-01	SO-B16-02	SO-B16-03	SO-B17-01	SO-B17-02	SO-B17-03
				Sample Date	12/5/2018	12/5/2018	12/5/2018	12/5/2018	12/5/2018	12/5/2018
				Sample Type	Normal	Normal	Field Duplicate	Normal	Normal	Field Duplicate
				Sample Depth (feet bgs)	2.17-2.67	5.67-6.0	5.67-6.0	1.5-2.0	5.0-5.5	5.0-5.5
				Pavement Thickness (feet)	0.67	0.67	0.67	0	0	0
				Depth Below Pavement (feet)	1.5-2.0	5.0-5.33	5.0-5.33	1.5-2.0	5.0-5.5	5.0-5.5
Analyte	Units	Residential SL[a]	Commercial/ Industrial SL[a]	Leaching to Groundwater ESL[b]						
Arsenic	mg/kg	0.11	0.36	NE	**280**	**3.8**	**3.4**	**45**	**270**	**330**

Notes:

Concentrations detected above the laboratory MDL shown in **bold.**

Concentration exceeds residential and commercial/industrial SLs.

[a] Residential and commercial/industrial SLs from HERO HHRA Note 3 (DTSC, 2019). Cancer Endpoint.

[b] A Leaching to Groundwater (drinking water) ESL is not established for arsenic(SWRCB, 2019).

bgs = below ground surface
DTSC = California Department of Toxic Substances Control
ESL = Environmental Screening Level
HERO = Human and Ecological Risk Office
HHRA = human health risk assessment
ID = identification
MDL = method detection limit
mg/kg = milligrams per kilogram
NE = not established
SL = Screening Level
SWRCB = California State Water Resources Control Board

TABLE 4-3. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL
(Page 1 of 8)

				Location ID	VW01	VW01	VW01	VW02	VW02
				Sample ID	SO-VW01-01	SO-VW01-02	SO-VW01-03	SO-VW02-01	SO-VW02-02
				Sample Date	12/4/2018	12/5/2018	12/5/2018	12/3/2018	12/5/2018
				Sample Type	Normal	Normal	Normal	Normal	Normal
				Sample Depth (feet bgs)	2.0-2.5	5.85-6.33	9.83-10.33	2.0-2.5	6.17-6.67
				Pavement Thickness (feet)	0.33	0.33	0.33	0.67	0.67
				Depth Below Pavement (feet)	1.67-2.17	5.5-6.0	9.5-10.0	1.33-1.83	5.5-6.0
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]	Leaching to Groundwater ESL[(b)]					
Chloroethane	mg/kg	*(14,000)*	*(57,000)*	1.2	ND (<0.0017)	ND (<0.0011)	ND (<0.0014)	ND (<0.0010 UJ)	ND (<0.0011)
1,1-Dichloroethane	mg/kg	3.6	16	0.20	ND (<0.0017)	ND (<0.0011)	ND (<0.0014)	ND (<0.0010)	ND (<0.0011)
1,2-Dichloroethane	mg/kg	0.46	2.0	0.007	ND (<0.0010)	ND (<0.00068)	ND (<0.00085)	ND (<0.00062)	ND (<0.00067)
1,1-Dichloroethene	mg/kg	*(83)*	*(350)*	0.54	ND (<0.0014)	ND (<0.00096)	ND (<0.0012)	ND (<0.00088)	ND (<0.00095)
cis-1,2-Dichloroethene	mg/kg	*(18)*	*(84)*	0.19	ND (<0.0016)	ND (<0.0010)	ND (<0.0013)	ND (<0.00095)	ND (<0.0010)
trans-1,2-Dichloroethene	mg/kg	*(130)*	*(600)*	0.65	ND (<0.0017)	ND (<0.0011)	ND (<0.0014)	ND (<0.0010)	ND (<0.0011)
1,1,1,2-Tetrachloroethane	mg/kg	2.0	8.8	0.017	ND (<0.0013)	ND (<0.00088)	ND (<0.0011)	ND (<0.00081)	ND (<0.00087)
1,1,2,2-Tetrachloroethane	mg/kg	0.6	2.7	0.018	ND (<0.0013)	ND (<0.00088)	ND (<0.0011)	ND (<0.00081)	ND (<0.00087)
Tetrachloroethene (PCE)	mg/kg	0.59	2.7	0.08	ND (<0.0016)	ND (<0.0010)	ND (<0.0013)	ND (<0.00095)	ND (<0.0010)
1,1,1-Trichloroethane	mg/kg	*(1,700)*	*(7,200)*	7.0	ND (<0.0013)	ND (<0.00088)	ND (<0.0011)	ND (<0.00081)	ND (<0.00087)
1,1,2-Trichloroethane	mg/kg	1.1	5.0	0.076	ND (<0.00093)	ND (<0.00062)	ND (<0.00077)	ND (<0.00056)	ND (<0.00061)
Trichloroethene (TCE)	mg/kg	0.94	6.0	0.085	ND (<0.0013)	ND (<0.00088)	ND (<0.0011)	ND (<0.00081)	ND (<0.00087)
Vinyl Chloride	mg/kg	0.0082	0.15	0.0015	ND (<0.0019)	ND (<0.0013)	ND (<0.0016)	ND (<0.0012)	ND (<0.0013)

TABLE 4-3. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL
(Page 2 of 8)

				Location ID	VW02	VW02	VW03/B07	VW03/B07	VW04
				Sample ID	SO-VW02-02-Dup	SO-VW02-03	SO-VW03-01	SO-VW03-02	SO-VW04-01
				Sample Date	12/5/2018	12/5/2018	12/4/2018	12/5/2018	12/3/2018
				Sample Type	Field Duplicate	Normal	Normal	Normal	Normal
				Sample Depth (feet bgs)	6.17-6.67	10.17-10.67	2.0-2.5	6.17-6.67	2.0-2.5
				Pavement Thickness (feet)	0.67	0.67	0.67	0.67	0.33
				Depth Below Pavement (feet)	5.5-6.0	9.5-10.0	1.33-1.83	5.5-6.0	1.67-2.17
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]	Leaching to Groundwater ESL[(b)]					
Chloroethane	mg/kg	*(14,000)*	*(57,000)*	1.2	ND (<0.0012)	ND (<0.0011)	ND (<0.0012)	ND (<0.0010)	ND (<0.00095 UJ)
1,1-Dichloroethane	mg/kg	3.6	16	0.20	ND (<0.0012)	ND (<0.0011)	ND (<0.0012)	ND (<0.0010)	ND (<0.00095)
1,2-Dichloroethane	mg/kg	0.46	2.0	0.007	ND(<0.00071)	ND (<0.00068)	ND(<0.00072)	ND (<0.00062)	ND (<0.00058)
1,1-Dichloroethene	mg/kg	*(83)*	*(350)*	0.54	ND (<0.0010)	ND (<0.00096)	ND (<0.0010)	ND (<0.00087)	ND (<0.00082)
cis-1,2-Dichloroethene	mg/kg	*(18)*	*(84)*	0.19	ND (<0.0011)	ND (<0.0010)	ND (<0.0011)	ND (<0.00094)	ND (<0.00089)
trans-1,2-Dichloroethene	mg/kg	*(130)*	*(600)*	0.65	ND (<0.0012)	ND (<0.0011)	ND (<0.0012)	ND (<0.0010)	ND (<0.00095)
1,1,1,2-Tetrachloroethane	mg/kg	2.0	8.8	0.017	ND (<0.00092)	ND (<0.00088)	ND (<0.00093)	ND (<0.00080)	ND (<0.00075)
1,1,2,2-Tetrachloroethane	mg/kg	0.6	2.7	0.018	ND (<0.00092)	ND (<0.00088)	ND (<0.00093)	ND (<0.00080)	ND (<0.00075)
Tetrachloroethene (PCE)	mg/kg	0.59	2.7	0.08	ND (<0.0011)	ND (<0.0010)	ND (<0.0011)	ND (<0.00094)	ND (<0.00089)
1,1,1-Trichloroethane	mg/kg	*(1,700)*	*(7,200)*	7.0	ND (<0.00092)	ND (<0.00088)	ND (<0.00093)	ND (<0.00080)	ND (<0.00075)
1,1,2-Trichloroethane	mg/kg	1.1	5.0	0.076	ND (<0.00064)	ND (<0.00061)	ND (<0.00065)	ND (<0.00056)	ND (<0.00053)
Trichloroethene (TCE)	mg/kg	0.94	6.0	0.085	ND (<0.00092)	ND (<0.00088)	ND (<0.00093)	ND (<0.00080)	ND (<0.00075)
Vinyl Chloride	mg/kg	0.0082	0.15	0.0015	ND (<0.0013)	ND (<0.0013)	ND (<0.0014)	ND (<0.0012)	ND (<0.0011)

TABLE 4-3. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL
(Page 3 of 8)

				Location ID	VW04	VW04	VW05/B09	VW05/B09	VW05/B09
				Sample ID	SO-VW04-02	SO-VW04-03	SO-VW05-01	SO-VW05-02	SO-VW05-03
				Sample Date	12/4/2018	12/4/2018	12/3/2018	12/4/2018	12/4/2018
				Sample Type	Normal	Normal	Normal	Normal	Normal
				Sample Depth (feet bgs)	5.33-5.83	9.83-10.33	2.0-2.5	5.33-5.83	9.83-10.33
				Pavement Thickness (feet)	0.33	0.33	0.33	0.33	0.33
				Depth Below Pavement (feet)	5.0-5.5	9.5-10.0	1.67-2.17	5.0-5.5	9.5-10.0
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]	Leaching to Groundwater ESL[(b)]					
Chloroethane	mg/kg	*(14,000)*	*(57,000)*	1.2	ND (<0.0011)	ND (<0.0012)	ND (<0.0010 UJ)	ND (<0.0012)	ND (<0.0014)
1,1-Dichloroethane	mg/kg	3.6	16	0.20	ND (<0.0011)	ND (<0.0012)	ND (<0.0010)	ND (<0.0012)	ND (<0.0014)
1,2-Dichloroethane	mg/kg	0.46	2.0	0.007	ND (<0.00065)	ND(<0.00072)	ND (<0.00063)	ND (<0.00075)	ND (<0.00085)
1,1-Dichloroethene	mg/kg	*(83)*	*(350)*	0.54	ND (<0.00091)	ND (<0.0010)	ND (<0.00089)	ND (<0.0011)	ND (<0.0012)
cis-1,2-Dichloroethene	mg/kg	*(18)*	*(84)*	0.19	ND (<0.00099)	ND (<0.0011)	ND (<0.00097)	ND (<0.0012)	ND (<0.0013)
trans-1,2-Dichloroethene	mg/kg	*(130)*	*(600)*	0.65	ND (<0.0011)	ND (<0.0012)	ND (<0.0010)	ND (<0.0012)	ND (<0.0014)
1,1,1,2-Tetrachloroethane	mg/kg	2.0	8.8	0.017	ND (<0.00084)	ND (<0.00093)	ND (<0.00082)	ND (<0.00098)	ND (<0.0011)
1,1,2,2-Tetrachloroethane	mg/kg	0.6	2.7	0.018	ND (<0.00084)	ND (<0.00093)	ND (<0.00082)	ND (<0.00098)	ND (<0.0011)
Tetrachloroethene (PCE)	mg/kg	0.59	2.7	0.08	ND (<0.00099)	ND (<0.0011)	**0.0020 J**	ND (<0.0012)	ND (<0.0013)
1,1,1-Trichloroethane	mg/kg	*(1,700)*	*(7,200)*	7.0	ND (<0.00084)	ND (<0.00093)	ND (<0.00082)	ND (<0.00098)	ND (<0.0011)
1,1,2-Trichloroethane	mg/kg	1.1	5.0	0.076	ND (<0.00059)	ND (<0.00065)	ND (<0.00057)	ND (<0.00068)	ND (<0.00077)
Trichloroethene (TCE)	mg/kg	0.94	6.0	0.085	ND (<0.00084)	ND (<0.00093)	ND (<0.00082)	ND (<0.00098)	ND (<0.0011)
Vinyl Chloride	mg/kg	0.0082	0.15	0.0015	ND (<0.0012)	ND (<0.0014)	ND (<0.0012)	ND (<0.0014)	ND (<0.0016)

TABLE 4-3. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL
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				Location ID	VW06	VW06	VW06	VW07	VW07
				Sample ID	SO-VW06-01	SO-VW06-02	SO-VW06-03	SO-VW07-01	SO-VW07-02
				Sample Date	12/3/2018	12/4/2018	12/4/2018	12/4/2018	12/5/2018
				Sample Type	Normal	Normal	Normal	Normal	Normal
				Sample Depth (feet bgs)	2.0-2.5	5.71-6.21	10.21-10.71	2.0-2.5	8.0-8.5
				Pavement Thickness (feet)	0.71	0.71	0.71	0.5	0.5
				Depth Below Pavement (feet)	1.29-1.79	5.0-5.5	9.5-10.0	1.5-2.0	7.5-8.0
Analyte	Units	Residential SL[a]	Commercial/ Industrial SL[a]	Leaching to Groundwater ESL[b]					
Chloroethane	mg/kg	*(14,000)*	*(57,000)*	1.2	ND (<0.0011 UJ)	ND (<0.00096)	ND (<0.0014)	ND (<0.00099)	ND (<0.00091)
1,1-Dichloroethane	mg/kg	3.6	16	0.20	ND (<0.0011)	ND (<0.00096)	ND (<0.0014)	ND (<0.00099)	ND (<0.00091)
1,2-Dichloroethane	mg/kg	0.46	2.0	0.007	ND (<0.00064)	ND (<0.00058)	ND (<0.00085)	ND (<0.00060)	ND (<0.00055)
1,1-Dichloroethene	mg/kg	*(83)*	*(350)*	0.54	ND (<0.00091)	ND (<0.00082)	ND (<0.0012)	ND (<0.00085)	ND (<0.00078)
cis-1,2-Dichloroethene	mg/kg	*(18)*	*(84)*	0.19	ND (<0.00099)	ND (<0.00089)	ND (<0.0013)	ND (<0.00092)	ND (<0.00084)
trans-1,2-Dichloroethene	mg/kg	*(130)*	*(600)*	0.65	ND (<0.0011)	ND (<0.00096)	ND (<0.0014)	ND (<0.00099)	ND (<0.00091)
1,1,1,2-Tetrachloroethane	mg/kg	2.0	8.8	0.017	ND (<0.00083)	ND (<0.00075)	ND (<0.0011)	ND (<0.00078)	ND (<0.00071)
1,1,2,2-Tetrachloroethane	mg/kg	0.6	2.7	0.018	ND (<0.00083)	ND (<0.00075)	ND (<0.0011)	ND (<0.00078)	ND (<0.00071)
Tetrachloroethene (PCE)	mg/kg	0.59	2.7	0.08	ND (<0.00099)	ND (<0.00089)	ND (<0.0013)	ND (<0.00092)	ND (<0.00084)
1,1,1-Trichloroethane	mg/kg	*(1,700)*	*(7,200)*	7.0	ND (<0.00083)	ND (<0.00075)	ND (<0.0011)	ND (<0.00078)	ND (<0.00071)
1,1,2-Trichloroethane	mg/kg	1.1	5.0	0.076	ND (<0.00058)	ND (<0.00053)	ND (<0.00077)	ND (<0.00054)	ND (<0.00050)
Trichloroethene (TCE)	mg/kg	0.94	6.0	0.085	ND (<0.00083)	ND (<0.00075)	ND (<0.0011)	ND (<0.00078)	ND (<0.00071)
Vinyl Chloride	mg/kg	0.0082	0.15	0.0015	ND (<0.0012)	ND (<0.0011)	ND (<0.0016)	ND (<0.0011)	ND (<0.0010)

TABLE 4-3. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL
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				Location ID	VW07	VW08	VW08	VW08	VW08
				Sample ID	SO-VW07-03	SO-VW08-01	SO-VW08-01-Dup	SO-VW08-02	SO-VW08-03
				Sample Date	12/5/2018	12/3/2018	12/3/2018	12/4/2018	12/4/2018
				Sample Type	Normal	Normal	Field Duplicate	Normal	Normal
				Sample Depth (feet bgs)	10.0-10.5	2.0-2.5	2.0-2.5	5.83-6.33	9.83-10.33
				Pavement Thickness (feet)	0.5	0.33	0.33	0.33	0.33
				Depth Below Pavement (feet)	9.5-10.0	1.67-2.17	1.67-2.17	5.5-6.0	9.5-10.0
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]	Leaching to Groundwater ESL[(b)]					
Chloroethane	mg/kg	*(14,000)*	*(57,000)*	1.2	ND (<0.00098)	ND (<0.0014 UJ)	ND (<0.0012 UJ)	ND (<0.0010)	ND (<0.0011)
1,1-Dichloroethane	mg/kg	3.6	16	0.20	ND (<0.00098)	ND (<0.0014)	ND (<0.0012)	ND (<0.0010)	ND (<0.0011)
1,2-Dichloroethane	mg/kg	0.46	2.0	0.007	ND (<0.00059)	ND (<0.00085)	ND (<0.00072)	ND (<0.00062)	ND (<0.00065)
1,1-Dichloroethene	mg/kg	*(83)*	*(350)*	0.54	ND (<0.00084)	ND (<0.0012)	ND (<0.0010)	ND (<0.00087)	ND (<0.00091)
cis-1,2-Dichloroethene	mg/kg	*(18)*	*(84)*	0.19	ND (<0.00091)	ND (<0.0013)	ND (<0.0011)	ND (<0.00095)	ND (<0.00099)
trans-1,2-Dichloroethene	mg/kg	*(130)*	*(600)*	0.65	ND (<0.00098)	ND (<0.0014)	ND (<0.0012)	ND (<0.0010)	ND (<0.0011)
1,1,1,2-Tetrachloroethane	mg/kg	2.0	8.8	0.017	ND (<0.00077)	ND (<0.0011)	ND (<0.00093)	ND (<0.00080)	ND (<0.00084)
1,1,2,2-Tetrachloroethane	mg/kg	0.6	2.7	0.018	ND (<0.00077)	ND (<0.0011)	ND (<0.00093)	ND (<0.00080)	ND (<0.00084)
Tetrachloroethene (PCE)	mg/kg	0.59	2.7	0.08	ND (<0.00091)	ND (<0.0013)	ND (<0.0011)	ND (<0.00095)	ND (<0.00099)
1,1,1-Trichloroethane	mg/kg	*(1,700)*	*(7,200)*	7.0	ND (<0.00077)	ND (<0.0011)	ND (<0.00093)	ND (<0.00080)	ND (<0.00084)
1,1,2-Trichloroethane	mg/kg	1.1	5.0	0.076	ND (<0.00054)	ND (<0.00077)	ND (<0.00065)	ND (<0.00056)	ND (<0.00059)
Trichloroethene (TCE)	mg/kg	0.94	6.0	0.085	ND (<0.00077)	ND (<0.0011 UJ)	ND (<0.00093)	ND (<0.00080)	ND (<0.00084)
Vinyl Chloride	mg/kg	0.0082	0.15	0.0015	ND (<0.0011)	ND (<0.0016)	ND (<0.0014)	ND (<0.0012)	ND (<0.0012)

TABLE 4-3. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL
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				Location ID	VW09	VW09	VW09	VW10	VW10
				Sample ID	SO-VW09-01	SO-VW09-02	SO-VW09-03	SO-VW10-01	SO-VW10-02
				Sample Date	12/4/2018	12/5/2018	12/5/2018	12/3/2018	12/4/2018
				Sample Type	Normal	Normal	Normal	Normal	Normal
				Sample Depth (feet bgs)	2.0-2.5	5.5-6.0	10.0-10.5	2.0-2.5	5.33-5.83
				Pavement Thickness (feet)	0.5	0.5	0.5	0.33	0.33
				Depth Below Pavement (feet)	1.5-2.0	5.0-5.5	9.5-10.0	1.67-2.17	5.0-5.5
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]	Leaching to Groundwater ESL[(b)]					
Chloroethane	mg/kg	*(14,000)*	*(57,000)*	1.2	ND (<0.0011)	ND (<0.0012)	ND (<0.0012)	ND (<0.0014)	ND (<0.0014)
1,1-Dichloroethane	mg/kg	3.6	16	0.20	ND (<0.0011)	ND (<0.0012)	ND (<0.0012)	ND (<0.0014)	ND (<0.0014)
1,2-Dichloroethane	mg/kg	0.46	2.0	0.007	ND (<0.00065)	ND (<0.00072)	ND (<0.00070)	ND (<0.00085)	ND (<0.00085)
1,1-Dichloroethene	mg/kg	*(83)*	*(350)*	0.54	ND (<0.00092)	ND (<0.0010)	ND (<0.00099)	ND (<0.0012)	ND (<0.0012)
cis-1,2-Dichloroethene	mg/kg	*(18)*	*(84)*	0.19	ND (<0.0010)	ND (<0.0011)	ND (<0.0011)	ND (<0.0013)	ND (<0.0013)
trans-1,2-Dichloroethene	mg/kg	*(130)*	*(600)*	0.65	ND (<0.0011)	ND (<0.0012)	ND (<0.0012)	ND (<0.0014)	ND (<0.0014)
1,1,1,2-Tetrachloroethane	mg/kg	2.0	8.8	0.017	ND (<0.00085)	ND (<0.00094)	ND (<0.00091)	ND (<0.0011)	ND (<0.0011)
1,1,2,2-Tetrachloroethane	mg/kg	0.6	2.7	0.018	ND (<0.00085)	ND (<0.00094)	ND (<0.00091)	ND (<0.0011)	ND (<0.0011)
Tetrachloroethene (PCE)	mg/kg	0.59	2.7	0.08	ND (<0.0010)	ND (<0.0011)	ND (<0.0011)	ND (<0.0013)	ND (<0.0013)
1,1,1-Trichloroethane	mg/kg	*(1,700)*	*(7,200)*	7.0	ND (<0.00085)	ND (<0.00094)	ND (<0.00091)	ND (<0.0011)	ND (<0.0011)
1,1,2-Trichloroethane	mg/kg	1.1	5.0	0.076	ND (<0.00059)	ND (<0.00065)	ND (<0.00063)	ND (<0.00077)	ND (<0.00077)
Trichloroethene (TCE)	mg/kg	0.94	6.0	0.085	ND (<0.00085)	ND (<0.00094)	ND (<0.00091)	ND (<0.0011)	ND (<0.0011)
Vinyl Chloride	mg/kg	0.0082	0.15	0.0015	ND (<0.0012)	ND (<0.0014)	ND (<0.0013)	ND (<0.0016)	ND (<0.0016)

TABLE 4-3. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL
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				Location ID	VW10	VW10	VW11	VW11	VW11
				Sample ID	SO-VW10-02-Dup	SO-VW10-03	SO-VW11-01	SO-VW11-02	SO-VW11-03
				Sample Date	12/4/2018	12/4/2018	12/3/2018	12/4/2018	12/4/2018
				Sample Type	Field Duplicate	Normal	Normal	Normal	Normal
				Sample Depth (feet bgs)	5.33-5.83	9.83-10.33	2.0-2.5	5.33-5.83	9.83-10.33
				Pavement Thickness (feet)	0.33	0.33	0.33	0.33	0.33
				Depth Below Pavement (feet)	5.0-5.5	9.5-10.0	1.67-2.17	5.0-5.5	9.5-10.0
Analyte	Units	Residential SL[(a)]	Commercial/ Industrial SL[(a)]	Leaching to Groundwater ESL[(b)]					
Chloroethane	mg/kg	*(14,000)*	*(57,000)*	1.2	ND (<0.0011)	ND (<0.0012)	ND (<0.0014 UJ)	ND (<0.00094)	ND (<0.00099)
1,1-Dichloroethane	mg/kg	3.6	16	0.20	ND (<0.0011)	ND (<0.0012)	ND (<0.0014)	ND (<0.00094)	ND (<0.00099)
1,2-Dichloroethane	mg/kg	0.46	2.0	0.007	ND (<0.00065)	ND (<0.00072)	ND (<0.00085)	ND (<0.00057)	ND (<0.00060)
1,1-Dichloroethene	mg/kg	*(83)*	*(350)*	0.54	ND (<0.00092)	ND (<0.0010)	ND (<0.0012)	ND (<0.00080)	ND (<0.00085)
cis-1,2-Dichloroethene	mg/kg	*(18)*	*(84)*	0.19	ND (<0.00099)	ND (<0.0011)	ND (<0.0013)	ND (<0.00087)	ND (<0.00092)
trans-1,2-Dichloroethene	mg/kg	*(130)*	*(600)*	0.65	ND (<0.0011)	ND (<0.0012)	ND (<0.0014)	ND (<0.00094)	ND (<0.00099)
1,1,1,2-Tetrachloroethane	mg/kg	2.0	8.8	0.017	ND (<0.00084)	ND (<0.00093)	ND (<0.0011)	ND (<0.00074)	ND (<0.00078)
1,1,2,2-Tetrachloroethane	mg/kg	0.6	2.7	0.018	ND (<0.00084)	ND (<0.00093)	ND (<0.0011)	ND (<0.00074)	ND (<0.00078)
Tetrachloroethene (PCE)	mg/kg	0.59	2.7	0.08	ND (<0.00099)	ND (<0.0011)	**0.0048 J**	ND (<0.00087)	ND (<0.00092)
1,1,1-Trichloroethane	mg/kg	*(1,700)*	*(7,200)*	7.0	ND (<0.00084)	ND (<0.00093)	ND (<0.0011)	ND (<0.00074)	ND (<0.00078)
1,1,2-Trichloroethane	mg/kg	1.1	5.0	0.076	ND (<0.00059)	ND (<0.00065)	ND (<0.00077)	ND (<0.00052)	ND (<0.00055)
Trichloroethene (TCE)	mg/kg	0.94	6.0	0.085	ND (<0.00084)	ND (<0.00093)	ND (<0.0011)	ND (<0.00074)	ND (<0.00078)
Vinyl Chloride	mg/kg	0.0082	0.15	0.0015	ND (<0.0012)	ND (<0.0013)	ND (<0.0016)	ND (<0.0011)	ND (<0.0011)

TABLE 4-3. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN SOIL
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				Location ID	VW12/B05	VW12/B05	VW12/B05	VW13	VW13	VW13
				Sample ID	SO-VW12-01	SO-VW12-02	SO-VW12-03	SO-VW13-01	SO-VW13-02	SO-VW13-03
				Sample Date	12/6/2018	12/7/2018	12/7/2018	12/31/2018	12/31/2018	12/31/2018
				Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
				Sample Depth (feet bgs)	2.0-2.5	5.33-5.83	9.83-10.33	1.75-2.25	5.25-5.75	9.75-10.25
				Pavement Thickness (feet)	0.33	0.33	0.33	0.25	0.25	0.25
				Depth Below Pavement (feet)	1.67-2.17	5.0-5.5	9.5-10.0	1.5-2.0	5.0-5.5	9.5-10.0
Analyte	Units	Residential SL[a]	Commercial/ Industrial SL[a]	Leaching to Groundwater ESL[b]						
Chloroethane	mg/kg	*(14,000)*	*(57,000)*	1.2	ND (<0.0014)	ND (<0.0010)	ND (<0.0012)	ND (<0.0014)	ND (<0.0019)	ND (<0.0011)
1,1-Dichloroethane	mg/kg	3.6	16	0.20	ND (<0.0014)	ND (<0.0010)	ND (<0.0012)	ND (<0.0014)	ND (<0.0019)	ND (<0.0011)
1,2-Dichloroethane	mg/kg	0.46	2.0	0.007	ND (<0.00085)	ND (<0.00062)	ND (<0.00072)	ND (<0.00085)	ND (<0.0011)	ND (<0.00069)
1,1-Dichloroethene	mg/kg	*(83)*	*(350)*	0.54	ND (<0.0012)	ND (<0.00088)	ND (<0.0010)	ND (<0.0012)	ND (<0.0016)	ND (<0.00097)
cis-1,2-Dichloroethene	mg/kg	*(18)*	*(84)*	0.19	ND (<0.0013)	ND (<0.00096)	ND (<0.0011)	ND (<0.0013)	ND (<0.0017)	ND (<0.0011)
trans-1,2-Dichloroethene	mg/kg	*(130)*	*(600)*	0.65	ND (<0.0014)	ND (<0.0010)	ND (<0.0012)	ND (<0.0014)	ND (<0.0019)	ND (<0.0011)
1,1,1,2-Tetrachloroethane	mg/kg	2.0	8.8	0.017	ND (<0.0011)	ND (<0.00081)	ND (<0.00093)	ND (<0.0011)	ND (<0.0015)	ND (<0.00089)
1,1,2,2-Tetrachloroethane	mg/kg	0.6	2.7	0.018	ND (<0.0011)	ND (<0.00081)	ND (<0.00093)	ND (<0.0011)	ND (<0.0015)	ND (<0.00089)
Tetrachloroethene (PCE)	mg/kg	0.59	2.7	0.08	ND (<0.0013)	ND (<0.00096)	ND (<0.0011)	ND (<0.0013)	ND (<0.0017)	ND (<0.0011)
1,1,1-Trichloroethane	mg/kg	*(1,700)*	*(7,200)*	7.0	ND (<0.0011)	ND (<0.00081)	ND (<0.00093)	ND (<0.0011)	ND (<0.0015)	ND (<0.00089)
1,1,2-Trichloroethane	mg/kg	1.1	5.0	0.076	ND (<0.00077)	ND (<0.00057)	ND (<0.00065)	ND (<0.00077)	ND (<0.0010)	ND (<0.00062)
Trichloroethene (TCE)	mg/kg	0.94	6.0	0.085	ND (<0.0011)	ND (<0.00081)	ND (<0.00093)	ND (<0.0011)	ND (<0.0015)	ND (<0.00089)
Vinyl Chloride	mg/kg	0.0082	0.15	0.0015	ND (<0.0016)	ND (<0.0012)	ND (<0.0014)	ND (<0.0016)	ND (<0.0021)	ND (<0.0013)

Notes:

Concentrations detected above the laboratory MDL shown in **bold.**

All detected concentrations were below their respective screening criteria.

Black inversed cells indicate instances when the analyte was not detected, but the laboratory MDL exceeded one or more screening criteria.

[a] Residential and commercial/industrial SLs from HERO HHRA Note 3 (DTSC, 2019). Cancer Endpoint *(Non-Cancer Endpoint)* .

[b] Leaching to Groundwater (drinking water) ESLs from *Summary of Soil ESLs* (SWRCB, 2019).

bgs = below ground surface
DTSC = California Department of Toxic Substances Control
ESL = Environmental Screening Level
HERO = Human and Ecological Risk Office
HHRA = human health risk assessment
ID = identification
J = estimated; detected analyte
MDL = method detection limit
mg/kg = milligrams per kilogram
SL = Screening Level
SWRCB = California State Water Resources Control Board
UJ = estimated; non-detected analyte

TABLE 4-4. CURRENT INVESTIGATION ANALYTICAL RESULTS FOR PCE AND ASSOCIATED DEGRADATION PRODUCTS IN GROUNDWATER

		Location ID	B06	B06	B13
		Sample ID	GW-B06-01	GW-B06-02	GW-B13-01
		Sample Date	12/10/2018	12/10/2018	12/7/2018
		Sample Type	Normal	Field Duplicate	Normal
		Sample Depth (feet bgs)	33.73	33.73	37.0
		Pavement Thickness (feet)	0.33	0.33	0.5
		Depth Below Pavement (feet)	33.4	33.4	36.5
Analyte	Units	Primary MCL[(a)]			
Chloroethane	µg/L	NE	ND (<0.14)	ND (<0.14)	ND (<0.14)
1,1-Dichloroethane	µg/L	5.0	ND (<0.11)	ND (<0.11)	ND (<0.11)
1,2-Dichloroethane	µg/L	0.5	ND (<0.17)	ND (<0.17)	ND (<0.17)
1,1-Dichloroethene	µg/L	6.0	ND (<0.18)	ND (<0.18)	ND (<0.18)
cis-1,2-Dichloroethene	µg/L	6.0	ND (<0.085)	ND (<0.085)	ND (<0.085)
trans-1,2-Dichloroethene	µg/L	10	ND (<0.15)	ND (<0.15)	ND (<0.15)
1,1,1,2-Tetrachloroethane	µg/L	NE	ND (<0.18)	ND (<0.18)	ND (<0.18)
1,1,2,2-Tetrachloroethane	µg/L	1.0	ND (<0.17)	ND (<0.17)	ND (<0.17)
Tetrachloroethene (PCE)	µg/L	5.0	**0.33 J**	**0.73**	**0.44 J**
1,1,1-Trichloroethane	µg/L	200	ND (<0.11)	ND (<0.11)	ND (<0.11)
1,1,2-Trichloroethane	µg/L	5.0	ND (<0.16)	ND (<0.16)	ND (<0.16)
Trichloroethene (TCE)	µg/L	5.0	ND (<0.085)	ND (<0.085)	ND (<0.085)
Vinyl Chloride	µg/L	0.5	ND (<0.12)	ND (<0.12)	ND (<0.12)

Notes:

Concentrations detected above the laboratory MDL shown in **bold**.

No analytes were detected at concentrations exceeding their respective primary MCL.

[(a)] California primary MCLs (SWRCB, 2018).

< = less than

µg/L = micrograms per liter

bgs = below ground surface

ID = identification

J = estimated

MCL = maximum contaminant level

ND = not detected above laboratory MDL

NE = not established

SWRCB = State Water Resources Control Board

TABLE 6-1. PCE AND TCE CONCENTRATIONS IN SOIL GAS COMPARED TO REGULATORY SCREENING CRITERIA
(Page 1 of 2)

Location ID	Sample Date	Sample Depth (feet bgs)[a]		PCE	TCE
			Units	µg/m^3	µg/m^3
			Residential SL[b]	460	480
			Commercial/Industrial SL[b]	2,000	3,000
Previous Investigation[c]					
KA-2	6/18/2015	4.5		**220**	ND (<22)
KA-8	6/18/2015	4.5		**47**	**16**
KA-11	6/18/2015	4.5		**33**	ND (<4.7)
KA-17	6/19/2015	4.5		15,000 **14,000**[d]	210 **200**[d]
KA-19	6/19/2015	4.5		**240**	ND (<4.4)
KA-31	6/19/2015	4.5		**6.9**	ND (<4.6)
Current Investigation					
VW01	12/7/2018	5.5		**320**	ND (<22)
	12/5/2018	14.5		**2,000**	ND (<22)
VW02	12/7/2018	5.5		**390**	ND (<22)
	12/5/2018	14.5		**970**	ND (<22)
VW03	12/7/2018	5.5		ND (<44) ND (<44)[d]	ND (<22) ND (<22)[d]
VW04	12/7/2018	5.5		**1,200**	ND (<22)
	12/5/2018	14.5		**5,900**	**34 J**
VW05	12/7/2018	5.5		**5,100**	**25 J**
	12/5/2018	14.5		**3,900** **3,800**[d]	**140** **130**[d]
VW06	12/7/2018	5.5		**99 J**	ND (<22)
	12/5/2018	14.5		**210**	ND (<22)
VW07	12/7/2018	5.5		**96 J**	ND (<22)
	12/5/2018	14.5		**560**	ND (<22)
VW08	12/7/2018	5.5		**82 J**	ND (<22)
	12/5/2018	14.5		**510**	ND (<22)
VW09	12/7/2018	5.5		ND (<44)	ND (<22)
	12/5/2018	14.5		**100**	ND (<22)
VW10	12/7/2018	5.5		**1,100**	ND (<22)
	12/5/2018	14.5		**4,200**	ND (<22)
VW11	12/7/2018	5.5		**740**	ND (<22)
	12/5/2018	14.5		**2,600**	ND (<22)
VW12	3/18/2019	5.5		**97**	ND (<5.8)
	12/7/2018	14.5		**270**	ND (<22)
VW13	3/18/2019	5.5		**400** **360**[d]	ND (<5.8) ND (<5.2)[d]

Notes:

Concentrations detected above the laboratory MDL are shown in **bold**.

For non-detects, the values in parantheses correspond to the laboratory RL for the previous investigation and the laboratory MDL for the current investigation.

Concentration exceeds residential SL.

Concentration exceeds residential and commercial/industrial SLs.

TABLE 6-1. PCE AND TCE CONCENTRATIONS IN SOIL GAS COMPARED TO REGULATORY SCREENING CRITERIA
(Page 2 of 2)

Notes (continued):

[(a)] All vapor wells were located in areas paved with either asphalt or concrete. The pavement thickness varied from 4 to 8.5 inches. Sample depths for the previous investigation are referenced to the top of pavement. Sample depths for the current investigation are referenced to the bottom of pavement.

[(b)] SLs for ambient air from HERO HHRA Note 3 (DTSC, 2019) modified using a 0.001 attenuation factor for future residential and existing commercial/industrial scenarios (sample at contaminant source) (DTSC, 2011).

[(c)] Phase II ESA (Kleinfelder, 2016)

[(d)] Field duplicate analytical result

< = less than

$\mu g/m^3$ = micrograms per cubic meter

bgs = below ground surface

DTSC = California Department of Toxic Substances Control

ESA = Environmental Site Assessment

ID = identification

HERO = Human and Ecological Risk Office

HHRA = human health risk assessment

J = estimated; detected analyte

MDL = method detection limit

ND = not detected above laboratory MDL

PCE = tetrachloroethene

RL = reporting limit

SL = screening level

TCE = trichloroethene

TABLE 6-2. ARSENIC CONCENTRATIONS IN SOIL COMPARED TO BACKGROUND
(Page 1 of 4)

Location ID	Sample Date	Sample Depth (feet bgs)[a]	Units	Arsenic mg/kg
			Background Concentration[b]	17.53
Previous Investigation[c]				
KA-1	6/1/2015	21		**2.2**
KA-2	5/29/2015	6		**7.4**
		16		**3.0**
KA-3	6/1/2015	6		**7.0**
		11		**3.8**
KA-4	6/1/2015	6		**5.8**
		16		**1.9**
KA-5	5/28/2015	6		**7.5**
		36		**1.5**
		46		**2.5**
KA-6	5/21/2015	6		**7.2**
		36		**1.5**
		46		**1.7**
KA-7	5/29/2015	6		**5.8**
		36		**2.2**
		46		**1.4**
KA-8	6/3/2015	2		**4.1**
				4.3[d]
KA-9	5/22/2015	6		**6.3**
		36		**1.0**
		51		**1.7**
KA-10	5/19/2015	1.5		**29**
		4.5		**2.6**
KA-11	5/19/2015	1.5		**5.9**
KA-13	6/1/2015	6		**4.8**
		11		**7.2**
KA-14	6/2/2015	6		**3.2**
				5.2[d]
		16		**2.5**
				3.5[d]
KA-15	5/26/2015	6		**4.2**
		36		**2.5**
	5/27/2015	46		**2.6**
KA-16	5/18/2015	1.5		**3.9**
KA-17	5/18/2015	1.5		**100**
		5		**2.2**
KA-18	6/2/2015	6		**23**
				22[d]
		11		**7.2**
				6.5[d]

TABLE 6-2. ARSENIC CONCENTRATIONS IN SOIL COMPARED TO BACKGROUND
(Page 2 of 4)

Location ID	Sample Date	Sample Depth (feet bgs)[a]	Units / Background Concentration[b]	Arsenic mg/kg
				17.53
Previous Investigation[c] (continued)				
KA-19	6/2/2015	6		**10** **14**[d]
		16		**5.7** **5.0**[d]
KA-20	5/19/2015	1.5		**4.9**
KA-21	5/19/2015	1.5		**3.6**
KA-22	5/19/2015	2		**5.3**
KA-23	6/2/2015	6		**1.7** **5.4**[d]
		11		**7.1** **8.6**[d]
KA-24	6/2/2015	6		**2.5** **4.7**[d]
		11		**2.3** **4.8**[d]
KA-25	6/1/2015	6		**5.2**
		16		**1.7**
KA-26	5/26/2015	6		**3.7**
		36		**0.79 J**
		51		**3.3**
KA-27	5/22/2015	6		**6.7**
		36		**0.97 J**
		46		**3.9**
KA-28	5/20/2015	1		**5.2**
KA-29	5/20/2015	1		**5.8**
KA-30	5/20/2015	1		**5.1**
KA-31	5/20/2015	1		**6.9**
KA-32	5/20/2015	1		**5.0**
KA-33	5/19/2015	1		**10**
KA-34	5/20/2015	2		**4.7**
KA-35	6/2/2015	6		**4.7** **5.2**[d]
		16		**2.3** **2.5**[d]
KA-36	6/3/2015	6		**7.9** **8.3**[d]
		16		**5.1** **6.1**[d]

TABLE 6-2. ARSENIC CONCENTRATIONS IN SOIL COMPARED TO BACKGROUND
(Page 3 of 4)

Location ID	Sample Date	Sample Depth (feet bgs)[a]	Units	Arsenic mg/kg
			Background Concentration[b]	17.53
Previous Investigation[c] (continued)				
KA-37	6/3/2015	6		**7.6**
				7.7[d]
		11		**5.0**
				5.6[d]
KA-38	6/3/2015	6		**6.0**
				6.2[d]
		11		**3.7**
				3.7[d]
KA-40	6/3/2015	6		**7.0**
				6.9[d]
		16		**2.0**
				1.9[d]
KA-41	5/27/2015	6		**4.4**
		26		**2.0**
		36		**1.2**
KA-42	5/27/2015	6		**5.5**
		26		**0.65 J**
		36		**2.4**
KA-43	5/18/2015	1		**4.9**
KA-44	5/18/2015	1.5		**30**
		5		**2.5**
KA-45	5/18/2015	1.5		**7.4**
KA-46	5/18/2015	1.5		**6.5**
KA-47	5/18/2015	1.5		**4.0**
KA-48	5/19/2015	2		**60**
KA-49	5/19/2015	1.5		**15**
KA-50	5/19/2015	3		**110**
		5		**6.8**
Current Investigation				
B01	12/4/2018	1.5-2.0		**6.4**
B02	12/5/2018	1.5-2.0		**6.3**
B03	12/5/2018	1.5-2.0		**8.2**
B04	12/6/2018	1.67-2.17		**16**
		5.17-5.67		**3.3**
B05	12/6/2018	1.67-2.17		**3.7**
	12/7/2018	4.67-5.17		**3.5**
B06	12/3/2018	1.67-2.17		**3.6**
	12/4/2018	4.67-5.17		**5.1**
B07	12/4/2018	1.33-1.83		**2.7**
	12/5/2018	4.83-5.33		**4.9**

TABLE 6-2. ARSENIC CONCENTRATIONS IN SOIL COMPARED TO BACKGROUND
(Page 4 of 4)

Location ID	Sample Date	Sample Depth (feet bgs)[a]	Units	Arsenic mg/kg
			Background Concentration[b]	17.53
Current Investigation (continued)				
B08	12/5/2018	1.5-2.0		**67**
		5.0-5.5		**4.4**
B09	12/3/2018	1.67-2.17		**3.4**
	12/4/2018	4.67-5.17		**5.2**
B10	12/5/2018	1.5-2.0		**240**
		5.0-5.33		**9.1**
B11	12/6/2018	1.21-1.71		**260**
		3.71-4.21		**190**
B12	12/6/2018	1.67-2.17		**13**
	12/31/2018	4.67-5.17		**7.3**
B13	12/4/2018	1.5-2.0		**8.7**
	12/5/2018	4.5-5.0		**3.9**
B14	12/4/2018	1.5-2.0		**13**
		5.0-5.33		**4.4**
B15	12/5/2018	1.5-2.0		**140**
		5.0-5.33		**6.3**
B16	12/5/2018	1.5-2.0		**280**
		5.0-5.33		**3.8**
				3.4[e]
B17	12/5/2018	1.5-2.0		**45**
		5.0-5.5		**270**
				330[e]

Notes:

Concentrations detected above the laboratory MDL shown in **bold**.

For non-detects, the values in parantheses correspond to the laboratory MDL.

Concentration exceeds site-specific background concentration.

[a] Most boreholes were located in paved areas. The pavement thickness varied from 3 to 13 inches. Sample depths for the previous investigation are referenced to the top of pavement. Sample depths for the current investigation are referenced to the bottom of pavement (top of soil).

[b] Site-specific background concentration (see Section 5.0).

[c] Phase II ESA (Kleinfelder, 2016)

[d] Laboratory duplicate analytical result

[e] Field duplicate analytical result

bgs = below ground surface

ESA = Environmental Site Assessment

ID = identification

J = estimated; detected analyte

MDL = method detection limit

mg/kg = milligrams per kilogram

TABLE 6-3. PCE CONCENTRATIONS IN GROUNDWATER COMPARED TO REGULATORY SCREENING CRITERIA

			PCE
		Units	µg/L
		Primary MCL[a]	5
Location ID	Sample Date	Sample Depth (feet bgs)	Tap Water SL[b]	0.082
Previous Investigation[c]				
KA-5-D	6/1/2015	40.0-45.0	**0.35 J**
KA-6-D	6/1/2015	47.5-49.5	**0.85**
KA-7-D	6/1/2015	39.0-45.0	**0.77**
KA-9-D	6/2/2015	47.5-49.5	**2.1**
KA-15-D	6/2/2015	47.5-49.5	**0.5**
KA-26-D	6/2/2015	47.0-49.0	ND(<0.13)[d]
KA-27-D	6/1/2015	47.0-49.0	**1.8**
KA-41-D	6/2/2015	30.0-40.0	ND(<0.13)[d]
KA-42-D	6/2/2015	33.0-40.0	**0.18 J**
Current Investigation			
B06	12/10/2018	33.7	**0.33 J** **0.73**[e]
B13	12/7/2018	37.0	**0.44 J**

Notes:

Concentration exceeds tap water SL.

Concentrations in **bold** were detected above the laboratory MDL.

For non-detects, the values in parantheses correspond to the laboratory MDL.

[a] California Primary MCLs (SWRCB, 2018).

[b] Tap water SLs from HERO HHRA Note 3 (DTSC, 2019). Cancer Endpoint.

[c] Phase II Environmental Site Assessment (Kleinfelder, 2017)

[d] Laboratory MDL exceeds one or more screening criteria.

[e] Field duplicate analytical result

< = less than

µg/L = micrograms per liter

bgs = below ground surface

DTSC = California Department of Toxic Substances Control

HERO = Human and Ecological Risk Office

HHRA = human health risk assessment

ID = identification

J = estimated; detected analyte

MCL = maximum contaminant level

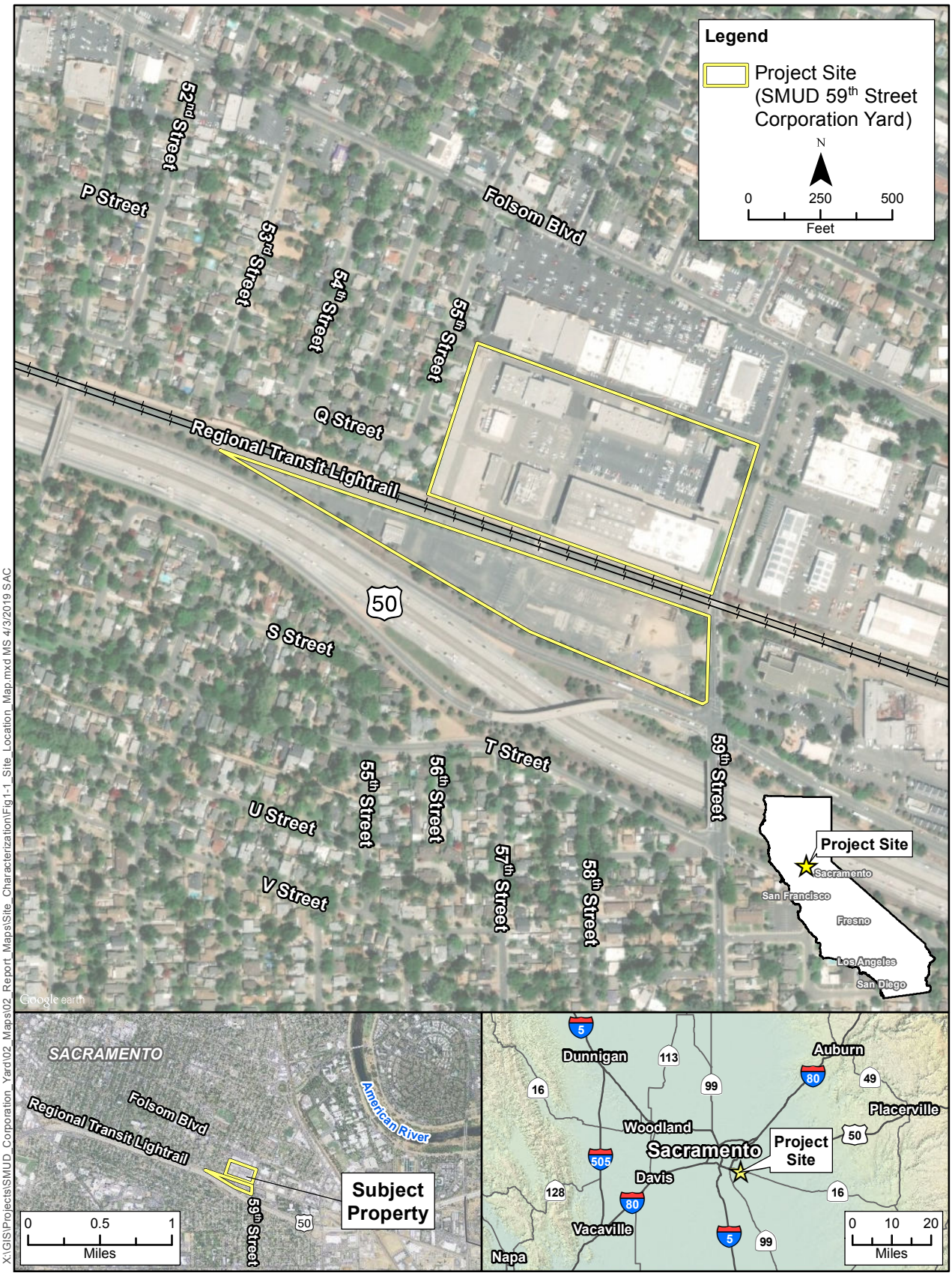
MDL = method detection limit

PCE = tetrachloroethene

SL = screening level

SWRCB = California State Water Resources Control Board

Figures



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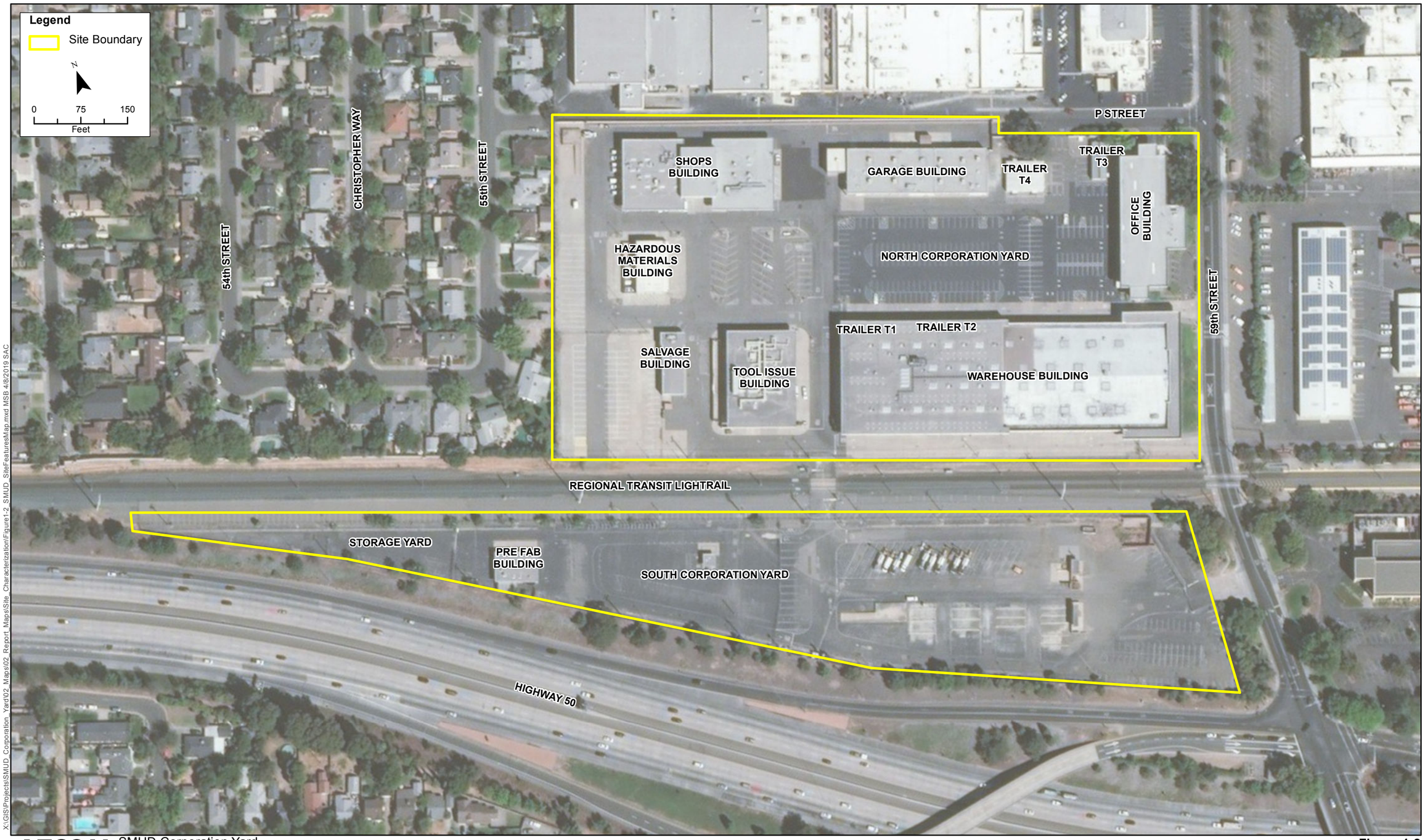
AECOM SMUD Corporation Yard
1708 59th Street, Sacramento, California

Figure 1-1
Site Location Map



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AECOM

SMUD Corporation Yard
1708 59th Street Sacramento, California

Figure 1-2
Site Features Map

Legend

PSG-38 (<0.02) — Phase II ESA Passive Soil Gas Location (2015) Sample ID with PCE concentration

Phase II ESA Active Soil Gas Location (2015)

Sample ID — Depth (ft bgs)

KA-11 — 4.5'

PCE — 33

Analyte — Concentration ($\mu g/m^3$)

Abbreviations:

μg = micrograms

$\mu g/m^3$ = micrograms per cubic meter

bgs = below ground surface

ESA = Environmental Site Assessment

ft = feet

ID = identification

PCE = tetrachloroethene

Notes:

1. Passive soil gas sample PCE concentrations in μg.
2. Active soil gas sample PCE concentrations in $\mu g/m^3$.

KA-2 4.5' PCE 220

KA-8 4.5' PCE 47

KA-11 4.5' PCE 33

KA-19 4.5' PCE 240

KA-17 4.5' PCE 15,000/14,000

KA-31 4.5' PCE 6.9

PSG-01 (0.47)
PSG-02 (0.08)
PSG-03 (0.33)
PSG-04 (0.33)
PSG-05 (0.40)
PSG-06 (0.20)
PSG-07 (1.24)
PSG-08 (0.53)
PSG-09 (<0.02)
PSG-10 (0.26)
PSG-11 (0.02)
PSG-12 (0.13)
PSG-13 (<0.02)
PSG-14 (0.03)
PSG-15 (0.20)
PSG-17 (<0.02)
PSG-18 (<0.02)
PSG-19 (<0.02)
PSG-20 (0.06)
PSG-21 (1.48)
PSG-22 (83.75)
PSG-23 (0.76)
PSG-24 (0.81)
PSG-25 (<0.02)
PSG-26 (<0.02)
PSG-27 (<0.02)
PSG-28 (<0.02)
PSG-29 (0.03)
PSG-30 (7.02)
PSG-31 (1.86)
PSG-32 (2.64)
PSG-33 (0.25)
PSG-34 (<0.02)
PSG-35 (<0.02)
PSG-36 (<0.02)
PSG-37 (<0.02)
PSG-38 (<0.02)

SHOPS BUILDING
GARAGE BUILDING
TRAILER T4
TRAILER T3
OFFICE BUILDING
HAZARDOUS MATERIAL BUILDING
TRAILER T1
TRAILER T2
WAREHOUSE BUILDING
SALVAGE BUILDING
TOOL ISSUE BUILDING
STORAGE YARD
PRE FAB BUILDING
59th STREET
SHIN STREET
REGIONAL TRANSIT LIGHTRAIL
SACRAMENTO REGIONAL TRANSIT LIGHT RAIL

N

0 60 120
Feet

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AECOM

Figure 2-1
Previous Investigation PCE Concentrations in Soil Gas

Legend

- ▲ Pole Storage Area RFI Soil Borehole (2015)
- ▲ Phase II ESA Soil Borehole

Borehole ID	Depth (ft bgs)
KA-11	1.5'
Arsenic	5.9
Thallium	ND(<0.64)
Analyte	Concentration (mg/kg)

Abbreviations:
bgs = below ground surface
ESA = Environmental Site Assessment
ft = feet
ID = identification
DUP = duplicate sample (Thallium)
NA = not analyzed
ND = not detected
NS = not sampled
RFI = Resource Conservation and Recovery Act Facility Investigation

KA-27	6'	36'	46'
Arsenic	6.7	0.97	3.9
Thallium	ND(<0.64)	ND(<0.64)	ND(<0.64)

KA-2	6'	16'
Arsenic	7.4	3.0
Thallium	ND(<0.64)	ND(<0.64)

KA-3	6'	11'
Arsenic	7.0	3.8
Thallium	2.1	1.9

KA-4	6'	16'
Arsenic	5.8	1.9
Thallium	1.7	1.6

KA-6	6'	36'	46'
Arsenic	7.2	1.5	1.7
Thallium	ND(<0.64)	ND(<0.64)	ND(<0.64)

KA-11	1.5'
Arsenic	5.9
Thallium	ND(<0.64)

KA-8	2'
Arsenic	4.3
Thallium	ND(<0.64)
DUP	ND(<0.64)

KA-1	21'
Arsenic	2.2
Thallium	1.2

KA-7	6'	36'	46'
Arsenic	5.8	2.2	1.4
Thallium	ND(<0.64)	ND(<0.64)	ND(<0.64)

KA-20	1.5'
Arsenic	4.9
Thallium	ND(<0.64)

KA-9	6'	36'	51'
Arsenic	6.3	1.0	1.7
Thallium	ND(<0.64)	ND(<0.64)	ND(<0.64)

KA-5	6'	36'	46'
Arsenic	7.5	1.5	2.5
Thallium	ND(<0.64)	ND(<0.64)	ND(<0.64)

KA-10	1.5'	4.5'
Arsenic	29	2.6
Thallium	ND(<0.64)	NA

KA-13	6'	11'
Arsenic	4.8	7.2
Thallium	1.3	1.9

KA-45	1.5'
Arsenic	7.4
Thallium	ND(<0.64)

KA-43	1'
Arsenic	4.9
Thallium	ND(<0.64)

KA-24	6'	11'
Arsenic	4.7	4.8
Thallium	1.7	1.2
DUP	0.86	ND(<0.64)

KA-14	6'	16'
Arsenic	5.2	3.5
Thallium	1.4	2.0
DUP	0.89	1.8

KA-44	1.5'	5'
Arsenic	30	2.5
Thallium	ND(<0.64)	NA

KA-16	1.5'
Arsenic	3.9
Thallium	ND(<0.64)

KA-47	1.5'
Arsenic	4.0
Thallium	ND(<0.64)

KA-15	6'	36'	46'
Arsenic	4.2	2.5	2.6
Thallium	ND(<0.64)	ND(<0.64)	ND(<0.64)

KA-46	1.5'
Arsenic	6.5
Thallium	ND(<0.64)

KA-23	6'	11'
Arsenic	5.4	8.6
Thallium	1.9	ND(<0.64)
DUP	0.95	1.3

KA-25	6'	16'
Arsenic	5.2	1.7
Thallium	1.7	1.8

KA-21	1.5'
Arsenic	3.6
Thallium	ND(<0.64)

KA-19	6'	16'
Arsenic	14	5.7
Thallium	ND(<0.64)	ND(<0.64)
DUP	ND(<0.64)	0.82

KA-17	1.5'	5'
Arsenic	100	2.2
Thallium	ND(<0.64)	NA

KA-48	2'
Arsenic	60
Thallium	ND(<0.64)

KA-50	3.0'	5'
Arsenic	110	6.8
Thallium	ND(<0.64)	NA

KA-26	6'	36'	51'
Arsenic	3.7	0.79	3.3
Thallium	ND(<0.64)	ND(<0.64)	ND(<0.64)

KA-22	2'
Arsenic	5.3
Thallium	ND(<0.64)

KA-18	6'	11'
Arsenic	23	5.0
Thallium	ND(<0.64)	ND(<0.64)
DUP	ND(<0.64)	0.66

KA-41	6'	26'	36'
Arsenic	4.4	2.0	1.2
Thallium	ND(<0.64)	ND(<0.64)	1.1

KA-33	1'
Arsenic	10
Thallium	ND(<0.64)

BK-1	1'	6'	11'	16'
Arsenic	4.0	4.1	2.1	1.2
Thallium	0.7	2.2	2.3	2.7
DUP	NS	3.0	NS	NS

KA-49	1.5'
Arsenic	15
Thallium	ND(<0.64)

KA-40	6'	16'
Arsenic	7.0	2.0
Thallium	ND(<0.64)	0.69
DUP	ND(<0.64)	0.66

KA-29	1'
Arsenic	5.8
Thallium	ND(<0.64)

KA-38	6'	11'
Arsenic	6.2	3.7
Thallium	ND(<0.64)	ND(<0.64)
DUP	ND(<0.64)	ND(<0.64)

KA-37	6'	11'
Arsenic	7.7	5.6
Thallium	ND(<0.64)	ND(<0.64)
DUP	ND(<0.64)	0.84

KA-35	6'	16'
Arsenic	5.2	2.5
Thallium	0.85	1.0
DUP	1.4	1.1

PS-4	1'	6'	11'	16'
Arsenic	6.1	5.3	4.9	1.9
Thallium	1.6	2.6	2.2	1.4
DUP	NS	NS	1.8	NS

PS-5	1'	6'	11'	16'
Arsenic	5.3	4.7	2.8	2.7
Thallium	ND(<0.64)	0.84	1.6	1.5
DUP	NS	NS	NS	2.2

KA-32	1'
Arsenic	5.0
Thallium	ND(<0.64)

KA-30	1'
Arsenic	5.1
Thallium	ND(<0.64)

KA-28	1'
Arsenic	5.2
Thallium	ND(<0.64)

KA-36	6'	16'
Arsenic	8.3	6.1
Thallium	ND(<0.64)	ND(<0.64)
DUP	1.0	ND(<0.64)

KA-42	6'	26'	36'
Arsenic	5.5	0.65	2.4
Thallium	ND(<0.64)	ND(<0.64)	ND(<0.64)

PS-3	1'	6'	11'	16'
Arsenic	4.4	5.7	7.3	8.1
Thallium	1.0	2.3	3.3	3.0
DUP	NS	NS	NS	2.4

PS-1	1'	6'	11'	16'
Arsenic	6.5	7.2	8.3	5.1
Thallium	1.7	0.88	0.77	ND(<0.64)
DUP	NS	0.70	NS	NS

KA-31	1'
Arsenic	6.9
Thallium	ND(<0.64)

PS-2	1'	6'	11'	16'
Arsenic	8.7	8.8	11	6.7
Thallium	7.3	ND(<3.2)	ND(<3.2)	ND(<0.64)
DUP	2.3	NS	NS	NS

KA-34	2'
Arsenic	4.7
Thallium	ND(<0.64)

HAZARDOUS MATERIAL BUILDING
SHOPS BUILDING
GARAGE BUILDING
TRAILER T4
TRAILER T1
TRAILER T2
TOOL ISSUE BUILDING
WAREHOUSE BUILDING
PRE FAB BUILDING
STORAGE YARD
REGIONAL TRANSIT LIGHTRAIL
59th STREET

N
0 60 120
Feet

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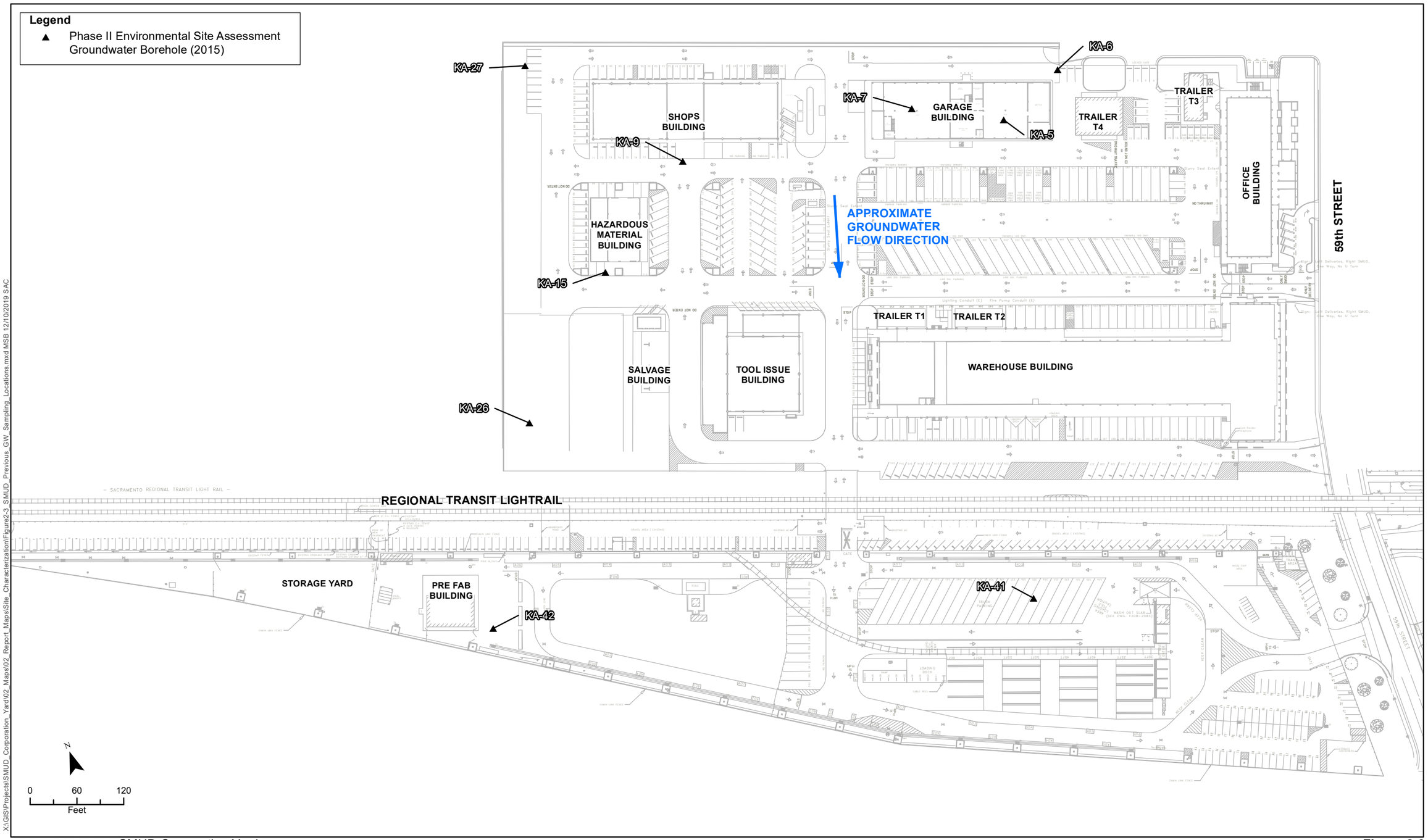
SMUD Corporation Yard
1708 59th Street, Sacramento, California

Figure 2-2
Previous Investigation Arsenic and Thallium Concentrations in Soil

Legend

▲ Phase II Environmental Site Assessment Groundwater Borehole (2015)



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SMUD Corporation Yard
1708 59th Street, Sacramento, California

Figure 2-3
Previous Investigation Groundwater Sampling Locations

Legend

- Soil Gas and Soil Sample Location
- Soil Sample Location
- Groundwater Sample Location

SHOPS BUILDING
GARAGE BUILDING
TRAILER T4
TRAILER T3
OFFICE BUILDING
59th STREET
HAZARDOUS MATERIAL BUILDING
B01
B02
B03
VW01
VW13
B04
VW12/B05
B06
VW04/B06
VW10
VW02
VW03/B07
TRAILER T1
TRAILER T2
VW07
SALVAGE BUILDING
TOOL ISSUE BUILDING
VW05/B09
WAREHOUSE BUILDING
VW11
B08
VW08
VW06
B10
B11
B12
B14
B15
VW09/B13
B13
B16
B17
REGIONAL TRANSIT LIGHTRAIL
STORAGE YARD
PRE FAB BUILDING
39th STREET

N

0 60 120
Feet

X:\GIS\Projects\SMUD_Corporation_Yard\02_Maps\02_Report_Maps\Site_Characterization\Figure3-1_SMUD_Current_Sample_Locations.mxd MSB 5/7/2019 SAC

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SMUD Corporation Yard
1708 59th Street, Sacramento, California

Figure 3-1
Current Investigation Sample Locations

Legend

▽ Active Soil Gas Sample Location

Location ID | Depth (ft bgs)

VW12 | 5.5'

PCE | 97

TCE | ND(<5.8)

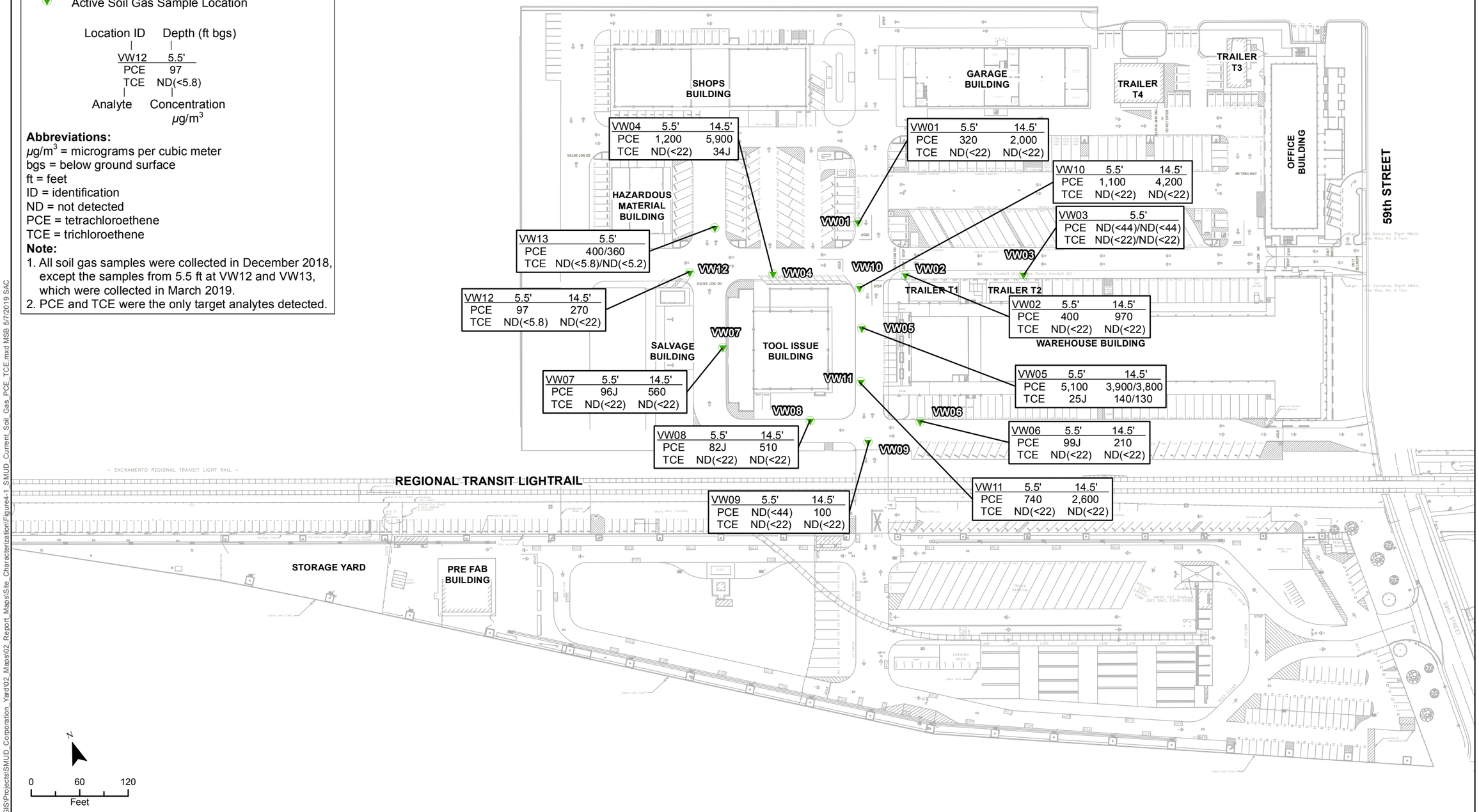
Analyte | Concentration $\mu g/m^3$

Abbreviations:

$\mu g/m^3$ = micrograms per cubic meter
bgs = below ground surface
ft = feet
ID = identification
ND = not detected
PCE = tetrachloroethene
TCE = trichloroethene

Note:

1. All soil gas samples were collected in December 2018, except the samples from 5.5 ft at VW12 and VW13, which were collected in March 2019.
2. PCE and TCE were the only target analytes detected.



X:\GIS\Projects\SMUD_Corporation_Yard\02_Maps\02_Report_Maps\Site_Characterization\Figure4-1_SMUD_Current_Soil_Gas_PCE_TCE.mxd MSB 5/7/2019 SAC

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Figure 4-1
Current Investigation PCE and TCE Concentrations in Soil Gas

Legend

▲ Soil Borehole (2018)

Borehole ID — Depth (ft bgs)

B04 1.5' 5'
Arsenic 16 3.3

Analyte — Concentration (mg/kg)

Abbreviations:
bgs = below ground surface
ft = feet
ID = identification
mg/kg = milligrams per kilogram

B01 1.5'
Arsenic 6.4

B02 1.5'
Arsenic 6.3

B03 1.5'
Arsenic 8.2

VW12/B05 1.5' 5'
Arsenic 3.7 3.5

VW04/B06 1.5' 5'
Arsenic 3.6 5.1

VW03/B07 1.5 5'
Arsenic 2.7 4.9

B04 1.5' 5'
Arsenic 16 3.3

VW05/B09 1.5' 5'
Arsenic 3.4 5.2

B10 1.5' 5'
Arsenic 240 9.0

B11 1.5' 5'
Arsenic 260 140

B08 1.5' 5'
Arsenic 69 4.4

B12 1.75' 5'
Arsenic 13 7.3

VW09/B13 1.5' 5'
Arsenic 8.7 3.9

B14 1.5' 5'
Arsenic 13 4.4

B15 1.5' 5'
Arsenic 140 6.3

B16 1.5' 5'
Arsenic 280 3.8

B17 1.5' 5'
Arsenic 45 330

SHOPS BUILDING
GARAGE BUILDING
TRAILER T4
TRAILER T3
OFFICE BUILDING
59th STREET
HAZARDOUS MATERIAL BUILDING
TRAILER T1
TRAILER T2
WAREHOUSE BUILDING
SALVAGE BUILDING
TOOL ISSUE BUILDING
REGIONAL TRANSIT LIGHTRAIL
STORAGE YARD
PRE FAB BUILDING
30th STREET

N

0 60 120
Feet

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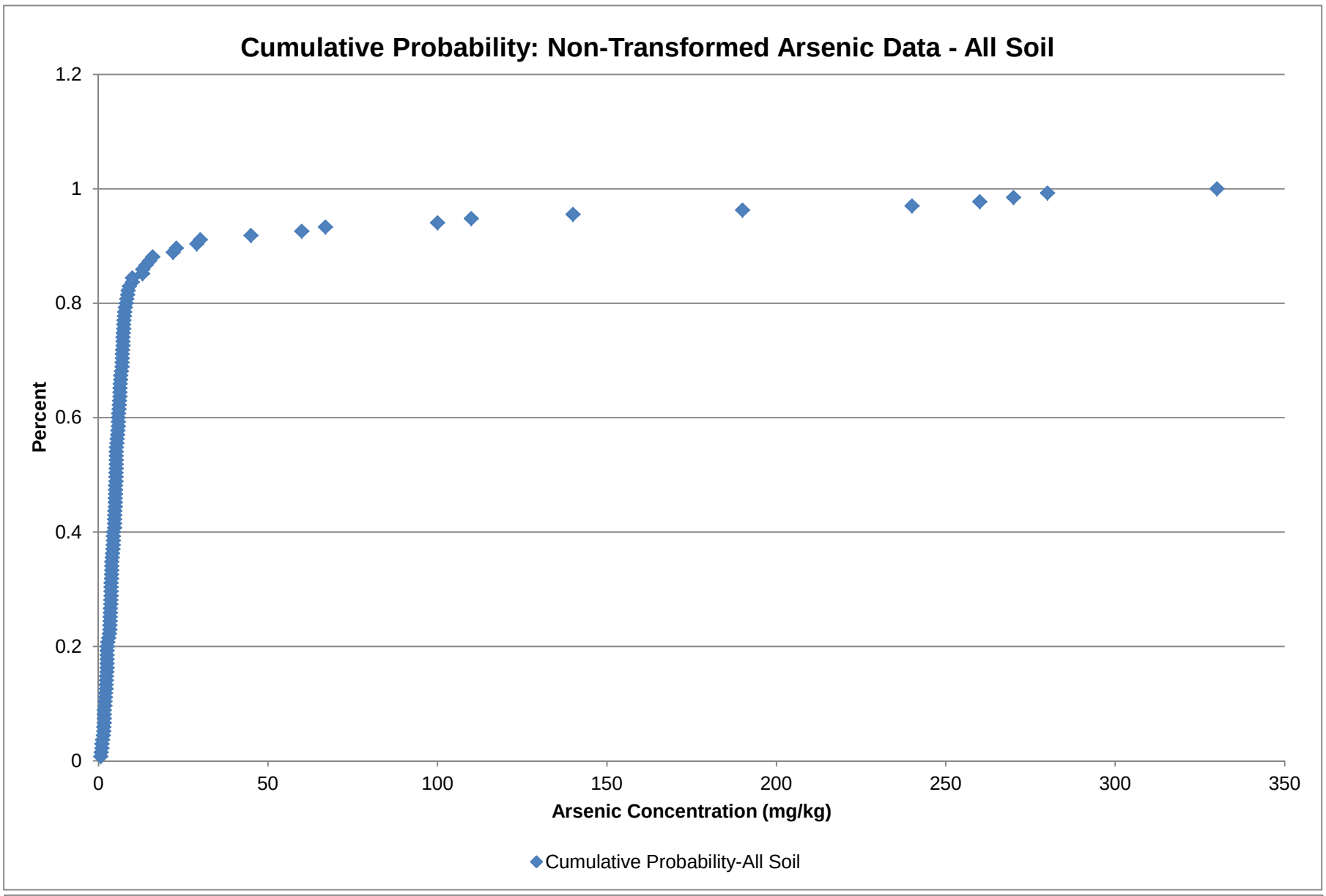
Figure 4-2
Current Investigation Arsenic Concentrations in Soil

Figure 5-1: Cumulative Probability Plots: All Soil Types



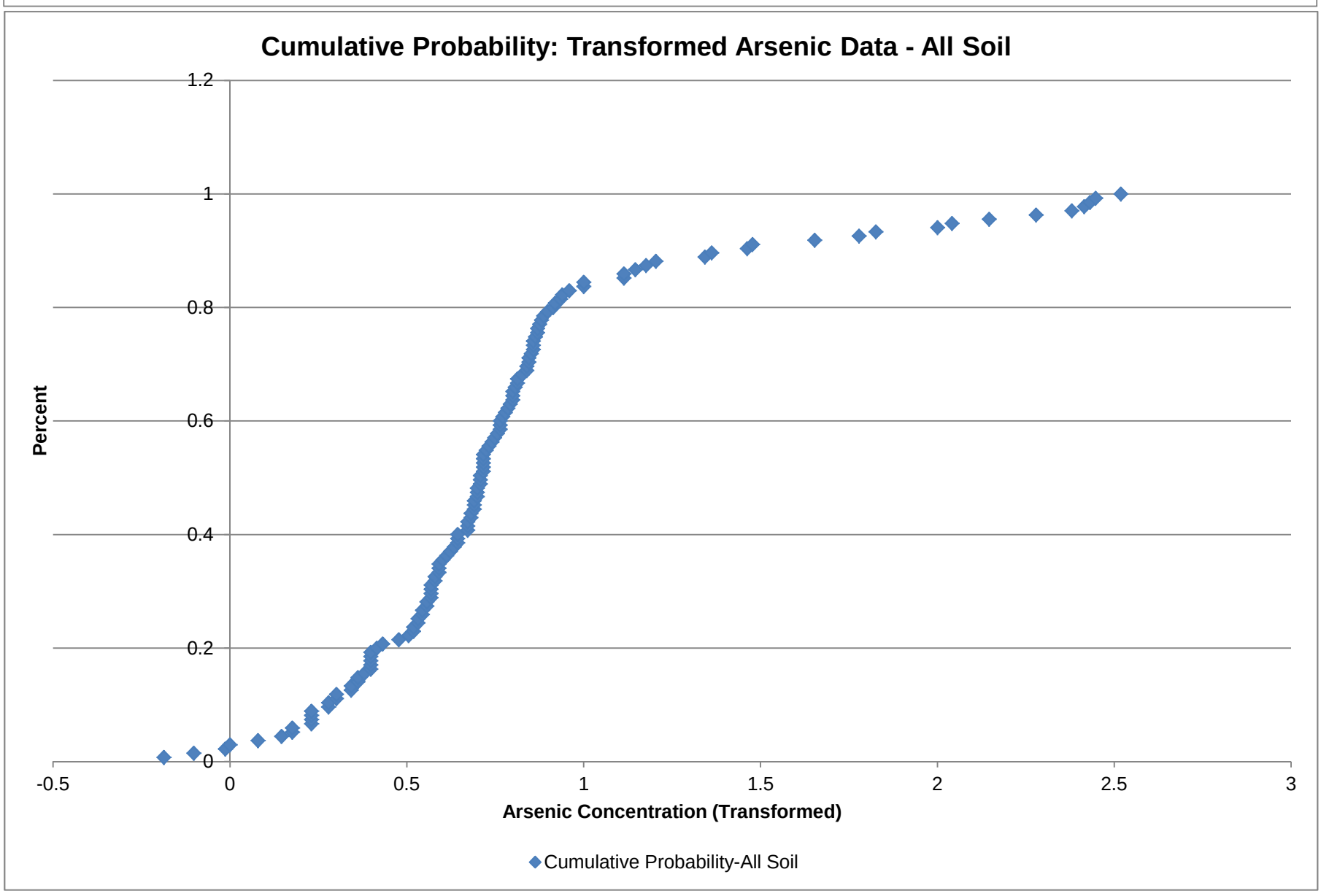


Figure 5-2: Cumulative Probability Plots: Coarse Soil Types

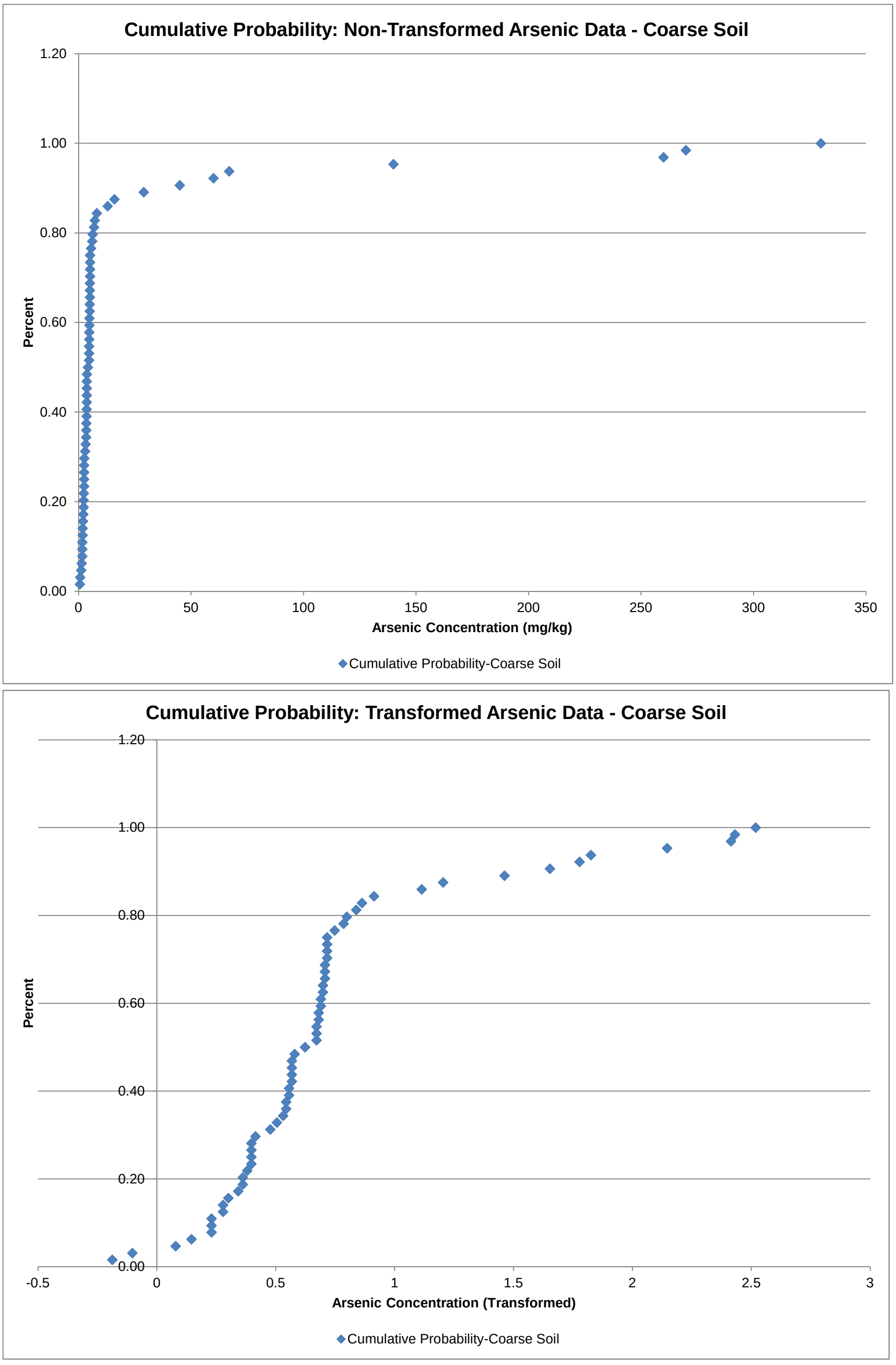
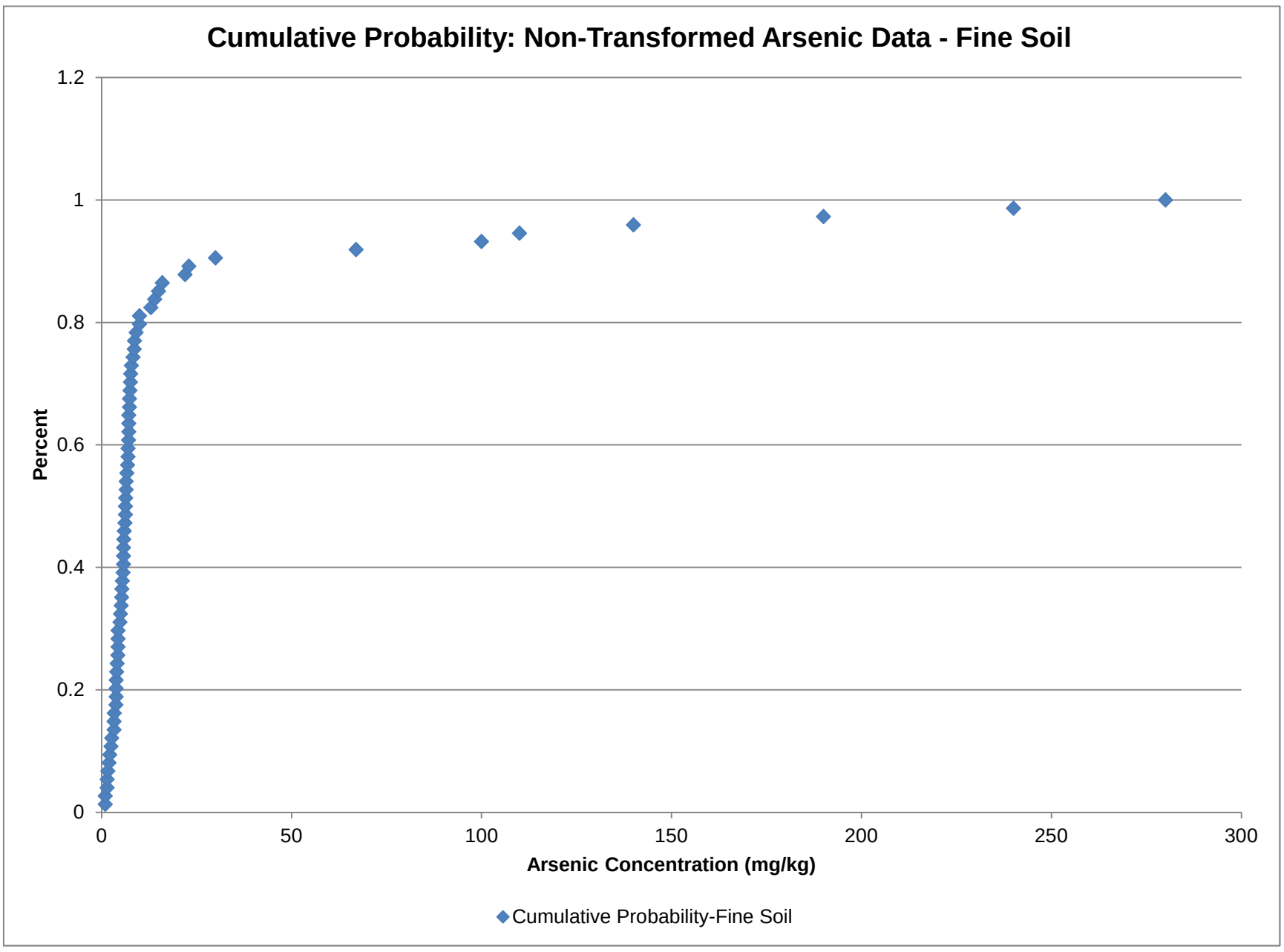


Figure 5-3: Cumulative Probability Plots: Fine Soil Types



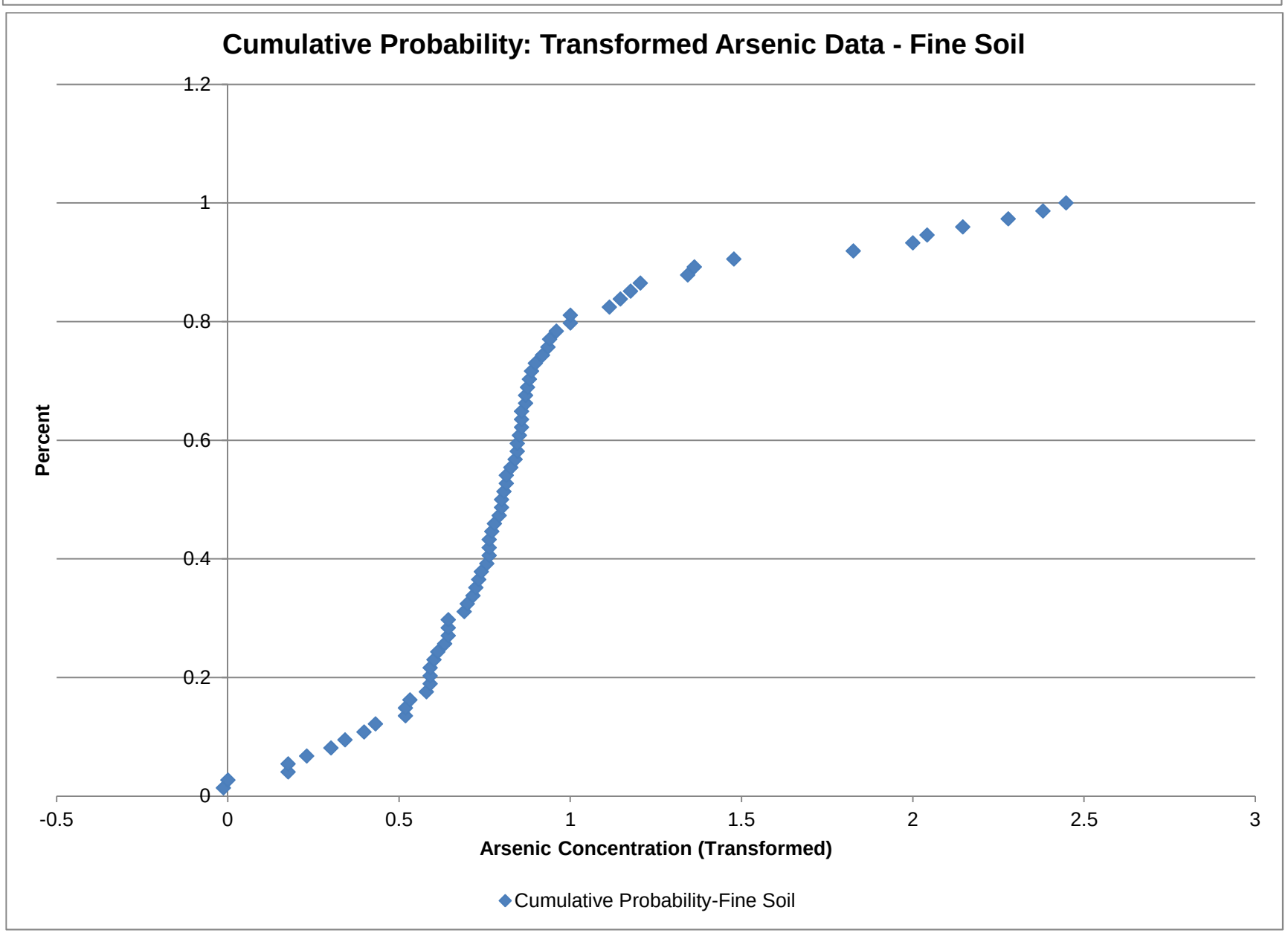


Figure 5-4: Non-Transformed and Transformed Arsenic Data Histograms

Non-Transformed Arsenic Data Histogram	Transformed Arsenic Data Histogram

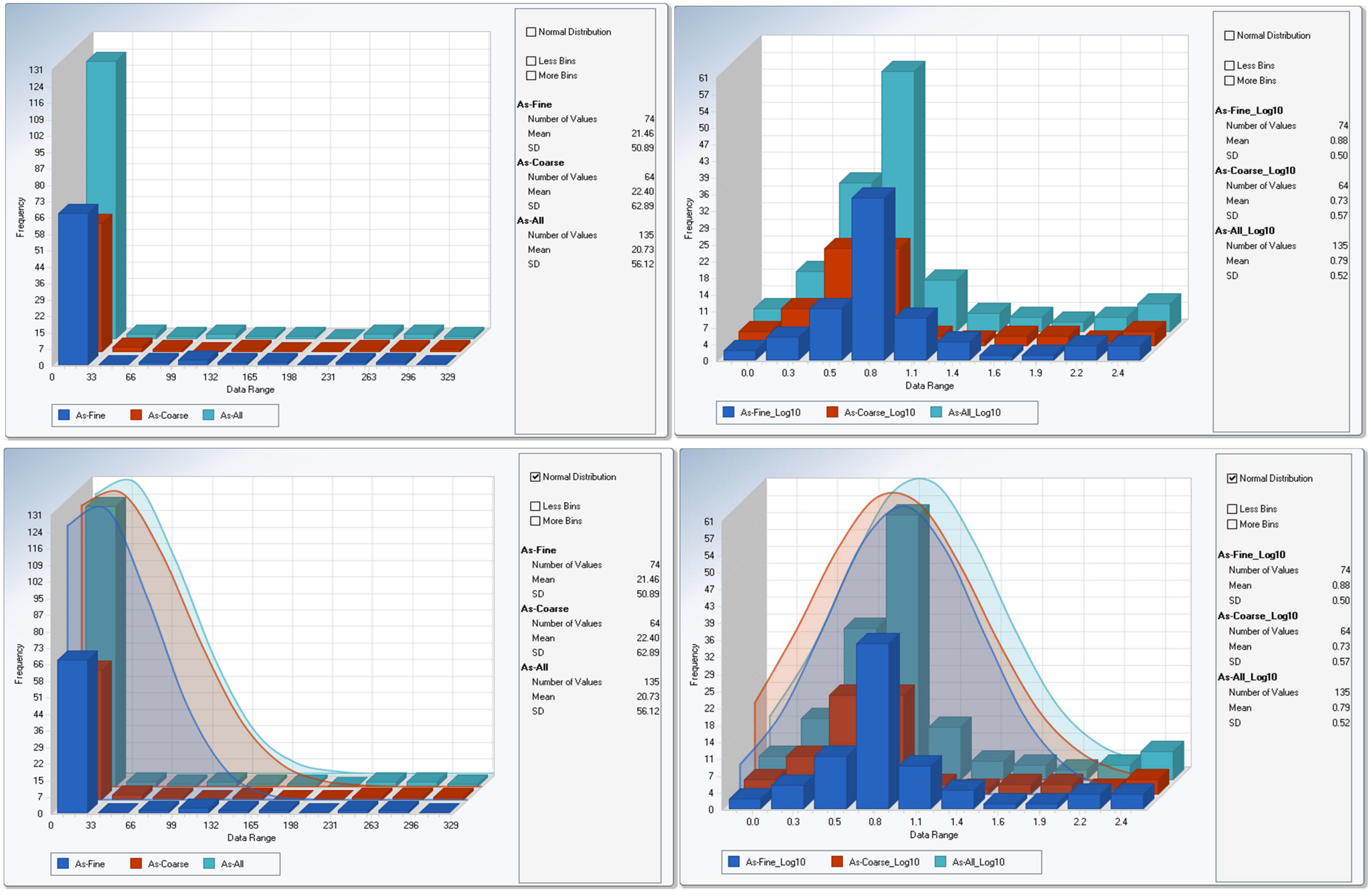
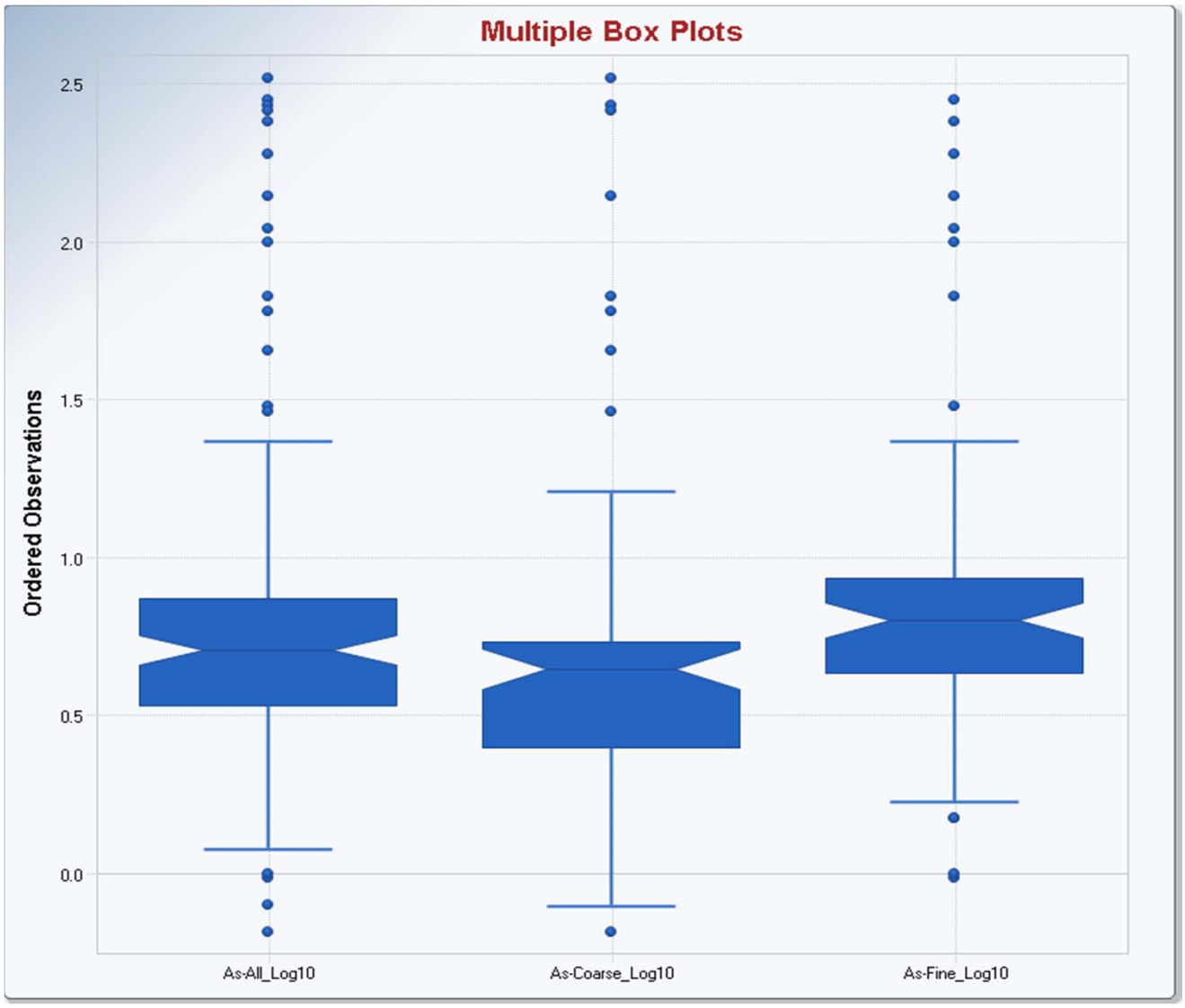


Figure 5-5: Transformed Arsenic Data Box Plots



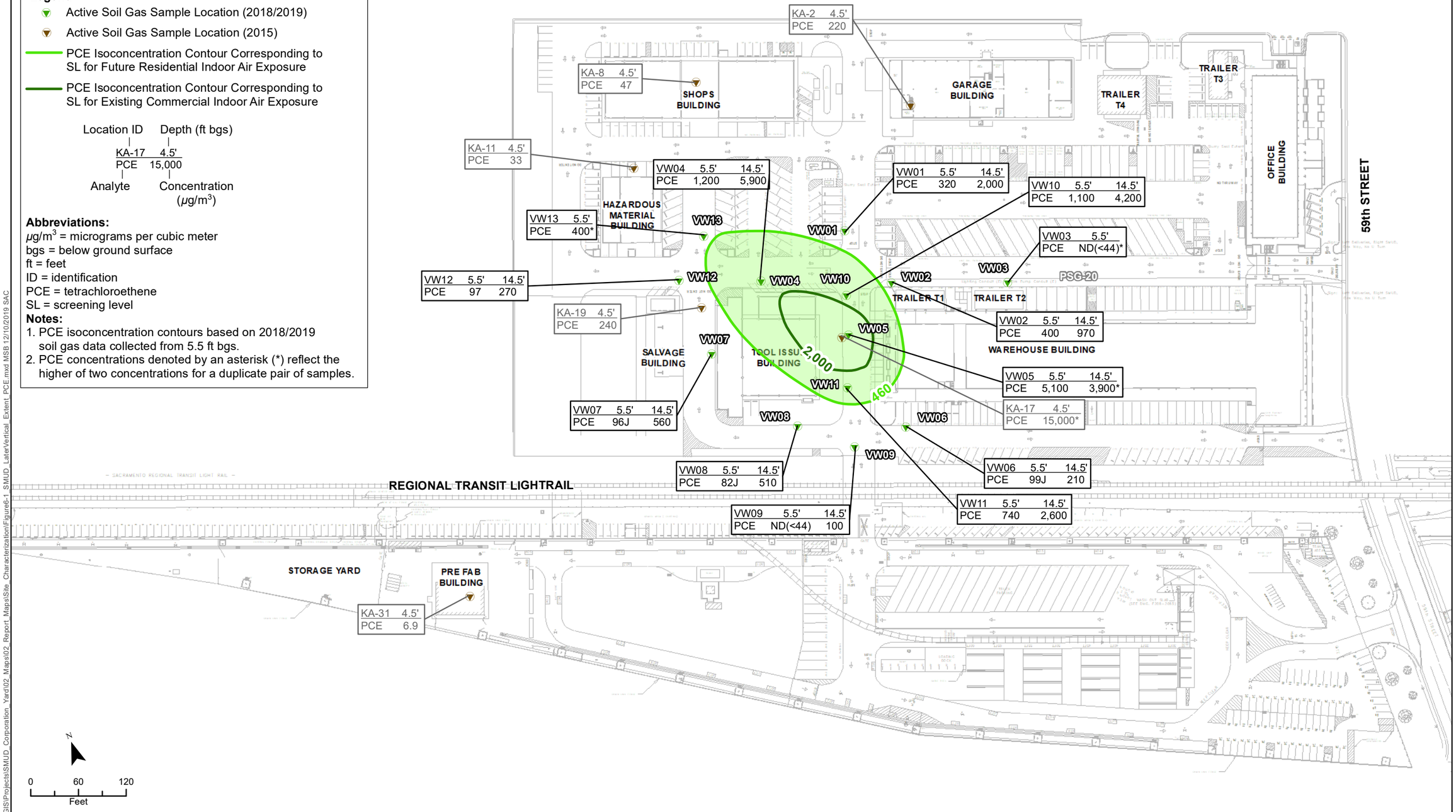
Legend

- Active Soil Gas Sample Location (2018/2019)
- Active Soil Gas Sample Location (2015)
- PCE Isoconcentration Contour Corresponding to SL for Future Residential Indoor Air Exposure
- PCE Isoconcentration Contour Corresponding to SL for Existing Commercial Indoor Air Exposure

Location ID — Depth (ft bgs)
KA-17 4.5'
PCE 15,000
Analyte — Concentration ($\mu g/m^3$)

Abbreviations:
$\mu g/m^3$ = micrograms per cubic meter
bgs = below ground surface
ft = feet
ID = identification
PCE = tetrachloroethene
SL = screening level

Notes:
1. PCE isoconcentration contours based on 2018/2019 soil gas data collected from 5.5 ft bgs.
2. PCE concentrations denoted by an asterisk (*) reflect the higher of two concentrations for a duplicate pair of samples.



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1708 59th Street, Sacramento, California

Figure 6-1
Lateral and Vertical Extent of PCE in Soil Gas

Legend

- 2018 Soil Borehole
- 2015 Soil Borehole
- Arsenic Isoconcentration Contour 0 to 3 ft bgs (dashed where inferred)
- Arsenic Isoconcentration Contour >3 to 6 ft bgs (dashed where inferred)

Location ID — Depth (ft bgs)

KA-11 1.5'
Arsenic 5.9

Analyte — Concentration (mg/kg)

Abbreviations:
> = greater than
bgs = below ground surface
ft = feet
ID = identification
mg/kg = milligrams per kilogram

Notes:
1. Arsenic concentrations denoted by an asterisk (*) reflect the higher of two concentrations for a duplicate pair of samples.
2. The site-specific arsenic background concentration is 17.53 mg/kg.

KA-27 6' 36' 46' Arsenic 6.7 0.97 3.9
KA-2 6' 16' Arsenic 7.4 3.0
KA-3 6' 11' Arsenic 7.0 3.8
KA-4 6' 16' Arsenic 5.8 1.9
KA-6 6' 36' 46' Arsenic 7.2 1.5 1.7
KA-5 6' 36' 46' Arsenic 7.5 1.5 2.5
KA-8 2' Arsenic 4.3*
KA-1 21' Arsenic 2.2
KA-20 1.5' Arsenic 4.9
KA-7 6' 36' 46' Arsenic 5.8 2.2 1.4
KA-11 1.5' Arsenic 5.9
KA-9 6' 36' 46' Arsenic 6.3 1.0 1.7
B01 1.5' Arsenic 6.4
B02 1.5' Arsenic 6.3
KA-10 1.5' 4.5' Arsenic 29 2.6
KA-44 1.5' 5' Arsenic 30 2.5
KA-43 1' Arsenic 4.9
KA-15 6' 36' 46' Arsenic 4.2 2.5 2.6
KA-13 6' 11' Arsenic 4.8 7.2
KA-45 1.5' Arsenic 7.4
KA-24 6' 11' Arsenic 4.7* 4.8*
KA-14 6' 16' Arsenic 5.2* 3.5*
B06 1.5' 5' Arsenic 3.6 5.1
KA-16 1.5' Arsenic 3.9
B03 1.5' Arsenic 8.2
KA-47 1.5' Arsenic 4.0
B05 1.5' 5' Arsenic 3.7 3.5
KA-46 1.5' Arsenic 6.5
B07 1.5' 5' Arsenic 2.7 4.9
KA-25 6' 16' Arsenic 5.2 1.7
B04 1.5' 5' Arsenic 16 3.3
KA-19 6' 16' Arsenic 14* 5.7*
KA-17 1.5' 5' Arsenic 100 2.2
B10 1.5' 5' Arsenic 240 9.0
KA-21 1.5' Arsenic 3.6
B09 1.5' 5' Arsenic 3.4 5.2
B11 1.5' 5' Arsenic 260 140
KA-23 6' 11' Arsenic 5.4* 8.6*
KA-18 6' 11' Arsenic 23* 7.2*
KA-48 2' Arsenic 60
KA-50 3' 5' Arsenic 110 6.8
KA-26 6' 36' 51' Arsenic 3.7 0.79 3.3
KA-22 2' Arsenic 5.3
B08 1.5' 5' Arsenic 69 4.4
B12 1.75' 5' Arsenic 13 7.3
B13 1.5' 5' Arsenic 8.7 3.9
KA-49 1.5' Arsenic 15
B14 1.5' 5' Arsenic 13 4.4
B17 1.5' 5' Arsenic 45 330*
BK-1 1' 6' 11' 16' Arsenic 4.0 4.1 2.1 1.2
PS-4 1' 6' 11' 16' Arsenic 6.1 5.3 4.9 1.9
B15 1.5' 5' Arsenic 140 6.3
KA-40 6' 16' Arsenic 7.0* 2.0*
B16 1.5' 5' Arsenic 280 3.8*
KA-33 1' Arsenic 10
KA-29 1' Arsenic 5.8
KA-41 6' 26' 36' Arsenic 4.4 2.0 1.2
KA-38 6' 11' Arsenic 6.2* 3.7*
KA-37 6' 11' Arsenic 7.7* 5.6*
PS-3 1' 6' 11' 16' Arsenic 4.4 5.7 7.3 8.1
PS-5 1' 6' 11' 16' Arsenic 5.3 4.7 2.8 2.7
KA-32 1' Arsenic 5.0
KA-30 1' Arsenic 5.1
KA-35 6' 16' Arsenic 5.2* 2.5*
KA-28 1' Arsenic 5.2
KA-36 6' 16' Arsenic 8.3* 6.1*
KA-34 2' Arsenic 4.7
KA-31 1' Arsenic 6.9
KA-42 6' 26' 36' Arsenic 5.5 0.65 2.4
PS-2 1' 6' 11' 16' Arsenic 8.7 8.8 11 6.7
PS-1 1' 6' 11' 16' Arsenic 6.5 7.2 8.3 5.1

HAZARDOUS MATERIAL BUILDING
SHOPS BUILDING
GARAGE BUILDING
TRAILER T3
TRAILER T4
OFFICE BUILDING
59th STREET
TRAILER T1
TRAILER T2
SALVAGE BUILDING
TOOL ISSUE BUILDING
WAREHOUSE BUILDING
REGIONAL TRANSIT LIGHTRAIL
STORAGE YARD
PRE FAB BUILDING
17.53
50
100

N
0 60 120
Feet

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1708 59th Street, Sacramento, California

Figure 6-2
Lateral and Vertical Extent of Arsenic in Soil

Legend

- ▲ 2018 Groundwater Borehole
- ▲ 2015 Groundwater Borehole

Borehole ID — Depth (ft bgs)
KA-27 47' - 49'
PCE 1.8 µg/L
Analyte — Concentration

Abbreviations:
< = less than
µg/L = micrograms per liter
bgs = below ground surface
ft = feet
ID = identification
ND = not detected
PCE = tetrachloroethene

KA-27 47' - 49'
PCE 1.8 µg/L

KA-6 47.5' - 49.5'
PCE 0.85 µg/L

KA-9 47.5' - 49.5'
PCE 2.1 µg/L

KA-5 40' - 45'
PCE 0.35 µg/L

KA-15 47.5' - 49.5'
PCE 0.50 µg/L

KA-7 40' - 45'
PCE 0.77 µg/L

B06 33.73'
PCE 0.33J/0.73 µg/L

KA-26 47' - 49'
PCE ND(<0.50 µg/L)

B13 37'
PCE 0.44J µg/L

KA-41 34' - 40'
PCE ND(<0.50 µg/L)

KA-42 34' - 40'
PCE 0.18 µg/L

SHOPS BUILDING
GARAGE BUILDING
TRAILER T4
TRAILER T3
OFFICE BUILDING
HAZARDOUS MATERIAL BUILDING
APPROXIMATE GROUNDWATER FLOW DIRECTION
TRAILER T1
TRAILER T2
SALVAGE BUILDING
TOOL ISSUE BUILDING
WAREHOUSE BUILDING
59th STREET
REGIONAL TRANSIT LIGHTRAIL
STORAGE YARD
PRE FAB BUILDING
58th STREET

N
0 60 120
Feet

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SMUD Corporation Yard
1708 59th Street, Sacramento, California

Figure 6-3
Previous and Current Investigation
PCE Concentrations in Groundwater

Appendix A

Investigative-Derived Waste Analytical Results and Disposal Documentation

TABLE A-1. SOIL INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO TOTAL THRESHOLD LIMIT CONCENTRATIONS

VOLATILE ORGANIC COMPOUNDS		Sample ID	SO-IDW-01
		Sample Date	1/3/2019
		Sample Type	Composite
Analyte	Units	TTLC[(a)]	
Benzene	mg/kg	NE	ND (<0.0013)
Bromobenzene	mg/kg	NE	ND (<0.0013)
Bromochloromethane	mg/kg	NE	ND (<0.00092)
Bromodichloromethane	mg/kg	NE	ND (<0.00084)
Bromoform	mg/kg	NE	ND (<0.0015)
Bromomethane	mg/kg	NE	ND (<0.0016)
n-Butylbenzene	mg/kg	NE	ND (<0.0015)
sec-Butylbenzene	mg/kg	NE	ND (<0.0012)
tert-Butylbenzene	mg/kg	NE	ND (<0.0012)
Carbon tetrachloride	mg/kg	NE	ND (<0.0011)
Chlorobenzene	mg/kg	NE	ND (<0.0013)
Chloroethane	mg/kg	NE	ND (<0.0014)
Chloroform	mg/kg	NE	ND (<0.00063)
Chloromethane	mg/kg	NE	ND (<0.0014)
2-Chlorotoluene	mg/kg	NE	ND (<0.0018)
4-Chlorotoluene	mg/kg	NE	ND (<0.0014)
Dibromochloromethane	mg/kg	NE	ND (<0.00099)
1,2-Dibromo-3-chloropropane	mg/kg	NE	ND (<0.0017)
1,2-Dibromoethane	mg/kg	NE	ND (<0.0010)
Dibromomethane	mg/kg	NE	ND (<0.0018)
1,2-Dichlorobenzene	mg/kg	NE	ND (<0.00081)
1,3-Dichlorobenzene	mg/kg	NE	ND (<0.0014)
1,4-Dichlorobenzene	mg/kg	NE	ND (<0.0015)
Dichlorofluoromethane	mg/kg	NE	ND (<0.0013)
1,1-Dichloroethane	mg/kg	NE	ND (<0.0014)
1,2-Dichloroethane	mg/kg	NE	ND (<0.00085)
1,1-Dichloroethene	mg/kg	NE	ND (<0.0012)
cis-1,2-Dichloroethene	mg/kg	NE	ND (<0.0013)
trans-1,2-Dichloroethene	mg/kg	NE	ND (<0.0014)
1,2-Dichloroethene, total	mg/kg	NE	ND (<0.0026)
1,2-Dichloropropane	mg/kg	NE	ND (<0.00081)
1,3-Dichloropropane	mg/kg	NE	ND (<0.0011)
2,2-Dichloropropane	mg/kg	NE	ND (<0.0013)
1,1-Dichloropropene	mg/kg	NE	ND (<0.0012)

TABLE A-1. SOIL INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO TOTAL THRESHOLD LIMIT CONCENTRATIONS

VOLATILE ORGANIC COMPOUNDS		Sample ID	SO-IDW-01
		Sample Date	1/3/2019
		Sample Type	Composite
Analyte	Units	TTLC[(a)]	
cis-1,3-Dichloropropene	mg/kg	NE	ND (<0.0011)
trans-1,3-Dichloropropene	mg/kg	NE	ND (<0.0012)
1,3-Dichloropropene, total	mg/kg	NE	ND (<0.0020)
Ethylbenzene	mg/kg	NE	ND (<0.0015)
Hexachlorobutadiene	mg/kg	NE	ND (<0.0017)
Isopropylbenzene	mg/kg	NE	ND (<0.0013)
p-Isopropyltoluene	mg/kg	NE	ND (<0.0013)
Methylene chloride	mg/kg	NE	ND (<0.0024)
Methyl *tert*-butyl ether	mg/kg	NE	ND (<0.00050)
Naphthalene	mg/kg	NE	ND (<0.0014)
n-Propylbenzene	mg/kg	NE	ND (<0.0013)
Styrene	mg/kg	NE	ND (<0.0014)
1,1,1,2-Tetrachloroethane	mg/kg	NE	ND (<0.0011)
1,1,2,2-Tetrachloroethane	mg/kg	NE	ND (<0.0011)
Tetrachloroethene (PCE)	mg/kg	NE	ND (<0.0013)
Toluene	mg/kg	NE	ND (<0.0012)
1,2,3-Trichlorobenzene	mg/kg	NE	ND (<0.0021)
1,2,4-Trichlorobenzene	mg/kg	NE	ND (<0.0020)
1,1,1-Trichloroethane	mg/kg	NE	ND (<0.0011)
1,1,2-Trichloroethane	mg/kg	NE	ND (<0.00077)
Trichloroethene (TCE)	mg/kg	2,040	ND (<0.0011)
Trichlorofluoromethane	mg/kg	NE	ND (<0.0011)
1,2,3-Trichloropropane	mg/kg	NE	ND (<0.0016)
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	NE	ND (<0.0013)
1,2,4-Trimethylbenzene	mg/kg	NE	ND (<0.0013)
1,3,5-Trimethylbenzene	mg/kg	NE	ND (<0.0015)
Vinyl chloride	mg/kg	NE	ND (<0.0016)
Total Purgeable Petroleum Hydrocarbons	mg/kg	NE	ND (<0.020)

Notes:

No analytes were detected above their respective screening criteria, if established.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

ID = identification

mg/kg = milligrams per kilogram

ND = not detected

NE = not established

TTLC = total threshold limit concentration

TABLE A-1. SOIL INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO TOTAL THRESHOLD LIMIT CONCENTRATIONS

SEMI-VOLATILE ORGANIC COMPOUNDS		Sample ID	SO-IDW-01
		Sample Date	1/3/2019
		Sample Type	Composite
Analyte	Units	TTLC[(a)]	
Acenaphthene	mg/kg	NE	ND (<0.038)
Acenaaphthylene	mg/kg	NE	ND (<0.034)
Aldrin	mg/kg	1.4	ND (<0.070)
Aniline	mg/kg	NE	ND (<0.18)
Anthracene	mg/kg	NE	ND (<0.034)
Benzidine	mg/kg	NE	ND (<0.39)
Benzo[*a*]anthracene	mg/kg	NE	ND (<0.047)
Benzo[*a*]fluoranthene	mg/kg	NE	ND (<0.034)
Benzo[*k*]fluoranthene	mg/kg	NE	ND (<0.049)
Benzo[*a*]pyrene	mg/kg	NE	ND (<0.055)
Benzo[*g,h,i*]perylene	mg/kg	NE	ND (<0.12)
Benzoic acid	mg/kg	NE	ND (<0.095)
Benzyl alcohol	mg/kg	NE	ND (<0.28)
Benzyl butyl phthalate	mg/kg	NE	ND (<0.055)
alpha-BHC	mg/kg	NE	ND (<0.070)
beta-BHC	mg/kg	NE	ND (<0.044)
delta-BHC	mg/kg	NE	ND (<0.046)
gamma-BHC (Lindane)	mg/kg	4.0	ND (<0.046)
bis(2-Chloroethoxy)methane	mg/kg	NE	ND (<0.036)
bis(2-Chloroethyl)ether	mg/kg	NE	ND (<0.13)
bis(2-Chloroiospropyl)ether	mg/kg	NE	ND (<0.16)
bis(2-Ethylhexyl)phthalate	mg/kg	NE	ND (<0.055)
4-Bromophenyl phenyl ether	mg/kg	NE	ND (<0.050)
4-Chloroaniline	mg/kg	NE	ND (<0.060)
2-Chloronaphthalene	mg/kg	NE	ND (<0.034)
4-Chlorophenyl phenyl ether	mg/kg	NE	ND (<0.044)
Chrysene	mg/kg	NE	ND (<0.034)
4,4'-Dichlorodiphenyldichloroethane (DDD)	mg/kg	1.0	ND (<0.080)
4,4'-Dichlorodiphenyldichloroethene (DDE)	mg/kg	1.0	ND (<0.11)
4,4'-Dichlorodiphenylchloroethane (DDT)	mg/kg	1.0	ND (<0.060)
Dibenzo[*a,h*]anthracene	mg/kg	NE	ND (<0.12)
Dibenzofuran	mg/kg	NE	ND (<0.036)
1,2-Dichlorobenzene	mg/kg	NE	ND (<0.33)
1,3-Dichlorobenzene	mg/kg	NE	ND (<0.33)
1,4-Dichlorobenzene	mg/kg	NE	ND (<0.34)
3,3-Dichlorobenzidine	mg/kg	NE	ND (<0.075)
Dieldrin	mg/kg	8.0	ND (<0.12)
Diethyl phthalate	mg/kg	NE	ND (<0.043)
Dimethyl phthalate	mg/kg	NE	ND (<0.050)
Di-n-butyl phthalate	mg/kg	NE	ND (<0.034)

TABLE A-1. SOIL INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO TOTAL THRESHOLD LIMIT CONCENTRATIONS

SEMI-VOLATILE ORGANIC COMPOUNDS		Sample ID	SO-IDW-01
		Sample Date	1/3/2019
		Sample Type	Composite
Analyte	Units	TTLC[(a)]	
2,4-Dinitrotoluene	mg/kg	NE	ND (<0.16)
2,6-Dinitrotoluene	mg/kg	NE	ND (<0.044)
Di-*n*-octyl phthalate	mg/kg	NE	ND (<0.060)
1,2-Diphenylhydrazine	mg/kg	NE	ND (<0.034)
Endosulfan I	mg/kg	NE	ND (<0.14)
Endosulfan II	mg/kg	NE	ND (<0.14)
Endosulfan sulfate	mg/kg	NE	ND (<0.070)
Endrin	mg/kg	0.2	ND (<0.14)
Endrin aldehyde	mg/kg	NE	ND (<0.095)
Fluoranthene	mg/kg	NE	ND (<0.10)
Fluorene	mg/kg	NE	ND (<0.038)
Heptachlor	mg/kg	4.7	ND (<0.048)
Heptachlor epoxide	mg/kg	NE	ND (<0.080)
Hexachlorobenzene	mg/kg	NE	ND (<0.036)
Hexachlorobutadiene	mg/kg	NE	ND (<0.039)
Hexachlorocyclopentadiene	mg/kg	NE	ND (<0.036)
Hexachloroethane	mg/kg	NE	ND (<0.31)
Indeno[1,2,3-*cd*]pyrene	mg/kg	NE	ND (<0.11)
Isophorone	mg/kg	NE	ND (<0.10)
2-Methylnaphthalene	mg/kg	NE	ND (<0.055)
Naphthalene	mg/kg	NE	ND (<0.034)
2-Naphthylamine	mg/kg	NE	ND (<0.18)
2-Nitroaniline	mg/kg	NE	ND (<0.065)
3-Nitroaniline	mg/kg	NE	ND (<0.12)
4-Nitroaniline	mg/kg	NE	ND (<0.14)
Nitrobenzene	mg/kg	NE	ND (<0.048)
N-Nitrosodimethylamine	mg/kg	NE	ND (<0.090)
N-Nitrosodi-N-propylamine	mg/kg	NE	ND (<0.28)
N-Nitrosodiphenylamine	mg/kg	NE	ND (<0.065)
Phenanthrene	mg/kg	NE	ND (<0.034)
Pyrene	mg/kg	NE	ND (<0.10)
1,2,4-Trichlorobenzene	mg/kg	NE	ND (<0.034)
4-Chloro-3-methylphenol	mg/kg	NE	ND (<0.055)
2-Chlorophenol	mg/kg	NE	ND (<0.28)
2,4-Dichlorophenol	mg/kg	NE	ND (<0.075)
2,4-Dimethylphenol	mg/kg	NE	ND (<0.055)
4,6-Dinitro-2-methylphenol	mg/kg	NE	ND (<0.095)
2,4-Dinitrophenol	mg/kg	NE	ND (<0.075)
2-Methylphenol	mg/kg	NE	ND (<0.34)
3- & 4-Methylphenol	mg/kg	NE	ND (<0.70)

TABLE A-1. SOIL INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO TOTAL THRESHOLD LIMIT CONCENTRATIONS

SEMI-VOLATILE ORGANIC COMPOUNDS		Sample ID	SO-IDW-01
		Sample Date	1/3/2019
		Sample Type	Composite
Analyte	Units	TTLC[(a)]	
2-Nitrophenol	mg/kg	NE	ND (<0.034)
4-Nitrophenol	mg/kg	NE	ND (<0.13)
Pentachlorophenol	mg/kg	17	ND (<0.12)
Phenol	mg/kg	NE	ND (<0.32)
2,4,5-Trichlorophenol	mg/kg	NE	ND (<0.075)
2,4,6-Trichlorophenol	mg/kg	NE	ND (<0.034)

Notes:

No analytes were detected above their respective screening criteria, if established.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

BHC = hexachlorocyclohexane

ID = identification

mg/kg = milligrams per kilogram

ND = not detected

NE = not established

TTLC = total threshold limit concentration

TABLE A-1. SOIL INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO TOTAL THRESHOLD LIMIT CONCENTRATIONS

METALS		Sample ID	SO-IDW-01
		Sample Date	1/3/2019
		Sample Type	Composite
Analyte	Units	TTLC[(a)]	
Antimony	mg/kg	500	**0.76 J**
Arsenic	mg/kg	500	**58**
Barium	mg/kg	10,000	**610**
Beryllium	mg/kg	75	**1.7**
Cadmium	mg/kg	100	**2.1**
Chromium	mg/kg	2,500	**240**
Cobalt	mg/kg	8,000	**67**
Copper	mg/kg	2,500	**180**
Lead	mg/kg	1,000	**42**
Mercury	mg/kg	20	ND (<0.019)
Molybdenum	mg/kg	3,500	**3.2**
Nickel	mg/kg	2,000	**300**
Selenium	mg/kg	100	ND (<0.55)
Silver	mg/kg	500	**0.46 J**
Thallium	mg/kg	700	**0.64 J**
Vanadium	mg/kg	2,400	**260**
Zinc	mg/kg	5,000	**300**

Notes:

Concentrations detected above the laboratory MDL shown in **bold.**

No analytes were detected above their respective screening criteria.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

ID = identification

J = estimated; detected analyte

MDL = method detection limit

mg/kg = milligrams per kilogram

ND = not detected

TTLC = total threshold limit concentration

TABLE A-1. SOIL INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO TOXIC CHARACTERISTIC LEACHING PROCEDURE AND SOLUBLE THRESHOLD LIMIT CONCENTRATIONS

METALS		Sample ID	SO-IDW-01
		Sample Date	1/3/2019
		Sample Type	Composite
Analyte	Units	TCLP[(a)]	
Chromium	mg/L	5.0	**0.012 J**
Analyte	Units	STLC[(a)]	
Arsenic	mg/L	5.0	ND (<0.12)
Chromium	mg/L	5.0	**0.052 J**
Nickel	mg/L	20	**0.55**
Vanadium	mg/L	24	**0.28**

Notes:

Concentrations detected above the laboratory MDL shown in **bold.**

No analytes were detected above their respective screening criteria.

TCLP was run for chromium only because it was the only metal with a TTLC concentration that exceeded 20 times its TCLP limit.

STLC was run for arsenic, chromium, nickel, and vanadium only because these were the only metals with TTLC concentrations that exceeded 10 times their respective STLCs.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

ID = identification

J = estimated; detected analyte

MDL = method detection limit

mg/kg = milligrams per kilogram

ND = not detected

STLC = soluble threshold limit concentration

TCLP = toxic characteristic leaching procedure

TTLC = total threshold limit concentration'

TABLE A-1. SOIL INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO TOTAL THRESHOLD LIMIT CONCENTRATIONS

PCBs		Sample ID	SO-IDW-01
		Sample Date	1/3/2019
		Sample Type	Composite
Analyte	Units	TTLC[(a)]	
PCB-1016	mg/kg	NE	ND (<0.0013)
PCB-1221	mg/kg	NE	ND (<0.0019)
PCB-1232	mg/kg	NE	ND (<0.0026)
PCB-1242	mg/kg	NE	ND (<0.0017)
PCB-1248	mg/kg	NE	ND (<0.0019)
PCB-1254	mg/kg	NE	ND (<0.0018)
PCB-1260	mg/kg	NE	ND (<0.0019)
PCBs, total	mg/kg	50	ND (<0.0050)

Notes:

No analytes were detected above their respective screening criteria, if established.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

ID = identification

mg/kg = milligrams per kilogram

ND = not detected

NE = not established

PCB = polychlorinated biphenyl

TTLC = total threshold limit concentration

TABLE A-1. SOIL INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO TOTAL THRESHOLD LIMIT CONCENTRATIONS

TOTAL PETROLEUM HYDROCARBONS		Sample ID	SO-IDW-01
		Sample Date	1/3/2019
		Sample Type	Composite
Analyte	Units	TTLC[(a)]	
TPH - Light Naphtha	mg/kg	NE	ND (<20)
TPH - Aviation Gas	mg/kg	NE	ND (<20)
TPH - Stoddard Solvent	mg/kg	NE	ND (<5.0)
TPH - Heavy Naphtha	mg/kg	NE	ND (<5.0)
TPH - Gasoline	mg/kg	NE	ND (<5.0)
TPH - Jet Fuel (JP4)	mg/kg	NE	ND (<5.0)
TPH - Jet Fuel (JP5)	mg/kg	NE	ND (<4.6)
TPH - Jet Fuel (JP8)	mg/kg	NE	ND (<5.0)
TPH - Kerosene	mg/kg	NE	ND (<1.4)
TPH - Diesel (FFP)	mg/kg	NE	ND (<1.2)
TPH - Fuel Oil #6	mg/kg	NE	ND (<5.0)
TPH - Crude Oil	mg/kg	NE	ND (<2.8)
TPH - Hydraulic Oil/Motor Oil	mg/kg	NE	**40**
TPH - WD-40	mg/kg	NE	ND (<5.0)

Notes:

Concentrations detected above the laboratory MDL shown in **bold.**

No analytes were detected above their respective screening criteria, if established.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

ID = identification

MDL = method detection limit

mg/kg = milligrams per kilogram

ND = not detected

NE = not established

TPH = total petroleum hydrocarbons

TTLC = total threshold limit concentration

TABLE A-2. WATER INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO SOLUBLE THRESHOLD LIMIT CONCENTRATIONS
(Page 1 of 8)

VOLATILE ORGANIC COMPOUNDS		Sample ID	W-IDW-01
		Sample Date	1/3/2019
		Sample Type	Grab
Analyte	Units	STLC[(a)]	
Benzene	µg/L	NE	ND (<0.083)
Bromobenzene	µg/L	NE	ND (<0.13)
Bromochloromethane	µg/L	NE	ND (<0.24)
Bromodichloromethane	µg/L	NE	ND (<0.14)
Bromoform	µg/L	NE	ND (<0.27)
Bromomethane	µg/L	NE	ND (<0.25)
n-Butylbenzene	µg/L	NE	ND (<0.11)
sec-Butylbenzene	µg/L	NE	ND (<0.15)
tert-Butylbenzene	µg/L	NE	ND (<0.13)
Carbon tetrachloride	µg/L	NE	ND (<0.18)
Chlorobenzene	µg/L	NE	ND (<0.093)
Chloroethane	µg/L	NE	ND (<0.14)
Chloroform	µg/L	NE	**0.89**
Chloromethane	µg/L	NE	ND (<0.14)
2-Chlorotoluene	µg/L	NE	ND (<0.20)
4-Chlorotoluene	µg/L	NE	ND (<0.15)
Dibromochloromethane	µg/L	NE	ND (<0.13)
1,2-Dibromo-3-chloropropane	µg/L	NE	ND (<0.44)
1,2-Dibromoethane	µg/L	NE	ND (<0.16)
Dibromomethane	µg/L	NE	ND (<0.24)
1,2-Dichlorobenzene	µg/L	NE	ND (<0.072)
1,3-Dichlorobenzene	µg/L	NE	ND (<0.15)
1,4-Dichlorobenzene	µg/L	NE	ND (<0.062)
Dichlorofluoromethane	µg/L	NE	ND (<0.099)
1,1-Dichloroethane	µg/L	NE	ND (<0.11)
1,2-Dichloroethane	µg/L	NE	ND (<0.17)
1,1-Dichloroethene	µg/L	NE	ND (<0.18)
cis-1,2-Dichloroethene	µg/L	NE	ND (<0.085)
trans-1,2-Dichloroethene	µg/L	NE	ND (<0.15)
1,2-Dichloroethene, total	µg/L	NE	ND (<0.23)
1,2-Dichloropropane	µg/L	NE	ND (<0.13)
1,3-Dichloropropane	µg/L	NE	ND (<0.086)
2,2-Dichloropropane	µg/L	NE	ND (<0.13)
1,1-Dichloropropene	µg/L	NE	ND (<0.085)
cis-1,3-Dichloropropene	µg/L	NE	ND (<0.14)
trans-1,3-Dichloropropene	µg/L	NE	ND (<0.079)
1,3-Dichloropropene, total	µg/L	NE	ND (<0.21)
Ethylbenzene	µg/L	NE	ND (<0.098)

TABLE A-2. WATER INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO SOLUBLE THRESHOLD LIMIT CONCENTRATIONS

VOLATILE ORGANIC COMPOUNDS		Sample ID	W-IDW-01
		Sample Date	1/3/2019
		Sample Type	Grab
Analyte	Units	STLC[(a)]	
Hexachlorobutadiene	µg/L	NE	ND (<0.17)
Isopropylbenzene	µg/L	NE	ND (<0.14)
p-Isopropyltoluene	µg/L	NE	ND (<0.12)
Methylene chloride	µg/L	NE	ND (<0.48)
Methyl *tert*-butyl ether	µg/L	NE	ND (<0.11)
Naphthalene	µg/L	NE	ND (<0.36)
n-Propylbenzene	µg/L	NE	ND (<0.11)
Styrene	µg/L	NE	ND (<0.068)
1,1,1,2-Tetrachloroethane	µg/L	NE	ND (<0.18)
1,1,2,2-Tetrachloroethane	µg/L	NE	ND (<0.17)
Tetrachloroethene (PCE)	µg/L	NE	ND (<0.13)
Toluene	µg/L	NE	ND (<0.093)
1,2,3-Trichlorobenzene	µg/L	NE	ND (<0.16)
1,2,4-Trichlorobenzene	µg/L	NE	ND (<0.19)
1,1,1-Trichloroethane	µg/L	NE	ND (<0.11)
1,1,2-Trichloroethane	µg/L	NE	ND (<0.16)
Trichloroethene (TCE)	µg/L	204,000	ND (<0.085)
Trichlorofluoromethane	µg/L	NE	ND (<0.13)
1,2,3-Trichloropropane	µg/L	NE	ND (<0.24)
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	NE	ND (<0.15)
1,2,4-Trimethylbenzene	µg/L	NE	ND (<0.12)
1,3,5-Trimethylbenzene	µg/L	NE	ND (<0.12)
Vinyl chloride	µg/L	NE	ND (<0.12)
Total Purgeable Petroleum Hydrocarbons	µg/L	NE	**22 J**

Notes:

Concentrations detected above the laboratory MDL shown in **bold.**

No analytes were detected above their respective screening criteria, if established.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

µg/L = micrograms per liter

ID = identification

J = estimated; detected analyte

ND = not detected

NE = not established

STLC = soluble threshold limit concentration

TABLE A-2. WATER INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO SOLUBLE THRESHOLD LIMIT CONCENTRATIONS

SEMI-VOLATILE ORGANIC COMPOUNDS		Sample ID	W-IDW-01
		Sample Date	1/3/2019
		Sample Type	Grab
Analyte	Units	STLC[(a)]	
Acenaphthene	µg/L	NE	ND (<0.22)
Acenaaphthylene	µg/L	NE	ND (<0.20)
Aldrin	µg/L	140	ND (<0.28)
Aniline	µg/L	NE	ND (<1.8)
Anthracene	µg/L	NE	ND (<0.20)
Benzidine	µg/L	NE	ND (<3.0)
Benzo[a]anthracene	µg/L	NE	ND (<0.30)
Benzo[a]fluoranthene	µg/L	NE	ND (<0.42)
Benzo[k]fluoranthene	µg/L	NE	ND (<0.29)
Benzo[a]pyrene	µg/L	NE	ND (<0.21)
Benzo[g,h,i]perylene	µg/L	NE	ND (<0.48)
Benzoic acid	µg/L	NE	**60**
Benzyl alcohol	µg/L	NE	**0.39 J**
Benzyl butyl phthalate	µg/L	NE	ND (<0.26)
alpha-BHC	µg/L	NE	ND (<0.36)
beta-BHC	µg/L	NE	ND (<0.25)
delta-BHC	µg/L	NE	ND (<0.28)
gamma-BHC (Lindane)	µg/L	400	ND (<0.32)
bis(2-Chloroethoxy)methane	µg/L	NE	ND (<0.27)
bis(2-Chloroethyl)ether	µg/L	NE	ND (<1.9)
bis(2-Chloroiospropyl)ether	µg/L	NE	ND (<1.7)
bis(2-Ethylhexyl)phthalate	µg/L	NE	ND (<0.20)
4-Bromophenyl phenyl ether	µg/L	NE	ND (<0.20)
4-Chloroaniline	µg/L	NE	ND (<0.39)
2-Chloronaphthalene	µg/L	NE	ND (<0.23)
4-Chlorophenyl phenyl ether	µg/L	NE	ND (<0.20)
Chrysene	µg/L	NE	ND (<0.26)
4,4'-Dichlorodiphenyldichloroethane (DDD)	µg/L	100	ND (<0.40)
4,4'-Dichlorodiphenyldichloroethene (DDE)	µg/L	100	ND (<0.32)
4,4'-Dichlorodiphenylchloroethane (DDT)	µg/L	100	ND (<0.26)
Dibenzo[a,h]anthracene	µg/L	NE	ND (<0.59)
Dibenzofuran	µg/L	NE	ND (<0.20)
1,2-Dichlorobenzene	µg/L	NE	ND (<1.8)
1,3-Dichlorobenzene	µg/L	NE	ND (<1.8)
1,4-Dichlorobenzene	µg/L	NE	ND (<1.8)
3,3-Dichlorobenzidine	µg/L	NE	ND (<0.41)
Dieldrin	µg/L	800	ND (<0.45)
Diethyl phthalate	µg/L	NE	ND (<0.20)

TABLE A-2. WATER INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO SOLUBLE THRESHOLD LIMIT CONCENTRATIONS

SEMI-VOLATILE ORGANIC COMPOUNDS		Sample ID	W-IDW-01
		Sample Date	1/3/2019
		Sample Type	Grab
Analyte	Units	STLC[(a)]	
Dimethyl phthalate	µg/L	NE	ND (<0.25)
Di-n-butyl phthalate	µg/L	NE	ND (<0.20)
2,4-Dinitrotoluene	µg/L	NE	ND (<0.87)
2,6-Dinitrotoluene	µg/L	NE	ND (<0.46)
Di-n-octyl phthalate	µg/L	NE	ND (<0.31)
1,2-Diphenylhydrazine	µg/L	NE	ND (<0.44)
Endosulfan I	µg/L	NE	ND (<0.37)
Endosulfan II	µg/L	NE	ND (<0.37)
Endosulfan sulfate	µg/L	NE	ND (<0.37)
Endrin	µg/L	20	ND (<0.67)
Endrin aldehyde	µg/L	NE	ND (<0.37)
Fluoranthene	µg/L	NE	ND (<0.41)
Fluorene	µg/L	NE	ND (<0.20)
Heptachlor	µg/L	470	ND (<0.22)
Heptachlor epoxide	µg/L	NE	ND (<0.35)
Hexachlorobenzene	µg/L	NE	ND (<0.23)
Hexachlorobutadiene	µg/L	NE	ND (<0.46)
Hexachlorocyclopentadiene	µg/L	NE	ND (<0.35)
Hexachloroethane	µg/L	NE	ND (<1.3)
Indeno[1,2,3-cd]pyrene	µg/L	NE	ND (<0.71)
Isophorone	µg/L	NE	ND (<0.41)
2-Methylnaphthalene	µg/L	NE	ND (<0.30)
Naphthalene	µg/L	NE	ND (<0.20)
2-Naphthylamine	µg/L	NE	ND (<1.7)
2-Nitroaniline	µg/L	NE	ND (<0.36)
3-Nitroaniline	µg/L	NE	ND (<0.52)
4-Nitroaniline	µg/L	NE	ND (<0.85)
Nitrobenzene	µg/L	NE	ND (<0.39)
N-Nitrosodimethylamine	µg/L	NE	ND (<0.56)
N-Nitrosodi-N-propylamine	µg/L	NE	ND (<0.56)
N-Nitrosodiphenylamine	µg/L	NE	ND (<0.27)
Phenanthrene	µg/L	NE	ND (<0.20)
Pyrene	µg/L	NE	ND (<0.31)
1,2,4-Trichlorobenzene	µg/L	NE	ND (<0.24)
4-Chloro-3-methylphenol	µg/L	NE	ND (<0.42)
2-Chlorophenol	µg/L	NE	ND (<0.85)
2,4-Dichlorophenol	µg/L	NE	ND (<0.26)
2,4-Dimethylphenol	µg/L	NE	ND (<0.30)

TABLE A-2. WATER INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO SOLUBLE THRESHOLD LIMIT CONCENTRATIONS

SEMI-VOLATILE ORGANIC COMPOUNDS		Sample ID	W-IDW-01
		Sample Date	1/3/2019
		Sample Type	Grab
Analyte	Units	STLC[(a)]	
4,6-Dinitro-2-methylphenol	µg/L	NE	ND (<0.43)
2,4-Dinitrophenol	µg/L	NE	ND (<0.37)
2-Methylphenol	µg/L	NE	ND (<0.43)
3- & 4-Methylphenol	µg/L	NE	ND (<1.3)
2-Nitrophenol	µg/L	NE	ND (<0.39)
4-Nitrophenol	µg/L	NE	ND (<0.66)
Pentachlorophenol	µg/L	1,700	ND (<0.43)
Phenol	µg/L	NE	**0.91 J**
2,4,5-Trichlorophenol	µg/L	NE	ND (<0.36)
2,4,6-Trichlorophenol	µg/L	NE	ND (<0.34)

Notes:

Concentrations detected above the laboratory MDL shown in **bold.**

No analytes were detected above their respective screening criteria, if established.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

µg/L = micrograms per liter

BHC = hexachlorocyclohexane

ID = identification

J = estimated; detected analyte

ND = not detected

NE = not established

STLC = soluble threshold limit concentration

TABLE A-2. WATER INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO SOLUBLE THRESHOLD LIMIT CONCENTRATIONS

METALS		Sample ID	W-IDW-01
		Sample Date	1/3/2019
		Sample Type	Grab
Analyte	Units	STLC[(a)]	
Antimony	µg/L	15,000	ND (<5.8)
Arsenic	µg/L	5,000	ND (<17)
Barium	µg/L	100,000	**3.0 J**
Beryllium	µg/L	750	ND (<2.4)
Cadmium	µg/L	1,000	ND (<2.0)
Chromium	µg/L	5,000	**32 J**
Cobalt	µg/L	80,000	ND (<2.0)
Copper	µg/L	25,000	**23 J**
Lead	µg/L	5,000	ND (<2.0)
Mercury	µg/L	200	**0.035 J**
Molybdenum	µg/L	350,000	**24**
Nickel	µg/L	20,000	ND (<14)
Selenium	µg/L	1,000	ND (<5.7)
Silver	µg/L	5,000	ND (<2.3)
Thallium	µg/L	7,000	ND (<2.0)
Vanadium	µg/L	24,000	ND (<47)
Zinc	µg/L	250,000	ND (<44)

Notes:

Concentrations detected above the laboratory MDL shown in **bold.**

No analytes were detected above their respective screening criteria.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

µg/L = micrograms per liter

ID = identification

J = estimated; detected analyte

MDL = method detection limit

ND = not detected

STLC = soluble threshold limit concentration

TABLE A-2. WATER INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO SOLUBLE THRESHOLD LIMIT CONCENTRATIONS

PCBs		Sample ID	W-IDW-01
		Sample Date	1/3/2019
		Sample Type	Grab
Analyte	Units	STLC[(a)]	
PCB-1016	µg/L	NE	ND (<0.062)
PCB-1221	µg/L	NE	ND (<0.095)
PCB-1232	µg/L	NE	ND (<0.063)
PCB-1242	µg/L	NE	ND (<0.069)
PCB-1248	µg/L	NE	ND (<0.12)
PCB-1254	µg/L	NE	ND (<0.057)
PCB-1260	µg/L	NE	ND (<0.034)
PCBs, total	µg/L	5,000	ND (<0.10)

Notes:

No analytes were detected above their respective screening criteria, if established.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

µg/L = micrograms per liter

ID = identification

ND = not detected

NE = not established

PCB = polychlorinated biphenyl

STLC = soluble threshold limit concentration

TABLE A-2. WATER INVESTIGATIVE-DERIVED WASTE ANALYTICAL RESULTS COMPARED TO SOLUBLE THRESHOLD LIMIT CONCENTRATIONS

TOTAL PETROLEUM HYDROCARBONS		Sample ID	W-IDW-01
		Sample Date	1/3/2019
		Sample Type	Grab
Analyte	Units	STLC[(a)]	
TPH - Light Naphtha	µg/L	NE	ND (<200)
TPH - Aviation Gas	µg/L	NE	ND (<200)
TPH - Stoddard Solvent	µg/L	NE	ND (<100)
TPH - Heavy Naphtha	µg/L	NE	ND (<100)
TPH - Gasoline	µg/L	NE	ND (<200)
TPH - Jet Fuel (JP4)	µg/L	NE	ND (<100)
TPH - Jet Fuel (JP5)	µg/L	NE	ND (<130)
TPH - Jet Fuel (JP8)	µg/L	NE	ND (<100)
TPH - Kerosene	µg/L	NE	ND (<57)
TPH - Diesel (FFP)	µg/L	NE	**350**
TPH - Fuel Oil #6	µg/L	NE	ND (<25)
TPH - Crude Oil	µg/L	NE	ND (<140)
TPH - Hydraulic Oil/Motor Oil	µg/L	NE	**350 J**
TPH - WD-40	µg/L	NE	ND (<100)

Notes:

Concentrations detected above the laboratory MDL shown in **bold.**

No analytes were detected above their respective screening criteria, if established.

[(a)] 22 California Code of Regulations §66261.24 Characteristic of Toxicity.

< = less than

µg/L = micrograms per liter

ID = identification

MDL = method detection limit

ND = not detected

NE = not established

STLC = soluble threshold limit concentration

TPH = total petroleum hydrocarbons

Appendix B

Boring Logs

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B01**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 4, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 4, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**3" ASPHALT** 3"	Well Not Constructed	0
			0.0		GM	**SANDY GRAVEL w/SILT:** 60% gravel, fine to coarse with max size of 3-inches, sub-angular to sub-rounded. 25% sand, fine- to coarse-grained, dense. 15% non-plastic fines. 1'6"		
			0.0	SO-B01-01	ML	**SANDY SILT:** 70% silt, non-plastic, medium-stiff, damp, dark yellowish brown (10YR 4/4). 30% sand, sub-angular to sub-rounded, fine- to medium grained. 2'3"		
5						Geologist Terminated Boring at 2'3" - Target Depth Achieved Soil Sample SO-B01-01 collected from 1'9" to 2'3" Boring backfilled with clean sand and patched at surface with concrete		5
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B02**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 5, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 5, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**3" ASPHALT** 3"	Well Not Constructed	0
			0.0		**SP**	**GRAVELLY SAND w/SILT:** 50% sand, damp, medium-dense, fine- to coarse-grained, brown (10YR 4/3). 35% gravel, fine to coarse with max size of 3-inches, sub-angular to rounded. 15% non-plastic fines. 1'6"		
			0.0	SO-B02-01	**SM**	**SILTY SAND:** 60% sand, damp, medium-dense, fine- to medium-grained, yellowish brown (10YR 5/6). 40% non-plastic fines. 2'3"		
						Geologist Terminated Boring at 2'3" - Target Depth Achieved Soil Sample SO-B02-01 collected from 1'9" to 2'3" Boring backfilled with clean sand and patched at surface with concrete		
5								5
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B03**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 5, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 5, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**3" ASPHALT** 3"	Well Not Constructed	0
			0.0		SP	**GRAVELLY SAND w/SILT:** 50% sand, damp, medium-dense, fine- to coarse-grained, brown (10YR 4/3). 35% gravel, fine to coarse with max size of 3-inches, sub-angular to rounded. 15% non-plastic fines. 1'6"		
			0.0	SO-B03-01	SM	**SILTY SAND:** 60% sand, damp, medium-dense, fine- to medium-grained, yellowish brown (10YR 5/6). 40% non-plastic fines. 2'3"		
5						Geologist Terminated Boring at 2'3" - Target Depth Achieved Soil Sample SO-B03-01 collected from 1'9" to 2'3" Boring backfilled with clean sand and patched at surface with concrete		5
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B04**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 6, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 6, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	J. Rayl, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**4" ASPHALT** 4"	Well Not Constructed	0
					GM	**SANDY GRAVEL w/SILT:** 50% gravel, moist, dark brown, fine to medium. 35% sand, fine- to medium-grained. 15% non-plastic fines.		
				SO-B04-01		2'0"		
					ML	**SANDY SILT:** 70% non-plastic fines, moist, dark yellowish brown. 30% sand, fine-grained.		
5				SO-B04-02		6'0"		5
						Geologist Terminated Boring at 6'0" - Target Depth Achieved Soil Sample SO-B04-01 collected from 2'0" to 2'6" Soil Sample SO-B04-02 collected from 5'6" to 6'0" Boring backfilled with clean sand and patched at surface with concrete		
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B06**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 31' 2.0-inch from 31' to 41'
DATE STARTED:	December 7, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 7, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment, Remainder drilled using Direct Push (2.5-inch and 2.0-inch)	GEOLOGIST/ENGINEER:	J. Rayl, GIT (from 0' to 15') A. Morgan, GIT (from 15' to 41')

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**4" ASPHALT** 0'4"	Well Not Constructed	0
					SM	**SILTY SAND w/GRAVEL:** 60% sand, moist, dark brown, fine- to medium-grained, poorly graded. 20% fine to medium gravel. 20% non-plastic fines. 2'		
					SM	**SILTY SAND:** 60% sand, moist, dark brown, fine- to medium-grained, poorly graded. 40% non-plastic fines.		
5		100%				10'		5
		100%						
10					CL	**SANDY LEAN CLAY:** 70% low-plasticity fines, moist, strong brown. 30% sand, fine- to medium-grained. 13'		10
	DIRECT PUSH	100%			SM	**SILTY SAND:** 60% sand, moist, brown, fine- to medium-grained, poorly graded. 40% non-plastic fines. 15'		
15			0.0		SM	**SILTY SAND:** Yellowish brown (10YR 5/6), very fine, medium-dense, dry.		15
		67%	0.0			17'		
					SM-SP	**SAND w/SILT:** Yellowish brown (10YR 5/6), fine, loose, dry. 18'		
20			0.0		SM	**SILTY SAND:** Light olive brown (2.5Y 6/4), fine, dense, dry. 21'		20
		92%			ML	**SILT w/SAND and CLAY:** Light yellowish brown (2.5Y 6/4), fine, dense, dry.		
			0.0			@23' - Grades clayey, very dense.		
						@24' - Grades with clay, dense.		
25						Continued on Next Page		25

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B06**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 31' 2.0-inch from 31' to 41'
DATE STARTED:	December 7, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 7, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment, Remainder drilled using Direct Push (2.5-inch and 2.0-inch)	GEOLOGIST/ENGINEER:	J. Rayl, GIT (from 0' to 15') A. Morgan, GIT (from 15' to 41')

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
25	DIRECT PUSH	92%	0.0		ML	**SILT w/SAND and CLAY:** Same as above. @27' - Grades sandy, no clay.	Well Not Constructed	25
30		100%	0.0	GW-B06-01 GW-B06-02	CL	30' **SILTY CLAY:** Light brownish gray (2.5Y 6/2), hard, low-plasticity, dry. No soil samples collected below 31'		30
35		NR						35
40						41' Geologist Terminated Boring at 41'0" - Refusal Encountered Static Water Level at 33.73' on 12/10/2018 Collected Groundwater Samples GW-B06-01 and Duplicate GW-B06-02 Groundwater samples collected from a temporary well placed in the open borehole (1-inch diameter PVC casing and 5-foot screen) on 12/10/2018 On 12/31/2018, boring was backfilled with neat cement grout via tremie methods from total depth (41') to 5'. Clean sand placed from 5' to bottom of asphalt. Surface pavement patched with concrete.		40
45								45
50								50

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B08**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 5, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 5, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**3" ASPHALT** 3"		0
			0.0		GM	**SANDY GRAVEL w/SILT:** 50% gravel, damp, very dense, fine to coarse with max size of 2-inches, rounded to sub-angular. 35% sand, fine- to coarse-grained. 15% non-plastic fines. 2'0"		
				SO-B08-01	ML	**SANDY SILT:** 65% silt, damp, medium-stiff, dark yellowish brown (10YR 4/4), non-plastic. 25% sand, fine- to coarse-grained, sub-angular to sub-rounded.	Well Not Constructed	
			0.0					
5				SO-B08-02		5'9"		5
						Geologist Terminated Boring at 5'9" - Target Depth Achieved Soil Sample SO-B08-01 collected from 1'9" to 2'3" Soil Sample SO-B08-02 collected from 5'3" to 5'9" Boring backfilled with clean sand and patched at surface with concrete		
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B10**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 5, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 5, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**8" CONCRETE** 0'8"	Well Not Constructed	0
			0.0		GM	**SANDY GRAVEL w/SILT:** 50% gravel, damp, very dense, fine to coarse with max size of 2-inches, rounded to sub-angular. 30% sand, fine- to coarse-grained. 20% non-plastic fines. 2'0"		
				SO-B10-01	ML	**SANDY SILT:** 65% silt, damp, medium-stiff, dark yellowish brown (10YR 4/4), non-plastic. 25% sand, fine- to coarse-grained, sub-angular to sub-rounded.		
			0.0					
5				SO-B10-02		6'0"		5
						Geologist Terminated Boring at 6'0" - Target Depth Achieved Soil Sample SO-B10-01 collected from 2'2" to 2'8" Soil Sample SO-B10-02 collected from 5'8" to 6'0" Boring backfilled with clean sand and patched at surface with concrete		
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B11**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 6, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 6, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	J. Rayl, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**13" CONCRETE** 1'1"		0
						2.5" ASPHALT 1'4"		
					SM	**SILTY SAND w/GRAVEL:** 55% sand, fine- to medium-grained. 30% non-plastic fines. 15% fine gravel. Asphalt pieces observed to 3' bgs.		
				SO-B11-01		3'0"		
					CL/ML	**CLAY/SILT w/SAND:** 75% fines, moist, dark brown, non-plastic to low-plasticity. 25% fine-grained sand.		
5				SO-B11-02		6'0"		5
						Geologist Terminated Boring at 6'0" - Target Depth Achieved Soil Sample SO-B11-01 collected from 2'6" to 3'0" Soil Sample SO-B11-02 collected from 5'0" to 5'6" Boring backfilled with clean sand and patched at surface with concrete		
10								10

Well Not Constructed

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B12**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED: DATE COMPLETED:	December 6, 2018 December 31, 2018	DRILLER/COMPANY:	Confluence Environmental, C57# 913194 Enprobe, C57# 1012248
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	J. Rayl, GIT (on 12/6/2018) A. Morgan, GIT (on 12/31/2018)

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**4" ASPHALT** 0'4"	Well Not Constructed	0
					SM	**SILTY SAND w/GRAVEL:** 70% sand, moist, dark brown, fine- to medium-grained, poorly graded. 30% non-plastic fines. Gravel size up to 2.5-inches. Chunks of asphalt down to 2-feet. 2'0"		
				SO-B12-01	SM	**SILTY SAND:** 70% sand, moist, dark brown, fine- to medium-grained, poorly graded. 30% non-plastic fines. 4'0"		
					SC	**CLAYEY SAND:** 80% sand, brown, moist, fine- to medium-grained. 30% low-plasticity fines (lean clay).		
5				SO-B12-02		5'6"		5
						Geologist Terminated Boring at 5'6" - Target Depth Achieved On 12/6/2018, B12 was advanced to 5'0" by Confluence Environmental On 12/31/2018, B12 was advanced to 5'6" by Enprobe Soil Sample SO-B12-01 collected from 2'0" to 2'6" on 12/6/2018 Soil Sample SO-B12-02 collected from 5'0" to 5'6" on 12/31/2018 Boring backfilled with clean sand and patched at surface with concrete		
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B13**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 27' 2.0-inch from 27' to 38'
DATE STARTED:	December 7, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 7, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment, Remainder drilled using Direct Push (2.5-inch and 2.0-inch)	GEOLOGIST/ENGINEER:	J. Rayl, GIT A. Morgan, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER		0.0			**6" ASPHALT** 0'6"		0
					GM	**SANDY GRAVEL w/SILT:** 50% gravel, angular to sub-rounded, fine to coarse with max size of 2-inch. 25% sand, fine- to coarse-grained. 15% non-plastic fines. 2'0"		
			0.0		ML	**SANDY SILT:** 70% silt, non-plastic, damp, medium-stiff. 30% sand, fine- to medium-grained.		
			0.0			5'0"		
5	DIRECT PUSH	75%	0.0		ML	**CLAYEY SILT:** Dark yellowish brown (10YR 3/4), high-plasticity, stiff, dry.		5
						@7' - Grades to low-plasticity.		
		100%	0.0			@9' - Color change to brown (10YR 5/3).		
10						@11' - Color change to yellowish brown (10YR 5/4). 12'6"	Well Not Constructed	10
		58%	0.0		SM	**SILTY SAND:** Yellowish brown (10YR 5/6), fine-grained, loose, dry.		
15								15
		67%	0.0			@17' - Changes to sand with silt.		
20						20'6"		20
		100%	0.0		SW	**SAND w/GRAVEL:** Light yellowish brown (10YR 6/4), coarse-grained sand and sub-rounded gravel, loose, dry. 21'6"		
					CL	**SILTY CLAY:** Light yellowish brown (2.5Y 6/4), medium-plasticity, dense, dry.		
			0.0			@24' - Grades to very stiff.		
25						Continued on Next Page		25

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B13**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 27' 2.0-inch from 27' to 38'
DATE STARTED:	December 7, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 7, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment, Remainder drilled using Direct Push (2.5-inch and 2.0-inch)	GEOLOGIST/ENGINEER:	J. Rayl, GIT A. Morgan, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
25	DIRECT PUSH	77%			CL	**SILTY CLAY:** Same as above.	Well Not Constructed	25
		NR				No soil samples collected below 27 feet		
30								30
35				GW-B13-01		38'		35
40						Geologist Terminated Boring at 38'0" - Refusal Encountered Static Water Level at 37' Collected Groundwater Sample GW-B13-01 Groundwater sample collected from a temporary well placed in the open borehole (1-inch diameter PVC casing and 5-foot screen) Boring backfilled with neat cement grout via tremie methods from total depth (38') to 5'. Clean sand placed from 5' to bottom of the asphalt. Surface pavement patched with concrete.		40
45								45
50								50

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B14**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 4, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 4, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**8" CONCRETE** 0'8"	Well Not Constructed	0
			0.0	SO-B14-01	ML	**SANDY SILT w/GRAVEL:** 60% silt, damp, medium-stiff, non-plastic, brown (10YR 4/3). 25% sand, fine- to coarse-grained, sub-angular. 15% gravel, fine with max size of 1/4-inch. 3'0"		
			0.0	SO-B14-02	ML	**SANDY SILT:** 65% silt, damp, stiff, non-plastic, brown (10YR 4/3), 35% sand, fine- to medium-grained, sub-angular to sub-rounded. 6'0"		
5								5
						Geologist Terminated Boring at 6'0" - Target Depth Achieved Soil Sample SO-B14-01 collected from 2'2" to 2'8" Soil Sample SO-B14-02 collected from 5'8" to 6'0" Boring backfilled with clean sand and patched at surface with concrete		
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B15**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 5, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 5, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**8" CONCRETE** 0'8"	Well Not Constructed	0
			0.0		**SM**	**SILTY SAND w/GRAVEL:** 60% sand, damp, medium-dense, dark yellowish brown (10YR 3/4), fine- to coarse-grained, sub-angular. 30% silt, non-plastic. 10% gravel, fine with max size of 3/4-inch.		
				SO-B15-01		2'6"		
					ML	**SANDY SILT:** 70% silt, damp, medium-stiff, non-plastic, dark yellowish brown (10YR 4/4). 30% sand, fine- to coarse-grained, sub-angular to sub-rounded.		
			0.0					
5				SO-B15-02		6'0"		5
						Geologist Terminated Boring at 6'0" - Target Depth Achieved Soil Sample SO-B15-01 collected from 2'2" to 2'8" Soil Sample SO-B15-02 collected from 5'8" to 6'0" Boring backfilled with clean sand and patched at surface with concrete		
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B16**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 5, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 5, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**8" CONCRETE** 0'8"	Well Not Constructed	0
			0.0		GM	**SANDY GRAVEL w/SILT:** 50% gravel, damp, very dense, fine to coarse with max size of 2-inch. 30% sand, fine to coarse-grained, sub-angular to sub-rounded. 20% silt, non-plastic. 2'0"		
				SO-B16-01	MLS	**SANDY SILT w/GRAVEL:** 60% silt, damp, medium-stiff, non-plastic, very dark gray (10YR 3/1). 25% sand, fine- to coarse-grained, sub-angular to sub-rounded. 15% gravel, fine with max size of 1/2 inch.		
			0.0					
5				SO-B16-02		6'0"		5
						Geologist Terminated Boring at 6'0" - Target Depth Achieved Soil Sample SO-B16-01 collected from 2'2" to 2'8" Soil Sample SO-B16-02 collected from 5'8" to 6'0" Duplicate Soil Sample SO-B16-03 collected from 5'8" to 6'0" Boring backfilled with clean sand and patched at surface with concrete		
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**B17**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch
DATE STARTED:	December 5, 2018	DRILLER/COMPANY:	Confluence Environmental
DATE COMPLETED:	December 5, 2018		C57# 913194
DRILLING METHOD:	Drilled using 3.5-inch Hand Auger Equipment	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER		0.0	SO-B17-01	SM	**SILTY SAND w/GRAVEL:** 45% sand, damp, medium-dense, brown (10YR 4/3), fine- to coarse-grained, sub-angular. 40% silt, non-plastic. 15% gravel, fine with max size of 2-inch.	Well Not Constructed	0
			0.0					
5				SO-B17-02		5'6"		5
						Geologist Terminated Boring at 5'6" - Target Depth Achieved Soil Sample SO-B17-01 collected from 1'6" to 2'0" Soil Sample SO-B17-02 collected from 5'0" to 5'6" Duplicate Soil Sample SO-B17-03 collected from 5'0" to 5'6" Boring backfilled with clean sand		
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW01**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'4"
DATE STARTED: DATE COMPLETED:	December 4, 2018 December 5, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc. C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009 (from 0' to 5') J. Rayl, GIT (from 5' to 15'4")

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER		0.0		SM	**4" ASPHALT** 0'4" **SILTY SAND w/GRAVEL:** 70% sand, damp, medium-dense, dark grayish brown, medium-grained. 20% non-plastic fines. 10% fine gravel, sub-angular. 1'6"		0
				SO-VW01-01	SM	**SILTY SAND:** 70% sand, damp, medium-dense, yellowish brown (10YR 5/4), medium-grained. 30% non-plastic fines. 10% fine gravel, sub-angular.		
5		100%		SO-VW01-02				5
	DIRECT PUSH	100%		SO-VW01-03		@9' - Sand content increases, dry		
10						12'0"		10
		100%	0.6 0.7		SP-SM	**POORLY GRADED SAND:** 90% sand, fine- to medium-grained, dry, reddish brown. 10% non-plastic fines. 15'4"		
15						Geologist Terminated Boring at 15'4" - Target Depth Achieved Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'4" to 6'4" and 14'4" to 15'4" Dry Granular Bentonite from 4'4" to 5'4" and 13'4" to 14'4" Hydrated Granular Bentonite from ground surface to 4'4" and 6'4" to 13'4" Soil Sample SO-VW01-01 collected from 2'0" to 2'6" Soil Sample SO-VW01-02 collected from 5'10" to 6'4" Soil Sample SO-VW01-03 collected from 9'10" to 10'4" On 12/31/2018, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then by backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		15
20								20

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW02**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'8"
DATE STARTED:	December 3, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 5, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	J. Rayl, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**8" CONCRETE** 0'8"		0
					SM	**SILTY SAND w/GRAVEL** 2'0"		
					SC	**CLAYEY SAND:** 60% fine-grained sand, moist, brown. 40% non-plastic fines. 3'0"		
				SO-VW02-01	**ML**	**SILT w/SAND:** 75% fines, non- to low-plasticity, dry, red brown. 25% fine-grained sand.		
5	DIRECT PUSH	100%		SO-VW02-02				5
		100%						
10				SO-VW02-03				10
		100%						
					SP	**POORLY GRADED SAND w/GRAVEL:** 80% sand, fine- to medium-grained, dry to moist, light brown, poorly graded. 20% fine to medium gravel. 14'0"		
15						15'8"		15
20								20

Geologist Terminated Boring at 15'8" - Target Depth Achieved

Dual-Completion Vapor Well constructed with following specifications:
Vapor Probes set in center of each sand filter pack
1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe
Sand Filter Pack placed from 5'8" to 6'8" and 14'8" to 15'8"
Dry Granular Bentonite from 4'8" to 5'8" and 13'8" to 14'8"
Hydrated Granular Bentonite from ground surface to 4'8" and 6'8" to 13'8"

Soil Sample SO-VW02-01 collected from 2'0" to 2'6"
Soil Samples SO-VW02-02 and SO-VW02-DUP collected from 5'8" to 6'2"
Soil Sample SO-VW02-03 collected from 10'2" to 10'8"

On 12/31/2018, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then by backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW03 / B07**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 6'8"
DATE STARTED:	December 4, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 5, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	B. Whalen, P.G. #9009 J. Rayl, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**8" CONCRETE** 0'8"		0
			0.0		**GM**	**SANDY GRAVEL w/SILT:** 50% gravel, damp, medium-dense, rounded to sub-angular, fine to coarse with max size of 3-inch. 35% sand, fine- to coarse-grained, brown (10YR 4/3). 15% non-plastic fines.		
			0.0			2'0"		
				SO-VW03-01	**ML**	**SANDY SILT:** 70% silt, damp, medium-stiff, dark yellowish brown (10YR 4/4). 30% sand, fine- to medium-grained.		
5	DIRECT PUSH			SO-VW03-02		6'8"		5
						Geologist Terminated Boring at 6'8" - Target Depth Achieved Vapor Well constructed with following specification: Vapor Probe set in center of sand filter pack 1/8" Nylaflow Tubing from ground surface to top of Vapor Probe Sand Filter Pack placed from 5'8" to 6'8" Dry Granular Bentonite from 4'8" to 5'8" Hydrated Granular Bentonite from ground surface to 4'8" Soil Samples SO-VW03-01 and SO-B07-01 collected from 2'0" to 2'6" Soil Samples SO-VW03-02 and SO-B07-02 collected from 6'2" to 6'8" On 12/31/2018, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger. Clean sand was placed from 6'8" to the bottom of the pavement and the surface was patched with concrete.		
10								10

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW04**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'4"
DATE STARTED:	December 3, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 4, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	J. Rayl, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER				SM	**4" ASPHALT** 0'4" **SILTY SAND w/GRAVEL:** 60% sand, moist, dark brown, fine- to medium-grained, poorly graded. 20% fine to medium gravel. 20% non-plastic fines. 2'0"		0
				SO-VW04-01	SM	**SILTY SAND:** 60% sand, moist, dark brown, fine- to medium-grained, poorly graded. 40% non-plastic fines.		
5		100%		SO-VW04-02				5
	DIRECT PUSH	100%		SO-VW04-03		10'0"		
10					CL	**SANDY LEAN CLAY:** 70% low-plasticity fines, moist, strong brown. 30% sand, fine- to medium-grained. 13'0"		10
		100%			SM	**SILTY SAND:** 60% sand, moist, brown, fine- to medium-grained, poorly graded. 40% non-plastic fines. 15'4"		
15						Geologist Terminated Boring at 15'4" - Target Depth Achieved Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'4" to 6'4" and 14'4" to 15'4" Dry Granular Bentonite from 4'4" to 5'4" and 13'4" to 14'4" Hydrated Granular Bentonite from ground surface to 4'4" and 6'4" to 13'4" Soil Samples SO-VW04-01 and SO-B06-01 collected from 2'0" to 2'6" Soil Samples SO-VW04-02 and SO-B06-02 collected from 5'4" to 5'10" Soil Sample SO-VW04-03 collected from 9'10" to 10'4" On 12/31/2018, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then by backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		15
20								20

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW05 / B09**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'4"
DATE STARTED:	December 3, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 4, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	J. Rayl, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER			SO-VW05-01	SM	**4" ASPHALT** 0'4" **SILTY SAND w/GRAVEL:** 60% sand, moist, dark brown, fine- to medium-grained, poorly graded. 20% fine to medium gravel. 20% non-plastic fines.		0
					SM	3'0" **SILTY SAND w/GRAVEL:** 75% sand, moist, dark brown, fine- to medium-grained, poorly graded. 25% non-plastic fines.		
5	DIRECT PUSH	100%		SO-VW05-02				5
		100%			SM	8'0" **SILTY SAND:** 70% sand, moist, brown, fine- to medium-grained, poorly graded. 30% non-plastic fines.		
10				SO-VW05-03				10
		100%			SC	12'0" **CLAYEY SAND:** 70% sand, moist, strong brown, fine- to medium-grained, poorly graded. 30% medium-plasticity fines, low dry strength.		
					SM	14'0" **SILTY SAND:** 70% sand, moist, brown, fine- to medium-grained, poorly graded. 30% non-plastic fines.		
15						15'4" Geologist Terminated Boring at 15'4" - Target Depth Achieved		15
20						Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'4" to 6'4" and 14'4" to 15'4" Dry Granular Bentonite from 4'4" to 5'4" and 13'4" to 14'4" Hydrated Granular Bentonite from ground surface to 4'4" and 6'4" to 13'4" Soil Samples SO-VW05-01 and SO-B09-01 collected from 2'0" to 2'6" Soil Samples SO-VW05-02 and SO-B09-02 collected from 5'4" to 5'10" Soil Sample SO-VW05-03 collected from 9'10" to 10'4" On 12/31/2018, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then by backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		20

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW06**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'9"
DATE STARTED:	December 3, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 4, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	J. Rayl, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER					**8.5" CONCRETE** 0'9"		0
					SM	**SILTY SAND:** 70% sand, moist, dark brown, fine- to medium-grained, poorly graded. 30% non-plastic fines.		
				SO-VW06-01		@3' - Gravel observed		
						@4' - Gravel not present. Back to silty sand.		
5		100%		SO-VW06-02				5
	DIRECT PUSH	100%						
10				SO-VW06-03		12'0"		10
		100%			**SM**	**SILTY SAND:** 70% sand, moist, dark brown, fine- to medium-grained, poorly graded. 30% non-plastic fines.		
15						15'9" Geologist Terminated Boring at 15'8" - Target Depth Achieved		15
20						Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'9" to 6'9" and 14'9" to 15'9" Dry Granular Bentonite from 4'9" to 5'9" and 13'9" to 14'9" Hydrated Granular Bentonite from ground surface to 4'9" and 6'9" to 13'9" Soil Sample SO-VW06-01 collected from 2'0" to 2'6" Soil Sample SO-VW06-02 collected from 5'9" to 6'3" Soil Sample SO-VW06-03 collected from 10'3" to 10'9" On 1/3/2019, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then by backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		20

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW07**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'6"
DATE STARTED: DATE COMPLETED:	December 4, 2018 December 5, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc. C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	B. Whalen, PG #9009 (from 0' to 5') J. Rayl, GIT (from 5' to 15.5')

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER		0.0			**6" ASPHALT** 0'6"		0
			0.0		SP	**GRAVELLY SAND w/SILT:** 65% sand, damp, dark yellowish brown (10YR 4/4). 25% gravel, fine to coarse with max size of 2-inch, rounded to sub-angular. 10% non-plastic fines. 1'6"		
			0.0	SO-VW07-01	ML	**SANDY SILT:** 80% silt, damp, dark grayish brown (10YR 4/2), non-plastic. 20% sand, fine- to medium-grained.		
			0.0					
5		No Recovery	0.0					5
				SO-VW07-02		9'0"		
	DIRECT PUSH	100%			SM	**SILTY SAND:** 75% sand, moist, brown, fine- to medium-grained. 25% non-plastic fines.		
10				SO-VW07-03				10
		100%				14'0"		
					SP	**POORLY GRADED SAND:** 95% sand, greyish brown, medium-grained. 5% non-plastic fines. 15'6"		
15						Geologist Terminated Boring at 15'6" - Target Depth Achieved		15
						Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'6" to 6'6" and 14'6" to 15'6" Dry Granular Bentonite from 4'6" to 5'6" and 13'6" to 14'6" Hydrated Granular Bentonite from ground surface to 4'6" and 6'6" to 13'6"		
						Soil Sample SO-VW07-01 collected from 2'0" to 2'6" Soil Sample SO-VW07-02 collected from 8'0" to 8'6" Soil Sample SO-VW07-03 collected from 10'0" to 10'6"		
20						On 1/3/2019, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then by backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		20

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW08**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'4"
DATE STARTED:	December 3, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 4, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	J. Rayl, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER				GM	**4" ASPHALT** 0'4" **SILTY GRAVEL w/SAND:** 50% gravel, moist, dark brown, fine to medium. 25% sand, fine- to medium-grained. 25% non-plastic fines.		0
				SO-VW08-01		@3' - No gravel		
					CL	4'0" **SANDY CLAY:** 80% clay, moist, strong brown, low-plasticity. 20% sand, fine-grained.		
5		100%		SO-VW08-02				5
	DIRECT PUSH							
		100%		SO-VW08-03				
10								10
		100%			ML	13'0" **SILT w/SAND:** 75% fines, non-plastic, low dry strength, moist. 25% sand, fine-grained.		
15						15'4" Geologist Terminated Boring at 15'4" - Target Depth Achieved		15
20						Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'4" to 6'4" and 14'4" to 15'4" Dry Granular Bentonite from 4'4" to 5'4" and 13'4" to 14'4" Hydrated Granular Bentonite from ground surface to 4'4" and 6'4" to 13'4" Soil Sample SO-VW08-01 collected from 2'0" to 2'6" Duplicate Soil Sample SO-VW08-01-DUP collected from 2'0" to 2'6" Soil Sample SO-VW08-02 collected from 5'10" to 6'4" Soil Sample SO-VW08-03 collected from 9'10" to 10'4" On 1/3/2019, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		20

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW09**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'6"
DATE STARTED: DATE COMPLETED:	December 4, 2018 December 5, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc. C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	B. Whalen, PG #9009 (from 0' to 5') J. Rayl, GIT (from 5' to 15'6")

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER		0.0			**6" ASPHALT** 0'6"		0
					GM	**SANDY GRAVEL w/SILT:** 50% gravel, angular to sub-rounded, fine to coarse with max size of 2-inch. 25% sand, fine- to coarse-grained. 15% non-plastic fines. 2'0"		
			0.0	SO-VW09-01	**ML**	**SANDY SILT:** 70% silt, non-plastic, damp, medium-stiff. 30% sand, fine- to medium-grained.		
			0.0			5'0"		
5	DIRECT PUSH	100%		SO-VW09-02	**ML-CL**	**SILT/CLAY w/SAND:** 85% silt/clay, moist, strong brown to reddish brown, low-plasticity, no dilatency, low dry strength. 15% sand.		5
		100%						
10		100%		SO-VW09-03				10
						15'6"		
15						Geologist Terminated Boring at 15'6" - Target Depth Achieved		15
						Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'6" to 6'6" and 14'6" to 15'6" Dry Granular Bentonite from 4'6" to 5'6" and 13'6" to 14'6" Hydrated Granular Bentonite from ground surface to 4'6" and 6'6" to 13'6"		
						Soil Samples SO-VW09-01 and SO-B13-01 collected from 2'0" to 2'6" Soil Samples SO-VW09-02 and SO-B13-02 collected from 5'6" to 6'0" Soil Sample SO-VW09-03 collected from 10'0" to 10'6"		
20						On 1/3/2019, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		20

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW10**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'4"
DATE STARTED:	December 3, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 3, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	J. Rayl, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER				CL	**4" ASPHALT** 0'4" **SILTY SAND w/GRAVEL**		0
				SO-VW10-01	SP	**POORLY GRADED SAND w/SILT:** 80% sand, moist, dark brown, medium-grained, poorly graded. 20% fines, non-plastic. Trace fine gravel. 2'0"		
					SC	**CLAYEY SAND:** 60% sand, strong brown, moist, fine-grained, poorly graded. 40% fines, non-plastic. 4'0"		
5				SO-VW10-02		6'0"		5
	DIRECT PUSH	100%			SM	**SILTY SAND:** 80% sand, brown, moist, fine- to medium-grained, poorly graded. 20% fines, non-plastic.		
		100%		SO-VW10-03				
10								10
		100%				14'0"		
					SC	**CLAYEY SAND:** 70% sand, brown, moist, fine-grained, poorly graded. 30% fines, low- to medium-plasticity. 15'4"		
15						Geologist Terminated Boring at 15'4" - Target Depth Achieved		15
20						Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'4" to 6'4" and 14'4" to 15'4" Dry Granular Bentonite from 4'4" to 5'4" and 13'4" to 14'4" Hydrated Granular Bentonite from ground surface to 4'4" and 6'4" to 13'4" Soil Sample SO-VW10-01 collected from 2'0" to 2'6" Duplicate Soil Samples SO-VW10-02 and SO-VW10-02-DUP collected from 5'4" to 5'10" Soil Sample SO-VW10-03 collected from 9'10" to 10'4" On 12/31/2018, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		20

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW11**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'4"
DATE STARTED:	December 3, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc.
DATE COMPLETED:	December 3, 2018		C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	J. Rayl, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER				GM	**4" ASPHALT** 0'4" **SILTY GRAVEL w/SAND:** 50% gravel, moist, dark brown, fine to medium. 25% sand, fine- to medium-grained. 25% fines, non-plastic.		0
				SO-VW11-01	SP	2'0" **SILTY SAND:** 75% sand, moist, dark brown, fine- to medium-grained. 25% fines, non-plastic.		
5		100%		SO-VW11-02				5
10	DIRECT PUSH	100%		SO-VW11-03				10
		100%			ML	13'0" **SILT w/SAND:** 75% silt, moist, dark brown, non-plastic, low dry strength. 25% sand, fine-grained.		
15						15'4" Geologist Terminated Boring at 15'4" - Target Depth Achieved		15
20						Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'4" to 6'4" and 14'4" to 15'4" Dry Granular Bentonite from 4'4" to 5'4" and 13'4" to 14'4" Hydrated Granular Bentonite from ground surface to 4'4" and 6'4" to 13'4" Soil Sample SO-VW11-01 collected from 2'0" to 2'6" Soil Sample SO-VW11-02 collected from 5'10" to 6'4" Soil Sample SO-VW11-03 collected from 9'10" to 10'4" On 12/31/2018, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		20

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW12 / B05**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'4"
DATE STARTED: DATE COMPLETED:	December 6, 2018 December 7, 2018	DRILLER/COMPANY:	TEG - Northern California, Inc. C57# 706568
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	J. Rayl, GIT (0' to 5') A. Morgan, GIT (5' to 15'4")

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER				CL	**4" ASPHALT** 0'4" **POORLY GRADED GRAVEL w/SAND & SILT:** 60% gravel, rounded with max size of 3-inch. 30% sand, fine- to medium-grained. 10% silt. 2'0"		0
				SO-VW12-01	SM	**SILTY SAND:** 70% sand, moist, brown, fine- to medium-grained. 30% fines, non-plastic. 5'0"		
5	DIRECT PUSH	50%	0.0 0.0	SO-VW12-02	SM	**SAND w/SILT:** reddish brown (5YR 4/4), fine, loose, dry.		5
10		73%	0.0	SO-VW12-03		12'0"		10
		100%	0.0		ML	**CLAYEY SILT:** Yellowish brown (10YR 5/8), medium-soft, low-plasticity, dry, CaCO3 stringers. 13'6"		
			0.0		SL	**SANDY SILT:** Yellowish brown (10YR 5/6), fine, soft, dry. 15'4"		
15						Geologist Terminated Boring at 15'4" - Target Depth Achieved		15
20						Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/8" Nylaflow Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'4" to 6'4" and 14'4" to 15'4" Dry Granular Bentonite from 4'4" to 5'4" and 13'4" to 14'4" Hydrated Granular Bentonite from ground surface to 4'4" and 6'4" to 13'4" Soil Samples SO-VW12-01 and SO-B05-01 collected from 2'0" to 2'6" Soil Sample SO-VW12-02 collected from 5'4" to 5'10" Soil Sample SO-VW12-03 collected from 9'10" to 10'4" On 1/3/2019, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		20

PROJECT NAME:	**SMUD 59th Street Corporation Yard**	**LOG OF BORING:**	**VW13**
SITE ADDRESS:	1708 59th Street Sacramento, California	BORING DIAM. (in):	3.5-inch from 0' to 5' 2.5-inch from 5' to 15'3"
DATE STARTED:	December 31, 2018	DRILLER/COMPANY:	Enprobe
DATE COMPLETED:	December 31, 2018		C57# 1012248
DRILLING METHOD:	Top 5-feet drilled using 3.5-inch Hand Auger Equipment Remainder drilled using 2.5-inch Direct Push	GEOLOGIST/ENGINEER:	A. Morgan, GIT

DEPTH (Feet)	Sample Interval	Recovery (%)	PID (ppm)	SAMPLE NUMBER	USCS SYMBOL	DESCRIPTION	Well Construction	DEPTH (Feet)
0	HAND AUGER		0.0	SO-VW13-01	SM	**3" ASPHALT** 0'3" **SILTY SAND:** Reddish brown (5YR 4/4), fine, sub-rounded, loose, semi-moist.		0
			0.0			@4' - Color change to yellowish brown (10YR 4/4), dry		
5		100%	0.0	SO-VW13-02				5
	DIRECT PUSH		0.0			@7' - Trace CaCO3 stringers @8.5' to 9' - Minor gravel		
10		100%		SO-VW13-03				10
		100%	0.0					
			0.0		SP-SM	14'6" **SAND w/SILT:** Light olive brown (2.5Y 5/6), fine-grained, sub-rounded, loose, dry. 15'3"		
15						Geologist Terminated Boring at 15'3" - Target Depth Achieved		15
20						Dual-Completion Vapor Well constructed with following specifications: Vapor Probes set in center of each sand filter pack 1/4" Teflon-Lined Tubing from ground surface to top of each Vapor Probe Sand Filter Pack placed from 5'3" to 6'3" and 14'3" to 15'3" Dry Granular Bentonite from 4'3" to 5'3" and 13'3" to 14'3" Hydrated Granular Bentonite from ground surface to 4'3" and 6'3" to 13'3" Soil Sample SO-VW13-01 collected from 1'9" to 2'3" Soil Sample SO-VW13-02 collected from 5'3" to 5'9" Soil Sample SO-VW13-03 collected from 9'9" to 10'3" On 1/3/2019, Enprobe, Inc. destroyed vapor well by overdrilling using 4-inch solid-stem auger, and then backfilling with neat cement grout from total depth to 5'. Clean sand was placed from 5' to the bottom of the pavement and the surface was patched with concrete.		20

Appendix C

Data Validation Summary and Laboratory Analytical Data Reports

SMUD 59th Street Corporation Yard Site Investigation Data Validation Summary

Soil and groundwater samples were collected from 3 through 31 December 2018 for the SMUD Corporation Yard site located at 1708 59th Street in Sacramento, California. Soil and groundwater samples were analyzed by BC Laboratories, Inc. in Bakersfield, California, for the following:

Soil:

- Arsenic by United States Environmental Protection Agency (USEPA) Method SW6020 - 31 normal samples (NS), 2 field duplicates (FDs), 3 laboratory duplicates (LDs) and 6 matrix spikes (MSs)/MS duplicates (MSDs); and
- Thirteen site-specific volatile organic compounds (VOCs) by USEPA Method SW8260B - 38 NS, 3 FDs and 1 MS/MSD.

Groundwater:

- Thirteen site-specific VOCs by USEPA Method SW8260B - 2 NS, 1 FD, and 2 trip blanks (TBs).

Soil gas samples were collected on 5 and 7 December 2018. These samples were analyzed on-site by TEG's mobile laboratory for the following:

- Thirteen site-specific VOCs and 1,1-difluoroethane (leak check compound) by modified USEPA Method SW8260B - 22 NS, 2 FDs, 2 probe blanks and one syringe blank.

Additional soil gas samples were collected on 18 March 2019. These samples were analyzed off-site by BC Laboratories for the following:

- Thirteen site-specific VOCs and isopropyl alcohol (leak check compound) by USEPA Method TO-15 - 2 NS and 1 FD.

The quality control (QC) samples used to assess contamination, precision, and accuracy for the soil and groundwater data include initial calibration (ICAL) and continuing calibration verification (CCV) samples, blanks (method, TBs, and continuing calibration blanks [arsenic only]), spikes (laboratory control samples [LCSs], MSs, and surrogate spikes [for organic methods]) and duplicates (FDs and MSDs). In addition, LDs were analyzed for arsenic only. The laboratory ran the VOC samples in sequential batches: running QC and samples continuously; therefore, the preparation dates or QC sample dates may not match up exactly with the sample analysis dates.

For the soil gas samples analyzed on-site, QC indicators included surrogate spikes and six calibration check compounds (CCCs). Two (1,1-dichloroethene and vinyl chloride) of the six CCCs are target compounds for this project. No target analytes were detected in any of the blanks analyzed by the on-site laboratory.

For the soil gas samples analyzed off-site, QC indicators included ICAL and CCV samples, a method blank, LCS/LCSD (trichloroethene and tetrachloroethene only), surrogate spikes and a FD.

The analytical results were validated against laboratory accuracy and precision limits and in accordance with the promulgated method. No systematic analytical problems were indicated by the validation process. However, during the validation process, any analytes (detected or not detected) associated with laboratory or field QC samples that do not meet the accuracy or precision limits were flagged by

AECOM's project chemist. Non-detect results with potential low bias are flagged "UJ," detected results that are determined to be from external contamination are flagged as not-detected (U), detected results that are determined to be estimated results are flagged "J" (a "+" or "-" would indicate a potential high or low bias, respectively), and any results (detected or not) that are associated with extreme QC issues are rejected (R) and should not be used per USEPA guidance. Analytical data from samples collected at the SMUD 59th Street Corporation Yard site are valid and can be used to assess site conditions with limitations noted by USEPA qualified data flags. Table 1 lists all the qualified data. The following bullets summarize the data results that are qualified:

- **SW6020 for arsenic** – No data are qualified for arsenic, and the data can be used as reported.
- **SW8260B for VOCs** –Ten soil results and 3 groundwater results are qualified.

  Soil: Seven not-detected results are qualified (UJ) as estimated practical quantitation limits (PQL) because of a low CCV recovery. One of these seven results is also qualified due to a low MS recovery. One result is qualified as an estimated PQL because of a low MS recovery and two results are qualified as estimated concentrations because they were detected between the PQL and method detection limit (MDL).
  Water: Two results are qualified as estimated concentrations because they were detected between the PQL and MDL.

- **Modified SW8260B for VOCs in soil gas:** Five results are qualified as estimated concentrations only because they were detected between the reporting limit (RL) and the MDL.
- **TO-15 for VOCs in soil gas:** No data are qualified, and the data can be used as reported.

Samples qualified as estimated (J) because they were detected between the PQL/RL and MDL are not indicative of analytical QC issues.

TABLE C-1. QUALIFIED LABORATORY ANALYTICAL

Method	Field Sample ID	Analyte	EPA Flag	Reason
SW8260B (soil)	SO-VW02-01	Chloroethane	UJ	Low CCV recovery
	SO-VW04-01	Chloroethane	UJ	Low CCV recovery
	SO-VW05-01	Tetrachloroethene	J	Reported between the PQL and MDL
		Chloroethane	UJ	Low CCV recovery
	SO-VW08-01	Trichloroethene	UJ	Low MS recovery
		Chloroethane	UJ	Low MS and CCV recovery
	SO-VW08-01-DUP	Chloroethane	UJ	Low CCV recovery
	SO-VW06-01	Chloroethane	UJ	Low CCV recovery
	SO-VW11-01	Tetrachloroethene	J	Reported between the PQL and MDL
		Chloroethane	UJ	Low CCV recovery
SW8260B (water)	GW-B06-01	Tetrachloroethene	J	Reported between the PQL and MDL
	GW-B13-01	Tetrachloroethene	J	Reported between the PQL and MDL
Modified SW8260B (soil gas)	SG-VW04B-01	Trichloroethene	J	Reported between the RL and MDL
	SG-VW05A-01	Trichloroethene	J	Reported between the RL and MDL
	SG-VW06A-01	Tetrachloroethene	J	Reported between the RL and MDL
	SG-VW07A-01	Tetrachloroethene	J	Reported between the RL and MDL
	SG-VW08A-01	Tetrachloroethene	J	Reported between the RL and MDL

Notes:

CCV = continuing calibration verification
EPA = United States Environmental Protection Agency
MDL = method detection limit
MS = matrix spike
PQL = practical quantitation limit
RL = reporting limit

BC LABORATORIES, INC.

Work Order Number: 1837609

Laboratory Documentation Requirements
For Data Validation of
Volatiles Analysis

Prepared By

BC Laboratories

For AECOM - Sacramento

30570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1837609
COC Number:
Default Cooler was received at 1 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-8260B	MS-V3

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

The Continuing Calibration Verification (CCV) recovery was not within established control limits.

Lab Number	Method	Analyte
1824146-CCV4	EPA-8260B	Chloroethane

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032321	EPA-8260B	1837609-06	SO-VW06-01

Matrix spike recovery(s) was(were) not within the control limits.

Lab Number	Method	Analyte
B032321-MS1	EPA-8260B	Chloroethane
B032321-MS1	EPA-8260B	Trichloroethene
B032321-MSD1	EPA-8260B	Chloroethane
B032321-MSD1	EPA-8260B	Trichloroethene

LCS

The LCS recoveries were within QC limits.

BC LABORATORIES, INC.

Chain of Custody Form

18-371609

Report To:
Client: AECom
Attn: Robert Kohlhardt
Street Address: 2020 L St Suite 400
City, State, Zip: Sacramento CA 95811
Phone: 916 414-5800 Fax:
Email: Robert.Kohlhardt@aecom.com
Work Order #:

Project #: 60587730.05
Project Name: SMUD 59th ST
Sampler(s): Jack Zayl

Analysis Requested

Please refer to the back of this page for completion instructions and method legend.

Page ____ of ____

Comments:

Sample #	Description	Date Sampled	Time Sampled	SW 8260B	SW 6020	Sample Matrix: Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Notes
1	SO-VW05-01	12/3/18	0755	X		X						
2	SO-B09-01	12/3/18	0800		X	X						
3	SO-VW11-01	12/3/18	0840	X		X						
4	SO-VW08-01	12/3/18	0920	X		X						
5	SO-VW08-01-DUP	12/3/18	0925	X		X						
6	SO-VW06-01	12/3/18	1010	X		X						MS/MSD
7	SO-VW10-01	12/3/18	1055	X		X						
8	SO-VW02-01	12/3/18	1400	X		X						
9	SO-VW04-01	12/3/18	1435	X		X						
10	SO-B06-01	12/3/18	1440		X	X						

Result Request **Surcharge: [X] STD (10 Days) ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

CHK BY

DISTRIBUTION

SUB-OUT ☐

SR 12.3.18

Billing
[X] Same as above
Client:
Address:
City: State Zip
Attn:
P.O. #:

EDF Required? Geotracker ☐ Yes ☐ No

Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

	Relinquished By	Date	Time	Received By	Date	Time
1		12/3/18	1487		12/3/18	1487
2		12/3/18	1513		12.4.18	0840
3		Date	Time		Date	Time

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1837609 Page 1 of 2

Chain of Custody and Cooler Receipt Form for 1837609 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: B - 37609

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☐ (Specify) GSO	Ice Chest ☒ None ☐ Box ☐ Other ☐ (Specify)	YES ☐ NO ☐ W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ (Intact? Yes ☐ No ☐) Containers ☐ (Intact? Yes ☐ No ☐) None ☒ Comments:

All samples received? Yes ☒ No ☐ All samples containers intact? Yes ☒ No ☐ Description(s) match COC? Yes ☒ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 95 Container: Jog Thermometer ID: 274 Date/Time 12.4.18

Temperature: (A) 1.2 °C / (C) 1.0 °C Analyst Init AD 08:40

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR		A								A
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	A→D		A→D	A→D	A→D	A→L	A→D	A→D	A→D	
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: JR Date/Time: 12/4/18 1139

A = Actual / C = Corrected

Rev 21 05/23/2016

(S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20)

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1837609**
Class: **VOA**
Method: **EPA-8260B**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1837609
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-VW05-01	1837609-01
SO-VW11-01	1837609-03
SO-VW08-01	1837609-04
SO-VW08-01-DUP	1837609-05
SO-VW06-01	1837609-06
SO-VW10-01	1837609-07
SO-VW02-01	1837609-08
SO-VW04-01	1837609-09

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-07-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-8260B

Laboratory: BC Laboratories
SDG: 1837609
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: MS-V3

Analyte	MDL	PQL	Units
Chloroethane	0.0014	0.0050	mg/kg
1,1-Dichloroethane	0.0014	0.0050	mg/kg
1,2-Dichloroethane	0.00085	0.0050	mg/kg
1,1-Dichloroethene	0.0012	0.0050	mg/kg
cis-1,2-Dichloroethene	0.0013	0.0050	mg/kg
trans-1,2-Dichloroethene	0.0014	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	0.0011	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	0.0011	0.0050	mg/kg
Tetrachloroethene	0.0013	0.0050	mg/kg
1,1,1-Trichloroethane	0.0011	0.0050	mg/kg
1,1,2-Trichloroethane	0.00077	0.0050	mg/kg
Trichloroethene	0.0011	0.0050	mg/kg
Vinyl chloride	0.0016	0.0050	mg/kg

AECOM - Sacramento
2020 L St, Suite 400
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Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW05-01

Laboratory:	BC Laboratories			SDG:	1837609
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1837609-01	File ID:	05DEC63.D
Sampled:	12/03/18 07:55	Prepared:	12/06/18 11:00	Analyzed:	12/06/18 11:06
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	6.71 g / 5 ml
Batch:	B032321	Sequence:	1824146	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.745	0.0010	UD
75-34-3	1,1-Dichloroethane	0.745	0.0010	UD
107-06-2	1,2-Dichloroethane	0.745	0.00063	UD
75-35-4	1,1-Dichloroethene	0.745	0.00089	UD
156-59-2	cis-1,2-Dichloroethene	0.745	0.00097	UD
156-60-5	trans-1,2-Dichloroethene	0.745	0.0010	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.745	0.00082	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.745	0.00082	UD
127-18-4	Tetrachloroethene	0.745	0.0020	JD
71-55-6	1,1,1-Trichloroethane	0.745	0.00082	UD
79-00-5	1,1,2-Trichloroethane	0.745	0.00057	UD
79-01-6	Trichloroethene	0.745	0.00082	UD
75-01-4	Vinyl chloride	0.745	0.0012	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.037258	0.035462	95.2	70 - 121	
Toluene-d8 (Surrogate)	0.037258	0.041393	111	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.037258	0.039709	107	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	100283	6.24	83645	6.23	
Chlorobenzene-d5 (IS)	91824	9.42	73383	9.42	
1,4-Difluorobenzene (IS)	317171	7.13	290742	7.13	

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW11-01

Laboratory:	BC Laboratories			SDG:	1837609
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1837609-03	File ID:	05DEC64.D
Sampled:	12/03/18 08:40	Prepared:	12/06/18 11:00	Analyzed:	12/06/18 11:28
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	5.45 g / 5 ml
Batch:	B032321	Sequence:	1824146	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.917	0.0014	U
75-34-3	1,1-Dichloroethane	0.917	0.0014	U
107-06-2	1,2-Dichloroethane	0.917	0.00085	U
75-35-4	1,1-Dichloroethene	0.917	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.917	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.917	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.917	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.917	0.0011	U
127-18-4	Tetrachloroethene	0.917	0.0048	J
71-55-6	1,1,1-Trichloroethane	0.917	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.917	0.00077	U
79-01-6	Trichloroethene	0.917	0.0011	U
75-01-4	Vinyl chloride	0.917	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.045872	0.047523	104	70 - 121	
Toluene-d8 (Surrogate)	0.045872	0.047394	103	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.045872	0.040083	87.4	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	91918	6.23	83645	6.23	
Chlorobenzene-d5 (IS)	73515	9.42	73383	9.42	
1,4-Difluorobenzene (IS)	295652	7.13	290742	7.13	

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW08-01

Laboratory:	BC Laboratories			SDG:	1837609
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1837609-04	File ID:	05DEC65.D
Sampled:	12/03/18 09:20	Prepared:	12/06/18 11:00	Analyzed:	12/06/18 11:51
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	5.43 g / 5 ml
Batch:	B032321	Sequence:	1824146	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.921	0.0014	U
75-34-3	1,1-Dichloroethane	0.921	0.0014	U
107-06-2	1,2-Dichloroethane	0.921	0.00085	U
75-35-4	1,1-Dichloroethene	0.921	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.921	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.921	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.921	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.921	0.0011	U
127-18-4	Tetrachloroethene	0.921	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.921	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.921	0.00077	U
79-01-6	Trichloroethene	0.921	0.0011	U
75-01-4	Vinyl chloride	0.921	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.046041	0.049659	108	70 - 121	
Toluene-d8 (Surrogate)	0.046041	0.047394	103	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.046041	0.046777	102	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	95701	6.24	83645	6.23	
Chlorobenzene-d5 (IS)	84928	9.42	73383	9.42	
1,4-Difluorobenzene (IS)	318178	7.13	290742	7.13	

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW08-01-DUP

Laboratory:	BC Laboratories			SDG:	1837609
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1837609-05	File ID:	05DEC66.D
Sampled:	12/03/18 09:25	Prepared:	12/06/18 11:00	Analyzed:	12/06/18 12:12
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	5.91 g / 5 ml
Batch:	B032321	Sequence:	1824146	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.846	0.0012	UD
75-34-3	1,1-Dichloroethane	0.846	0.0012	UD
107-06-2	1,2-Dichloroethane	0.846	0.00072	UD
75-35-4	1,1-Dichloroethene	0.846	0.0010	UD
156-59-2	cis-1,2-Dichloroethene	0.846	0.0011	UD
156-60-5	trans-1,2-Dichloroethene	0.846	0.0012	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.846	0.00093	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.846	0.00093	UD
127-18-4	Tetrachloroethene	0.846	0.0011	UD
71-55-6	1,1,1-Trichloroethane	0.846	0.00093	UD
79-00-5	1,1,2-Trichloroethane	0.846	0.00065	UD
79-01-6	Trichloroethene	0.846	0.00093	UD
75-01-4	Vinyl chloride	0.846	0.0014	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.042301	0.046827	111	70 - 121	
Toluene-d8 (Surrogate)	0.042301	0.044179	104	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.042301	0.042707	101	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	94804	6.24	83645	6.23	
Chlorobenzene-d5 (IS)	86521	9.43	73383	9.42	
1,4-Difluorobenzene (IS)	321789	7.13	290742	7.13	

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW06-01

Laboratory:	BC Laboratories			SDG:	1837609
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1837609-06	File ID:	05DEC67.D
Sampled:	12/03/18 10:10	Prepared:	12/06/18 11:00	Analyzed:	12/06/18 12:34
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	6.59 g / 5 ml
Batch:	B032321	Sequence:	1824146	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.759	0.0011	UD
75-34-3	1,1-Dichloroethane	0.759	0.0011	UD
107-06-2	1,2-Dichloroethane	0.759	0.00064	UD
75-35-4	1,1-Dichloroethene	0.759	0.00091	UD
156-59-2	cis-1,2-Dichloroethene	0.759	0.00099	UD
156-60-5	trans-1,2-Dichloroethene	0.759	0.0011	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.759	0.00083	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.759	0.00083	UD
127-18-4	Tetrachloroethene	0.759	0.00099	UD
71-55-6	1,1,1-Trichloroethane	0.759	0.00083	UD
79-00-5	1,1,2-Trichloroethane	0.759	0.00058	UD
79-01-6	Trichloroethene	0.759	0.00083	UD
75-01-4	Vinyl chloride	0.759	0.0012	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.037936	0.042314	112	70 - 121	
Toluene-d8 (Surrogate)	0.037936	0.040129	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.037936	0.039401	104	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	92414	6.24	83645	6.23	
Chlorobenzene-d5 (IS)	84050	9.42	73383	9.42	
1,4-Difluorobenzene (IS)	308504	7.13	290742	7.13	

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW10-01

Laboratory:	BC Laboratories			SDG:	1837609
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1837609-07	File ID:	07DEC17.D
Sampled:	12/03/18 10:55	Prepared:	12/06/18 11:00	Analyzed:	12/07/18 17:17
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	5.41 g / 5 ml
Batch:	B032321	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.924	0.0014	U
75-34-3	1,1-Dichloroethane	0.924	0.0014	U
107-06-2	1,2-Dichloroethane	0.924	0.00085	U
75-35-4	1,1-Dichloroethene	0.924	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.924	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.924	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.924	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.924	0.0011	U
127-18-4	Tetrachloroethene	0.924	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.924	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.924	0.00077	U
79-01-6	Trichloroethene	0.924	0.0011	U
75-01-4	Vinyl chloride	0.924	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.046211	0.047052	102	70 - 121	
Toluene-d8 (Surrogate)	0.046211	0.050610	110	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.046211	0.048780	106	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	80413	6.22	77833	6.22	
Chlorobenzene-d5 (IS)	74905	9.41	65753	9.41	
1,4-Difluorobenzene (IS)	258062	7.11	252306	7.11	

* Values outside of QC limits

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Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW02-01

Laboratory:	BC Laboratories			SDG:	1837609
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1837609-08	File ID:	05DEC69.D
Sampled:	12/03/18 14:00	Prepared:	12/06/18 11:00	Analyzed:	12/06/18 13:18
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	6.83 g / 5 ml
Batch:	B032321	Sequence:	1824146	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.732	0.0010	UD
75-34-3	1,1-Dichloroethane	0.732	0.0010	UD
107-06-2	1,2-Dichloroethane	0.732	0.00062	UD
75-35-4	1,1-Dichloroethene	0.732	0.00088	UD
156-59-2	cis-1,2-Dichloroethene	0.732	0.00095	UD
156-60-5	trans-1,2-Dichloroethene	0.732	0.0010	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.732	0.00081	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.732	0.00081	UD
127-18-4	Tetrachloroethene	0.732	0.00095	UD
71-55-6	1,1,1-Trichloroethane	0.732	0.00081	UD
79-00-5	1,1,2-Trichloroethane	0.732	0.00056	UD
79-01-6	Trichloroethene	0.732	0.00081	UD
75-01-4	Vinyl chloride	0.732	0.0012	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.036603	0.038426	105	70 - 121	
Toluene-d8 (Surrogate)	0.036603	0.038646	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.036603	0.039004	107	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	89828	6.24	83645	6.23	
Chlorobenzene-d5 (IS)	81744	9.42	73383	9.42	
1,4-Difluorobenzene (IS)	292785	7.13	290742	7.13	

* Values outside of QC limits

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Reported: 1/7/2019 11:04:03AM
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Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW04-01

Laboratory:	BC Laboratories			SDG:	1837609
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1837609-09	File ID:	05DEC70.D
Sampled:	12/03/18 14:35	Prepared:	12/06/18 11:00	Analyzed:	12/06/18 13:40
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	7.33 g / 5 ml
Batch:	B032321	Sequence:	1824146	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.682	0.00095	UD
75-34-3	1,1-Dichloroethane	0.682	0.00095	UD
107-06-2	1,2-Dichloroethane	0.682	0.00058	UD
75-35-4	1,1-Dichloroethene	0.682	0.00082	UD
156-59-2	cis-1,2-Dichloroethene	0.682	0.00089	UD
156-60-5	trans-1,2-Dichloroethene	0.682	0.00095	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.682	0.00075	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.682	0.00075	UD
127-18-4	Tetrachloroethene	0.682	0.00089	UD
71-55-6	1,1,1-Trichloroethane	0.682	0.00075	UD
79-00-5	1,1,2-Trichloroethane	0.682	0.00053	UD
79-01-6	Trichloroethene	0.682	0.00075	UD
75-01-4	Vinyl chloride	0.682	0.0011	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.034106	0.034768	102	70 - 121	
Toluene-d8 (Surrogate)	0.034106	0.036276	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.034106	0.035150	103	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	93201	6.24	83645	6.23	
Chlorobenzene-d5 (IS)	82081	9.42	73383	9.42	
1,4-Difluorobenzene (IS)	291952	7.13	290742	7.13	

* Values outside of QC limits

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Sacramento, CA 95811

Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1837609
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032321 Batch Matrix: Solids
Preparation: EPA 5035 Soil MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW05-01	1837609-01	05DEC63.D	12/06/18 11:00	VOCs + TPHg
SO-VW11-01	1837609-03	05DEC64.D	12/06/18 11:00	VOCs + TPHg
SO-VW08-01	1837609-04	05DEC65.D	12/06/18 11:00	VOCs + TPHg
SO-VW08-01-DUP	1837609-05	05DEC66.D	12/06/18 11:00	VOCs + TPHg
SO-VW06-01	1837609-06	05DEC67.D	12/06/18 11:00	VOCs + TPHg
SO-VW10-01	1837609-07	07DEC17.D	12/06/18 11:00	VOCs + TPHg
SO-VW02-01	1837609-08	05DEC69.D	12/06/18 11:00	VOCs + TPHg
SO-VW04-01	1837609-09	05DEC70.D	12/06/18 11:00	VOCs + TPHg
Blank	B032321-BLK1	06DEC22.D	12/06/18 11:00	
LCS	B032321-BS1	06DEC17.D	12/06/18 11:00	
SO-VW06-01	B032321-MS1	06DEC18.D	12/06/18 11:00	
SO-VW06-01	B032321-MSD1	06DEC19.D	12/06/18 11:00	

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Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1837609
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032321-BLK1	File ID:	06DEC22.D
Prepared:	12/06/18 11:00	Preparation:	EPA 5035 Soil MS	Initial/Final:	5 g / 5 ml
Analyzed:	12/06/18 22:05	Instrument:	MS-V3		
Batch:	B032321	Sequence:	1824146	Calibration:	1812002

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.0014	U
75-34-3	1,1-Dichloroethane	0.0014	U
107-06-2	1,2-Dichloroethane	0.00085	U
75-35-4	1,1-Dichloroethene	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.0011	U
127-18-4	Tetrachloroethene	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.00077	U
79-01-6	Trichloroethene	0.0011	U
75-01-4	Vinyl chloride	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.044760	89.5	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.054470	109	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.050550	101	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	77420	6.23	78718	6.24	
Chlorobenzene-d5 (IS)	65846	9.42	68320	9.42	
1,4-Difluorobenzene (IS)	243496	7.12	259417	7.13	

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Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

SO-VW06-01

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032321
Preparation: EPA 5035 Soil MS
Source Sample Number: 1837609-06

SDG: 1837609
Project: SMUD 59th St.
Laboratory ID: B032321-MS1
Initial/Final: 5.85 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Chloroethane	0.10684	ND	0.072368	67.7 *	70 - 130
1,1-Dichloroethane	0.10684	ND	0.080496	75.3	70 - 130
1,1-Dichloroethene	0.10684	ND	0.080795	75.6	70 - 130
Trichloroethene	0.10684	ND	0.069299	64.9 *	70 - 130

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	0.11161	0.076205	68.3 *	5.17	20	70 - 130
1,1-Dichloroethane	0.11161	0.084393	75.6	4.73	20	70 - 130
1,1-Dichloroethene	0.11161	0.083580	74.9	3.39	20	70 - 130
Trichloroethene	0.11161	0.077893	69.8 *	11.7	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032321
Preparation: EPA 5035 Soil MS

SDG: 1837609
Project: SMUD 59th St.
Laboratory ID: B032321-BS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	0.11945	95.6	70 - 130
1,1-Dichloroethane	0.12500	0.13363	107	70 - 130
1,1-Dichloroethene	0.12500	0.13020	104	70 - 130
Trichloroethene	0.12500	0.13792	110	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824146	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824146-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824146-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824146-TUN2	05DEC42.D	12/06/18 02:14
Calibration Check	1824146-CCV4	05DEC44.D	12/06/18 02:58
Calibration Blank	1824146-CCB2	05DEC46.D	12/06/18 03:42
SO-VW05-01	1837609-01	05DEC63.D	12/06/18 11:06
SO-VW11-01	1837609-03	05DEC64.D	12/06/18 11:28
SO-VW08-01	1837609-04	05DEC65.D	12/06/18 11:51
SO-VW08-01-DUP	1837609-05	05DEC66.D	12/06/18 12:12
SO-VW06-01	1837609-06	05DEC67.D	12/06/18 12:34
SO-VW02-01	1837609-08	05DEC69.D	12/06/18 13:18
SO-VW04-01	1837609-09	05DEC70.D	12/06/18 13:40
MS Tune	1824146-TUN3	06DEC02.D	12/06/18 14:24
Calibration Check	1824146-CCV7	06DEC04.D	12/06/18 15:23
Calibration Blank	1824146-CCB3	06DEC06.D	12/06/18 16:11
LCS	B032321-BS1	06DEC17.D	12/06/18 20:14
SO-VW06-01	B032321-MS1	06DEC18.D	12/06/18 20:36
SO-VW06-01	B032321-MSD1	06DEC19.D	12/06/18 20:59
Blank	B032321-BLK1	06DEC22.D	12/06/18 22:05

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids
SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824353-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824353-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824353-TUN1	07DEC02.D	12/07/18 10:16
Calibration Check	1824353-CCV1	07DEC04.D	12/07/18 11:11
Calibration Blank	1824353-CCB1	07DEC06.D	12/07/18 11:59
SO-VW10-01	1837609-07	07DEC17.D	12/07/18 17:17
MS Tune	1824353-TUN2	07DEC27.D	12/07/18 20:55
Calibration Check	1824353-CCV4	07DEC29.D	12/07/18 21:39
Calibration Blank	1824353-CCB2	07DEC31.D	12/07/18 22:22

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824979	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1824979-TUN1	13NOV03.D	11/13/18 07:18
Cal Standard	1824979-CAL2	13NOV13.D	11/13/18 13:18
Cal Standard	1824979-CAL3	13NOV14.D	11/13/18 13:41
Cal Standard	1824979-CAL4	13NOV15.D	11/13/18 14:04
Cal Standard	1824979-CAL5	13NOV16.D	11/13/18 14:27
Cal Standard	1824979-CAL6	13NOV17.D	11/13/18 14:50
Cal Standard	1824979-CAL1	13NOV21.D	11/13/18 16:22

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	05DEC42.D	Injection Date:	12/06/18
Instrument ID:	MS-V3	Injection Time:	02:14
Sequence:	1824146	Lab Sample ID:	1824146-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.9	PASS
Mass 75	30 - 60% of Mass 95	41.2	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	8.22	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	94.1	PASS
Mass 175	5 - 9% of Mass 174	7.45	PASS
Mass 176	95 - 101% of Mass 174	96.5	PASS
Mass 177	5 - 9% of Mass 176	6.49	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	06DEC02.D	Injection Date:	12/06/18
Instrument ID:	MS-V3	Injection Time:	14:24
Sequence:	1824146	Lab Sample ID:	1824146-TUN3

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	19.7	PASS
Mass 75	30 - 60% of Mass 95	43.5	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.54	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	70.3	PASS
Mass 175	5 - 9% of Mass 174	5.6	PASS
Mass 176	95 - 101% of Mass 174	96.9	PASS
Mass 177	5 - 9% of Mass 176	7.36	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	07DEC02.D	Injection Date:	12/07/18
Instrument ID:	MS-V3	Injection Time:	10:16
Sequence:	1824353	Lab Sample ID:	1824353-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	16.6	PASS
Mass 75	30 - 60% of Mass 95	39.9	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	5.21	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	93.6	PASS
Mass 175	5 - 9% of Mass 174	5.73	PASS
Mass 176	95 - 101% of Mass 174	96.1	PASS
Mass 177	5 - 9% of Mass 176	5.79	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	07DEC27.D	Injection Date:	12/07/18
Instrument ID:	MS-V3	Injection Time:	20:55
Sequence:	1824353	Lab Sample ID:	1824353-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.1	PASS
Mass 75	30 - 60% of Mass 95	43.1	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.33	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	78.9	PASS
Mass 175	5 - 9% of Mass 174	7.51	PASS
Mass 176	95 - 101% of Mass 174	98.2	PASS
Mass 177	5 - 9% of Mass 176	6.57	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	13NOV03.D	Injection Date:	11/13/18
Instrument ID:	MS-V3	Injection Time:	07:18
Sequence:	1824979	Lab Sample ID:	1824979-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	20.4	PASS
Mass 75	30 - 60% of Mass 95	50.7	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.36	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	59.8	PASS
Mass 175	5 - 9% of Mass 174	8.79	PASS
Mass 176	95 - 101% of Mass 174	98.4	PASS
Mass 177	5 - 9% of Mass 176	7.95	PASS

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	11/13/18
Lab Sample ID:	1824146-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	05DEC44.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	12/06/18
Lab Sample ID:	1824146-CCV4	Injection Time:	02:58

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.099050	1.08303	0.8581649		-20.8	20 *
1,1-Dichloroethane	A	0.12500	0.11984	2.329792	2.23364	0.1	-4.1	20
1,2-Dichloroethane	A	0.12500	0.12855	1.174426	1.207814		2.8	20
1,1-Dichloroethene	A	0.12500	0.11503	1.140625	1.049669		-8.0	20
cis-1,2-Dichloroethene	A	0.12500	0.12810	1.251724	1.282735		2.5	20
trans-1,2-Dichloroethene	A	0.12500	0.12074	1.143278	1.104291		-3.4	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.12291	0.9907955	0.9742529		-1.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12449	1.330376	1.324966	0.3	-0.4	20
Tetrachloroethene	A	0.12500	0.11355	0.3102159	0.2818086		-9.2	20
1,1,1-Trichloroethane	A	0.12500	0.12242	1.337076	1.309443		-2.1	20
1,1,2-Trichloroethane	A	0.12500	0.12050	0.2309915	0.2226813		-3.6	20
Trichloroethene	A	0.12500	0.11467	0.3225112	0.2958472		-8.3	20
Vinyl chloride	A	0.12500	0.11182	1.938052	1.733708		-10.5	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	06DEC04.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	12/06/18
Lab Sample ID:	1824146-CCV7	Injection Time:	15:23

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11716	1.08303	1.015143		-6.3	20
1,1-Dichloroethane	A	0.12500	0.12438	2.329792	2.318179	0.1	-0.5	20
1,2-Dichloroethane	A	0.12500	0.12097	1.174426	1.136604		-3.2	20
1,1-Dichloroethene	A	0.12500	0.12688	1.140625	1.157768		1.5	20
cis-1,2-Dichloroethene	A	0.12500	0.12670	1.251724	1.268757		1.4	20
trans-1,2-Dichloroethene	A	0.12500	0.12774	1.143278	1.168333		2.2	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.12703	0.9907955	1.006885		1.6	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12315	1.330376	1.310685	0.3	-1.5	20
Tetrachloroethene	A	0.12500	0.14048	0.3102159	0.3486448		12.4	20
1,1,1-Trichloroethane	A	0.12500	0.13261	1.337076	1.418471		6.1	20
1,1,2-Trichloroethane	A	0.12500	0.12180	0.2309915	0.2250832		-2.6	20
Trichloroethene	A	0.12500	0.13072	0.3225112	0.3372593		4.6	20
Vinyl chloride	A	0.12500	0.13571	1.938052	2.104113		8.6	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	11/13/18
Lab Sample ID:	1824353-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	07DEC04.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	12/07/18
Lab Sample ID:	1824353-CCV1	Injection Time:	11:11

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.10420	1.08303	0.9028099		-16.6	20
1,1-Dichloroethane	A	0.12500	0.12470	2.329792	2.324166	0.1	-0.2	20
1,2-Dichloroethane	A	0.12500	0.12366	1.174426	1.161831		-1.1	20
1,1-Dichloroethene	A	0.12500	0.12147	1.140625	1.108419		-2.8	20
cis-1,2-Dichloroethene	A	0.12500	0.12918	1.251724	1.293595		3.3	20
trans-1,2-Dichloroethene	A	0.12500	0.12681	1.143278	1.159827		1.4	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.12526	0.9907955	0.9928672		0.2	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12443	1.330376	1.324289	0.3	-0.5	20
Tetrachloroethene	A	0.12500	0.13371	0.3102159	0.3318288		7.0	20
1,1,1-Trichloroethane	A	0.12500	0.13081	1.337076	1.399232		4.6	20
1,1,2-Trichloroethane	A	0.12500	0.12603	0.2309915	0.2329029		0.8	20
Trichloroethene	A	0.12500	0.13095	0.3225112	0.337858		4.8	20
Vinyl chloride	A	0.12500	0.11957	1.938052	1.853856		-4.3	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	07DEC29.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	12/07/18
Lab Sample ID:	1824353-CCV4	Injection Time:	21:39

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11512	1.08303	0.9974103		-7.9	50
1,1-Dichloroethane	A	0.12500	0.12622	2.329792	2.352528	0.1	1.0	50
1,2-Dichloroethane	A	0.12500	0.12701	1.174426	1.193313		1.6	50
1,1-Dichloroethene	A	0.12500	0.12274	1.140625	1.120005		-1.8	50
cis-1,2-Dichloroethene	A	0.12500	0.13064	1.251724	1.308164		4.5	50
trans-1,2-Dichloroethene	A	0.12500	0.13013	1.143278	1.190162		4.1	50
1,1,1,2-Tetrachloroethane	A	0.12500	0.13330	0.9907955	1.056561		6.6	50
1,1,2,2-Tetrachloroethane	A	0.12500	0.12841	1.330376	1.366644	0.3	2.7	50
Tetrachloroethene	A	0.12500	0.12834	0.3102159	0.3185061		2.7	50
1,1,1-Trichloroethane	A	0.12500	0.13100	1.337076	1.401284		4.8	50
1,1,2-Trichloroethane	A	0.12500	0.12724	0.2309915	0.2351315		1.8	50
Trichloroethene	A	0.12500	0.13150	0.3225112	0.3392697		5.2	50
Vinyl chloride	A	0.12500	0.13220	1.938052	2.049614		5.8	50

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
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Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824146-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824146-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824146-CCV4)			Lab File ID: 05DEC44.D		Analyzed: 12/06/18 02:58			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	80 - 120	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9	80 - 120	10.16	10.14	0.0200	+/-1.0	
Calibration Blank (1824146-CCB2)			Lab File ID: 05DEC46.D		Analyzed: 12/06/18 03:42			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	93.2	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.8	74 - 121	10.16	10.14	0.0200	+/-1.0	
SO-VW05-01 (1837609-01)			Lab File ID: 05DEC63.D		Analyzed: 12/06/18 11:06			
1,2-Dichloroethane-d4 (Surrogate)	0.037258	95.2	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.037258	111	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.037258	107	74 - 121	10.16	10.14	0.0200	+/-1.0	
SO-VW11-01 (1837609-03)			Lab File ID: 05DEC64.D		Analyzed: 12/06/18 11:28			
1,2-Dichloroethane-d4 (Surrogate)	0.045872	104	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.045872	103	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.045872	87.4	74 - 121	10.15	10.14	0.0100	+/-1.0	
SO-VW08-01 (1837609-04)			Lab File ID: 05DEC65.D		Analyzed: 12/06/18 11:51			
1,2-Dichloroethane-d4 (Surrogate)	0.046041	108	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.046041	103	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.046041	102	74 - 121	10.16	10.14	0.0200	+/-1.0	

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Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
SO-VW08-01-DUP (1837609-05)			Lab File ID: 05DEC66.D		Analyzed: 12/06/18 12:12			
1,2-Dichloroethane-d4 (Surrogate)	0.042301	111	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.042301	104	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.042301	101	74 - 121	10.16	10.14	0.0200	+/-1.0	
SO-VW06-01 (1837609-06)			Lab File ID: 05DEC67.D		Analyzed: 12/06/18 12:34			
1,2-Dichloroethane-d4 (Surrogate)	0.037936	112	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.037936	106	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.037936	104	74 - 121	10.16	10.14	0.0200	+/-1.0	
SO-VW02-01 (1837609-08)			Lab File ID: 05DEC69.D		Analyzed: 12/06/18 13:18			
1,2-Dichloroethane-d4 (Surrogate)	0.036603	105	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.036603	106	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.036603	107	74 - 121	10.16	10.14	0.0200	+/-1.0	
SO-VW04-01 (1837609-09)			Lab File ID: 05DEC70.D		Analyzed: 12/06/18 13:40			
1,2-Dichloroethane-d4 (Surrogate)	0.034106	102	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.034106	106	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.034106	103	74 - 121	10.15	10.14	0.0100	+/-1.0	
Calibration Check (1824146-CCV7)			Lab File ID: 06DEC04.D		Analyzed: 12/06/18 15:23			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	92.1	80 - 120	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	106	80 - 120	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	104	80 - 120	10.16	10.14	0.0200	+/-1.0	
Calibration Blank (1824146-CCB3)			Lab File ID: 06DEC06.D		Analyzed: 12/06/18 16:11			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.9	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.2	74 - 121	10.15	10.14	0.0100	+/-1.0	
LCS (B032321-BS1)			Lab File ID: 06DEC17.D		Analyzed: 12/06/18 20:14			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	91.8	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	100	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	108	74 - 121	10.15	10.14	0.0100	+/-1.0	

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Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Matrix Spike (B032321-MS1)			Lab File ID: 06DEC18.D		Analyzed: 12/06/18 20:36			
1,2-Dichloroethane-d4 (Surrogate)	0.042735	102	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.042735	105	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.042735	104	74 - 121	10.15	10.14	0.0100	+/-1.0	
Matrix Spike Dup (B032321-MSD1)			Lab File ID: 06DEC19.D		Analyzed: 12/06/18 20:59			
1,2-Dichloroethane-d4 (Surrogate)	0.044643	105	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.044643	96.5	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.044643	101	74 - 121	10.15	10.14	0.0100	+/-1.0	
Blank (B032321-BLK1)			Lab File ID: 06DEC22.D		Analyzed: 12/06/18 22:05			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	89.5	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	109	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.15	10.14	0.0100	+/-1.0	

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SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824353-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824353-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824353-CCV1)			Lab File ID: 07DEC04.D		Analyzed: 12/07/18 11:11			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.1	80 - 120	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	80 - 120	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	80 - 120	10.15	10.14	0.0100	+/-1.0	
Calibration Blank (1824353-CCB1)			Lab File ID: 07DEC06.D		Analyzed: 12/07/18 11:59			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	95.2	70 - 121	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	105	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.15	10.14	0.0100	+/-1.0	
SO-VW10-01 (1837609-07)			Lab File ID: 07DEC17.D		Analyzed: 12/07/18 17:17			
1,2-Dichloroethane-d4 (Surrogate)	0.046211	102	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.046211	110	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.046211	106	74 - 121	10.15	10.14	0.0100	+/-1.0	
Calibration Check (1824353-CCV4)			Lab File ID: 07DEC29.D		Analyzed: 12/07/18 21:39			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.9	80 - 120	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.5	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.3	80 - 120	10.15	10.14	0.0100	+/-1.0	
Calibration Blank (1824353-CCB2)			Lab File ID: 07DEC31.D		Analyzed: 12/07/18 22:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.8	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D		Analyzed: 11/13/18 13:18			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	103		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.0		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D		Analyzed: 11/13/18 13:41			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	95.2		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D		Analyzed: 11/13/18 14:04			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	95.7		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.0		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	104		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D		Analyzed: 11/13/18 14:27			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.3		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.7		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D		Analyzed: 11/13/18 14:50			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	91.9		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D		Analyzed: 11/13/18 16:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	105		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.2		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9		10.14	10.14	0.0000	+/-1.0	

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Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824146-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824146-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824146-CCV4)			Lab File ID: 05DEC44.D			Analyzed: 12/06/18 02:58			
Pentafluorobenzene (IS)	83645	6.23	85192	6.21	98	50 - 200	0.0200	+/-0.50	
Chlorobenzene-d5 (IS)	73383	9.42	69865	9.41	105	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	290742	7.13	271811	7.1	107	50 - 200	0.0300	+/-0.50	
Calibration Blank (1824146-CCB2)			Lab File ID: 05DEC46.D			Analyzed: 12/06/18 03:42			
Pentafluorobenzene (IS)	96426	6.24	83645	6.23	115	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	77990	9.42	73383	9.42	106	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	295815	7.13	290742	7.13	102	50 - 200	0.0000	+/-0.50	
SO-VW05-01 (1837609-01)			Lab File ID: 05DEC63.D			Analyzed: 12/06/18 11:06			
Pentafluorobenzene (IS)	100283	6.24	83645	6.23	120	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	91824	9.42	73383	9.42	125	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	317171	7.13	290742	7.13	109	50 - 200	0.0000	+/-0.50	
SO-VW11-01 (1837609-03)			Lab File ID: 05DEC64.D			Analyzed: 12/06/18 11:28			
Pentafluorobenzene (IS)	91918	6.23	83645	6.23	110	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	73515	9.42	73383	9.42	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	295652	7.13	290742	7.13	102	50 - 200	0.0000	+/-0.50	
SO-VW08-01 (1837609-04)			Lab File ID: 05DEC65.D			Analyzed: 12/06/18 11:51			
Pentafluorobenzene (IS)	95701	6.24	83645	6.23	114	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	84928	9.42	73383	9.42	116	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	318178	7.13	290742	7.13	109	50 - 200	0.0000	+/-0.50	

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Project Number: 30570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SO-VW08-01-DUP (1837609-05)			Lab File ID: 05DEC66.D			Analyzed: 12/06/18 12:12			
Pentafluorobenzene (IS)	94804	6.24	83645	6.23	113	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	86521	9.43	73383	9.42	118	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	321789	7.13	290742	7.13	111	50 - 200	0.0000	+/-0.50	
SO-VW06-01 (1837609-06)			Lab File ID: 05DEC67.D			Analyzed: 12/06/18 12:34			
Pentafluorobenzene (IS)	92414	6.24	83645	6.23	110	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	84050	9.42	73383	9.42	115	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	308504	7.13	290742	7.13	106	50 - 200	0.0000	+/-0.50	
SO-VW02-01 (1837609-08)			Lab File ID: 05DEC69.D			Analyzed: 12/06/18 13:18			
Pentafluorobenzene (IS)	89828	6.24	83645	6.23	107	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	81744	9.42	73383	9.42	111	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	292785	7.13	290742	7.13	101	50 - 200	0.0000	+/-0.50	
SO-VW04-01 (1837609-09)			Lab File ID: 05DEC70.D			Analyzed: 12/06/18 13:40			
Pentafluorobenzene (IS)	93201	6.24	83645	6.23	111	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	82081	9.42	73383	9.42	112	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	291952	7.13	290742	7.13	100	50 - 200	0.0000	+/-0.50	
Calibration Check (1824146-CCV7)			Lab File ID: 06DEC04.D			Analyzed: 12/06/18 15:23			
Pentafluorobenzene (IS)	78718	6.24	85192	6.21	92	50 - 200	0.0300	+/-0.50	
Chlorobenzene-d5 (IS)	68320	9.42	69865	9.41	98	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	259417	7.13	271811	7.1	95	50 - 200	0.0300	+/-0.50	
Calibration Blank (1824146-CCB3)			Lab File ID: 06DEC06.D			Analyzed: 12/06/18 16:11			
Pentafluorobenzene (IS)	94614	6.24	78718	6.24	120	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	80728	9.42	68320	9.42	118	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	304843	7.13	259417	7.13	118	50 - 200	0.0000	+/-0.50	
LCS (B032321-BS1)			Lab File ID: 06DEC17.D			Analyzed: 12/06/18 20:14			
Pentafluorobenzene (IS)	70643	6.23	78718	6.24	90	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	55315	9.42	68320	9.42	81	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	229781	7.12	259417	7.13	89	50 - 200	-0.0100	+/-0.50	

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Project: SMUD 59th St.
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Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B032321-MS1)			Lab File ID: 06DEC18.D			Analyzed: 12/06/18 20:36			
Pentafluorobenzene (IS)	74699	6.23	78718	6.24	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	59401	9.42	68320	9.42	87	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	233064	7.12	259417	7.13	90	50 - 200	-0.0100	+/-0.50	
Matrix Spike Dup (B032321-MSD1)			Lab File ID: 06DEC19.D			Analyzed: 12/06/18 20:59			
Pentafluorobenzene (IS)	76940	6.23	78718	6.24	98	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	60954	9.42	68320	9.42	89	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	252291	7.12	259417	7.13	97	50 - 200	-0.0100	+/-0.50	
Blank (B032321-BLK1)			Lab File ID: 06DEC22.D			Analyzed: 12/06/18 22:05			
Pentafluorobenzene (IS)	77420	6.23	78718	6.24	98	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	65846	9.42	68320	9.42	96	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	243496	7.12	259417	7.13	94	50 - 200	-0.0100	+/-0.50	

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Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
SDG: 1837609
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Sequence: 1824353
Instrument: MS-V3
Matrix: Solids
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824353-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824353-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824353-CCV1)			Lab File ID: 07DEC04.D			Analyzed: 12/07/18 11:11			
Pentafluorobenzene (IS)	77833	6.22	85192	6.21	91	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	65753	9.41	69865	9.41	94	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	252306	7.11	271811	7.1	93	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824353-CCB1)			Lab File ID: 07DEC06.D			Analyzed: 12/07/18 11:59			
Pentafluorobenzene (IS)	77570	6.22	77833	6.22	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70786	9.41	65753	9.41	108	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	259907	7.11	252306	7.11	103	50 - 200	0.0000	+/-0.50	
SO-VW10-01 (1837609-07)			Lab File ID: 07DEC17.D			Analyzed: 12/07/18 17:17			
Pentafluorobenzene (IS)	80413	6.22	77833	6.22	103	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	74905	9.41	65753	9.41	114	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	258062	7.11	252306	7.11	102	50 - 200	0.0000	+/-0.50	
Calibration Check (1824353-CCV4)			Lab File ID: 07DEC29.D			Analyzed: 12/07/18 21:39			
Pentafluorobenzene (IS)	105107	6.22	85192	6.21	123	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	85377	9.41	69865	9.41	122	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	346259	7.11	271811	7.1	127	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824353-CCB2)			Lab File ID: 07DEC31.D			Analyzed: 12/07/18 22:22			
Pentafluorobenzene (IS)	104184	6.21	91031	6.21	114	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	87032	9.41	83102	9.41	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	339559	7.11	314278	7.11	108	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D			Analyzed: 11/13/18 13:18			
Pentafluorobenzene (IS)	82386	6.2	85192	6.21	97	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	70974	9.41	69865	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	277119	7.1	271811	7.1	102	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D			Analyzed: 11/13/18 13:41			
Pentafluorobenzene (IS)	85192	6.21	85192	6.21	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69865	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	271811	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D			Analyzed: 11/13/18 14:04			
Pentafluorobenzene (IS)	85251	6.2	85192	6.21	100	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	69041	9.41	69865	9.41	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	283685	7.1	271811	7.1	104	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D			Analyzed: 11/13/18 14:27			
Pentafluorobenzene (IS)	82966	6.21	85192	6.21	97	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	66555	9.4	69865	9.41	95	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	268813	7.1	271811	7.1	99	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D			Analyzed: 11/13/18 14:50			
Pentafluorobenzene (IS)	81182	6.2	85192	6.21	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	64689	9.4	69865	9.41	93	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	262849	7.1	271811	7.1	97	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D			Analyzed: 11/13/18 16:22			
Pentafluorobenzene (IS)	83848	6.21	85192	6.21	98	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69643	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	272090	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	

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INITIAL CALIBRATION STANDARDS

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824979	Instrument:	MS-V3
Calibration:	1812002		

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
8K09001	8260 V2 BFB WORKING STD	1824979-TUN1	13NOV03.D	11/13/18 07:18
8K27020	8260 V3 1823650 REG CAL2	1824979-CAL2	13NOV13.D	11/13/18 13:18
8K27021	8260 V3 1823650 REG CAL3	1824979-CAL3	13NOV14.D	11/13/18 13:41
8K27022	8260 V3 1823650 REG CAL4	1824979-CAL4	13NOV15.D	11/13/18 14:04
8K27023	8260 V3 1823650 REG CAL5	1824979-CAL5	13NOV16.D	11/13/18 14:27
8K27024	8260 V3 1823650 REG CAL6	1824979-CAL6	13NOV17.D	11/13/18 14:50
8K27019	8260 V3 1823650 REG CAL1	1824979-CAL1	13NOV21.D	11/13/18 16:22

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Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF
Chloroethane	0.005	0.9313281	0.05	1.280436	0.125	1.123669	0.25	1.047286	0.375	1.06771	0.5	1.047751
1,1-Dichloroethane	0.005	2.253363	0.05	2.54945	0.125	2.321218	0.25	2.350689	0.375	2.253137	0.5	2.250896
1,2-Dichloroethane	0.005	1.146479	0.05	1.313476	0.125	1.170007	0.25	1.180664	0.375	1.126421	0.5	1.109511
1,1-Dichloroethene	0.005	0.9562542	0.05	1.254315	0.125	1.221396	0.25	1.161347	0.375	1.193917	0.5	1.056522
cis-1,2-Dichloroethene	0.005	1.213267	0.05	1.362792	0.125	1.245521	0.25	1.256239	0.375	1.227132	0.5	1.205393
trans-1,2-Dichloroethene	0.005	1.100921	0.05	1.242881	0.125	1.15423	0.25	1.133702	0.375	1.111533	0.5	1.1164
1,1,1,2-Tetrachloroethane	0.005	1.032121	0.05	1.041565	0.125	0.9871209	0.25	1.008363	0.375	0.9530864	0.5	0.922517
1,1,2,2-Tetrachloroethane	0.005	1.309823	0.05	1.361287	0.125	1.364838	0.25	1.368691	0.375	1.264155	0.5	1.313461
Tetrachloroethene	0.005	0.2811937	0.05	0.3458767	0.125	0.3362851	0.25	0.3051829	0.375	0.2984593	0.5	0.2942975
1,1,1-Trichloroethane	0.005	1.101756	0.05	1.480106	0.125	1.384257	0.25	1.367637	0.375	1.334175	0.5	1.354528
1,1,2-Trichloroethane	0.005	0.2463523	0.05	0.247493	0.125	0.2332768	0.25	0.2215901	0.375	0.2211758	0.5	0.2160609
Trichloroethene	0.005	0.2871109	0.05	0.3531768	0.125	0.3378907	0.25	0.3156205	0.375	0.3192589	0.5	0.3220092
Vinyl chloride	0.005	1.449766	0.05	2.242881	0.125	2.185468	0.25	1.980629	0.375	1.929103	0.5	1.840463
1,2-Dichloroethane-d4 (Surrogate)	0.05	0.9335941	0.05	0.943	0.05	0.8892502	0.05	0.8737962	0.05	0.8606658	0.05	0.8391146
Toluene-d8 (Surrogate)	0.05	1.05224	0.05	1.058386	0.05	1.088999	0.05	1.040034	0.05	1.061548	0.05	1.061499
4-Bromofluorobenzene (Surrogate)	0.05	1.365191	0.05	1.329571	0.05	1.305475	0.05	1.427688	0.05	1.367305	0.05	1.4035

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1837609
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Chloroethane	1.08303	10.63971	2.313333	0.352722			15	
1,1-Dichloroethane	2.329792	4.957522	4.69	2.144103E-02			SPCC (0.10)	
1,2-Dichloroethane	1.174426	6.221394	6.68	1.342167E-02			15	
1,1-Dichloroethene	1.140625	9.902162	3.181667	0.1271662			CCC (20)	
cis-1,2-Dichloroethene	1.251724	4.606693	5.411667	7.615105E-02			15	
trans-1,2-Dichloroethene	1.143278	4.571262	4.145	0.1308259			15	
1,1,1,2-Tetrachloroethane	0.9907955	4.667134	9.485	5.866972E-02			15	
1,1,2,2-Tetrachloroethane	1.330376	3.136352	10.21	1.398524E-02			SPCC (0.30)	
Tetrachloroethene	0.3102159	8.168443	8.81	2.247676E-02			15	
1,1,1-Trichloroethane	1.337076	9.419156	6.125	8.905765E-02			15	
1,1,2-Trichloroethane	0.2309915	5.875976	8.758334	4.406004E-02			15	
Trichloroethene	0.3225112	6.917194	7.325	7.247583E-02			15	
Vinyl chloride	1.938052	14.66652	1.881667	0.2169596			CCC (20)	
1,2-Dichloroethane-d4 (Surrogate)	0.8899035	4.611968	6.586667	7.620565E-02			15	
Toluene-d8 (Surrogate)	1.060451	1.523989	8.38	1.581306E-02			15	
4-Bromofluorobenzene (Surrogate)	1.366455	3.305892	10.14	2.059171E-02			15	

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Reported: 1/7/2019 11:04:03AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

HOLDING TIME SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1837609
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
SO-VW05-01	12/03/18 07:55	12/04/18 08:40	12/06/18 11:00	3.00	14.00	12/06/18 11:06	3.00	14.00	
SO-VW11-01	12/03/18 08:40	12/04/18 08:40	12/06/18 11:00	3.00	14.00	12/06/18 11:28	3.00	14.00	
SO-VW08-01	12/03/18 09:20	12/04/18 08:40	12/06/18 11:00	3.00	14.00	12/06/18 11:51	3.00	14.00	
SO-VW08-01-DUP	12/03/18 09:25	12/04/18 08:40	12/06/18 11:00	3.00	14.00	12/06/18 12:12	3.00	14.00	
SO-VW06-01	12/03/18 10:10	12/04/18 08:40	12/06/18 11:00	3.00	14.00	12/06/18 12:34	3.00	14.00	
SO-VW10-01	12/03/18 10:55	12/04/18 08:40	12/06/18 11:00	4.00	14.00	12/07/18 17:17	4.00	14.00	
SO-VW02-01	12/03/18 14:00	12/04/18 08:40	12/06/18 11:00	3.00	14.00	12/06/18 13:18	3.00	14.00	
SO-VW04-01	12/03/18 14:35	12/04/18 08:40	12/06/18 11:00	3.00	14.00	12/06/18 13:40	3.00	14.00	

* Holding time not met

Note: If Prep or Analysis are performed within the hour (if holding time is based on hours) or within the day (if holding time is based on days), then the sample is not flagged as outside holding times. Calculated number of days are based on date received or date prepared depending on the test.

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Project: SMUD 59th St.
Project Number: 30570043.05
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Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1837609

Laboratory Documentation Requirements
For Data Validation of
Metals Analysis (using ppm units)

Prepared By

BC Laboratories

For AECOM - Sacramento

30570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1837609
COC Number:
Default Cooler was received at 1 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-6020 (TTLC)	PE-EL2

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032012	EPA-6020 (TTLC)	1837609-02	SO-B09-01

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

Post Spikes

The Post Spike recoveries were within QC limits.

Interference Checks

The Interference Check recoveries were within QC limits.

BC LABORATORIES, INC.

Chain of Custody Form

18-371609

Report To:	
Client: AECom	Project #: 60587730.05
Attn: Robert Kohlhardt	Project Name: SMUD 59th ST
Street Address: 2020 L ST Suite 400	
City, State, Zip: Sacramento CA 95811	Sampler(s): Jack Zayl
Phone: 916 414-5800 Fax:	
Email: Robert.Kohlhardt@aecom.com	
Work Order #:	

Analysis Requested

Please refer to the back of this page for completion instructions and method legend.

Page ____ of ____

Comments:

Sample #	Description	Date Sampled	Time Sampled	SW 8260B	SW 6020	Sample Matrix: Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Result Request **Surcharge: STD (10 Days) / 5 Day** / 2 Day** / 1 Day**	Notes
1	SO-VW05-01	12/3/18	0755	X		X							
2	SO-B09-01	12/3/18	0800		X	X							
3	SO-VW11-01	12/3/18	0840	X		X							
4	SO-VW08-01	12/3/18	0920	X		X							
5	SO-VW08-01-DUP	12/3/18	0925	X		X							
6	SO-VW06-01	12/3/18	1010	X		X							MS/MSD
7	SO-VW10-01	12/3/18	1055	X		X							
8	SO-VW02-01	12/3/18	1400	X		X							
9	SO-VW04-01	12/3/18	1435	X		X							
10	SO-B06-01	12/3/18	1440		X	X							

CHK BY DISTRIBUTION

SUB-OUT

SR 12.3.18

Billing	Same as above	EDF Required? Geotracker	Global ID (Needed for EDF)	System # (Needed for EDT)
Client:		☐ Yes ☐ No		
Address:		Send Copy to State of CA? (EDT)		
City: State Zip		☐ Yes ☐ No		
Attn:				
P.O. #:				

	Relinquished By	Date	Time	Received By	Date	Time
1.		12/3/18	1487		12/3/18	1487
2.		12/3/18	1513		12.4.18	0840
3.						

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1837609 Page 1 of 2

Chain of Custody and Cooler Receipt Form for 1837609 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: B - 37609

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☐ (Specify) GSO	Ice Chest ☒ None ☐ Box ☐ Other ☐ (Specify)	YES ☐ NO ☐ W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☒ No ☐ All samples containers intact? Yes ☒ No ☐ Description(s) match COC? Yes ☒ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 95 Container: Jog Thermometer ID: 274 Date/Time 12.4.18

Temperature: (A) 1.2 °C / (C) 1.0 °C Analyst Init AD 08:40

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR		A								A
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	A→D		A→D	A→D	A→D	A→L	A→D	A→D	A→D	
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: JR Date/Time: 12/4/18 1139

A = Actual / C = Corrected

Rev 21 05/23/2016

(S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20)

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1837609**
Class: **METALS-PPM**
Method: **EPA-6020**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1837609
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-B09-01	1837609-02
SO-B06-01	1837609-10

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-07-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-6020

Laboratory: BC Laboratories
SDG: 1837609
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: PE-EL2

Analyte	MDL	PQL	Units
Arsenic	0.17	0.5	mg/kg

AECOM - Sacramento
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Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B09-01

Laboratory: BC Laboratories
SDG: 1837609
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1837609-02
File ID: PE_EL2_181207-066
Sampled: 12/03/18 08:00
Prepared: 12/05/18 11:00
Analyzed: 12/07/18 12:39
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1 g / 250 ml
Batch: B032012
Sequence: 1824398
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	3.4	1		EPA-6020

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Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B06-01

Laboratory: BC Laboratories
SDG: 1837609
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1837609-10
File ID: PE_EL2_181207-072
Sampled: 12/03/18 14:40
Prepared: 12/05/18 11:00
Analyzed: 12/07/18 13:00
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.02 g / 250 ml
Batch: B032012
Sequence: 1824398
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	3.6	0.98		EPA-6020

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Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-6020

Laboratory: BC Laboratories
SDG: 1837609
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032012 Batch Matrix: Solids
Preparation: EPA 3050B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-B09-01	1837609-02	PE_EL2_181207-066	12/05/18 11:00	
SO-B06-01	1837609-10	PE_EL2_181207-072	12/05/18 11:00	
Blank	B032012-BLK1	PE_EL2_181207-065	12/05/18 11:00	
LCS	B032012-BS1	PE_EL2_181207-064	12/05/18 11:00	
SO-B09-01	B032012-DUP1	PE_EL2_181207-067	12/05/18 11:00	
SO-B09-01	B032012-MS1	PE_EL2_181207-069	12/05/18 11:00	
SO-B09-01	B032012-MSD1	PE_EL2_181207-070	12/05/18 11:00	
SO-B09-01	B032012-PS1	PE_EL2_181207-071	12/05/18 11:00	[Spk] 1g->250ml; 250ml->250ml; Spiked 9.8ml

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Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-6020

Laboratory:	BC Laboratories			SDG:	1837609
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032012-BLK1	File ID:	PE_EL2_181207-065
Prepared:	12/05/18 11:00	Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml
Analyzed:	12/07/18 12:35	Instrument:	PE-EL2		
Batch:	B032012	Sequence:	1824398	Calibration:	UNASSIGNED

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
7440-38-2	Arsenic	0.17	U

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Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

SO-B09-01

DUPLICATES

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032012
Preparation: EPA 3050B
Source Sample Name: SO-B09-01

SDG: 1837609
Project: SMUD 59th St.
Laboratory ID: B032012-DUP1
Lab Source ID: 1837609-02
Initial/Final: 1 g / 250 ml
% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/kg)	C	DUPLICATE CONCENTRATION (mg/kg)	C	RPD %	Q	METHOD
Arsenic	20	3.4045		3.4092		0.139		EPA-6020

* Values outside of QC limits

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Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-6020

SO-B09-01

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032012
Preparation: EPA 3050B
Source Sample Number: 1837609-02

SDG: 1837609
Project: SMUD 59th St.
Laboratory ID: B032012-MS1
Initial/Final: 1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Arsenic	25.000	3.4045	27.997	98.4	75 - 125

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Arsenic	25.000	28.787	102	2.78	20	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Sacramento, CA 95811

Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032012
Preparation: EPA 3050B

SDG: 1837609
Project: SMUD 59th St.
Laboratory ID: B032012-BS1
Initial/Final: 1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Arsenic	25.000	26.570	106	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1837609
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824398	Instrument:	PE-EL2
Matrix:	Solids	Calibration:	UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824398-ICV1	PE_EL2_181207-019	12/07/18 09:04
Initial Cal Blank	1824398-ICB1	PE_EL2_181207-020	12/07/18 09:07
Calibration Check	1824398-CCV2	PE_EL2_181207-040	12/07/18 10:45
Calibration Blank	1824398-CCB2	PE_EL2_181207-041	12/07/18 10:49
MRL Check	1824398-CRL3	PE_EL2_181207-042	12/07/18 11:02
Interference Check A	1824398-IFA1	PE_EL2_181207-043	12/07/18 11:07
Interference Check B	1824398-IFB1	PE_EL2_181207-044	12/07/18 11:11
Calibration Check	1824398-CCV3	PE_EL2_181207-049	12/07/18 11:31
Calibration Blank	1824398-CCB3	PE_EL2_181207-050	12/07/18 11:35
Calibration Check	1824398-CCV4	PE_EL2_181207-062	12/07/18 12:22
Calibration Blank	1824398-CCB4	PE_EL2_181207-063	12/07/18 12:26
LCS	B032012-BS1	PE_EL2_181207-064	12/07/18 12:32
Blank	B032012-BLK1	PE_EL2_181207-065	12/07/18 12:35
SO-B09-01	1837609-02	PE_EL2_181207-066	12/07/18 12:39
SO-B09-01	B032012-DUP1	PE_EL2_181207-067	12/07/18 12:42
SO-B09-01	B032012-MS1	PE_EL2_181207-069	12/07/18 12:49
SO-B09-01	B032012-MSD1	PE_EL2_181207-070	12/07/18 12:53
SO-B09-01	B032012-PS1	PE_EL2_181207-071	12/07/18 12:57
SO-B06-01	1837609-10	PE_EL2_181207-072	12/07/18 13:00
Calibration Check	1824398-CCV5	PE_EL2_181207-073	12/07/18 13:04
Calibration Blank	1824398-CCB5	PE_EL2_181207-074	12/07/18 13:07

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

BLANKS
EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Sequence: 1824398

SDG: 1837609
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	Found	PQL	Units	C	Method
1824398-ICB1	Arsenic	0.54900	2.0	ug/L		EPA-6020
1824398-CCB2	Arsenic	0.11000	2.0	ug/L		EPA-6020
1824398-CCB3	Arsenic	0.66800	2.0	ug/L		EPA-6020
1824398-CCB4	Arsenic	0.17100	2.0	ug/L		EPA-6020
1824398-CCB5	Arsenic	-0.068000	2.0	ug/L		EPA-6020

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

INITIAL AND CONTINUING CALIBRATION CHECK

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Control Limt: +/- 10.00%

SDG: 1837609
Project: SMUD 59th St.
Calibration: UNASSIGNED
Sequence: 1824398

Lab Sample ID	Analyte	True	Found	%R	Units	Method
1824398-ICV1	Arsenic	125.00	128.16	103	ug/L	EPA-6020
1824398-CCV2	Arsenic	100.00	98.796	98.8	ug/L	EPA-6020
1824398-CCV3	Arsenic	100.00	103.43	103	ug/L	EPA-6020
1824398-CCV4	Arsenic	100.00	105.17	105	ug/L	EPA-6020
1824398-CCV5	Arsenic	100.00	102.27	102	ug/L	EPA-6020

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

POST DIGEST SPIKE SAMPLE RECOVERY

EPA-6020

SO-B09-01

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032012
Preparation: EPA 3050B

SDG: 1837609
Project: SMUD 59th St.
Laboratory ID: B032012-PS1
Lab Source ID: 1837609-02
Initial/Final: 0.0392 g / 10 ml

Source Sample Name: SO-B09-01
% Solids:

Analyte	Control Limit %R	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R
Arsenic	75 - 125	106.88	13.346	100.00	93.5

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

ICP INTERFERENCE CHECK SAMPLE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Sequence: 1824398

SDG: 1837609
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	True	Found	%R	Units
1824398-IFA1	Arsenic		-0.51100		ug/L
1824398-IFB1	Arsenic	20.000	20.20	101	mg/kg

* Values outside of QC limits

Raw Data From Instrument PE-EL2

Raw Data - Calibration Standards

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Friday, December 07, 2018 08:05:45
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.605
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	46.000				ug/L
|	B	11	342.674				ug/L
|	Al	27	16328.659				ug/L
| >	Sc	45	661091.552				ug/L
|	V	51	14801.013				ug/L
|	Cr	52	10632.011				ug/L
|	Cr	53	84987.416				ug/L
|	Mn	55	892.719				ug/L
|	Co	59	199.669				ug/L
⌊	Ni	60	81.334				ug/L
⌈	Cu	63	266.671				ug/L
|	Cu	65	145.335				ug/L
|	Zn	66	311.340				ug/L
|	Zn	68	528.352				ug/L
| >	Ge	72	455782.179				ug/L
|	As	75	269.929				ug/L
|	Se	77	2704.476				ug/L
|	Se	82	51.079				ug/L
⌊	Sr	88	915.055				ug/L
⌈	Mo	98	84.406				ug/L
| >	Rh	103	439921.993				ug/L
⌊	Ag	107	62.667				ug/L
⌈	Cd	111	73.464				ug/L
|	Cd	114	40.981				ug/L
| >	In	115	562731.502				ug/L
|	Sn	120	490.687				ug/L
⌊	Sb	121	512.017				ug/L
⌈	Ba	137	180.045				ug/L
|	Ba	138	870.426				ug/L
| >	Tb	159	906288.003				ug/L
|	Tl	205	373.676				ug/L
⌊	Pb	208	338.336				ug/L
⌈	Hg	200	57.459				ug/L
|	Hg	201	38.000				ug/L
| >	Bi	209	450709.467				ug/L
⌊	U	238	74718.520				ug/L
	C	13	2520.453				ug/L
	W	184	84.617				ug/L
	Pd	106	80.159				ug/L
	Kr	83	86.834				ug/L
⌈	Na	23	11067.981				ug/L
|	Mg	24	1846.896				ug/L

	K	39	262459.687	ug/L
	Ca	44	23368.848	ug/L
	Ti	47	416.678	ug/L
	Sc-1	45	661091.552	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000000	0.000	0.000000	Linear Thru Zero
B	11.009	0.000000	0.000	0.000000	Linear Thru Zero
Al	26.982	0.000000	0.000	0.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.000000	0.000	0.000000	Linear Thru Zero
Cr	51.941	0.000000	0.000	0.000000	Linear Thru Zero
Cr	52.941	0.000000	0.000	0.000000	Linear Thru Zero
Mn	54.938	0.000000	0.000	0.000000	Linear Thru Zero
Co	58.933	0.000000	0.000	0.000000	Linear Thru Zero
Ni	59.933	0.000000	0.000	0.000000	Linear Thru Zero
Cu	62.930	0.000000	0.000	0.000000	Linear Thru Zero
Cu	64.928	0.000000	0.000	0.000000	Linear Thru Zero
Zn	65.926	0.000000	0.000	0.000000	Linear Thru Zero
Zn	67.925	0.000000	0.000	0.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000000	0.000	0.000000	Linear Thru Zero
Se	76.920	0.000000	0.000	0.000000	Linear Thru Zero
Se	81.917	0.000000	0.000	0.000000	Linear Thru Zero
Sr	87.906	0.000000	0.000	0.000000	Linear Thru Zero
Mo	97.906	0.000000	0.000	0.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.000000	0.000	0.000000	Linear Thru Zero
Cd	110.904	0.000000	0.000	0.000000	Linear Thru Zero
Cd	113.904	0.000000	0.000	0.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.000000	0.000	0.000000	Linear Thru Zero
Sb	120.904	0.000000	0.000	0.000000	Linear Thru Zero
Ba	136.905	0.000000	0.000	0.000000	Linear Thru Zero
Ba	137.905	0.000000	0.000	0.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.000000	0.000	0.000000	Linear Thru Zero
Pb	207.977	0.000000	0.000	0.000000	Linear Thru Zero
Hg	199.968	0.000000	0.000	0.000000	Linear Thru Zero
Hg	200.970	0.000000	0.000	0.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.000000	0.000	0.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	0.000000	0.000	0.000000	Linear Thru Zero
Mg	23.985	0.000000	0.000	0.000000	Linear Thru Zero
K	38.964	0.000000	0.000	0.000000	Linear Thru Zero
Ca	43.956	0.000000	0.000	0.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Friday, December 07, 2018 08:09:18
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.605
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	311.673	**1.000**	0.12	11.8	ug/L
|	B	11	6392.656	**20.000**	1.66	8.3	ug/L
|	Al	27	110835.721	**20.000**	1.69	8.5	ug/L
| >	Sc	45	667244.548				ug/L
|	V	51	33496.067	**3.000**	0.15	4.9	ug/L
|	Cr	52	27718.357	**3.000**	0.32	10.6	ug/L
|	Cr	53	87705.337	**3.000**	7.27	242.2	ug/L
|	Mn	55	9242.883	**1.000**	0.06	5.7	ug/L
|	Co	59	5623.055	**1.000**	0.06	6.4	ug/L
⌊	Ni	60	2357.695	**1.000**	0.09	9.4	ug/L
⌈	Cu	63	4811.173	**2.000**	0.12	5.8	ug/L
|	Cu	65	2136.630	**2.000**	0.12	6.2	ug/L
|	Zn	66	3379.075	**5.000**	0.19	3.7	ug/L
|	Zn	68	2723.816	**5.000**	0.10	2.1	ug/L
| >	Ge	72	471904.547				ug/L
|	As	75	1482.909	**2.000**	0.40	20.0	ug/L
|	Se	77	2997.252	**2.000**	1.61	80.4	ug/L
|	Se	82	134.368	**2.000**	0.65	32.5	ug/L
⌊	Sr	88	3109.962	**0.200**	0.01	5.7	ug/L
⌈	Mo	98	2531.563	**1.000**	0.03	3.4	ug/L
| >	Rh	103	453453.078				ug/L
⌊	Ag	107	4362.572	**1.000**	0.02	2.1	ug/L
⌈	Cd	111	1098.339	**1.000**	0.12	11.5	ug/L
|	Cd	114	2314.834	**1.000**	0.11	11.0	ug/L
| >	In	115	588944.578				ug/L
|	Sn	120	4668.331	**1.000**	0.10	10.2	ug/L
⌊	Sb	121	7870.693	**2.000**	0.12	6.2	ug/L
⌈	Ba	137	2073.653	**1.000**	0.06	6.0	ug/L
|	Ba	138	13334.591	**1.000**	0.03	3.3	ug/L
| >	Tb	159	921421.183				ug/L
|	Tl	205	8513.710	**1.000**	0.05	5.5	ug/L
⌊	Pb	208	11663.855	**1.000**	0.05	5.2	ug/L
⌈	Hg	200	194.183	**0.200**	0.05	25.2	ug/L
|	Hg	201	126.668	**0.200**	0.12	60.8	ug/L
| >	Bi	209	461519.262				ug/L
⌊	U	238	90476.841	**1.000**	0.08	8.3	ug/L
	C	13	2620.463				ug/L
	W	184	75.965				ug/L
	Pd	106	40.975				ug/L
	Kr	83	111.334				ug/L
⌈	Na	23	470030.353	**100.000**	1.69	1.7	ug/L
|	Mg	24	310798.586	**100.000**	1.48	1.5	ug/L

	K	39	619075.850	**100.000**	1.61	1.6	ug/L
	Ca	44	39993.801	**100.000**	9.30	9.3	ug/L
	Ti	47	363.344				ug/L
	Sc-1	45	667244.548				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000397	0.000	1.000000	Linear Thru Zero
B	11.009	0.000454	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007091	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.009286	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.008517	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.001049	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012526	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008143	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003421	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004808	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002106	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001296	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000923	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001280	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000209	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000086	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.022933	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005394	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009475	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001738	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003866	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007064	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006237	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002055	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.013526	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.008842	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.012304	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001463	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000961	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.030225	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4589.623716	0.000	1.000000	Linear Thru Zero
Mg	23.985	3089.516900	0.000	1.000000	Linear Thru Zero
K	38.964	3566.161630	0.000	1.000000	Linear Thru Zero
Ca	43.956	166.249530	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Friday, December 07, 2018 08:12:51
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.605
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	20837.304	**99.997**	5.94	5.9	ug/L
|	B	11	241199.423	**999.904**	23.19	2.3	ug/L
|	Al	27	879706.191	**249.447**	5.58	2.2	ug/L
| >	Sc	45	656968.562				ug/L
|	V	51	508842.108	**99.979**	2.12	2.1	ug/L
|	Cr	52	472806.867	**99.981**	3.18	3.2	ug/L
|	Cr	53	137515.117	**99.973**	9.16	9.2	ug/L
|	Mn	55	1414227.958	**249.998**	7.72	3.1	ug/L
|	Co	59	449727.626	**99.998**	2.73	2.7	ug/L
⌊	Ni	60	237435.962	**249.995**	7.07	2.8	ug/L
⌈	Cu	63	470567.970	**249.997**	2.04	0.8	ug/L
|	Cu	65	213787.260	**249.998**	1.83	0.7	ug/L
|	Zn	66	137448.408	**249.993**	2.31	0.9	ug/L
|	Zn	68	96861.582	**249.991**	0.25	0.1	ug/L
| >	Ge	72	453660.760				ug/L
|	As	75	138690.587	**249.999**	3.24	1.3	ug/L
|	Se	77	13664.314	**249.981**	4.95	2.0	ug/L
|	Se	82	15546.174	**250.006**	2.98	1.2	ug/L
⌊	Sr	88	7676.830	**19.941**	0.78	3.9	ug/L
⌈	Mo	98	216584.966	**99.999**	1.09	1.1	ug/L
| >	Rh	103	433075.081				ug/L
⌊	Ag	107	357529.918	**99.999**	1.54	1.5	ug/L
⌈	Cd	111	92724.576	**99.999**	3.20	3.2	ug/L
|	Cd	114	203818.397	**99.999**	1.96	2.0	ug/L
| >	In	115	561187.621				ug/L
|	Sn	120	370348.110	**99.999**	1.86	1.9	ug/L
⌊	Sb	121	328913.899	**99.997**	2.17	2.2	ug/L
⌈	Ba	137	172258.905	**99.999**	1.81	1.8	ug/L
|	Ba	138	1008623.916	**99.998**	1.64	1.6	ug/L
| >	Tb	159	921982.862				ug/L
|	Tl	205	710636.771	**99.999**	2.80	2.8	ug/L
⌊	Pb	208	2415346.314	**249.999**	6.32	2.5	ug/L
⌈	Hg	200	13233.244	**20.000**	0.25	1.2	ug/L
|	Hg	201	7827.986	**20.000**	1.14	5.7	ug/L
| >	Bi	209	437053.401				ug/L
⌊	U	238	1345246.255	**100.000**	1.09	1.1	ug/L
	C	13	3033.952				ug/L
	W	184	125.910				ug/L
	Pd	106	-625.823				ug/L
	Kr	83	106.501				ug/L
⌈	Na	23	41581235.188	**9999.896**	325.89	3.3	ug/L
|	Mg	24	25058271.325	**9999.767**	322.23	3.2	ug/L

K	39	33556560.437	**9999.929**	225.45	2.3	ug/L
Ca	44	1066468.137	**9999.406**	242.18	2.4	ug/L
Ti	47	536.689				ug/L
Sc-1	45	656968.562				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000316	0.000	0.999997	Linear Thru Zero
B	11.009	0.000367	0.000	0.999989	Linear Thru Zero
Al	26.982	0.005270	0.000	0.999618	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007526	0.000	0.999975	Linear Thru Zero
Cr	51.941	0.007042	0.000	0.999980	Linear Thru Zero
Cr	52.941	0.000810	0.000	0.999961	Linear Thru Zero
Mn	54.938	0.008611	0.000	0.999998	Linear Thru Zero
Co	58.933	0.006846	0.000	0.999998	Linear Thru Zero
Ni	59.933	0.001446	0.000	0.999985	Linear Thru Zero
Cu	62.930	0.004148	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001884	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001209	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000849	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001221	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000097	0.000	0.999957	Linear Thru Zero
Se	81.917	0.000137	0.000	0.999996	Linear Thru Zero
Sr	87.906	0.000749	0.000	0.958780	Linear Thru Zero
Mo	97.906	0.004999	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008256	0.000	0.999999	Linear Thru Zero
Cd	110.904	0.001652	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003633	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006593	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005855	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001867	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.010934	0.000	0.999997	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.007708	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.010482	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001507	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000892	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.029127	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4157.059977	0.000	0.999999	Linear Thru Zero
Mg	23.985	2505.700825	0.000	0.999997	Linear Thru Zero
K	38.964	3329.433748	0.000	1.000000	Linear Thru Zero
Ca	43.956	104.316122	0.000	0.999982	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Friday, December 07, 2018 08:39:08
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.613
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	36.000				ug/L
|	B	11	1660.850				ug/L
|	Al	27	14986.586				ug/L
| >	Sc	45	675821.907				ug/L
|	V	51	16490.183				ug/L
|	Cr	52	10778.048				ug/L
|	Cr	53	92244.004				ug/L
|	Mn	55	972.728				ug/L
|	Co	59	169.335				ug/L
⌊	Ni	60	123.668				ug/L
⌈	Cu	63	265.005				ug/L
|	Cu	65	142.668				ug/L
|	Zn	66	350.008				ug/L
|	Zn	68	547.687				ug/L
| >	Ge	72	476084.740				ug/L
|	As	75	99.354				ug/L
|	Se	77	3010.089				ug/L
|	Se	82	41.293				ug/L
⌊	Sr	88	932.724				ug/L
⌈	Mo	98	143.913				ug/L
| >	Rh	103	454181.869				ug/L
⌊	Ag	107	84.667				ug/L
⌈	Cd	111	23.282				ug/L
|	Cd	114	1.767				ug/L
| >	In	115	578747.426				ug/L
|	Sn	120	744.102				ug/L
⌊	Sb	121	477.348				ug/L
⌈	Ba	137	148.135				ug/L
|	Ba	138	851.848				ug/L
| >	Tb	159	909423.315				ug/L
|	Tl	205	342.341				ug/L
⌊	Pb	208	316.002				ug/L
⌈	Hg	200	124.263				ug/L
|	Hg	201	80.000				ug/L
| >	Bi	209	479105.085				ug/L
⌊	U	238	79380.197				ug/L
	C	13	2520.425				ug/L
	W	184	63.290				ug/L
	Pd	106	64.128				ug/L
	Kr	83	81.334				ug/L
⌈	Na	23	11942.616				ug/L
|	Mg	24	1693.540				ug/L

	K	39	265243.726	ug/L
	Ca	44	29847.872	ug/L
	Ti	47	570.025	ug/L
	Sc-1	45	675821.907	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000316	0.000	0.999997	Linear Thru Zero
B	11.009	0.000367	0.000	0.999989	Linear Thru Zero
Al	26.982	0.005270	0.000	0.999618	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007526	0.000	0.999975	Linear Thru Zero
Cr	51.941	0.007042	0.000	0.999980	Linear Thru Zero
Cr	52.941	0.000810	0.000	0.999961	Linear Thru Zero
Mn	54.938	0.008611	0.000	0.999998	Linear Thru Zero
Co	58.933	0.006846	0.000	0.999998	Linear Thru Zero
Ni	59.933	0.001446	0.000	0.999985	Linear Thru Zero
Cu	62.930	0.004148	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001884	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001209	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000849	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001221	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000097	0.000	0.999957	Linear Thru Zero
Se	81.917	0.000137	0.000	0.999996	Linear Thru Zero
Sr	87.906	0.000749	0.000	0.958780	Linear Thru Zero
Mo	97.906	0.004999	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008256	0.000	0.999999	Linear Thru Zero
Cd	110.904	0.001652	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003633	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006593	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005855	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001867	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.010934	0.000	0.999997	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.007708	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.010482	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001507	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000892	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.029127	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4157.059977	0.000	0.999999	Linear Thru Zero
Mg	23.985	2505.700825	0.000	0.999997	Linear Thru Zero
K	38.964	3329.433748	0.000	1.000000	Linear Thru Zero
Ca	43.956	104.316122	0.000	0.999982	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Friday, December 07, 2018 08:42:41
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.613
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	243.337	**1.000**	0.09	9.1	ug/L
|	B	11	6451.376	**20.000**	0.41	2.1	ug/L
|	Al	27	102132.000	**20.000**	0.52	2.6	ug/L
| >	Sc	45	615797.267				ug/L
|	V	51	34770.826	**3.000**	0.21	7.0	ug/L
|	Cr	52	26664.137	**3.000**	0.16	5.2	ug/L
|	Cr	53	96931.933	**3.000**	0.69	23.1	ug/L
|	Mn	55	8963.890	**1.000**	0.07	6.9	ug/L
|	Co	59	5241.119	**1.000**	0.07	7.1	ug/L
⌊	Ni	60	2214.319	**1.000**	0.03	3.5	ug/L
⌈	Cu	63	4824.179	**2.000**	0.03	1.4	ug/L
|	Cu	65	2066.278	**2.000**	0.05	2.6	ug/L
|	Zn	66	3320.717	**5.000**	0.09	1.9	ug/L
|	Zn	68	2674.132	**5.000**	0.02	0.3	ug/L
| >	Ge	72	426893.173				ug/L
|	As	75	1599.231	**2.000**	0.18	8.8	ug/L
|	Se	77	3232.013	**2.000**	0.21	10.6	ug/L
|	Se	82	175.976	**2.000**	0.30	15.0	ug/L
⌊	Sr	88	2754.161	**0.200**	0.01	4.5	ug/L
⌈	Mo	98	2405.053	**1.000**	0.03	3.1	ug/L
| >	Rh	103	404958.297				ug/L
⌊	Ag	107	4128.442	**1.000**	0.05	4.9	ug/L
⌈	Cd	111	1071.271	**1.000**	0.15	15.0	ug/L
|	Cd	114	2265.642	**1.000**	0.10	9.7	ug/L
| >	In	115	511592.788				ug/L
|	Sn	120	4721.140	**1.000**	0.07	7.3	ug/L
⌊	Sb	121	7372.865	**2.000**	0.06	3.0	ug/L
⌈	Ba	137	1978.667	**1.000**	0.12	11.7	ug/L
|	Ba	138	12260.849	**1.000**	0.03	3.4	ug/L
| >	Tb	159	822281.033				ug/L
|	Tl	205	8311.823	**1.000**	0.02	1.8	ug/L
⌊	Pb	208	11433.702	**1.000**	0.02	1.6	ug/L
⌈	Hg	200	222.175	**0.200**	0.09	42.9	ug/L
|	Hg	201	152.002	**0.200**	0.04	20.4	ug/L
| >	Bi	209	426421.010				ug/L
⌊	U	238	87339.966	**1.000**	0.05	4.6	ug/L
	C	13	2880.540				ug/L
	W	184	77.293				ug/L
	Pd	106	44.020				ug/L
	Kr	83	79.834				ug/L
⌈	Na	23	440891.722	**100.000**	1.65	1.7	ug/L
|	Mg	24	299121.798	**100.000**	0.83	0.8	ug/L

K	39	608457.391	**100.000**	2.06	2.1	ug/L
Ca	44	45118.600	**100.000**	0.50	0.5	ug/L
Ti	47	730.035				ug/L
Sc-1	45	615797.267				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000341	0.000	1.000000	Linear Thru Zero
B	11.009	0.000401	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007187	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.010699	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.009129	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.007014	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013139	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008276	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003415	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005373	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002270	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001409	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.001023	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001768	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000624	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000162	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.022444	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005621	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.010014	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.002057	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004433	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007941	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006797	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002247	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.013977	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009733	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013560	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001316	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000943	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.039155	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4289.491064	0.000	1.000000	Linear Thru Zero
Mg	23.985	2974.282581	0.000	1.000000	Linear Thru Zero
K	38.964	3432.136645	0.000	1.000000	Linear Thru Zero
Ca	43.956	152.707276	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Friday, December 07, 2018 08:46:15
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.613
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	19729.939	**100.000**	3.92	3.9	ug/L
|	B	11	221391.211	**999.959**	31.87	3.2	ug/L
|	Al	27	828112.136	**249.473**	10.43	4.2	ug/L
| >	Sc	45	604888.741				ug/L
|	V	51	494715.343	**99.969**	5.35	5.4	ug/L
|	Cr	52	462067.456	**99.980**	5.11	5.1	ug/L
|	Cr	53	141973.590	**99.452**	8.39	8.4	ug/L
|	Mn	55	1390430.594	**249.998**	11.30	4.5	ug/L
|	Co	59	436455.802	**99.999**	4.26	4.3	ug/L
⌊	Ni	60	229664.041	**249.995**	11.91	4.8	ug/L
⌈	Cu	63	458593.335	**249.996**	13.27	5.3	ug/L
|	Cu	65	208253.472	**249.997**	14.87	5.9	ug/L
|	Zn	66	134147.624	**249.987**	12.93	5.2	ug/L
|	Zn	68	94390.616	**249.983**	11.75	4.7	ug/L
| >	Ge	72	431596.796				ug/L
|	As	75	134623.741	**249.993**	12.37	4.9	ug/L
|	Se	77	13295.657	**249.914**	11.27	4.5	ug/L
|	Se	82	14159.049	**249.996**	12.69	5.1	ug/L
⌊	Sr	88	7185.354	**19.941**	1.11	5.6	ug/L
⌈	Mo	98	209891.719	**99.999**	3.54	3.5	ug/L
| >	Rh	103	400187.926				ug/L
⌊	Ag	107	342981.577	**99.998**	4.45	4.4	ug/L
⌈	Cd	111	90323.220	**99.998**	2.60	2.6	ug/L
|	Cd	114	195269.071	**99.998**	2.99	3.0	ug/L
| >	In	115	520193.191				ug/L
|	Sn	120	356651.677	**99.998**	3.03	3.0	ug/L
⌊	Sb	121	319156.734	**99.996**	3.27	3.3	ug/L
⌈	Ba	137	162452.546	**99.998**	4.78	4.8	ug/L
|	Ba	138	960297.595	**99.998**	4.83	4.8	ug/L
| >	Tb	159	832437.562				ug/L
|	Tl	205	702509.983	**99.998**	4.76	4.8	ug/L
⌊	Pb	208	2391674.679	**249.999**	12.35	4.9	ug/L
⌈	Hg	200	13243.934	**20.000**	0.38	1.9	ug/L
|	Hg	201	7918.073	**20.000**	1.01	5.0	ug/L
| >	Bi	209	422051.099				ug/L
⌊	U	238	1349995.449	**99.997**	4.15	4.2	ug/L
	C	13	2807.227				ug/L
	W	184	125.306				ug/L
	Pd	106	-741.307				ug/L
	Kr	83	93.167				ug/L
⌈	Na	23	38975825.171	**9999.899**	182.55	1.8	ug/L
|	Mg	24	23880501.711	**9999.754**	64.89	0.6	ug/L

	K	39	32411987.408	**9999.932**	238.43	2.4	ug/L
	Ca	44	1033637.052	**9999.479**	211.87	2.1	ug/L
	Ti	47	533.352				ug/L
	Sc-1	45	604888.741				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000326	0.000	1.000000	Linear Thru Zero
B	11.009	0.000364	0.000	0.999998	Linear Thru Zero
Al	26.982	0.005406	0.000	0.999653	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007950	0.000	0.999946	Linear Thru Zero
Cr	51.941	0.007493	0.000	0.999979	Linear Thru Zero
Cr	52.941	0.000990	0.000	0.983746	Linear Thru Zero
Mn	54.938	0.009202	0.000	0.999999	Linear Thru Zero
Co	58.933	0.007223	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001520	0.000	0.999988	Linear Thru Zero
Cu	62.930	0.004256	0.000	0.999998	Linear Thru Zero
Cu	64.928	0.001933	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001243	0.000	0.999996	Linear Thru Zero
Zn	67.925	0.000872	0.000	0.999994	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001249	0.000	0.999994	Linear Thru Zero
Se	76.920	0.000098	0.000	0.999080	Linear Thru Zero
Se	81.917	0.000131	0.000	0.999998	Linear Thru Zero
Sr	87.906	0.000738	0.000	0.959374	Linear Thru Zero
Mo	97.906	0.005246	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008577	0.000	0.999999	Linear Thru Zero
Cd	110.904	0.001737	0.000	0.999998	Linear Thru Zero
Cd	113.904	0.003756	0.000	0.999998	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006848	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006132	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.001953	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.011544	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.008447	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.011508	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001556	0.000	0.999999	Linear Thru Zero
Hg	200.970	0.000931	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.030365	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3896.427562	0.000	0.999999	Linear Thru Zero
Mg	23.985	2387.939451	0.000	0.999997	Linear Thru Zero
K	38.964	3214.696112	0.000	1.000000	Linear Thru Zero
Ca	43.956	100.384150	0.000	0.999986	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Friday, December 07, 2018 09:57:42
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.628
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	26.333				ug/L
|	B	11	1309.449				ug/L
|	Al	27	12462.898				ug/L
| >	Sc	45	553687.998				ug/L
|	V	51	12889.927				ug/L
|	Cr	52	9239.280				ug/L
|	Cr	53	80482.433				ug/L
|	Mn	55	785.374				ug/L
|	Co	59	152.002				ug/L
⌊	Ni	60	94.001				ug/L
⌈	Cu	63	223.003				ug/L
|	Cu	65	119.334				ug/L
|	Zn	66	285.005				ug/L
|	Zn	68	457.680				ug/L
| >	Ge	72	399669.400				ug/L
|	As	75	183.305				ug/L
|	Se	77	2621.616				ug/L
|	Se	82	31.912				ug/L
⌊	Sr	88	831.046				ug/L
⌈	Mo	98	135.589				ug/L
| >	Rh	103	375449.942				ug/L
⌊	Ag	107	36.667				ug/L
⌈	Cd	111	43.196				ug/L
|	Cd	114	22.363				ug/L
| >	In	115	483650.999				ug/L
|	Sn	120	419.426				ug/L
⌊	Sb	121	228.670				ug/L
⌈	Ba	137	135.805				ug/L
|	Ba	138	718.504				ug/L
| >	Tb	159	770772.603				ug/L
|	Tl	205	140.335				ug/L
⌊	Pb	208	243.335				ug/L
⌈	Hg	200	89.506				ug/L
|	Hg	201	66.667				ug/L
| >	Bi	209	392614.713				ug/L
⌊	U	238	64578.508				ug/L
	C	13	2307.047				ug/L
	W	184	77.291				ug/L
	Pd	106	46.159				ug/L
	Kr	83	86.834				ug/L
⌈	Na	23	8004.198				ug/L
|	Mg	24	1453.473				ug/L

	K	39	249241.247	ug/L
	Ca	44	21557.168	ug/L
	Ti	47	496.684	ug/L
	Sc-1	45	553687.998	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000326	0.000	1.000000	Linear Thru Zero
B	11.009	0.000364	0.000	0.999998	Linear Thru Zero
Al	26.982	0.005406	0.000	0.999653	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007950	0.000	0.999946	Linear Thru Zero
Cr	51.941	0.007493	0.000	0.999979	Linear Thru Zero
Cr	52.941	0.000990	0.000	0.983746	Linear Thru Zero
Mn	54.938	0.009202	0.000	0.999999	Linear Thru Zero
Co	58.933	0.007223	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001520	0.000	0.999988	Linear Thru Zero
Cu	62.930	0.004256	0.000	0.999998	Linear Thru Zero
Cu	64.928	0.001933	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001243	0.000	0.999996	Linear Thru Zero
Zn	67.925	0.000872	0.000	0.999994	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001249	0.000	0.999994	Linear Thru Zero
Se	76.920	0.000098	0.000	0.999080	Linear Thru Zero
Se	81.917	0.000131	0.000	0.999998	Linear Thru Zero
Sr	87.906	0.000738	0.000	0.959374	Linear Thru Zero
Mo	97.906	0.005246	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008577	0.000	0.999999	Linear Thru Zero
Cd	110.904	0.001737	0.000	0.999998	Linear Thru Zero
Cd	113.904	0.003756	0.000	0.999998	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006848	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006132	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.001953	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.011544	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.008447	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.011508	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001556	0.000	0.999999	Linear Thru Zero
Hg	200.970	0.000931	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.030365	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3896.427562	0.000	0.999999	Linear Thru Zero
Mg	23.985	2387.939451	0.000	0.999997	Linear Thru Zero
K	38.964	3214.696112	0.000	1.000000	Linear Thru Zero
Ca	43.956	100.384150	0.000	0.999986	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Friday, December 07, 2018 10:01:16
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.628
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	220.003	**1.000**	0.16	15.9	ug/L
|	B	11	5341.871	**20.000**	1.70	8.5	ug/L
|	Al	27	86191.051	**20.000**	0.04	0.2	ug/L
| >	Sc	45	538156.935				ug/L
|	V	51	28587.693	**3.000**	0.09	2.9	ug/L
|	Cr	52	23574.948	**3.000**	0.11	3.6	ug/L
|	Cr	53	84501.514	**3.000**	0.58	19.3	ug/L
|	Mn	55	8093.589	**1.000**	0.05	4.9	ug/L
|	Co	59	4918.908	**1.000**	0.02	2.1	ug/L
⌊	Ni	60	2032.602	**1.000**	0.08	8.4	ug/L
⌈	Cu	63	4206.817	**2.000**	0.11	5.4	ug/L
|	Cu	65	1950.914	**2.000**	0.07	3.4	ug/L
|	Zn	66	2958.236	**5.000**	0.22	4.4	ug/L
|	Zn	68	2373.700	**5.000**	0.36	7.2	ug/L
| >	Ge	72	388685.048				ug/L
|	As	75	1289.371	**2.000**	0.54	27.1	ug/L
|	Se	77	2780.171	**2.000**	1.39	69.4	ug/L
|	Se	82	121.213	**2.000**	0.72	35.8	ug/L
⌊	Sr	88	2518.412	**0.200**	0.02	8.6	ug/L
⌈	Mo	98	2160.254	**1.000**	0.05	4.6	ug/L
| >	Rh	103	369844.732				ug/L
⌊	Ag	107	3767.590	**1.000**	0.02	1.9	ug/L
⌈	Cd	111	929.252	**1.000**	0.09	9.3	ug/L
|	Cd	114	1924.743	**1.000**	0.05	4.6	ug/L
| >	In	115	471027.140				ug/L
|	Sn	120	4055.395	**1.000**	0.08	7.7	ug/L
⌊	Sb	121	6819.027	**2.000**	0.08	4.1	ug/L
⌈	Ba	137	1724.898	**1.000**	0.02	2.2	ug/L
|	Ba	138	11320.701	**1.000**	0.03	2.8	ug/L
| >	Tb	159	753761.341				ug/L
|	Tl	205	7316.480	**1.000**	0.04	4.1	ug/L
⌊	Pb	208	10378.428	**1.000**	0.03	2.8	ug/L
⌈	Hg	200	171.546	**0.200**	0.01	4.9	ug/L
|	Hg	201	130.001	**0.200**	0.03	14.8	ug/L
| >	Bi	209	388394.819				ug/L
⌊	U	238	78029.924	**1.000**	0.12	11.7	ug/L
	C	13	2713.817				ug/L
	W	184	71.284				ug/L
	Pd	106	42.965				ug/L
	Kr	83	90.834				ug/L
⌈	Na	23	366141.903	**100.000**	6.80	6.8	ug/L
|	Mg	24	252909.944	**100.000**	4.89	4.9	ug/L

K	39	562122.307	**100.000**	9.47	9.5	ug/L
Ca	44	37142.791	**100.000**	0.94	0.9	ug/L
Ti	47	560.022				ug/L
Sc-1	45	538156.935				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000363	0.000	1.000000	Linear Thru Zero
B	11.009	0.000377	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006883	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.009937	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.009047	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.003867	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013644	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008868	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003616	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005140	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002363	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001381	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000994	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001419	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000297	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000115	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.022059	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005486	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.010091	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001887	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004041	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007730	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007001	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002111	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014090	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009531	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013460	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001068	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000823	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.036374	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3581.377042	0.000	1.000000	Linear Thru Zero
Mg	23.985	2514.564711	0.000	1.000000	Linear Thru Zero
K	38.964	3128.810593	0.000	1.000000	Linear Thru Zero
Ca	43.956	155.856234	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Friday, December 07, 2018 10:04:49
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.628
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	18358.267	**99.999**	1.25	1.2	ug/L
|	B	11	199096.464	**999.982**	3.30	0.3	ug/L
|	Al	27	737488.430	**249.521**	1.98	0.8	ug/L
| >	Sc	45	548843.485				ug/L
|	V	51	451080.988	**99.978**	4.44	4.4	ug/L
|	Cr	52	421236.301	**99.982**	3.97	4.0	ug/L
|	Cr	53	130485.589	**99.715**	7.57	7.6	ug/L
|	Mn	55	1302327.823	**249.998**	8.34	3.3	ug/L
|	Co	59	405780.665	**99.998**	3.48	3.5	ug/L
⌊	Ni	60	213916.629	**249.995**	9.70	3.9	ug/L
⌈	Cu	63	427811.537	**249.997**	4.20	1.7	ug/L
|	Cu	65	192492.769	**249.997**	3.97	1.6	ug/L
|	Zn	66	125549.161	**249.992**	3.47	1.4	ug/L
|	Zn	68	88521.512	**249.990**	5.20	2.1	ug/L
| >	Ge	72	390671.046				ug/L
|	As	75	124440.656	**249.998**	9.26	3.7	ug/L
|	Se	77	12086.828	**249.967**	12.23	4.9	ug/L
|	Se	82	13282.375	**250.002**	3.11	1.2	ug/L
⌊	Sr	88	6678.899	**19.944**	0.89	4.5	ug/L
⌈	Mo	98	192505.616	**100.000**	1.84	1.8	ug/L
| >	Rh	103	366143.470				ug/L
⌊	Ag	107	318615.889	**99.998**	2.14	2.1	ug/L
⌈	Cd	111	82741.956	**99.999**	1.67	1.7	ug/L
|	Cd	114	184925.676	**100.000**	1.66	1.7	ug/L
| >	In	115	476887.680				ug/L
|	Sn	120	336672.708	**99.999**	1.25	1.2	ug/L
⌊	Sb	121	302032.693	**99.996**	1.38	1.4	ug/L
⌈	Ba	137	153213.222	**99.999**	2.86	2.9	ug/L
|	Ba	138	898743.384	**99.998**	3.48	3.5	ug/L
| >	Tb	159	773787.638				ug/L
|	Tl	205	641222.767	**99.999**	4.35	4.3	ug/L
⌊	Pb	208	2197061.446	**249.999**	11.79	4.7	ug/L
⌈	Hg	200	12416.079	**20.001**	0.96	4.8	ug/L
|	Hg	201	7182.698	**20.000**	1.37	6.9	ug/L
| >	Bi	209	381151.989				ug/L
⌊	U	238	1233463.310	**99.998**	2.64	2.6	ug/L
	C	13	2160.310				ug/L
	W	184	93.970				ug/L
	Pd	106	-454.355				ug/L
	Kr	83	86.500				ug/L
⌈	Na	23	37140951.307	**10000.036**	260.77	2.6	ug/L
|	Mg	24	22913318.532	**9999.903**	242.67	2.4	ug/L

K	39	33387775.475	**10000.056**	348.58	3.5	ug/L
Ca	44	960247.362	**9999.340**	569.89	5.7	ug/L
Ti	47	540.019				ug/L
Sc-1	45	548843.485				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000334	0.000	1.000000	Linear Thru Zero
B	11.009	0.000360	0.000	1.000000	Linear Thru Zero
Al	26.982	0.005296	0.000	0.999713	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008002	0.000	0.999974	Linear Thru Zero
Cr	51.941	0.007522	0.000	0.999981	Linear Thru Zero
Cr	52.941	0.000929	0.000	0.995533	Linear Thru Zero
Mn	54.938	0.009499	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007399	0.000	0.999998	Linear Thru Zero
Ni	59.933	0.001561	0.000	0.999986	Linear Thru Zero
Cu	62.930	0.004381	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001970	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001283	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000902	0.000	0.999998	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001274	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000098	0.000	0.999867	Linear Thru Zero
Se	81.917	0.000136	0.000	0.999999	Linear Thru Zero
Sr	87.906	0.000754	0.000	0.962353	Linear Thru Zero
Mo	97.906	0.005256	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008705	0.000	0.999999	Linear Thru Zero
Cd	110.904	0.001735	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003879	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007052	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006330	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.001980	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011622	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.008299	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.011379	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001620	0.000	0.999994	Linear Thru Zero
Hg	200.970	0.000934	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.030741	0.000	0.999998	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3713.281520	0.000	1.000000	Linear Thru Zero
Mg	23.985	2291.208841	0.000	1.000000	Linear Thru Zero
K	38.964	3313.834920	0.000	1.000000	Linear Thru Zero
Ca	43.956	93.875218	0.000	0.999978	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Friday, December 07, 2018 10:31:25
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.636
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	31.667				ug/L
|	B	11	969.395				ug/L
|	Al	27	13960.062				ug/L
| >	Sc	45	619277.669				ug/L
|	V	51	15376.464				ug/L
|	Cr	52	10363.817				ug/L
|	Cr	53	95931.901				ug/L
|	Mn	55	816.710				ug/L
|	Co	59	169.002				ug/L
⌊	Ni	60	112.001				ug/L
⌈	Cu	63	234.004				ug/L
|	Cu	65	141.668				ug/L
|	Zn	66	267.672				ug/L
|	Zn	68	583.689				ug/L
| >	Ge	72	441625.223				ug/L
|	As	75	270.716				ug/L
|	Se	77	2959.903				ug/L
|	Se	82	31.127				ug/L
⌊	Sr	88	906.387				ug/L
⌈	Mo	98	96.073				ug/L
| >	Rh	103	416066.207				ug/L
⌊	Ag	107	70.000				ug/L
⌈	Cd	111	52.492				ug/L
|	Cd	114	4.798				ug/L
| >	In	115	530753.136				ug/L
|	Sn	120	393.089				ug/L
⌊	Sb	121	154.002				ug/L
⌈	Ba	137	177.725				ug/L
|	Ba	138	690.422				ug/L
| >	Tb	159	827082.997				ug/L
|	Tl	205	137.001				ug/L
⌊	Pb	208	294.669				ug/L
⌈	Hg	200	104.861				ug/L
|	Hg	201	103.334				ug/L
| >	Bi	209	424747.112				ug/L
⌊	U	238	70685.388				ug/L
	C	13	2060.300				ug/L
	W	184	73.981				ug/L
	Pd	106	62.953				ug/L
	Kr	83	100.501				ug/L
⌈	Na	23	10827.680				ug/L
|	Mg	24	1556.830				ug/L

	K	39	292021.939	ug/L
	Ca	44	27224.770	ug/L
	Ti	47	323.341	ug/L
	Sc-1	45	619277.669	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000334	0.000	1.000000	Linear Thru Zero
B	11.009	0.000360	0.000	1.000000	Linear Thru Zero
Al	26.982	0.005296	0.000	0.999713	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008002	0.000	0.999974	Linear Thru Zero
Cr	51.941	0.007522	0.000	0.999981	Linear Thru Zero
Cr	52.941	0.000929	0.000	0.995533	Linear Thru Zero
Mn	54.938	0.009499	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007399	0.000	0.999998	Linear Thru Zero
Ni	59.933	0.001561	0.000	0.999986	Linear Thru Zero
Cu	62.930	0.004381	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001970	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001283	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000902	0.000	0.999998	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001274	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000098	0.000	0.999867	Linear Thru Zero
Se	81.917	0.000136	0.000	0.999999	Linear Thru Zero
Sr	87.906	0.000754	0.000	0.962353	Linear Thru Zero
Mo	97.906	0.005256	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008705	0.000	0.999999	Linear Thru Zero
Cd	110.904	0.001735	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003879	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007052	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006330	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.001980	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011622	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.008299	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.011379	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001620	0.000	0.999994	Linear Thru Zero
Hg	200.970	0.000934	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.030741	0.000	0.999998	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3713.281520	0.000	1.000000	Linear Thru Zero
Mg	23.985	2291.208841	0.000	1.000000	Linear Thru Zero
K	38.964	3313.834920	0.000	1.000000	Linear Thru Zero
Ca	43.956	93.875218	0.000	0.999978	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Friday, December 07, 2018 10:34:58
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.636
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	267.338	**1.000**	0.26	25.5	ug/L
|	B	11	5952.302	**20.000**	0.61	3.0	ug/L
|	Al	27	99269.868	**20.000**	0.56	2.8	ug/L
| >	Sc	45	626149.748				ug/L
|	V	51	33881.956	**3.000**	0.24	8.0	ug/L
|	Cr	52	27276.135	**3.000**	0.09	3.0	ug/L
|	Cr	53	99845.183	**3.000**	1.79	59.8	ug/L
|	Mn	55	8783.016	**1.000**	0.03	2.5	ug/L
|	Co	59	5355.197	**1.000**	0.01	1.0	ug/L
⌊	Ni	60	2269.669	**1.000**	0.08	7.6	ug/L
⌈	Cu	63	4889.222	**2.000**	0.10	4.8	ug/L
|	Cu	65	2126.627	**2.000**	0.04	1.8	ug/L
|	Zn	66	3342.060	**5.000**	0.20	4.1	ug/L
|	Zn	68	2591.437	**5.000**	0.48	9.5	ug/L
| >	Ge	72	440301.437				ug/L
|	As	75	1606.712	**2.000**	0.39	19.5	ug/L
|	Se	77	3220.342	**2.000**	0.64	31.8	ug/L
|	Se	82	166.726	**2.000**	0.24	12.0	ug/L
⌊	Sr	88	2991.249	**0.200**	0.02	8.5	ug/L
⌈	Mo	98	2411.310	**1.000**	0.04	4.0	ug/L
| >	Rh	103	415495.722				ug/L
⌊	Ag	107	4392.591	**1.000**	0.05	4.5	ug/L
⌈	Cd	111	1047.998	**1.000**	0.11	11.1	ug/L
|	Cd	114	2230.313	**1.000**	0.08	7.7	ug/L
| >	In	115	527488.119				ug/L
|	Sn	120	4568.909	**1.000**	0.08	7.8	ug/L
⌊	Sb	121	7757.245	**2.000**	0.09	4.7	ug/L
⌈	Ba	137	1917.955	**1.000**	0.04	3.8	ug/L
|	Ba	138	13248.459	**1.000**	0.04	3.8	ug/L
| >	Tb	159	840305.977				ug/L
|	Tl	205	8118.283	**1.000**	0.03	2.6	ug/L
⌊	Pb	208	11419.005	**1.000**	0.01	1.3	ug/L
⌈	Hg	200	174.896	**0.200**	0.16	80.9	ug/L
|	Hg	201	141.335	**0.200**	0.29	143.4	ug/L
| >	Bi	209	422948.814				ug/L
⌊	U	238	85363.821	**1.000**	0.03	2.8	ug/L
	C	13	3240.733				ug/L
	W	184	68.628				ug/L
	Pd	106	60.464				ug/L
	Kr	83	89.501				ug/L
⌈	Na	23	427565.328	**100.000**	2.36	2.4	ug/L
|	Mg	24	287304.002	**100.000**	1.04	1.0	ug/L

	K	39	652655.143	**100.000**	1.59	1.6	ug/L
	Ca	44	42835.632	**100.000**	5.22	5.2	ug/L
	Ti	47	393.344				ug/L
	Sc-1	45	626149.748				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000397	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006802	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.009766	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.008941	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.001528	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012706	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008281	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003444	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005288	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002254	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001397	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000914	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001514	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000305	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000154	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.023720	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005574	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.010398	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001889	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004217	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007929	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007212	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002067	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014931	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009496	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013232	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.000824	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000456	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.035418	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4167.376482	0.000	1.000000	Linear Thru Zero
Mg	23.985	2857.471720	0.000	1.000000	Linear Thru Zero
K	38.964	3606.332033	0.000	1.000000	Linear Thru Zero
Ca	43.956	156.108624	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Friday, December 07, 2018 10:38:32
Sample File: C:\Elandata\Sample\PE_EL2_181207.sam
Blank File: C:\Elandata\Dataset\2018 DEC (03-09)\Blank.636
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181207.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	22026.166	**99.999**	0.33	0.3	ug/L
|	B	11	236172.256	**999.980**	25.52	2.6	ug/L
|	Al	27	839071.158	**249.552**	5.54	2.2	ug/L
| >	Sc	45	622302.470				ug/L
|	V	51	509245.853	**99.979**	2.00	2.0	ug/L
|	Cr	52	480805.797	**99.984**	1.27	1.3	ug/L
|	Cr	53	147154.938	**99.922**	4.60	4.6	ug/L
|	Mn	55	1440612.168	**249.999**	2.93	1.2	ug/L
|	Co	59	456575.908	**99.999**	1.08	1.1	ug/L
⌊	Ni	60	239139.809	**249.995**	3.00	1.2	ug/L
⌈	Cu	63	476990.768	**249.997**	2.25	0.9	ug/L
|	Cu	65	216990.541	**249.998**	1.04	0.4	ug/L
|	Zn	66	140073.500	**249.991**	2.77	1.1	ug/L
|	Zn	68	99495.458	**250.000**	2.94	1.2	ug/L
| >	Ge	72	434896.129				ug/L
|	As	75	141098.185	**249.997**	1.47	0.6	ug/L
|	Se	77	13569.303	**249.966**	3.64	1.5	ug/L
|	Se	82	15139.849	**249.998**	3.27	1.3	ug/L
⌊	Sr	88	7593.413	**19.941**	0.34	1.7	ug/L
⌈	Mo	98	218793.035	**100.000**	0.23	0.2	ug/L
| >	Rh	103	409075.659				ug/L
⌊	Ag	107	355302.997	**99.998**	1.40	1.4	ug/L
⌈	Cd	111	95183.908	**99.999**	1.40	1.4	ug/L
|	Cd	114	208850.845	**99.999**	1.16	1.2	ug/L
| >	In	115	533994.024				ug/L
|	Sn	120	372343.731	**99.999**	1.72	1.7	ug/L
⌊	Sb	121	338561.735	**99.994**	2.22	2.2	ug/L
⌈	Ba	137	172491.216	**100.000**	0.23	0.2	ug/L
|	Ba	138	1008916.429	**99.997**	0.94	0.9	ug/L
| >	Tb	159	852380.698				ug/L
|	Tl	205	696336.801	**99.998**	0.21	0.2	ug/L
⌊	Pb	208	2371816.362	**249.999**	1.04	0.4	ug/L
⌈	Hg	200	13405.303	**20.001**	0.59	2.9	ug/L
|	Hg	201	7870.695	**20.001**	0.51	2.5	ug/L
| >	Bi	209	409699.852				ug/L
⌊	U	238	1318521.851	**99.998**	2.10	2.1	ug/L
	C	13	2393.728				ug/L
	W	184	162.611				ug/L
	Pd	106	-627.198				ug/L
	Kr	83	105.001				ug/L
⌈	Na	23	38122137.633	**9999.907**	159.51	1.6	ug/L
|	Mg	24	23448891.613	**9999.781**	208.46	2.1	ug/L

K	39	35381547.849	**9999.972**	136.18	1.4	ug/L
Ca	44	1116158.172	**9999.566**	59.31	0.6	ug/L
Ti	47	663.363				ug/L
Sc-1	45	622302.470				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000353	0.000	1.000000	Linear Thru Zero
B	11.009	0.000378	0.000	0.999999	Linear Thru Zero
Al	26.982	0.005314	0.000	0.999749	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007938	0.000	0.999976	Linear Thru Zero
Cr	51.941	0.007561	0.000	0.999985	Linear Thru Zero
Cr	52.941	0.000816	0.000	0.999658	Linear Thru Zero
Mn	54.938	0.009256	0.000	0.999999	Linear Thru Zero
Co	58.933	0.007334	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001536	0.000	0.999988	Linear Thru Zero
Cu	62.930	0.004386	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001995	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001286	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000910	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001295	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000098	0.000	0.999858	Linear Thru Zero
Se	81.917	0.000139	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000773	0.000	0.958644	Linear Thru Zero
Mo	97.906	0.005346	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008685	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001781	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003911	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006966	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006339	0.000	0.999996	Linear Thru Zero
Ba	136.905	0.002021	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011828	0.000	0.999997	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.008168	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.011129	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001624	0.000	0.999988	Linear Thru Zero
Hg	200.970	0.000948	0.000	0.999987	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.030531	0.000	0.999999	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3811.166616	0.000	1.000000	Linear Thru Zero
Mg	23.985	2344.784747	0.000	0.999998	Linear Thru Zero
K	38.964	3508.962328	0.000	1.000000	Linear Thru Zero
Ca	43.956	108.898061	0.000	0.999991	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Raw Data - Instrument Tuning

Sample Information

Sample Date/Time: Friday, December 07, 2018 06:20:01
Method File: C:\Elandata\Method\BC Methods\BC-Tuning.mth
Dataset File: C:\Elandata\Dataset\Default\Mass Calibration and Resolution.1180
Tuning File: C:\Elandata\Tuning\default.tun
Number of Sweeps: 35
Number of Readings: 1
Number of Replicates: 5
Measurement Unit: cps

Instrument Tuning Report

File Name: default.tun
File Path: C:\Elandata\Tuning\default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
Li	7.016	7.027	1555	2090	0.670	
Mg	23.985	24.028	5682	2111	0.681	
Rh	102.905	102.979	24827	2275	0.689	
Ce	139.905	139.978	33800	2352	0.697	
Pb	207.977	207.979	50315	2510	0.721	
U	238.050	238.077	57617	2566	0.716	

Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Friday, December 07, 2018 06:36:31
Sample Description:
Method File: C:\Elandata\Method\BC Methods\BC_Daily Performance.mth
Dataset File: C:\Elandata\Dataset\Default\Daily Performance Check.1182
Tuning File: C:\Elandata\Tuning\default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Dual
Acq. Dead Time(ns): 65
Current Dead Time (ns): 65

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	45205.7	45205.747	688.759	1.5
	In	114.9	172084.3	172084.282	862.704	0.5
	U	238.1	237088.2	237088.221	994.772	0.4
⌈>	Ba	137.9	168994.3	168994.272	1609.513	1.0
⌊	Ba++	69.0	4870.7	0.029	0.001	3.3
⌈>	Ce	139.9	214322.6	214322.567	1478.256	0.7
⌊	CeO	155.9	3543.0	0.017	0.000	2.7
	220	220.0	27.1	27.120	6.702	24.7
	8.5	8.5	28.2	28.160	7.035	25.0

Current Optimization File Data

Current Value	Description
1.00	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
15.00	Plasma Gas Flow
9.00	Lens Voltage
1500.00	ICP RF Power
-1900.00	Analog Stage Voltage
1600.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset Std [QRO]
-10.00	Cell Rod Offset Std [CRO]
60.00	Discriminator Threshold
-21.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.25	RPq
0.98	DRC Mode NEB
-8.00	DRC Mode QRO
-2.00	DRC Mode CRO
-25.00	DRC Mode CPV
0.00	Cell Gas A
0.00	Cell Gas B
210.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
450.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	12	69	6.5	630267.6
Mg	24	69	6.3	67562.1
In	115	69	9.0	189297.5
Ce	140	69	9.3	236713.6
Pb	208	69	10.0	110765.1

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:05:50AM
Project: SMUD 59th St.
Project Number: 30570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838101

Laboratory Documentation Requirements
For Data Validation of
Metals Analysis (using ppm units)

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838101
COC Number:
Default Cooler was received at 0 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-6020 (TTLC)	PE-EL4

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032390	EPA-6020 (TTLC)	1838101-01	SO-B01-01

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

Post Spikes

The Post Spike recoveries were within QC limits.

Interference Checks

The Interference Check recoveries were within QC limits.

BC LABORATORIES, INC.

Chain of Custody Form

Page 1 of 2

Report To:
Client:
Attn: Robert Kahlhardt
Street Address: 2020 L St. Suite 400
City, State, Zip: Sacramento, CA 95811
Phone: 916 414 5800 Fax:
Email: robert.kahlhardt@aecom.com
Work Order #: 18-38101

Project #: 60570043.5
Project Name: SMUD 59th Street
Sampler(s): B. Whalen

Analysis Requested

Please refer to the back of this page for completion instructions and method legend.

Comments:

Sample #	Description	Date Sampled	Time Sampled	Arsenic (SW6020)	VOCs (SW8260B)	Sample Matrix: Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Result Request **Surcharge: STD (10 Days)	5 Day**	2 Day**	1 Day**	Notes
-1	SO-B01-01	12/4/18	1500	X		X										
-2	SO-B03-01	12/5/18	800	X												
-3	SO-B02-01	12/5/18	815	X												
-4	SO-B15-01	12/5/18	905	X												
-5	SO-B15-02	12/5/18	910	X												
-6	SO-B16-01	12/5/18	955	X												
-7	SO-B16-02	12/5/18	1000	X												
-8	SO-B16-03	12/5/18	1005	X												
-9	SO-B10-01	12/5/18	1050	X												
-10	SO-B10-02	12/5/18	1100	X												
-11	SO-B17-01	12/5/18	1255	X												
-12	SO-B17-02	12/5/18	1305	X												
-13	SO-B17-03	12/5/18	1310	X												
-14	SO-B08-01	12/5/18	1410	X												

CHK BY

DISTRIBUTION
WP
SUB-OUT

Billing
☒ Same as above
Client:
Address:
City: State Zip
Attn:
P.O. #:

EDF Required? Geotracker ☐ Yes ☐ No
Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)
System # (Needed for EDT)

	Relinquished By	Date	Time	Received By	Date	Time
1.		12/5/18	1452		12-5-18	1945
2.		12/5/18	1552		12.6.18	09:08
3.						

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838101 Page 2 of 4

BC LABORATORIES, INC.

Chain of Custody Form

Page 2 of 2

Report to:
Client:
Attn: Robert Kahlhardt
Street Address: 2020 L St, Suite 400
City, State, Zip: Sacramento, CA 95811
Phone: 916 414 5800 Fax:
Email: robert.kahlhardt@aecom.com
Work Order #: 18-38101

Project #:
Project Name: SMUD 59th Street
Sampler(s): By Whaley

Analysis Requested: (8260 MS) Acetone

Please refer to the back of this page for completion instructions and method legend.

Comments:

Sample #	Description	Date Sampled	Time Sampled	Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other
-15	SO-B08-02	12/5/18	1420	X					

Sample Matrix

Result Request **Surcharge
X STD [10 Days] ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

Notes

Billing
☒ Same as above
Client:
Address:
City: State Zip
Attn:
P.O. #:

EDF Required? Geotracker
☐ Yes ☐ No

Send Copy to State of CA? (EDT)
☐ Yes ☐ No

Global ID [Needed for EDF]

System # [Needed for EDT]

	Relinquished By	Date	Time	Received By	Date	Time
1.		12/5/18	1452		12-5-18	1952
2.		12/5/18	1552		12-6-18	0900
3.						

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838101 Page 3 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 2

Submission #: 18-38101

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☒ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☐ Other ☐ (Specify) GSO	Other ☐ (Specify)	W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ | Containers ☐ Intact? Yes ☐ No ☐ | None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☒ YES ☐ NO

Emissivity: .97 Container: FTPE Thermometer ID: 274 Date/Time 12-10-18

Temperature: (A) 0.0 °C / (C) 0.0 °C Analyst Init DP 09:08

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR	A	A	A	A	A	A	A	A	A	A
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: GS Date/Time: 12/6 1808

A = Actual / C = Corrected

Rev 21 05/23/2016

(S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20)

Chain of Custody and Cooler Receipt Form for 1838101 Page 4 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 2 Of 2

Submission #: 18-38101

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☒ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☐ Other ☒ (Specify) GSO	Other ☐ (Specify)	W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☒ YES ☐ NO

Emissivity: .97 Container: Type Thermometer ID: 274 Date/Time 12-6-18

Temperature: (A) 0.0 °C / (C) 0.0 °C Analyst Init 09.08

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR	A	A	A	A	A					
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: GSB Date/Time: 12/6 1808

A = Actual / C = Corrected

Rev 21 05/23/2016

I:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 21

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2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:07:48AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838101**
Class: **METALS-PPM**
Method: **EPA-6020**

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Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838101
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-B01-01	1838101-01
SO-B03-01	1838101-02
SO-B02-01	1838101-03
SO-B15-01	1838101-04
SO-B15-02	1838101-05
SO-B16-01	1838101-06
SO-B16-02	1838101-07
SO-B16-03	1838101-08
SO-B10-01	1838101-09
SO-B10-02	1838101-10
SO-B17-01	1838101-11
SO-B17-02	1838101-12
SO-B17-03	1838101-13
SO-B08-01	1838101-14
SO-B08-02	1838101-15

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-07-2019
Title: QA/QC Manager

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Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-6020

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: PE-EL4

Analyte	MDL	PQL	Units
Arsenic	0.17	0.5	mg/kg

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B01-01

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-01
File ID: PE_EL4_181210-191
Sampled: 12/04/18 15:00
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 22:04
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	6.4	1		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B03-01

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-02
File ID: PE_EL4_181210-199
Sampled: 12/05/18 08:00
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 22:32
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.01 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	8.2	0.99		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B02-01

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-03
File ID: PE_EL4_181210-200
Sampled: 12/05/18 08:15
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 22:36
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.01 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	6.3	0.99		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B15-01

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-04
File ID: PE_EL4_181210-201
Sampled: 12/05/18 09:05
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 22:39
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	140	1		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B15-02

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-05
File ID: PE_EL4_181210-202
Sampled: 12/05/18 09:10
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 22:43
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.02 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	6.3	0.98		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B16-01

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-06
File ID: PE_EL4_181210-203
Sampled: 12/05/18 09:55
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 22:46
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.01 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	280	0.99		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B16-02

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-07
File ID: PE_EL4_181210-204
Sampled: 12/05/18 10:00
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 22:50
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.05 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	3.8	0.952		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B16-03

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-08
File ID: PE_EL4_181210-207
Sampled: 12/05/18 10:05
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:01
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.05 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	3.4	0.952		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B10-01

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-09
File ID: PE_EL4_181210-208
Sampled: 12/05/18 10:50
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:04
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.07 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	240	0.935		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B10-02

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-10
File ID: PE_EL4_181210-209
Sampled: 12/05/18 11:00
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:07
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.03 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	9.1	0.971		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B17-01

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-11
File ID: PE_EL4_181210-210
Sampled: 12/05/18 12:55
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:11
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.03 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	45	0.971		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B17-02

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-12
File ID: PE_EL4_181210-211
Sampled: 12/05/18 13:05
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:14
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.02 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	270	0.98		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B17-03

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-13
File ID: PE_EL4_181210-212
Sampled: 12/05/18 13:10
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:18
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.03 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	330	0.971		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B08-01

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-14
File ID: PE_EL4_181210-215
Sampled: 12/05/18 14:10
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:29
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.04 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	67	0.962		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B08-02

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838101-15
File ID: PE_EL4_181210-216
Sampled: 12/05/18 14:20
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:32
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	4.4	1		EPA-6020

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PREPARATION BATCH SUMMARY

EPA-6020

Laboratory: BC Laboratories
SDG: 1838101
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032390 Batch Matrix: Solids
Preparation: EPA 3050B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-B01-01	1838101-01	PE_EL4_181210-191	12/10/18 08:00	
SO-B03-01	1838101-02	PE_EL4_181210-199	12/10/18 08:00	
SO-B02-01	1838101-03	PE_EL4_181210-200	12/10/18 08:00	
SO-B15-01	1838101-04	PE_EL4_181210-201	12/10/18 08:00	
SO-B15-02	1838101-05	PE_EL4_181210-202	12/10/18 08:00	
SO-B16-01	1838101-06	PE_EL4_181210-203	12/10/18 08:00	
SO-B16-02	1838101-07	PE_EL4_181210-204	12/10/18 08:00	
SO-B16-03	1838101-08	PE_EL4_181210-207	12/10/18 08:00	
SO-B10-01	1838101-09	PE_EL4_181210-208	12/10/18 08:00	
SO-B10-02	1838101-10	PE_EL4_181210-209	12/10/18 08:00	
SO-B17-01	1838101-11	PE_EL4_181210-210	12/10/18 08:00	
SO-B17-02	1838101-12	PE_EL4_181210-211	12/10/18 08:00	
SO-B17-03	1838101-13	PE_EL4_181210-212	12/10/18 08:00	
SO-B08-01	1838101-14	PE_EL4_181210-215	12/10/18 08:00	
SO-B08-02	1838101-15	PE_EL4_181210-216	12/10/18 08:00	
Blank	B032390-BLK1	PE_EL4_181210-190	12/10/18 08:00	
LCS	B032390-BS1	PE_EL4_181210-189	12/10/18 08:00	
SO-B01-01	B032390-DUP1	PE_EL4_181210-192	12/10/18 08:00	
SO-B01-01	B032390-MS1	PE_EL4_181210-194	12/10/18 08:00	
SO-B01-01	B032390-MSD1	PE_EL4_181210-195	12/10/18 08:00	
SO-B01-01	B032390-PS1	PE_EL4_181210-196	12/10/18 08:00	[Spk] 1g->250ml; 250ml->250ml; Spiked 9.8ml

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METHOD BLANK DATA SHEET
EPA-6020

Laboratory:	BC Laboratories			SDG:	1838101
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032390-BLK1	File ID:	PE_EL4_181210-190
Prepared:	12/10/18 08:00	Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml
Analyzed:	12/10/18 22:01	Instrument:	PE-EL4		
Batch:	B032390	Sequence:	1824509	Calibration:	UNASSIGNED

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
7440-38-2	Arsenic	0.17	U

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SO-B01-01

DUPLICATES

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032390
Preparation: EPA 3050B
Source Sample Name: SO-B01-01

SDG: 1838101
Project: SMUD 59th St.
Laboratory ID: B032390-DUP1
Lab Source ID: 1838101-01
Initial/Final: 1 g / 250 ml
% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/kg)	C	DUPLICATE CONCENTRATION (mg/kg)	C	RPD %	Q	METHOD
Arsenic	20	6.3820		6.4598		1.21		EPA-6020

* Values outside of QC limits

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-6020

SO-B01-01

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032390
Preparation: EPA 3050B
Source Sample Number: 1838101-01

SDG: 1838101
Project: SMUD 59th St.
Laboratory ID: B032390-MS1
Initial/Final: 1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Arsenic	25.000	6.3820	32.940	106	75 - 125

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Arsenic	25.000	33.979	110	3.11	20	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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LCS RECOVERY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1838101
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Matrix:	Solids		
Batch:	B032390	Laboratory ID:	B032390-BS1
Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Arsenic	25.000	27.308	109	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824509
Matrix: Solids

SDG: 1838101
Project: SMUD 59th St.
Instrument: PE-EL4
Calibration: UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824509-ICV1	PE_EL4_181210-022	12/10/18 10:39
Initial Cal Blank	1824509-ICB1	PE_EL4_181210-023	12/10/18 10:42
Calibration Check	1824509-CCV2	PE_EL4_181210-031	12/10/18 11:18
Calibration Blank	1824509-CCB2	PE_EL4_181210-032	12/10/18 11:22
MRL Check	1824509-CRL2	PE_EL4_181210-034	12/10/18 11:36
Interference Check A	1824509-IFA1	PE_EL4_181210-035	12/10/18 11:46
Interference Check B	1824509-IFB1	PE_EL4_181210-036	12/10/18 11:55
Calibration Check	1824509-CCV3	PE_EL4_181210-041	12/10/18 12:13
Calibration Blank	1824509-CCB3	PE_EL4_181210-042	12/10/18 12:17
Calibration Check	1824509-CCVJ	PE_EL4_181210-187	12/10/18 21:50
Calibration Blank	1824509-CCBJ	PE_EL4_181210-188	12/10/18 21:54
LCS	B032390-BS1	PE_EL4_181210-189	12/10/18 21:57
Blank	B032390-BLK1	PE_EL4_181210-190	12/10/18 22:01
SO-B01-01	1838101-01	PE_EL4_181210-191	12/10/18 22:04
SO-B01-01	B032390-DUP1	PE_EL4_181210-192	12/10/18 22:08
SO-B01-01	B032390-MS1	PE_EL4_181210-194	12/10/18 22:15
SO-B01-01	B032390-MSD1	PE_EL4_181210-195	12/10/18 22:18
SO-B01-01	B032390-PS1	PE_EL4_181210-196	12/10/18 22:22
Calibration Check	1824509-CCVK	PE_EL4_181210-197	12/10/18 22:25
Calibration Blank	1824509-CCBK	PE_EL4_181210-198	12/10/18 22:29
SO-B03-01	1838101-02	PE_EL4_181210-199	12/10/18 22:32
SO-B02-01	1838101-03	PE_EL4_181210-200	12/10/18 22:36
SO-B15-01	1838101-04	PE_EL4_181210-201	12/10/18 22:39
SO-B15-02	1838101-05	PE_EL4_181210-202	12/10/18 22:43
SO-B16-01	1838101-06	PE_EL4_181210-203	12/10/18 22:46
SO-B16-02	1838101-07	PE_EL4_181210-204	12/10/18 22:50

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:07:48AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1838101
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824509	Instrument:	PE-EL4
Matrix:	Solids	Calibration:	UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Check	1824509-CCVL	PE_EL4_181210-205	12/10/18 22:53
Calibration Blank	1824509-CCBL	PE_EL4_181210-206	12/10/18 22:57
SO-B16-03	1838101-08	PE_EL4_181210-207	12/10/18 23:01
SO-B10-01	1838101-09	PE_EL4_181210-208	12/10/18 23:04
SO-B10-02	1838101-10	PE_EL4_181210-209	12/10/18 23:07
SO-B17-01	1838101-11	PE_EL4_181210-210	12/10/18 23:11
SO-B17-02	1838101-12	PE_EL4_181210-211	12/10/18 23:14
SO-B17-03	1838101-13	PE_EL4_181210-212	12/10/18 23:18
Calibration Check	1824509-CCVM	PE_EL4_181210-213	12/10/18 23:21
Calibration Blank	1824509-CCBM	PE_EL4_181210-214	12/10/18 23:25
SO-B08-01	1838101-14	PE_EL4_181210-215	12/10/18 23:29
SO-B08-02	1838101-15	PE_EL4_181210-216	12/10/18 23:32
Calibration Check	1824509-CCVN	PE_EL4_181210-222	12/10/18 23:53
Calibration Blank	1824509-CCBN	PE_EL4_181210-223	12/10/18 23:57

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Reported: 1/7/2019 11:07:48AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BLANKS
EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL4
Sequence: 1824509

SDG: 1838101
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	Found	PQL	Units	C	Method
1824509-ICB1	Arsenic	-0.095000	2.0	ug/L		EPA-6020
1824509-CCB2	Arsenic	-0.29800	2.0	ug/L		EPA-6020
1824509-CCB3	Arsenic	0.37900	2.0	ug/L		EPA-6020
1824509-CCBJ	Arsenic	0.36800	2.0	ug/L		EPA-6020
1824509-CCBK	Arsenic	-0.96200	2.0	ug/L		EPA-6020
1824509-CCBL	Arsenic	-1.1910	2.0	ug/L		EPA-6020
1824509-CCBM	Arsenic	-1.1210	2.0	ug/L		EPA-6020
1824509-CCBN	Arsenic	-1.7500	2.0	ug/L		EPA-6020

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL AND CONTINUING CALIBRATION CHECK

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL4
Control Limt: +/- 10.00%

SDG: 1838101
Project: SMUD 59th St.
Calibration: UNASSIGNED
Sequence: 1824509

Lab Sample ID	Analyte	True	Found	%R	Units	Method
1824509-ICV1	Arsenic	125.00	128.95	103	ug/L	EPA-6020
1824509-CCV2	Arsenic	100.00	102.96	103	ug/L	EPA-6020
1824509-CCV3	Arsenic	100.00	101.14	101	ug/L	EPA-6020
1824509-CCVJ	Arsenic	100.00	99.240	99.2	ug/L	EPA-6020
1824509-CCVK	Arsenic	100.00	100.32	100	ug/L	EPA-6020
1824509-CCVL	Arsenic	100.00	96.953	97.0	ug/L	EPA-6020
1824509-CCVM	Arsenic	100.00	98.720	98.7	ug/L	EPA-6020
1824509-CCVN	Arsenic	100.00	96.660	96.7	ug/L	EPA-6020

* Values outside of QC limits

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/7/2019 11:07:48AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

POST DIGEST SPIKE SAMPLE RECOVERY

EPA-6020

SO-B01-01

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032390
Preparation: EPA 3050B

SDG: 1838101
Project: SMUD 59th St.
Laboratory ID: B032390-PS1
Lab Source ID: 1838101-01
Initial/Final: 0.0392 g / 10 ml

Source Sample Name: SO-B01-01
% Solids:

Analyte	Control Limit %R	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R
Arsenic	75 - 125	126.63	25.017	100.00	102

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:07:48AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ICP INTERFERENCE CHECK SAMPLE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL4
Sequence: 1824509

SDG: 1838101
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	True	Found	%R	Units
1824509-IFA1	Arsenic		0.32900		ug/L
1824509-IFB1	Arsenic	20.000	20.83	104	mg/kg

* Values outside of QC limits

Raw Data From Instrument PE-EL4

Raw Data - Calibration Standards

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 09:34:14
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.005
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	15.000				ug/L
|	B	11	214.669				ug/L
|	Al	27	7268.915				ug/L
| >	Sc	45	517580.258				ug/L
|	V	51	7020.517				ug/L
|	Cr	52	10887.685				ug/L
|	Cr	53	82325.784				ug/L
|	Mn	55	986.722				ug/L
|	Co	59	301.339				ug/L
⌊	Ni	60	66.334				ug/L
⌈	Cu	63	154.335				ug/L
|	Cu	65	85.000				ug/L
|	Zn	66	157.335				ug/L
|	Zn	68	356.340				ug/L
| >	Ge	72	478148.995				ug/L
|	As	75	969.142				ug/L
|	Se	77	3931.183				ug/L
|	Se	82	97.246				ug/L
⌊	Sr	88	342.340				ug/L
⌈	Mo	98	147.197				ug/L
| >	Rh	103	293807.017				ug/L
⌊	Ag	107	144.668				ug/L
⌈	Cd	111	36.412				ug/L
|	Cd	114	59.129				ug/L
| >	In	115	348842.498				ug/L
|	Sn	120	442.661				ug/L
⌊	Sb	121	568.684				ug/L
⌈	Ba	137	86.271				ug/L
|	Ba	138	544.621				ug/L
| >	Tb	159	460228.100				ug/L
|	Tl	205	371.009				ug/L
⌊	Pb	208	392.671				ug/L
⌈	Hg	200	21.945				ug/L
|	Hg	201	17.333				ug/L
| >	Bi	209	249788.773				ug/L
⌊	U	238	585.362				ug/L
	C	13	10272.480				ug/L
	W	184	8.666				ug/L
	Pd	106	0.760				ug/L
	Kr	83	29.333				ug/L
⌈	Na	23	33341.037				ug/L
|	Mg	24	546.683				ug/L

K	39	340403.710	ug/L
Ca	44	9468.267	ug/L
Ti	47	336.673	ug/L
Sc-1	45	517580.258	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000000	0.000	0.000000	Linear Thru Zero
B	11.009	0.000000	0.000	0.000000	Linear Thru Zero
Al	26.982	0.000000	0.000	0.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.000000	0.000	0.000000	Linear Thru Zero
Cr	51.941	0.000000	0.000	0.000000	Linear Thru Zero
Cr	52.941	0.000000	0.000	0.000000	Linear Thru Zero
Mn	54.938	0.000000	0.000	0.000000	Linear Thru Zero
Co	58.933	0.000000	0.000	0.000000	Linear Thru Zero
Ni	59.933	0.000000	0.000	0.000000	Linear Thru Zero
Cu	62.930	0.000000	0.000	0.000000	Linear Thru Zero
Cu	64.928	0.000000	0.000	0.000000	Linear Thru Zero
Zn	65.926	0.000000	0.000	0.000000	Linear Thru Zero
Zn	67.925	0.000000	0.000	0.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000000	0.000	0.000000	Linear Thru Zero
Se	76.920	0.000000	0.000	0.000000	Linear Thru Zero
Se	81.917	0.000000	0.000	0.000000	Linear Thru Zero
Sr	87.906	0.000000	0.000	0.000000	Linear Thru Zero
Mo	97.906	0.000000	0.000	0.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.000000	0.000	0.000000	Linear Thru Zero
Cd	110.904	0.000000	0.000	0.000000	Linear Thru Zero
Cd	113.904	0.000000	0.000	0.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.000000	0.000	0.000000	Linear Thru Zero
Sb	120.904	0.000000	0.000	0.000000	Linear Thru Zero
Ba	136.905	0.000000	0.000	0.000000	Linear Thru Zero
Ba	137.905	0.000000	0.000	0.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.000000	0.000	0.000000	Linear Thru Zero
Pb	207.977	0.000000	0.000	0.000000	Linear Thru Zero
Hg	199.968	0.000000	0.000	0.000000	Linear Thru Zero
Hg	200.970	0.000000	0.000	0.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.000000	0.000	0.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	0.000000	0.000	0.000000	Linear Thru Zero
Mg	23.985	0.000000	0.000	0.000000	Linear Thru Zero
K	38.964	0.000000	0.000	0.000000	Linear Thru Zero
Ca	43.956	0.000000	0.000	0.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 09:37:46
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.005
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	193.002	**1.000**	0.05	5.3	ug/L
|	B	11	6006.661	**20.000**	2.11	10.6	ug/L
|	Al	27	84220.186	**20.000**	1.02	5.1	ug/L
| >	Sc	45	541551.267				ug/L
|	V	51	19945.921	**3.000**	2.39	79.7	ug/L
|	Cr	52	22866.902	**3.000**	0.03	0.9	ug/L
|	Cr	53	92196.599	**3.000**	1.61	53.7	ug/L
|	Mn	55	7177.501	**1.000**	0.06	6.3	ug/L
|	Co	59	4726.563	**1.000**	0.06	5.6	ug/L
⌊	Ni	60	1911.868	**1.000**	0.07	6.9	ug/L
⌈	Cu	63	4350.709	**2.000**	0.10	4.8	ug/L
|	Cu	65	2083.906	**2.000**	0.08	4.0	ug/L
|	Zn	66	4247.659	**5.000**	0.08	1.7	ug/L
|	Zn	68	3263.919	**5.000**	0.10	2.0	ug/L
| >	Ge	72	508656.241				ug/L
|	As	75	2082.389	**2.000**	0.69	34.5	ug/L
|	Se	77	4663.030	**2.000**	0.81	40.3	ug/L
|	Se	82	230.056	**2.000**	0.27	13.7	ug/L
⌊	Sr	88	1980.883	**0.200**	0.01	5.3	ug/L
⌈	Mo	98	1858.569	**1.000**	0.03	3.5	ug/L
| >	Rh	103	312032.701				ug/L
⌊	Ag	107	2763.087	**1.000**	0.03	3.3	ug/L
⌈	Cd	111	640.123	**1.000**	0.04	4.4	ug/L
|	Cd	114	1365.938	**1.000**	0.04	3.5	ug/L
| >	In	115	377411.235				ug/L
|	Sn	120	3149.187	**1.000**	0.07	6.6	ug/L
⌊	Sb	121	4445.088	**2.000**	0.05	2.3	ug/L
⌈	Ba	137	965.949	**1.000**	0.08	7.9	ug/L
|	Ba	138	6446.850	**1.000**	0.04	4.5	ug/L
| >	Tb	159	498763.200				ug/L
|	Tl	205	5362.916	**1.000**	0.06	5.9	ug/L
⌊	Pb	208	7414.541	**1.000**	0.07	6.9	ug/L
⌈	Hg	200	91.966	**0.200**	0.02	11.2	ug/L
|	Hg	201	61.334	**0.200**	0.05	26.5	ug/L
| >	Bi	209	259240.977				ug/L
⌊	U	238	7437.042	**1.000**	0.03	3.0	ug/L
	C	13	9818.635				ug/L
	W	184	5.333				ug/L
	Pd	106	-8.114				ug/L
	Kr	83	32.333				ug/L
⌈	Na	23	394864.687	**100.000**	5.05	5.1	ug/L
|	Mg	24	225551.351	**100.000**	4.88	4.9	ug/L

	K	39	865834.600	**100.000**	3.43	3.4	ug/L
	Ca	44	24857.285	**100.000**	4.15	4.2	ug/L
	Ti	47	336.673				ug/L
	Sc-1	45	541551.267				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000328	0.000	1.000000	Linear Thru Zero
B	11.009	0.000534	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007076	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007684	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007064	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.003762	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.011358	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008152	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003405	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004117	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001960	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001604	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.001135	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001032	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000475	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000125	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.015903	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005455	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008370	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001594	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003453	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007092	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005077	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001753	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011759	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009963	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014037	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001330	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000841	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.026371	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3615.236500	0.000	1.000000	Linear Thru Zero
Mg	23.985	2250.046677	0.000	1.000000	Linear Thru Zero
K	38.964	5254.308908	0.000	1.000000	Linear Thru Zero
Ca	43.956	153.890183	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 09:41:19
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.005
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	17926.326	**100.000**	2.46	2.5	ug/L
|	B	11	269956.573	**999.960**	35.59	3.6	ug/L
|	Al	27	889821.301	**249.821**	8.42	3.4	ug/L
| >	Sc	45	555026.759				ug/L
|	V	51	449544.230	**100.003**	0.35	0.4	ug/L
|	Cr	52	384839.807	**99.995**	1.66	1.7	ug/L
|	Cr	53	123482.816	**99.558**	2.58	2.6	ug/L
|	Mn	55	1516030.128	**250.000**	4.37	1.7	ug/L
|	Co	59	460908.040	**100.000**	1.31	1.3	ug/L
⌊	Ni	60	233684.250	**249.996**	7.42	3.0	ug/L
⌈	Cu	63	502036.255	**249.999**	14.32	5.7	ug/L
|	Cu	65	240109.635	**249.999**	11.20	4.5	ug/L
|	Zn	66	130182.321	**249.937**	9.60	3.8	ug/L
|	Zn	68	90768.363	**249.935**	6.45	2.6	ug/L
| >	Ge	72	527508.827				ug/L
|	As	75	130625.698	**249.999**	4.70	1.9	ug/L
|	Se	77	14696.371	**249.919**	12.51	5.0	ug/L
|	Se	82	13486.089	**249.996**	15.63	6.3	ug/L
⌊	Sr	88	6590.388	**19.948**	0.91	4.6	ug/L
⌈	Mo	98	183204.122	**100.001**	2.68	2.7	ug/L
| >	Rh	103	317451.817				ug/L
⌊	Ag	107	272970.893	**100.000**	1.02	1.0	ug/L
⌈	Cd	111	65552.852	**100.001**	5.57	5.6	ug/L
|	Cd	114	139127.252	**100.001**	4.59	4.6	ug/L
| >	In	115	379810.226				ug/L
|	Sn	120	272763.806	**100.000**	2.39	2.4	ug/L
⌊	Sb	121	204071.088	**100.002**	1.49	1.5	ug/L
⌈	Ba	137	91940.514	**100.000**	5.77	5.8	ug/L
|	Ba	138	584707.188	**100.000**	5.76	5.8	ug/L
| >	Tb	159	511873.542				ug/L
|	Tl	205	504719.125	**100.000**	1.16	1.2	ug/L
⌊	Pb	208	1735968.352	**250.000**	7.99	3.2	ug/L
⌈	Hg	200	9347.933	**20.001**	0.90	4.5	ug/L
|	Hg	201	5230.838	**20.000**	0.56	2.8	ug/L
| >	Bi	209	258689.465				ug/L
⌊	U	238	717368.344	**100.000**	3.77	3.8	ug/L
	C	13	9605.077				ug/L
	W	184	31.998				ug/L
	Pd	106	-263.770				ug/L
	Kr	83	33.667				ug/L
⌈	Na	23	38653146.764	**10000.064**	88.43	0.9	ug/L
|	Mg	24	24342169.853	**10000.076**	243.06	2.4	ug/L

K	39	58763172.340	**10000.101**	44.67	0.4	ug/L
Ca	44	1491366.746	**9999.962**	30.33	0.3	ug/L
Ti	47	383.341				ug/L
Sc-1	45	555026.759				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000323	0.000	1.000000	Linear Thru Zero
B	11.009	0.000486	0.000	0.999998	Linear Thru Zero
Al	26.982	0.006363	0.000	0.999960	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007964	0.000	0.999999	Linear Thru Zero
Cr	51.941	0.006723	0.000	0.999999	Linear Thru Zero
Cr	52.941	0.000637	0.000	0.989338	Linear Thru Zero
Mn	54.938	0.010919	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008299	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001684	0.000	0.999992	Linear Thru Zero
Cu	62.930	0.003812	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001823	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.000987	0.000	0.999922	Linear Thru Zero
Zn	67.925	0.000686	0.000	0.999915	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000983	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000079	0.000	0.999189	Linear Thru Zero
Se	81.917	0.000102	0.000	0.999998	Linear Thru Zero
Sr	87.906	0.000591	0.000	0.968064	Linear Thru Zero
Mo	97.906	0.005771	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008594	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001726	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003663	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007171	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005357	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001798	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011432	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009855	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013576	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001804	0.000	0.999997	Linear Thru Zero
Hg	200.970	0.001008	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027730	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3861.955901	0.000	1.000000	Linear Thru Zero
Mg	23.985	2434.143907	0.000	1.000000	Linear Thru Zero
K	38.964	5842.218072	0.000	0.999999	Linear Thru Zero
Ca	43.956	148.190418	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 10:21:34
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.017
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	3.333				ug/L
|	B	11	834.038				ug/L
|	Al	27	6375.569				ug/L
| >	Sc	45	451336.588				ug/L
|	V	51	7233.734				ug/L
|	Cr	52	10493.386				ug/L
|	Cr	53	78236.572				ug/L
|	Mn	55	647.357				ug/L
|	Co	59	46.667				ug/L
⌊	Ni	60	18.333				ug/L
⌈	Cu	63	134.334				ug/L
|	Cu	65	70.667				ug/L
|	Zn	66	230.336				ug/L
|	Zn	68	372.341				ug/L
| >	Ge	72	432951.033				ug/L
|	As	75	804.883				ug/L
|	Se	77	3965.531				ug/L
|	Se	82	93.591				ug/L
⌊	Sr	88	304.005				ug/L
⌈	Mo	98	26.931				ug/L
| >	Rh	103	269458.844				ug/L
⌊	Ag	107	12.667				ug/L
⌈	Cd	111	1.685				ug/L
|	Cd	114	2.609				ug/L
| >	In	115	321670.591				ug/L
|	Sn	120	311.988				ug/L
⌊	Sb	121	181.335				ug/L
⌈	Ba	137	39.279				ug/L
|	Ba	138	264.616				ug/L
| >	Tb	159	407930.494				ug/L
|	Tl	205	35.000				ug/L
⌊	Pb	208	71.000				ug/L
⌈	Hg	200	36.633				ug/L
|	Hg	201	18.667				ug/L
| >	Bi	209	223215.015				ug/L
⌊	U	238	101.334				ug/L
	C	13	9731.883				ug/L
	W	184	5.333				ug/L
	Pd	106	5.008				ug/L
	Kr	83	28.000				ug/L
⌈	Na	23	35328.661				ug/L
|	Mg	24	606.687				ug/L

K	39	326803.728	ug/L
Ca	44	9084.541	ug/L
Ti	47	393.342	ug/L
Sc-1	45	451336.588	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000323	0.000	1.000000	Linear Thru Zero
B	11.009	0.000486	0.000	0.999998	Linear Thru Zero
Al	26.982	0.006363	0.000	0.999960	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007964	0.000	0.999999	Linear Thru Zero
Cr	51.941	0.006723	0.000	0.999999	Linear Thru Zero
Cr	52.941	0.000637	0.000	0.989338	Linear Thru Zero
Mn	54.938	0.010919	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008299	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001684	0.000	0.999992	Linear Thru Zero
Cu	62.930	0.003812	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001823	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.000987	0.000	0.999922	Linear Thru Zero
Zn	67.925	0.000686	0.000	0.999915	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000983	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000079	0.000	0.999189	Linear Thru Zero
Se	81.917	0.000102	0.000	0.999998	Linear Thru Zero
Sr	87.906	0.000591	0.000	0.968064	Linear Thru Zero
Mo	97.906	0.005771	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008594	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001726	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003663	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007171	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005357	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001798	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011432	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009855	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013576	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001804	0.000	0.999997	Linear Thru Zero
Hg	200.970	0.001008	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027730	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3861.955901	0.000	1.000000	Linear Thru Zero
Mg	23.985	2434.143907	0.000	1.000000	Linear Thru Zero
K	38.964	5842.218072	0.000	0.999999	Linear Thru Zero
Ca	43.956	148.190418	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 10:25:06
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.017
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	150.001	**1.000**	0.07	7.4	ug/L
|	B	11	6429.620	**20.000**	1.80	9.0	ug/L
|	Al	27	85370.014	**20.000**	0.61	3.0	ug/L
| >	Sc	45	489473.769				ug/L
|	V	51	15220.965	**3.000**	3.90	130.0	ug/L
|	Cr	52	21768.213	**3.000**	0.11	3.6	ug/L
|	Cr	53	88008.792	**3.000**	1.68	56.0	ug/L
|	Mn	55	6630.420	**1.000**	0.02	1.5	ug/L
|	Co	59	4341.372	**1.000**	0.04	3.7	ug/L
⌊	Ni	60	1767.839	**1.000**	0.04	3.9	ug/L
⌈	Cu	63	4015.555	**2.000**	0.13	6.6	ug/L
|	Cu	65	1871.526	**2.000**	0.08	4.0	ug/L
|	Zn	66	4053.571	**5.000**	0.16	3.1	ug/L
|	Zn	68	3042.511	**5.000**	0.09	1.7	ug/L
| >	Ge	72	448633.643				ug/L
|	As	75	1969.797	**2.000**	0.07	3.5	ug/L
|	Se	77	4680.538	**2.000**	0.75	37.7	ug/L
|	Se	82	222.112	**2.000**	0.30	15.1	ug/L
⌊	Sr	88	1787.176	**0.200**	0.01	4.8	ug/L
⌈	Mo	98	1656.009	**1.000**	0.04	4.2	ug/L
| >	Rh	103	279434.125				ug/L
⌊	Ag	107	2473.003	**1.000**	0.01	1.4	ug/L
⌈	Cd	111	588.961	**1.000**	0.06	5.6	ug/L
|	Cd	114	1250.952	**1.000**	0.01	0.8	ug/L
| >	In	115	348342.553				ug/L
|	Sn	120	2855.740	**1.000**	0.05	5.2	ug/L
⌊	Sb	121	3914.845	**2.000**	0.09	4.7	ug/L
⌈	Ba	137	926.296	**1.000**	0.04	4.2	ug/L
|	Ba	138	5856.472	**1.000**	0.10	9.7	ug/L
| >	Tb	159	433954.755				ug/L
|	Tl	205	4782.926	**1.000**	0.05	5.4	ug/L
⌊	Pb	208	6608.610	**1.000**	0.06	6.3	ug/L
⌈	Hg	200	126.608	**0.200**	0.02	8.9	ug/L
|	Hg	201	67.334	**0.200**	0.04	18.2	ug/L
| >	Bi	209	242944.923				ug/L
⌊	U	238	6776.860	**1.000**	0.06	6.2	ug/L
	C	13	9211.335				ug/L
	W	184	9.333				ug/L
	Pd	106	2.788				ug/L
	Kr	83	25.833				ug/L
⌈	Na	23	366756.597	**100.000**	3.56	3.6	ug/L
|	Mg	24	209444.531	**100.000**	4.15	4.1	ug/L

K	39	817203.319	**100.000**	5.05	5.0	ug/L
Ca	44	23293.147	**100.000**	3.78	3.8	ug/L
Ti	47	340.007				ug/L
Sc-1	45	489473.769				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000299	0.000	1.000000	Linear Thru Zero
B	11.009	0.000564	0.000	1.000000	Linear Thru Zero
Al	26.982	0.008016	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.005017	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007078	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.002174	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012111	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008764	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003568	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004327	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002007	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001702	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.001184	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001267	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000645	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000140	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.016432	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005833	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008806	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001688	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003584	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007241	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005339	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002042	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012893	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010956	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.015091	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001780	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000974	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027489	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3314.279363	0.000	1.000000	Linear Thru Zero
Mg	23.985	2088.378436	0.000	1.000000	Linear Thru Zero
K	38.964	4903.995914	0.000	1.000000	Linear Thru Zero
Ca	43.956	142.086064	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 10:28:38
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.017
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	17621.732	**100.001**	7.01	7.0	ug/L
|	B	11	275611.937	**999.950**	42.09	4.2	ug/L
|	Al	27	869159.510	**249.563**	11.25	4.5	ug/L
| >	Sc	45	549137.719				ug/L
|	V	51	436408.824	**100.032**	4.39	4.4	ug/L
|	Cr	52	373146.234	**99.993**	6.42	6.4	ug/L
|	Cr	53	121137.160	**99.682**	30.57	30.7	ug/L
|	Mn	55	1491526.559	**250.000**	16.46	6.6	ug/L
|	Co	59	454816.223	**99.999**	5.69	5.7	ug/L
⌊	Ni	60	229298.057	**249.995**	10.89	4.4	ug/L
⌈	Cu	63	491014.195	**249.999**	9.20	3.7	ug/L
|	Cu	65	233092.488	**249.999**	10.80	4.3	ug/L
|	Zn	66	126679.821	**249.935**	11.07	4.4	ug/L
|	Zn	68	88673.147	**249.935**	7.73	3.1	ug/L
| >	Ge	72	491336.218				ug/L
|	As	75	126153.099	**249.996**	4.78	1.9	ug/L
|	Se	77	14153.848	**249.885**	2.39	1.0	ug/L
|	Se	82	13132.410	**249.995**	8.74	3.5	ug/L
⌊	Sr	88	6246.146	**19.947**	0.62	3.1	ug/L
⌈	Mo	98	174994.960	**100.000**	4.58	4.6	ug/L
| >	Rh	103	298090.686				ug/L
⌊	Ag	107	263046.199	**100.000**	2.65	2.6	ug/L
⌈	Cd	111	62099.131	**100.000**	3.00	3.0	ug/L
|	Cd	114	133745.433	**100.000**	2.20	2.2	ug/L
| >	In	115	368296.513				ug/L
|	Sn	120	259863.718	**100.000**	2.58	2.6	ug/L
⌊	Sb	121	198382.540	**100.000**	3.57	3.6	ug/L
⌈	Ba	137	91243.884	**99.999**	3.08	3.1	ug/L
|	Ba	138	576265.254	**99.999**	3.27	3.3	ug/L
| >	Tb	159	493821.991				ug/L
|	Tl	205	485007.828	**99.999**	5.94	5.9	ug/L
⌊	Pb	208	1670806.661	**250.000**	14.51	5.8	ug/L
⌈	Hg	200	9046.306	**20.000**	0.65	3.2	ug/L
|	Hg	201	5221.500	**20.000**	0.53	2.6	ug/L
| >	Bi	209	255629.324				ug/L
⌊	U	238	703172.326	**100.000**	0.24	0.2	ug/L
	C	13	9524.992				ug/L
	W	184	30.663				ug/L
	Pd	106	-213.245				ug/L
	Kr	83	32.667				ug/L
⌈	Na	23	37699969.528	**10000.120**	126.86	1.3	ug/L
|	Mg	24	23995478.343	**10000.130**	97.20	1.0	ug/L

K	39	58604323.347	**10000.158**	233.82	2.3	ug/L
Ca	44	1472958.246	**10000.029**	190.43	1.9	ug/L
Ti	47	376.675				ug/L
Sc-1	45	549137.719				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000322	0.000	1.000000	Linear Thru Zero
B	11.009	0.000501	0.000	0.999997	Linear Thru Zero
Al	26.982	0.006296	0.000	0.999761	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007796	0.000	0.999943	Linear Thru Zero
Cr	51.941	0.006578	0.000	0.999997	Linear Thru Zero
Cr	52.941	0.000479	0.000	0.994420	Linear Thru Zero
Mn	54.938	0.010884	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008298	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001673	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.003998	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001898	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001030	0.000	0.999915	Linear Thru Zero
Zn	67.925	0.000719	0.000	0.999916	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001020	0.000	0.999998	Linear Thru Zero
Se	76.920	0.000079	0.000	0.998346	Linear Thru Zero
Se	81.917	0.000106	0.000	0.999997	Linear Thru Zero
Sr	87.906	0.000602	0.000	0.967152	Linear Thru Zero
Mo	97.906	0.005877	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008830	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001687	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003633	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007050	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005385	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001849	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.011675	0.000	0.999999	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009838	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013557	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001761	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001017	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027503	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3766.418873	0.000	0.999999	Linear Thru Zero
Mg	23.985	2399.456058	0.000	0.999999	Linear Thru Zero
K	38.964	5827.659596	0.000	0.999999	Linear Thru Zero
Ca	43.956	146.386940	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 11:04:10
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.027
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	2.000				ug/L
|	B	11	1271.422				ug/L
|	Al	27	7300.931				ug/L
| >	Sc	45	518969.321				ug/L
|	V	51	4250.410				ug/L
|	Cr	52	10557.627				ug/L
|	Cr	53	78404.585				ug/L
|	Mn	55	739.363				ug/L
|	Co	59	63.334				ug/L
⌊	Ni	60	31.000				ug/L
⌈	Cu	63	180.668				ug/L
|	Cu	65	101.667				ug/L
|	Zn	66	258.670				ug/L
|	Zn	68	413.009				ug/L
| >	Ge	72	482642.407				ug/L
|	As	75	869.456				ug/L
|	Se	77	3911.675				ug/L
|	Se	82	112.140				ug/L
⌊	Sr	88	357.007				ug/L
⌈	Mo	98	32.415				ug/L
| >	Rh	103	298222.348				ug/L
⌊	Ag	107	28.667				ug/L
⌈	Cd	111	1.127				ug/L
|	Cd	114	9.255				ug/L
| >	In	115	360891.043				ug/L
|	Sn	120	284.646				ug/L
⌊	Sb	121	186.002				ug/L
⌈	Ba	137	47.596				ug/L
|	Ba	138	315.935				ug/L
| >	Tb	159	474123.721				ug/L
|	Tl	205	51.000				ug/L
⌊	Pb	208	109.334				ug/L
⌈	Hg	200	41.957				ug/L
|	Hg	201	23.333				ug/L
| >	Bi	209	248815.213				ug/L
⌊	U	238	113.334				ug/L
	C	13	9311.439				ug/L
	W	184	6.666				ug/L
	Pd	106	4.276				ug/L
	Kr	83	22.333				ug/L
⌈	Na	23	38267.049				ug/L
|	Mg	24	1600.142				ug/L

K	39	337042.034	ug/L
Ca	44	7930.134	ug/L
Ti	47	326.673	ug/L
Sc-1	45	518969.321	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000322	0.000	1.000000	Linear Thru Zero
B	11.009	0.000501	0.000	0.999997	Linear Thru Zero
Al	26.982	0.006296	0.000	0.999761	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007796	0.000	0.999943	Linear Thru Zero
Cr	51.941	0.006578	0.000	0.999997	Linear Thru Zero
Cr	52.941	0.000479	0.000	0.994420	Linear Thru Zero
Mn	54.938	0.010884	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008298	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001673	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.003998	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001898	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001030	0.000	0.999915	Linear Thru Zero
Zn	67.925	0.000719	0.000	0.999916	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001020	0.000	0.999998	Linear Thru Zero
Se	76.920	0.000079	0.000	0.998346	Linear Thru Zero
Se	81.917	0.000106	0.000	0.999997	Linear Thru Zero
Sr	87.906	0.000602	0.000	0.967152	Linear Thru Zero
Mo	97.906	0.005877	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008830	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001687	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003633	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007050	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005385	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001849	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.011675	0.000	0.999999	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009838	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013557	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001761	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001017	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027503	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3766.418873	0.000	0.999999	Linear Thru Zero
Mg	23.985	2399.456058	0.000	0.999999	Linear Thru Zero
K	38.964	5827.659596	0.000	0.999999	Linear Thru Zero
Ca	43.956	146.386940	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD
Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 11:07:42
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.027
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	179.668	**1.000**	0.09	9.1	ug/L
|	B	11	7084.093	**20.000**	1.13	5.6	ug/L
|	Al	27	98182.701	**20.000**	0.74	3.7	ug/L
| >	Sc	45	524319.427				ug/L
|	V	51	14459.337	**3.000**	1.50	50.0	ug/L
|	Cr	52	22944.920	**3.000**	0.19	6.4	ug/L
|	Cr	53	90421.259	**3.000**	1.42	47.3	ug/L
|	Mn	55	7244.887	**1.000**	0.07	6.5	ug/L
|	Co	59	4799.601	**1.000**	0.07	7.2	ug/L
⌊	Ni	60	1931.872	**1.000**	0.07	7.0	ug/L
⌈	Cu	63	4309.355	**2.000**	0.01	0.4	ug/L
|	Cu	65	2049.231	**2.000**	0.01	0.7	ug/L
|	Zn	66	4321.027	**5.000**	0.13	2.6	ug/L
|	Zn	68	3240.911	**5.000**	0.10	2.0	ug/L
| >	Ge	72	490053.427				ug/L
|	As	75	1912.151	**2.000**	0.33	16.4	ug/L
|	Se	77	4706.385	**2.000**	0.25	12.3	ug/L
|	Se	82	221.296	**2.000**	0.16	7.9	ug/L
⌊	Sr	88	1892.530	**0.200**	0.00	1.7	ug/L
⌈	Mo	98	1724.095	**1.000**	0.01	0.9	ug/L
| >	Rh	103	306344.001				ug/L
⌊	Ag	107	2773.757	**1.000**	0.05	5.2	ug/L
⌈	Cd	111	680.810	**1.000**	0.07	6.8	ug/L
|	Cd	114	1398.622	**1.000**	0.09	8.9	ug/L
| >	In	115	383775.531				ug/L
|	Sn	120	3103.824	**1.000**	0.08	8.0	ug/L
⌊	Sb	121	4192.300	**2.000**	0.07	3.7	ug/L
⌈	Ba	137	1014.625	**1.000**	0.05	4.5	ug/L
|	Ba	138	6432.844	**1.000**	0.05	4.9	ug/L
| >	Tb	159	485414.937				ug/L
|	Tl	205	5102.765	**1.000**	0.05	4.6	ug/L
⌊	Pb	208	7191.457	**1.000**	0.06	5.9	ug/L
⌈	Hg	200	123.287	**0.200**	0.04	20.2	ug/L
|	Hg	201	72.667	**0.200**	0.03	14.7	ug/L
| >	Bi	209	256618.957				ug/L
⌊	U	238	7018.375	**1.000**	0.04	3.8	ug/L
	C	13	9371.502				ug/L
	W	184	7.333				ug/L
	Pd	106	-7.335				ug/L
	Kr	83	23.833				ug/L
⌈	Na	23	400144.634	**100.000**	1.66	1.7	ug/L
|	Mg	24	228437.863	**100.000**	0.41	0.4	ug/L

K	39	854192.002	**100.000**	1.65	1.7	ug/L
Ca	44	24018.372	**100.000**	4.46	4.5	ug/L
Ti	47	360.007				ug/L
Sc-1	45	524319.427				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000340	0.000	1.000000	Linear Thru Zero
B	11.009	0.000554	0.000	1.000000	Linear Thru Zero
Al	26.982	0.008668	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.006384	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007820	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.007217	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012415	0.000	1.000000	Linear Thru Zero
Co	58.933	0.009049	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003632	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004210	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001985	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001656	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.001151	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001050	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000750	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000110	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.015610	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005519	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008963	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001774	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003626	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007300	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005212	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001992	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012602	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010417	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014606	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001561	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000946	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.026916	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3618.775850	0.000	1.000000	Linear Thru Zero
Mg	23.985	2268.377207	0.000	1.000000	Linear Thru Zero
K	38.964	5171.499682	0.000	1.000000	Linear Thru Zero
Ca	43.956	160.882386	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD
Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 11:11:15
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.027
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	18431.032	**100.000**	5.93	5.9	ug/L
|	B	11	290121.450	**999.980**	59.25	5.9	ug/L
|	Al	27	887305.557	**249.445**	8.90	3.6	ug/L
| >	Sc	45	548007.123				ug/L
|	V	51	442310.556	**100.018**	2.14	2.1	ug/L
|	Cr	52	377971.366	**99.985**	1.12	1.1	ug/L
|	Cr	53	120381.872	**99.151**	5.67	5.7	ug/L
|	Mn	55	1518423.438	**250.000**	6.42	2.6	ug/L
|	Co	59	459537.054	**99.999**	3.57	3.6	ug/L
⌊	Ni	60	233791.516	**249.995**	8.63	3.5	ug/L
⌈	Cu	63	497636.662	**249.999**	7.62	3.0	ug/L
|	Cu	65	235020.162	**249.999**	4.81	1.9	ug/L
|	Zn	66	127730.865	**249.939**	1.04	0.4	ug/L
|	Zn	68	89283.459	**249.939**	2.49	1.0	ug/L
| >	Ge	72	497129.804				ug/L
|	As	75	126594.410	**249.999**	2.90	1.2	ug/L
|	Se	77	14247.659	**249.870**	11.70	4.7	ug/L
|	Se	82	13306.065	**249.999**	10.39	4.2	ug/L
⌊	Sr	88	6579.714	**19.952**	0.52	2.6	ug/L
⌈	Mo	98	178715.655	**100.001**	1.91	1.9	ug/L
| >	Rh	103	298968.747				ug/L
⌊	Ag	107	264575.027	**100.000**	3.33	3.3	ug/L
⌈	Cd	111	64339.395	**100.000**	2.71	2.7	ug/L
|	Cd	114	139099.127	**100.000**	1.60	1.6	ug/L
| >	In	115	377256.243				ug/L
|	Sn	120	271141.386	**100.000**	4.02	4.0	ug/L
⌊	Sb	121	204267.613	**100.001**	2.96	3.0	ug/L
⌈	Ba	137	92744.777	**99.999**	8.04	8.0	ug/L
|	Ba	138	585572.830	**99.999**	7.46	7.5	ug/L
| >	Tb	159	490326.978				ug/L
|	Tl	205	485299.416	**99.999**	5.03	5.0	ug/L
⌊	Pb	208	1679885.775	**250.000**	17.13	6.9	ug/L
⌈	Hg	200	8838.087	**20.000**	1.15	5.8	ug/L
|	Hg	201	5158.798	**20.000**	1.33	6.7	ug/L
| >	Bi	209	255318.331				ug/L
⌊	U	238	688403.817	**100.000**	2.47	2.5	ug/L
	C	13	9484.947				ug/L
	W	184	32.663				ug/L
	Pd	106	-403.567				ug/L
	Kr	83	23.500				ug/L
⌈	Na	23	38838955.998	**10000.067**	152.28	1.5	ug/L
|	Mg	24	24430686.835	**10000.071**	195.20	2.0	ug/L

K	39	59812123.450	**10000.130**	86.41	0.9	ug/L
Ca	44	1492288.473	**9999.916**	42.61	0.4	ug/L
Ti	47	370.008				ug/L
Sc-1	45	548007.123				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000336	0.000	1.000000	Linear Thru Zero
B	11.009	0.000527	0.000	0.999999	Linear Thru Zero
Al	26.982	0.006436	0.000	0.999615	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007987	0.000	0.999982	Linear Thru Zero
Cr	51.941	0.006694	0.000	0.999987	Linear Thru Zero
Cr	52.941	0.000692	0.000	0.962245	Linear Thru Zero
Mn	54.938	0.011079	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008386	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001707	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.004004	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001890	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001026	0.000	0.999924	Linear Thru Zero
Zn	67.925	0.000715	0.000	0.999926	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001012	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000082	0.000	0.997902	Linear Thru Zero
Se	81.917	0.000106	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000626	0.000	0.972565	Linear Thru Zero
Mo	97.906	0.005977	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008852	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001706	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003688	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007183	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005411	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001896	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011969	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009915	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013738	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001725	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001007	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.026973	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3880.042768	0.000	1.000000	Linear Thru Zero
Mg	23.985	2442.891218	0.000	1.000000	Linear Thru Zero
K	38.964	5947.430548	0.000	0.999999	Linear Thru Zero
Ca	43.956	148.437078	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 14:36:53
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.075
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	4.000				ug/L
|	B	11	779.367				ug/L
|	Al	27	6172.762				ug/L
| >	Sc	45	453110.276				ug/L
|	V	51	7497.216				ug/L
|	Cr	52	12482.566				ug/L
|	Cr	53	85053.275				ug/L
|	Mn	55	746.697				ug/L
|	Co	59	41.000				ug/L
⌊	Ni	60	22.667				ug/L
⌈	Cu	63	56.000				ug/L
|	Cu	65	36.667				ug/L
|	Zn	66	144.001				ug/L
|	Zn	68	293.338				ug/L
| >	Ge	72	422595.112				ug/L
|	As	75	1259.218				ug/L
|	Se	77	5193.984				ug/L
|	Se	82	96.285				ug/L
⌊	Sr	88	322.006				ug/L
⌈	Mo	98	17.781				ug/L
| >	Rh	103	258002.798				ug/L
⌊	Ag	107	15.333				ug/L
⌈	Cd	111	7.614				ug/L
|	Cd	114	2.791				ug/L
| >	In	115	321267.623				ug/L
|	Sn	120	209.994				ug/L
⌊	Sb	121	101.334				ug/L
⌈	Ba	137	31.609				ug/L
|	Ba	138	248.613				ug/L
| >	Tb	159	421152.846				ug/L
|	Tl	205	25.000				ug/L
⌊	Pb	208	43.000				ug/L
⌈	Hg	200	35.940				ug/L
|	Hg	201	16.667				ug/L
| >	Bi	209	218624.868				ug/L
⌊	U	238	100.334				ug/L
	C	13	9238.037				ug/L
	W	184	9.333				ug/L
	Pd	106	8.081				ug/L
	Kr	83	24.833				ug/L
⌈	Na	23	37845.333				ug/L
|	Mg	24	1196.751				ug/L

K	39	314743.211	ug/L
Ca	44	7619.864	ug/L
Ti	47	293.338	ug/L
Sc-1	45	453110.276	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000336	0.000	1.000000	Linear Thru Zero
B	11.009	0.000527	0.000	0.999999	Linear Thru Zero
Al	26.982	0.006436	0.000	0.999615	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007987	0.000	0.999982	Linear Thru Zero
Cr	51.941	0.006694	0.000	0.999987	Linear Thru Zero
Cr	52.941	0.000692	0.000	0.962245	Linear Thru Zero
Mn	54.938	0.011079	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008386	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001707	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.004004	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001890	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001026	0.000	0.999924	Linear Thru Zero
Zn	67.925	0.000715	0.000	0.999926	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001012	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000082	0.000	0.997902	Linear Thru Zero
Se	81.917	0.000106	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000626	0.000	0.972565	Linear Thru Zero
Mo	97.906	0.005977	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008852	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001706	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003688	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007183	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005411	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001896	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011969	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009915	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013738	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001725	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001007	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.026973	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3880.042768	0.000	1.000000	Linear Thru Zero
Mg	23.985	2442.891218	0.000	1.000000	Linear Thru Zero
K	38.964	5947.430548	0.000	0.999999	Linear Thru Zero
Ca	43.956	148.437078	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 14:40:25
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.075
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	153.335	**1.000**	0.07	6.7	ug/L
|	B	11	5973.299	**20.000**	1.45	7.3	ug/L
|	Al	27	69229.956	**20.000**	0.58	2.9	ug/L
| >	Sc	45	467773.593				ug/L
|	V	51	18339.966	**3.000**	2.48	82.5	ug/L
|	Cr	52	23331.240	**3.000**	0.06	2.0	ug/L
|	Cr	53	95513.753	**3.000**	1.40	46.6	ug/L
|	Mn	55	6455.625	**1.000**	0.04	3.7	ug/L
|	Co	59	4144.611	**1.000**	0.00	0.0	ug/L
⌊	Ni	60	1739.500	**1.000**	0.04	3.9	ug/L
⌈	Cu	63	3789.456	**2.000**	0.11	5.6	ug/L
|	Cu	65	1777.841	**2.000**	0.10	4.8	ug/L
|	Zn	66	2447.330	**5.000**	0.15	3.1	ug/L
|	Zn	68	1953.543	**5.000**	0.32	6.4	ug/L
| >	Ge	72	438421.924				ug/L
|	As	75	2333.996	**2.000**	0.29	14.7	ug/L
|	Se	77	5722.301	**2.000**	1.69	84.6	ug/L
|	Se	82	195.639	**2.000**	0.40	19.9	ug/L
⌊	Sr	88	1704.493	**0.200**	0.01	6.3	ug/L
⌈	Mo	98	1612.778	**1.000**	0.01	0.6	ug/L
| >	Rh	103	270250.130				ug/L
⌊	Ag	107	2370.309	**1.000**	0.01	1.2	ug/L
⌈	Cd	111	571.772	**1.000**	0.03	3.1	ug/L
|	Cd	114	1247.500	**1.000**	0.03	3.0	ug/L
| >	In	115	330517.730				ug/L
|	Sn	120	2530.293	**1.000**	0.06	5.8	ug/L
⌊	Sb	121	3842.813	**2.000**	0.04	2.0	ug/L
⌈	Ba	137	842.967	**1.000**	0.10	10.2	ug/L
|	Ba	138	5604.993	**1.000**	0.10	10.0	ug/L
| >	Tb	159	442013.709				ug/L
|	Tl	205	4582.822	**1.000**	0.05	4.7	ug/L
⌊	Pb	208	6205.176	**1.000**	0.05	4.9	ug/L
⌈	Hg	200	101.300	**0.200**	0.02	12.5	ug/L
|	Hg	201	50.667	**0.200**	0.04	20.4	ug/L
| >	Bi	209	225625.710				ug/L
⌊	U	238	6415.596	**1.000**	0.03	3.1	ug/L
	C	13	9091.212				ug/L
	W	184	5.333				ug/L
	Pd	106	0.936				ug/L
	Kr	83	22.667				ug/L
⌈	Na	23	360132.017	**100.000**	3.34	3.3	ug/L
|	Mg	24	200159.980	**100.000**	1.80	1.8	ug/L

	K	39	787485.571	**100.000**	1.06	1.1	ug/L
	Ca	44	22511.177	**100.000**	2.93	2.9	ug/L
	Ti	47	326.673				ug/L
	Sc-1	45	467773.593				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000319	0.000	1.000000	Linear Thru Zero
B	11.009	0.000553	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006721	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007495	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007444	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.005526	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012157	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008770	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003670	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004262	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001986	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001049	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000754	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001177	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000389	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000110	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.015657	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005898	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008713	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001708	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003765	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007015	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005657	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001838	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012123	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010326	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013958	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001421	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000739	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027992	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3222.866836	0.000	1.000000	Linear Thru Zero
Mg	23.985	1989.632284	0.000	1.000000	Linear Thru Zero
K	38.964	4727.423595	0.000	1.000000	Linear Thru Zero
Ca	43.956	148.913136	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 14:43:58
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.075
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	17126.791	**100.001**	6.75	6.7	ug/L
|	B	11	254350.422	**999.956**	74.80	7.5	ug/L
|	Al	27	817187.216	**249.910**	13.64	5.5	ug/L
| >	Sc	45	510413.074				ug/L
|	V	51	419512.190	**100.006**	1.11	1.1	ug/L
|	Cr	52	355884.966	**99.990**	2.77	2.8	ug/L
|	Cr	53	118428.101	**98.985**	23.69	23.9	ug/L
|	Mn	55	1410624.639	**250.000**	15.01	6.0	ug/L
|	Co	59	421749.975	**99.999**	5.19	5.2	ug/L
⌊	Ni	60	214154.843	**249.995**	12.87	5.1	ug/L
⌈	Cu	63	458863.999	**249.999**	10.01	4.0	ug/L
|	Cu	65	218216.768	**249.999**	9.58	3.8	ug/L
|	Zn	66	119643.697	**249.997**	6.05	2.4	ug/L
|	Zn	68	83704.339	**249.994**	6.45	2.6	ug/L
| >	Ge	72	471085.604				ug/L
|	As	75	119273.159	**249.997**	5.21	2.1	ug/L
|	Se	77	13843.873	**249.925**	17.06	6.8	ug/L
|	Se	82	12176.093	**249.999**	11.44	4.6	ug/L
⌊	Sr	88	6075.030	**19.951**	0.95	4.8	ug/L
⌈	Mo	98	168035.606	**100.000**	1.72	1.7	ug/L
| >	Rh	103	283347.687				ug/L
⌊	Ag	107	245743.353	**100.000**	1.68	1.7	ug/L
⌈	Cd	111	59846.853	**100.000**	5.95	6.0	ug/L
|	Cd	114	127890.702	**100.000**	4.85	4.8	ug/L
| >	In	115	341765.892				ug/L
|	Sn	120	246781.398	**100.000**	2.56	2.6	ug/L
⌊	Sb	121	190591.717	**99.999**	3.22	3.2	ug/L
⌈	Ba	137	84551.011	**100.000**	8.33	8.3	ug/L
|	Ba	138	540946.661	**100.000**	7.29	7.3	ug/L
| >	Tb	159	458211.136				ug/L
|	Tl	205	463463.396	**100.000**	4.60	4.6	ug/L
⌊	Pb	208	1586573.357	**250.000**	17.85	7.1	ug/L
⌈	Hg	200	8739.968	**20.000**	1.54	7.7	ug/L
|	Hg	201	4900.654	**20.001**	1.11	5.6	ug/L
| >	Bi	209	236205.376				ug/L
⌊	U	238	669833.615	**100.000**	4.41	4.4	ug/L
	C	13	9378.176				ug/L
	W	184	36.665				ug/L
	Pd	106	-193.290				ug/L
	Kr	83	30.333				ug/L
⌈	Na	23	36037338.855	**10000.105**	46.08	0.5	ug/L
|	Mg	24	22678788.247	**10000.123**	187.12	1.9	ug/L

K	39	55564282.272	**10000.144**	63.54	0.6	ug/L
Ca	44	1399091.330	**9999.930**	80.99	0.8	ug/L
Ti	47	326.673				ug/L
Sc-1	45	510413.074				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000336	0.000	1.000000	Linear Thru Zero
B	11.009	0.000498	0.000	0.999998	Linear Thru Zero
Al	26.982	0.006361	0.000	0.999990	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008055	0.000	0.999998	Linear Thru Zero
Cr	51.941	0.006703	0.000	0.999995	Linear Thru Zero
Cr	52.941	0.000450	0.000	0.947271	Linear Thru Zero
Mn	54.938	0.011066	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008273	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001680	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.003900	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001855	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001015	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000709	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001001	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000069	0.000	0.999299	Linear Thru Zero
Se	81.917	0.000103	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000609	0.000	0.970795	Linear Thru Zero
Mo	97.906	0.005930	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008674	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001755	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003748	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007220	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005580	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001851	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011836	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010134	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013892	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001846	0.000	0.999997	Linear Thru Zero
Hg	200.970	0.001035	0.000	0.999996	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.028392	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3599.911648	0.000	0.999999	Linear Thru Zero
Mg	23.985	2267.731340	0.000	0.999999	Linear Thru Zero
K	38.964	5524.874161	0.000	0.999999	Linear Thru Zero
Ca	43.956	139.148123	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 17:09:18
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.109
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	2.000				ug/L
|	B	11	2092.908				ug/L
|	Al	27	7252.228				ug/L
| >	Sc	45	497482.480				ug/L
|	V	51	6057.890				ug/L
|	Cr	52	13296.884				ug/L
|	Cr	53	94455.055				ug/L
|	Mn	55	738.030				ug/L
|	Co	59	31.000				ug/L
⌊	Ni	60	18.333				ug/L
⌈	Cu	63	51.333				ug/L
|	Cu	65	33.000				ug/L
|	Zn	66	166.335				ug/L
|	Zn	68	331.339				ug/L
| >	Ge	72	462980.506				ug/L
|	As	75	1245.659				ug/L
|	Se	77	5738.144				ug/L
|	Se	82	114.776				ug/L
⌊	Sr	88	451.345				ug/L
⌈	Mo	98	12.155				ug/L
| >	Rh	103	285481.156				ug/L
⌊	Ag	107	9.333				ug/L
⌈	Cd	111	0.715				ug/L
|	Cd	114	-5.908				ug/L
| >	In	115	356578.079				ug/L
|	Sn	120	229.944				ug/L
⌊	Sb	121	85.334				ug/L
⌈	Ba	137	55.584				ug/L
|	Ba	138	337.923				ug/L
| >	Tb	159	464021.234				ug/L
|	Tl	205	15.000				ug/L
⌊	Pb	208	38.000				ug/L
⌈	Hg	200	21.957				ug/L
|	Hg	201	18.000				ug/L
| >	Bi	209	231110.802				ug/L
⌊	U	238	97.334				ug/L
	C	13	9845.343				ug/L
	W	184	6.667				ug/L
	Pd	106	7.479				ug/L
	Kr	83	25.833				ug/L
⌈	Na	23	42807.644				ug/L
|	Mg	24	1980.222				ug/L

K	39	325843.836	ug/L
Ca	44	7679.911	ug/L
Ti	47	326.673	ug/L
Sc-1	45	497482.480	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000336	0.000	1.000000	Linear Thru Zero
B	11.009	0.000498	0.000	0.999998	Linear Thru Zero
Al	26.982	0.006361	0.000	0.999990	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008055	0.000	0.999998	Linear Thru Zero
Cr	51.941	0.006703	0.000	0.999995	Linear Thru Zero
Cr	52.941	0.000450	0.000	0.947271	Linear Thru Zero
Mn	54.938	0.011066	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008273	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001680	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.003900	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001855	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001015	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000709	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001001	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000069	0.000	0.999299	Linear Thru Zero
Se	81.917	0.000103	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000609	0.000	0.970795	Linear Thru Zero
Mo	97.906	0.005930	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008674	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001755	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003748	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007220	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005580	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001851	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011836	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010134	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013892	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001846	0.000	0.999997	Linear Thru Zero
Hg	200.970	0.001035	0.000	0.999996	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.028392	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3599.911648	0.000	0.999999	Linear Thru Zero
Mg	23.985	2267.731340	0.000	0.999999	Linear Thru Zero
K	38.964	5524.874161	0.000	0.999999	Linear Thru Zero
Ca	43.956	139.148123	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 17:12:52
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.109
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	185.002	**1.000**	0.10	9.7	ug/L
|	B	11	7961.485	**20.000**	1.30	6.5	ug/L
|	Al	27	76900.816	**20.000**	0.64	3.2	ug/L
| >	Sc	45	506718.512				ug/L
|	V	51	18425.669	**3.000**	0.54	18.1	ug/L
|	Cr	52	24534.228	**3.000**	0.40	13.2	ug/L
|	Cr	53	100148.227	**3.000**	5.23	174.3	ug/L
|	Mn	55	7058.073	**1.000**	0.08	7.5	ug/L
|	Co	59	4569.482	**1.000**	0.06	5.7	ug/L
⌊	Ni	60	1838.186	**1.000**	0.07	6.5	ug/L
⌈	Cu	63	4051.570	**2.000**	0.10	4.9	ug/L
|	Cu	65	1890.196	**2.000**	0.02	0.8	ug/L
|	Zn	66	2588.035	**5.000**	0.09	1.8	ug/L
|	Zn	68	2041.896	**5.000**	0.21	4.2	ug/L
| >	Ge	72	474242.836				ug/L
|	As	75	2741.004	**2.000**	0.60	29.8	ug/L
|	Se	77	6088.372	**2.000**	1.49	74.5	ug/L
|	Se	82	223.131	**2.000**	0.11	5.7	ug/L
⌊	Sr	88	2026.559	**0.200**	0.01	3.8	ug/L
⌈	Mo	98	1671.122	**1.000**	0.06	5.7	ug/L
| >	Rh	103	298220.860				ug/L
⌊	Ag	107	2735.079	**1.000**	0.08	7.7	ug/L
⌈	Cd	111	621.988	**1.000**	0.04	4.3	ug/L
|	Cd	114	1411.886	**1.000**	0.03	3.0	ug/L
| >	In	115	377658.416				ug/L
|	Sn	120	2963.766	**1.000**	0.07	6.5	ug/L
⌊	Sb	121	4193.634	**2.000**	0.08	3.9	ug/L
⌈	Ba	137	1000.300	**1.000**	0.06	5.7	ug/L
|	Ba	138	6292.757	**1.000**	0.02	1.8	ug/L
| >	Tb	159	474907.706				ug/L
|	Tl	205	4848.293	**1.000**	0.05	4.6	ug/L
⌊	Pb	208	6708.302	**1.000**	0.04	4.1	ug/L
⌈	Hg	200	103.296	**0.200**	0.03	13.5	ug/L
|	Hg	201	58.667	**0.200**	0.08	39.9	ug/L
| >	Bi	209	239150.465				ug/L
⌊	U	238	6444.617	**1.000**	0.00	0.3	ug/L
	C	13	9545.009				ug/L
	W	184	6.000				ug/L
	Pd	106	-16.827				ug/L
	Kr	83	23.667				ug/L
⌈	Na	23	388560.177	**100.000**	2.88	2.9	ug/L
|	Mg	24	223388.901	**100.000**	2.28	2.3	ug/L

K	39	827485.224	**100.000**	3.69	3.7	ug/L
Ca	44	22644.843	**100.000**	3.06	3.1	ug/L
Ti	47	340.006				ug/L
Sc-1	45	506718.512				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000362	0.000	1.000000	Linear Thru Zero
B	11.009	0.000577	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006867	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008119	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007268	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.002781	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012480	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008974	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003597	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004218	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001957	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001020	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000718	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001543	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000224	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000111	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.016493	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005568	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009153	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001645	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003757	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007207	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005436	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001990	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012528	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010190	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014060	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001687	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000841	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.026528	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3457.525330	0.000	1.000000	Linear Thru Zero
Mg	23.985	2214.086795	0.000	1.000000	Linear Thru Zero
K	38.964	5016.413873	0.000	1.000000	Linear Thru Zero
Ca	43.956	149.649321	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 17:16:24
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.109
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	18773.709	**100.000**	4.59	4.6	ug/L
|	B	11	296732.650	**999.983**	53.05	5.3	ug/L
|	Al	27	877748.546	**249.918**	9.22	3.7	ug/L
| >	Sc	45	533111.676				ug/L
|	V	51	426259.031	**99.997**	2.57	2.6	ug/L
|	Cr	52	367719.138	**99.991**	1.70	1.7	ug/L
|	Cr	53	119170.433	**99.354**	27.29	27.5	ug/L
|	Mn	55	1512770.794	**250.000**	12.00	4.8	ug/L
|	Co	59	454733.501	**99.999**	5.08	5.1	ug/L
⌊	Ni	60	227252.312	**249.996**	9.98	4.0	ug/L
⌈	Cu	63	482916.644	**249.999**	7.76	3.1	ug/L
|	Cu	65	229978.390	**249.999**	4.73	1.9	ug/L
|	Zn	66	124529.814	**250.000**	1.13	0.5	ug/L
|	Zn	68	86260.118	**249.998**	2.89	1.2	ug/L
| >	Ge	72	486731.258				ug/L
|	As	75	124617.029	**249.992**	2.99	1.2	ug/L
|	Se	77	14642.795	**249.965**	18.58	7.4	ug/L
|	Se	82	13335.580	**250.000**	7.62	3.0	ug/L
⌊	Sr	88	6451.288	**19.948**	0.15	0.7	ug/L
⌈	Mo	98	173627.945	**100.000**	4.13	4.1	ug/L
| >	Rh	103	298623.057				ug/L
⌊	Ag	107	259244.111	**99.999**	1.19	1.2	ug/L
⌈	Cd	111	64774.447	**100.000**	4.44	4.4	ug/L
|	Cd	114	139110.017	**100.000**	3.73	3.7	ug/L
| >	In	115	379436.710				ug/L
|	Sn	120	272713.897	**100.000**	2.50	2.5	ug/L
⌊	Sb	121	205927.835	**100.000**	3.32	3.3	ug/L
⌈	Ba	137	93143.862	**99.999**	6.68	6.7	ug/L
|	Ba	138	581791.455	**99.999**	5.62	5.6	ug/L
| >	Tb	159	492768.508				ug/L
|	Tl	205	472961.459	**99.999**	5.28	5.3	ug/L
⌊	Pb	208	1633281.061	**250.000**	14.41	5.8	ug/L
⌈	Hg	200	8659.920	**20.000**	0.99	4.9	ug/L
|	Hg	201	4929.337	**20.000**	0.55	2.7	ug/L
| >	Bi	209	242583.036				ug/L
⌊	U	238	662802.861	**100.000**	3.27	3.3	ug/L
	C	13	8964.421				ug/L
	W	184	31.997				ug/L
	Pd	106	-369.658				ug/L
	Kr	83	27.167				ug/L
⌈	Na	23	38571101.129	**10000.103**	271.36	2.7	ug/L
|	Mg	24	24334793.438	**10000.090**	156.78	1.6	ug/L

K	39	59209592.786	**10000.148**	81.08	0.8	ug/L
Ca	44	1482084.300	**9999.985**	224.53	2.2	ug/L
Ti	47	363.341				ug/L
Sc-1	45	533111.676				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000352	0.000	1.000000	Linear Thru Zero
B	11.009	0.000553	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006533	0.000	0.999992	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007874	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.006632	0.000	0.999996	Linear Thru Zero
Cr	52.941	0.000340	0.000	0.977581	Linear Thru Zero
Mn	54.938	0.011353	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008535	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001706	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.003969	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001890	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001022	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000706	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001013	0.000	0.999991	Linear Thru Zero
Se	76.920	0.000071	0.000	0.999851	Linear Thru Zero
Se	81.917	0.000109	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000616	0.000	0.968310	Linear Thru Zero
Mo	97.906	0.005817	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008682	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001710	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003672	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007188	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005433	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001893	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011819	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009613	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013281	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001782	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001012	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027340	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3852.789822	0.000	0.999999	Linear Thru Zero
Mg	23.985	2433.259404	0.000	1.000000	Linear Thru Zero
K	38.964	5888.287708	0.000	0.999999	Linear Thru Zero
Ca	43.956	147.440660	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 20:11:00
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.159
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	2.000				ug/L
|	B	11	2699.067				ug/L
|	Al	27	9395.527				ug/L
| >	Sc	45	519688.151				ug/L
|	V	51	11223.231				ug/L
|	Cr	52	16141.823				ug/L
|	Cr	53	111998.917				ug/L
|	Mn	55	994.721				ug/L
|	Co	59	33.667				ug/L
⌊	Ni	60	26.667				ug/L
⌈	Cu	63	57.000				ug/L
|	Cu	65	38.667				ug/L
|	Zn	66	145.668				ug/L
|	Zn	68	326.006				ug/L
| >	Ge	72	477849.111				ug/L
|	As	75	1723.627				ug/L
|	Se	77	6830.398				ug/L
|	Se	82	114.307				ug/L
⌊	Sr	88	647.023				ug/L
⌈	Mo	98	11.447				ug/L
| >	Rh	103	285925.511				ug/L
⌊	Ag	107	9.333				ug/L
⌈	Cd	111	-0.607				ug/L
|	Cd	114	2.864				ug/L
| >	In	115	341167.566				ug/L
|	Sn	120	321.307				ug/L
⌊	Sb	121	77.334				ug/L
⌈	Ba	137	71.591				ug/L
|	Ba	138	471.936				ug/L
| >	Tb	159	432955.469				ug/L
|	Tl	205	23.000				ug/L
⌊	Pb	208	47.667				ug/L
⌈	Hg	200	33.235				ug/L
|	Hg	201	23.333				ug/L
| >	Bi	209	236984.452				ug/L
⌊	U	238	99.667				ug/L
	C	13	9811.962				ug/L
	W	184	15.332				ug/L
	Pd	106	2.943				ug/L
	Kr	83	22.333				ug/L
⌈	Na	23	60990.690				ug/L
|	Mg	24	23386.926				ug/L

	K	39	357328.789	ug/L
	Ca	44	8463.940	ug/L
	Ti	47	306.672	ug/L
	Sc-1	45	519688.151	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000352	0.000	1.000000	Linear Thru Zero
B	11.009	0.000553	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006533	0.000	0.999992	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007874	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.006632	0.000	0.999996	Linear Thru Zero
Cr	52.941	0.000340	0.000	0.977581	Linear Thru Zero
Mn	54.938	0.011353	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008535	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001706	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.003969	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001890	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001022	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000706	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001013	0.000	0.999991	Linear Thru Zero
Se	76.920	0.000071	0.000	0.999851	Linear Thru Zero
Se	81.917	0.000109	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000616	0.000	0.968310	Linear Thru Zero
Mo	97.906	0.005817	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008682	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001710	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003672	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007188	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005433	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001893	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011819	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009613	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013281	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001782	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001012	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027340	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3852.789822	0.000	0.999999	Linear Thru Zero
Mg	23.985	2433.259404	0.000	1.000000	Linear Thru Zero
K	38.964	5888.287708	0.000	0.999999	Linear Thru Zero
Ca	43.956	147.440660	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 20:14:32
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.159
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	200.336	**1.000**	0.14	13.6	ug/L
|	B	11	8054.909	**20.000**	2.38	11.9	ug/L
|	Al	27	95693.927	**20.000**	6.76	33.8	ug/L
| >	Sc	45	528629.518				ug/L
|	V	51	27793.863	**3.000**	1.74	58.2	ug/L
|	Cr	52	27661.687	**3.000**	0.20	6.7	ug/L
|	Cr	53	115473.752	**3.000**	7.03	234.5	ug/L
|	Mn	55	8411.430	**1.000**	0.35	35.1	ug/L
|	Co	59	4626.177	**1.000**	0.03	2.5	ug/L
⌊	Ni	60	1949.543	**1.000**	0.07	6.6	ug/L
⌈	Cu	63	4286.011	**2.000**	0.16	8.0	ug/L
|	Cu	65	2044.230	**2.000**	0.12	6.1	ug/L
|	Zn	66	2654.054	**5.000**	0.14	2.8	ug/L
|	Zn	68	2114.579	**5.000**	0.27	5.5	ug/L
| >	Ge	72	488678.976				ug/L
|	As	75	3029.525	**2.000**	0.94	47.1	ug/L
|	Se	77	7214.862	**2.000**	3.28	164.1	ug/L
|	Se	82	224.818	**2.000**	0.22	10.8	ug/L
⌊	Sr	88	5497.026	**0.200**	0.25	127.0	ug/L
⌈	Mo	98	1688.495	**1.000**	0.07	6.6	ug/L
| >	Rh	103	291965.464				ug/L
⌊	Ag	107	2593.703	**1.000**	0.04	3.6	ug/L
⌈	Cd	111	635.802	**1.000**	0.12	12.3	ug/L
|	Cd	114	1327.365	**1.000**	0.08	8.4	ug/L
| >	In	115	350037.842				ug/L
|	Sn	120	2745.714	**1.000**	0.08	8.2	ug/L
⌊	Sb	121	4022.892	**2.000**	0.08	4.0	ug/L
⌈	Ba	137	1150.382	**1.000**	0.27	27.4	ug/L
|	Ba	138	7057.147	**1.000**	0.27	26.5	ug/L
| >	Tb	159	446065.643				ug/L
|	Tl	205	4849.627	**1.000**	0.05	5.0	ug/L
⌊	Pb	208	6922.360	**1.000**	0.07	6.5	ug/L
⌈	Hg	200	97.924	**0.200**	0.03	14.4	ug/L
|	Hg	201	67.334	**0.200**	0.05	25.5	ug/L
| >	Bi	209	236462.759				ug/L
⌊	U	238	7095.101	**1.000**	0.10	9.8	ug/L
	C	13	10319.188				ug/L
	W	184	11.998				ug/L
	Pd	106	11.563				ug/L
	Kr	83	21.333				ug/L
⌈	Na	23	691187.928	**100.000**	74.71	74.7	ug/L
|	Mg	24	404243.931	**100.000**	76.55	76.5	ug/L

K	39	899307.025	**100.000**	4.06	4.1	ug/L
Ca	44	30097.223	**100.000**	49.31	49.3	ug/L
Ti	47	380.008				ug/L
Sc-1	45	528629.518				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000376	0.000	1.000000	Linear Thru Zero
B	11.009	0.000503	0.000	1.000000	Linear Thru Zero
Al	26.982	0.008192	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.010341	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007098	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.001013	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.014078	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008689	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003641	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004335	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002054	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001026	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000730	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001303	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000246	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000111	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.049981	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005751	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008857	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001830	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003798	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006935	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005645	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002421	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014775	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010836	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.015434	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001366	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000944	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.029755	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	6301.972383	0.000	1.000000	Linear Thru Zero
Mg	23.985	3808.570043	0.000	1.000000	Linear Thru Zero
K	38.964	5419.782365	0.000	1.000000	Linear Thru Zero
Ca	43.956	216.332832	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD
Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 20:18:04
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.159
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	19517.951	**100.000**	4.19	4.2	ug/L
|	B	11	275566.788	**1000.004**	47.89	4.8	ug/L
|	Al	27	891347.162	**249.610**	3.90	1.6	ug/L
| >	Sc	45	536380.771				ug/L
|	V	51	433086.373	**99.972**	4.33	4.3	ug/L
|	Cr	52	370309.060	**99.993**	2.82	2.8	ug/L
|	Cr	53	131178.382	**99.777**	34.85	34.9	ug/L
|	Mn	55	1464108.975	**249.999**	7.72	3.1	ug/L
|	Co	59	451261.599	**100.000**	3.82	3.8	ug/L
⌊	Ni	60	227926.590	**249.995**	10.19	4.1	ug/L
⌈	Cu	63	486927.930	**249.999**	16.33	6.5	ug/L
|	Cu	65	231999.449	**249.999**	14.94	6.0	ug/L
|	Zn	66	126393.934	**250.001**	11.62	4.6	ug/L
|	Zn	68	86978.599	**249.997**	7.22	2.9	ug/L
| >	Ge	72	487416.006				ug/L
|	As	75	126933.251	**249.996**	8.38	3.4	ug/L
|	Se	77	15415.230	**249.959**	32.66	13.1	ug/L
|	Se	82	12748.253	**249.999**	16.16	6.5	ug/L
⌊	Sr	88	7439.057	**19.860**	2.56	12.9	ug/L
⌈	Mo	98	170089.538	**100.000**	1.08	1.1	ug/L
| >	Rh	103	289675.902				ug/L
⌊	Ag	107	251543.035	**100.000**	1.30	1.3	ug/L
⌈	Cd	111	61085.403	**99.999**	5.40	5.4	ug/L
|	Cd	114	133400.313	**100.000**	3.15	3.2	ug/L
| >	In	115	366566.106				ug/L
|	Sn	120	255833.444	**100.000**	1.29	1.3	ug/L
⌊	Sb	121	196376.275	**99.998**	1.55	1.5	ug/L
⌈	Ba	137	86143.465	**99.998**	7.50	7.5	ug/L
|	Ba	138	541574.287	**99.998**	5.53	5.5	ug/L
| >	Tb	159	435885.957				ug/L
|	Tl	205	461939.693	**100.000**	3.39	3.4	ug/L
⌊	Pb	208	1609584.039	**250.000**	14.37	5.7	ug/L
⌈	Hg	200	8736.676	**20.000**	1.02	5.1	ug/L
|	Hg	201	5046.734	**20.000**	1.15	5.8	ug/L
| >	Bi	209	244279.901				ug/L
⌊	U	238	690145.169	**99.999**	4.46	4.5	ug/L
	C	13	9791.939				ug/L
	W	184	29.328				ug/L
	Pd	106	-125.935				ug/L
	Kr	83	24.833				ug/L
⌈	Na	23	40323016.758	**9999.435**	43.60	0.4	ug/L
|	Mg	24	24912612.622	**9999.470**	137.70	1.4	ug/L

K	39	60798082.717	**10000.103**	270.98	2.7	ug/L
Ca	44	1469284.155	**9999.519**	153.51	1.5	ug/L
Ti	47	413.343				ug/L
Sc-1	45	536380.771				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000364	0.000	1.000000	Linear Thru Zero
B	11.009	0.000509	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006585	0.000	0.999809	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007860	0.000	0.999955	Linear Thru Zero
Cr	51.941	0.006594	0.000	0.999997	Linear Thru Zero
Cr	52.941	0.000292	0.000	0.997259	Linear Thru Zero
Mn	54.938	0.010911	0.000	0.999999	Linear Thru Zero
Co	58.933	0.008413	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001700	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.004005	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001908	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001038	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000712	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001028	0.000	0.999998	Linear Thru Zero
Se	76.920	0.000070	0.000	0.999795	Linear Thru Zero
Se	81.917	0.000104	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000703	0.000	0.818699	Linear Thru Zero
Mo	97.906	0.005871	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008684	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001670	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003643	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006971	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005358	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001980	0.000	0.999998	Linear Thru Zero
Ba	137.905	0.012439	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010610	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014801	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001784	0.000	0.999997	Linear Thru Zero
Hg	200.970	0.001030	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.028289	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4026.430161	0.000	0.999984	Linear Thru Zero
Mg	23.985	2489.054521	0.000	0.999986	Linear Thru Zero
K	38.964	6044.012970	0.000	0.999999	Linear Thru Zero
Ca	43.956	146.089046	0.000	0.999988	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Raw Data - Instrument Tuning

Sample Information

Sample Date/Time: Monday, December 10, 2018 08:15:32
Method File: C:\Elandata\Method\EL4\BCL_EL4-Tuning.mth
Dataset File: C:\Elandata\Dataset\Default\Mass Calibration and Resolution - Retry 1.922
Tuning File: C:\Elandata\Tuning\Default.tun
Number of Sweeps: 125
Number of Readings: 1
Number of Replicates: 3
Measurement Unit: cps

Instrument Tuning Report

File Name: Default.tun
File Path: C:\Elandata\Tuning\Default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
C	12.000	12.025	2763	2081	0.697	
Mg	23.985	24.025	5672	2099	0.697	
Ar2	75.930	75.975	18309	2170	0.699	
In	114.904	114.875	27783	2229	0.714	
Ce	139.905	139.925	33869	2258	0.691	
Pb	207.977	207.975	50435	2363	0.685	
U	238.050	238.075	57744	2421	0.703	

Complete Mass Scanning Results

Mass	Meas. Intens. Mean	Meas. Intens. SD	Meas. Intens. RSD
11.000	164.403	6.158	3.746
22.000	7.600	1.833	24.119
75.000	6675.626	40.169	0.602
114.000	208.698	15.153	7.261
139.000	80.536	2.203	2.735
206.000	5370.566	111.553	2.077
235.000	133.469	4.388	3.288

Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Monday, December 10, 2018 08:31:47
Sample Description:
Method File: C:\Elandata\Method\EL4\BCL_EL4_Daily Performance.mth
Dataset File: C:\Elandata\Dataset\Default\Daily Performance Check.925
Tuning File: C:\Elandata\Tuning\Default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Dual
Acq. Dead Time(ns): 55
Current Dead Time (ns): 55

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	36710.9	36710.948	574.148	1.6
	In	114.9	120606.6	120606.611	2650.869	2.2
	U	238.1	107203.1	107203.073	1736.381	1.6
⌈>	Ba	137.9	88944.7	88944.734	1192.831	1.3
⌊	Ba++	69.0	2408.2	0.027	0.000	1.1
⌈>	Ce	139.9	113233.2	113233.226	2324.070	2.1
⌊	CeO	155.9	2516.4	0.022	0.000	1.5
	220	220.0	0.6	0.640	0.358	55.9

Current Optimization File Data

Current Value	Description
0.93	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
15.00	Plasma Gas Flow
8.00	Lens Voltage
1050.00	ICP RF Power
-1650.00	Analog Stage Voltage
950.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset Std [QRO]
-11.00	Cell Rod Offset Std [CRO]
71.00	Discriminator Threshold
-14.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.25	RPq
0.93	DRC Mode NEB
-6.00	DRC Mode QRO
-1.00	DRC Mode CRO
-15.00	DRC Mode CPV
0.00	Cell Gas A
200.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
250.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	12	45	5.5	690443.3
Mg	24	45	5.8	39800.3
In	115	45	8.0	132779.3
Ce	140	45	7.5	120750.0
Pb	208	45	9.0	63209.0

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:07:48AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838102

Laboratory Documentation Requirements
For Data Validation of
Volatiles Analysis

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838102
COC Number:
Cooler 1 was received at 5.2 °C
Cooler 2 was received at 0 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-8260B	MS-V3

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

The Continuing Calibration Verification (CCV) recovery was not within established control limits.

Lab Number	Method	Analyte
1824146-CCV4	EPA-8260B	Chloroethane

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032223	EPA-8260B	1836707-28	<Not Client Sample>

Matrix spike recovery(s) was(were) not within the control limits.

Lab Number	Method	Analyte
B032223-MS1	EPA-8260B	Chloroethane

LCS

The LCS recoveries were within QC limits.

Chain of Custody and Cooler Receipt Form for 1838102 Page 1 of 3

Chain of Custody Form

BC LABORATORIES, INC.

Page 1 of 1

Report To
Client: Recon/SMUD
Attn: Robert Kohlhardt
Street Address: 2020 L St. Suite 400
City, State, Zip: Sacramento, CA 95811
Phone: 916 414 5800 Fax:
Email: robert.kohlhardt@recon.com
Work Order #: 18-38102

Project #: 605700 43.05
Project Name: SMUD 59th Street
Sampler(s): Brian Whalen

Sample #	Description	Date Sampled	Time Sampled	Arsenic (SW6020)	VOCs (SW8260B)	Analysis Requested: Please refer to the back of this page for completion instructions and method legend.	Sample Matrix: Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Result Request **Surcharge: STD (10 Days) ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**	Notes
1	SO-B14-01	12/4/18	840	X			X							
2	SO-B14-02		855	X										
3	SO-B13-01		920	X										
4	SO-VW09-01		920		X									
5	SO-VW07-01		1005		X									
6	SO-VW01-01		1305		X									
7	SO-VW03-01		1410		X									
8	SO-B07-01		1410	X									CHK BY DISTRIBUTION	
A	SO-B06-02		1440	X									SUB-OUT ☐	

Billing: ☒ Same as above
Client:
Address:
City: State Zip
Attn:
P.O. #:

EDF Required? Geotracker ☐ Yes ☐ No
Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

		Date	Time
1. Relinquished By		12/4/18	1432
2. Relinquished By		12/4/18	1600
3. Relinquished By		Date	Time

System # (Needed for EDT)

		Date	Time
1. Received By		12/4/18	1432
2. Received By		12.5.18	0815
3. Received By		Date	Time

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838102 Page 2 of 3

COOLER RECEIPT FORM

Submission #: 18-38102 Page 1 of 2

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) 7750

SHIPPING CONTAINER
Ice Chest ☒ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☐ No ☐ All samples containers intact? Yes ☐ No ☐ Description(s) match COC? Yes ☐ No ☐

COC Received ☒ YES ☐ NO

Emissivity: .97 Container: Glass Thermometer ID: 274 Date/Time: 12.5.18

Temperature: (A) 4.7 °C / (C) 5.2 °C Analyst Init: DS 08:50

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 541										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE	A	A	A				A	A		
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: GB Date/Time: 12/5 1821

A = Actual / C = Corrected

Rev 21 05/23/2016
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Chain of Custody and Cooler Receipt Form for 1838102 Page 3 of 3

BC LABORATORIES INC.

COOLER RECEIPT FORM

Page 2 Of 2

Submission #: 18-38102

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) GSO

SHIPPING CONTAINER
Ice Chest ☑ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: .95 Container: VOA Thermometer ID: 274

Temperature: (A) 0.0 °C / (C) 0.0 °C

Date/Time: 12.5.18 08:50

Analyst Init:

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PIA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER				ABCD	ABCD	ABCD	ABCD			

Comments:

Sample Numbering Completed By: BSB Date/Time: 12/5 1821

A = Actual / C = Corrected

Rev 21 05/23/2016

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AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838102**
Class: **VOA**
Method: **EPA-8260B**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838102
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-VW09-01	1838102-04
SO-VW07-01	1838102-05
SO-VW01-01	1838102-06
SO-VW03-01	1838102-07

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-07-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: MS-V3

Analyte	MDL	PQL	Units
Chloroethane	0.0014	0.0050	mg/kg
1,1-Dichloroethane	0.0014	0.0050	mg/kg
1,2-Dichloroethane	0.00085	0.0050	mg/kg
1,1-Dichloroethene	0.0012	0.0050	mg/kg
cis-1,2-Dichloroethene	0.0013	0.0050	mg/kg
trans-1,2-Dichloroethene	0.0014	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	0.0011	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	0.0011	0.0050	mg/kg
Tetrachloroethene	0.0013	0.0050	mg/kg
1,1,1-Trichloroethane	0.0011	0.0050	mg/kg
1,1,2-Trichloroethane	0.00077	0.0050	mg/kg
Trichloroethene	0.0011	0.0050	mg/kg
Vinyl chloride	0.0016	0.0050	mg/kg

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW09-01

Laboratory:	BC Laboratories			SDG:	1838102
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838102-04	File ID:	07DEC39.D
Sampled:	12/04/18 09:20	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 01:17
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	6.5 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.769	0.0011	UD
75-34-3	1,1-Dichloroethane	0.769	0.0011	UD
107-06-2	1,2-Dichloroethane	0.769	0.00065	UD
75-35-4	1,1-Dichloroethene	0.769	0.00092	UD
156-59-2	cis-1,2-Dichloroethene	0.769	0.0010	UD
156-60-5	trans-1,2-Dichloroethene	0.769	0.0011	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.769	0.00085	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.769	0.00085	UD
127-18-4	Tetrachloroethene	0.769	0.0010	UD
71-55-6	1,1,1-Trichloroethane	0.769	0.00085	UD
79-00-5	1,1,2-Trichloroethane	0.769	0.00059	UD
79-01-6	Trichloroethene	0.769	0.00085	UD
75-01-4	Vinyl chloride	0.769	0.0012	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.038462	0.043854	114	70 - 121	
Toluene-d8 (Surrogate)	0.038462	0.041331	107	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.038462	0.039538	103	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	116232	6.22	105107	6.22	
Chlorobenzene-d5 (IS)	102976	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	373173	7.11	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW07-01

Laboratory:	BC Laboratories			SDG:	1838102
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838102-05	File ID:	07DEC40.D
Sampled:	12/04/18 10:05	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 01:39
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	7.08 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.706	0.00099	UD
75-34-3	1,1-Dichloroethane	0.706	0.00099	UD
107-06-2	1,2-Dichloroethane	0.706	0.00060	UD
75-35-4	1,1-Dichloroethene	0.706	0.00085	UD
156-59-2	cis-1,2-Dichloroethene	0.706	0.00092	UD
156-60-5	trans-1,2-Dichloroethene	0.706	0.00099	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.706	0.00078	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.706	0.00078	UD
127-18-4	Tetrachloroethene	0.706	0.00092	UD
71-55-6	1,1,1-Trichloroethane	0.706	0.00078	UD
79-00-5	1,1,2-Trichloroethane	0.706	0.00054	UD
79-01-6	Trichloroethene	0.706	0.00078	UD
75-01-4	Vinyl chloride	0.706	0.0011	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.035311	0.038828	110	70 - 121	
Toluene-d8 (Surrogate)	0.035311	0.037754	107	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.035311	0.036928	105	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	119381	6.22	105107	6.22	
Chlorobenzene-d5 (IS)	102127	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	377177	7.11	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW01-01

Laboratory:	BC Laboratories			SDG:	1838102
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838102-06	File ID:	07DEC41.D
Sampled:	12/04/18 13:05	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 02:01
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	4.14 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	1.21	0.0017	UD
75-34-3	1,1-Dichloroethane	1.21	0.0017	UD
107-06-2	1,2-Dichloroethane	1.21	0.0010	UD
75-35-4	1,1-Dichloroethene	1.21	0.0014	UD
156-59-2	cis-1,2-Dichloroethene	1.21	0.0016	UD
156-60-5	trans-1,2-Dichloroethene	1.21	0.0017	UD
630-20-6	1,1,1,2-Tetrachloroethane	1.21	0.0013	UD
79-34-5	1,1,2,2-Tetrachloroethane	1.21	0.0013	UD
127-18-4	Tetrachloroethene	1.21	0.0016	UD
71-55-6	1,1,1-Trichloroethane	1.21	0.0013	UD
79-00-5	1,1,2-Trichloroethane	1.21	0.00093	UD
79-01-6	Trichloroethene	1.21	0.0013	UD
75-01-4	Vinyl chloride	1.21	0.0019	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.060386	0.071256	118	70 - 121	
Toluene-d8 (Surrogate)	0.060386	0.061932	103	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.060386	0.058502	96.9	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	110030	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	101656	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	369780	7.11	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW03-01

Laboratory:	BC Laboratories			SDG:	1838102
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838102-07	File ID:	07DEC42.D
Sampled:	12/04/18 14:10	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 02:23
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	5.9 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.847	0.0012	UD
75-34-3	1,1-Dichloroethane	0.847	0.0012	UD
107-06-2	1,2-Dichloroethane	0.847	0.00072	UD
75-35-4	1,1-Dichloroethene	0.847	0.0010	UD
156-59-2	cis-1,2-Dichloroethene	0.847	0.0011	UD
156-60-5	trans-1,2-Dichloroethene	0.847	0.0012	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.847	0.00093	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.847	0.00093	UD
127-18-4	Tetrachloroethene	0.847	0.0011	UD
71-55-6	1,1,1-Trichloroethane	0.847	0.00093	UD
79-00-5	1,1,2-Trichloroethane	0.847	0.00065	UD
79-01-6	Trichloroethene	0.847	0.00093	UD
75-01-4	Vinyl chloride	0.847	0.0014	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.042373	0.046653	110	70 - 121	
Toluene-d8 (Surrogate)	0.042373	0.044669	105	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.042373	0.043085	102	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	115438	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	101693	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	373733	7.11	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032223 Batch Matrix: Solids
Preparation: EPA 5030 Soil MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW09-01	1838102-04	07DEC39.D	12/07/18 12:00	Updated List 12/10/18
SO-VW07-01	1838102-05	07DEC40.D	12/07/18 12:00	Updated List 12/10/18
SO-VW01-01	1838102-06	07DEC41.D	12/07/18 12:00	Updated List 12/10/18
SO-VW03-01	1838102-07	07DEC42.D	12/07/18 12:00	Updated List 12/10/18
Blank	B032223-BLK1	05DEC52.D	12/05/18 16:00	
LCS	B032223-BS1	05DEC47.D	12/05/18 16:00	
Matrix Spike	B032223-MS1	05DEC48.D	12/05/18 16:00	
Matrix Spike Dup	B032223-MSD1	05DEC49.D	12/05/18 16:00	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1838102
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032223-BLK1	File ID:	05DEC52.D
Prepared:	12/05/18 16:00	Preparation:	EPA 5030 Soil MS	Initial/Final:	5 g / 5 ml
Analyzed:	12/06/18 05:54	Instrument:	MS-V3		
Batch:	B032223	Sequence:	1824146	Calibration:	1812002

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.0014	U
75-34-3	1,1-Dichloroethane	0.0014	U
107-06-2	1,2-Dichloroethane	0.00085	U
75-35-4	1,1-Dichloroethene	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.0011	U
127-18-4	Tetrachloroethene	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.00077	U
79-01-6	Trichloroethene	0.0011	U
75-01-4	Vinyl chloride	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.048130	96.3	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.051450	103	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.048620	97.2	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	86374	6.24	83645	6.23	
Chlorobenzene-d5 (IS)	74852	9.42	73383	9.42	
1,4-Difluorobenzene (IS)	272969	7.13	290742	7.13	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032223
Preparation: EPA 5030 Soil MS
Source Sample Number: 1836707-28

SDG: 1838102
Project: SMUD 59th St.
Laboratory ID: B032223-MS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	ND	0.084840	67.9 *	70 - 130
1,1-Dichloroethane	0.12500	ND	0.10743	85.9	70 - 130
1,1-Dichloroethene	0.12500	ND	0.10285	82.3	70 - 130
Trichloroethene	0.12500	ND	0.11056	88.4	70 - 130

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	0.12500	0.091200	73.0	7.23	20	70 - 130
1,1-Dichloroethane	0.12500	0.11100	88.8	3.27	20	70 - 130
1,1-Dichloroethene	0.12500	0.10444	83.6	1.53	20	70 - 130
Trichloroethene	0.12500	0.10899	87.2	1.43	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Batch: B032223
Laboratory ID: B032223-BS1
Preparation: EPA 5030 Soil MS
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	0.097520	78.0	70 - 130
1,1-Dichloroethane	0.12500	0.11854	94.8	70 - 130
1,1-Dichloroethene	0.12500	0.11305	90.4	70 - 130
Trichloroethene	0.12500	0.12014	96.1	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824146	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824146-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824146-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824146-TUN2	05DEC42.D	12/06/18 02:14
Calibration Check	1824146-CCV4	05DEC44.D	12/06/18 02:58
Calibration Blank	1824146-CCB2	05DEC46.D	12/06/18 03:42
LCS	B032223-BS1	05DEC47.D	12/06/18 04:04
Matrix Spike	B032223-MS1	05DEC48.D	12/06/18 04:26
Matrix Spike Dup	B032223-MSD1	05DEC49.D	12/06/18 04:48
Blank	B032223-BLK1	05DEC52.D	12/06/18 05:54
MS Tune	1824146-TUN3	06DEC02.D	12/06/18 14:24
Calibration Check	1824146-CCV7	06DEC04.D	12/06/18 15:23
Calibration Blank	1824146-CCB3	06DEC06.D	12/06/18 16:11

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Project Number: 60570043.05
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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824353-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824353-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824353-TUN2	07DEC27.D	12/07/18 20:55
Calibration Check	1824353-CCV4	07DEC29.D	12/07/18 21:39
Calibration Blank	1824353-CCB2	07DEC31.D	12/07/18 22:22
SO-VW09-01	1838102-04	07DEC39.D	12/08/18 01:17
SO-VW07-01	1838102-05	07DEC40.D	12/08/18 01:39
SO-VW01-01	1838102-06	07DEC41.D	12/08/18 02:01
SO-VW03-01	1838102-07	07DEC42.D	12/08/18 02:23

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824979	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1824979-TUN1	13NOV03.D	11/13/18 07:18
Cal Standard	1824979-CAL2	13NOV13.D	11/13/18 13:18
Cal Standard	1824979-CAL3	13NOV14.D	11/13/18 13:41
Cal Standard	1824979-CAL4	13NOV15.D	11/13/18 14:04
Cal Standard	1824979-CAL5	13NOV16.D	11/13/18 14:27
Cal Standard	1824979-CAL6	13NOV17.D	11/13/18 14:50
Cal Standard	1824979-CAL1	13NOV21.D	11/13/18 16:22

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	05DEC42.D	Injection Date:	12/06/18
Instrument ID:	MS-V3	Injection Time:	02:14
Sequence:	1824146	Lab Sample ID:	1824146-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.9	PASS
Mass 75	30 - 60% of Mass 95	41.2	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	8.22	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	94.1	PASS
Mass 175	5 - 9% of Mass 174	7.45	PASS
Mass 176	95 - 101% of Mass 174	96.5	PASS
Mass 177	5 - 9% of Mass 176	6.49	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	06DEC02.D	Injection Date:	12/06/18
Instrument ID:	MS-V3	Injection Time:	14:24
Sequence:	1824146	Lab Sample ID:	1824146-TUN3

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	19.7	PASS
Mass 75	30 - 60% of Mass 95	43.5	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.54	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	70.3	PASS
Mass 175	5 - 9% of Mass 174	5.6	PASS
Mass 176	95 - 101% of Mass 174	96.9	PASS
Mass 177	5 - 9% of Mass 176	7.36	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	07DEC27.D	Injection Date:	12/07/18
Instrument ID:	MS-V3	Injection Time:	20:55
Sequence:	1824353	Lab Sample ID:	1824353-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.1	PASS
Mass 75	30 - 60% of Mass 95	43.1	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.33	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	78.9	PASS
Mass 175	5 - 9% of Mass 174	7.51	PASS
Mass 176	95 - 101% of Mass 174	98.2	PASS
Mass 177	5 - 9% of Mass 176	6.57	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	13NOV03.D	Injection Date:	11/13/18
Instrument ID:	MS-V3	Injection Time:	07:18
Sequence:	1824979	Lab Sample ID:	1824979-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	20.4	PASS
Mass 75	30 - 60% of Mass 95	50.7	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.36	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	59.8	PASS
Mass 175	5 - 9% of Mass 174	8.79	PASS
Mass 176	95 - 101% of Mass 174	98.4	PASS
Mass 177	5 - 9% of Mass 176	7.95	PASS

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	11/13/18
Lab Sample ID:	1824146-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	05DEC44.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	12/06/18
Lab Sample ID:	1824146-CCV4	Injection Time:	02:58

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.099050	1.08303	0.8581649		-20.8	20 *
1,1-Dichloroethane	A	0.12500	0.11984	2.329792	2.23364	0.1	-4.1	20
1,2-Dichloroethane	A	0.12500	0.12855	1.174426	1.207814		2.8	20
1,1-Dichloroethene	A	0.12500	0.11503	1.140625	1.049669		-8.0	20
cis-1,2-Dichloroethene	A	0.12500	0.12810	1.251724	1.282735		2.5	20
trans-1,2-Dichloroethene	A	0.12500	0.12074	1.143278	1.104291		-3.4	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.12291	0.9907955	0.9742529		-1.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12449	1.330376	1.324966	0.3	-0.4	20
Tetrachloroethene	A	0.12500	0.11355	0.3102159	0.2818086		-9.2	20
1,1,1-Trichloroethane	A	0.12500	0.12242	1.337076	1.309443		-2.1	20
1,1,2-Trichloroethane	A	0.12500	0.12050	0.2309915	0.2226813		-3.6	20
Trichloroethene	A	0.12500	0.11467	0.3225112	0.2958472		-8.3	20
Vinyl chloride	A	0.12500	0.11182	1.938052	1.733708		-10.5	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	06DEC04.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	12/06/18
Lab Sample ID:	1824146-CCV7	Injection Time:	15:23

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11716	1.08303	1.015143		-6.3	50
1,1-Dichloroethane	A	0.12500	0.12438	2.329792	2.318179	0.1	-0.5	50
1,2-Dichloroethane	A	0.12500	0.12097	1.174426	1.136604		-3.2	50
1,1-Dichloroethene	A	0.12500	0.12688	1.140625	1.157768		1.5	50
cis-1,2-Dichloroethene	A	0.12500	0.12670	1.251724	1.268757		1.4	50
trans-1,2-Dichloroethene	A	0.12500	0.12774	1.143278	1.168333		2.2	50
1,1,1,2-Tetrachloroethane	A	0.12500	0.12703	0.9907955	1.006885		1.6	50
1,1,2,2-Tetrachloroethane	A	0.12500	0.12315	1.330376	1.310685	0.3	-1.5	50
Tetrachloroethene	A	0.12500	0.14048	0.3102159	0.3486448		12.4	50
1,1,1-Trichloroethane	A	0.12500	0.13261	1.337076	1.418471		6.1	50
1,1,2-Trichloroethane	A	0.12500	0.12180	0.2309915	0.2250832		-2.6	50
Trichloroethene	A	0.12500	0.13072	0.3225112	0.3372593		4.6	50
Vinyl chloride	A	0.12500	0.13571	1.938052	2.104113		8.6	50

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	11/13/18
Lab Sample ID:	1824353-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	07DEC29.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	12/07/18
Lab Sample ID:	1824353-CCV4	Injection Time:	21:39

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11512	1.08303	0.9974103		-7.9	20
1,1-Dichloroethane	A	0.12500	0.12622	2.329792	2.352528	0.1	1.0	20
1,2-Dichloroethane	A	0.12500	0.12701	1.174426	1.193313		1.6	20
1,1-Dichloroethene	A	0.12500	0.12274	1.140625	1.120005		-1.8	20
cis-1,2-Dichloroethene	A	0.12500	0.13064	1.251724	1.308164		4.5	20
trans-1,2-Dichloroethene	A	0.12500	0.13013	1.143278	1.190162		4.1	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.13330	0.9907955	1.056561		6.6	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12841	1.330376	1.366644	0.3	2.7	20
Tetrachloroethene	A	0.12500	0.12834	0.3102159	0.3185061		2.7	20
1,1,1-Trichloroethane	A	0.12500	0.13100	1.337076	1.401284		4.8	20
1,1,2-Trichloroethane	A	0.12500	0.12724	0.2309915	0.2351315		1.8	20
Trichloroethene	A	0.12500	0.13150	0.3225112	0.3392697		5.2	20
Vinyl chloride	A	0.12500	0.13220	1.938052	2.049614		5.8	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824146-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824146-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824146-CCV4)			Lab File ID: 05DEC44.D		Analyzed: 12/06/18 02:58			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	80 - 120	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9	80 - 120	10.16	10.14	0.0200	+/-1.0	
Calibration Blank (1824146-CCB2)			Lab File ID: 05DEC46.D		Analyzed: 12/06/18 03:42			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	93.2	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.8	74 - 121	10.16	10.14	0.0200	+/-1.0	
LCS (B032223-BS1)			Lab File ID: 05DEC47.D		Analyzed: 12/06/18 04:04			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	102	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.16	10.14	0.0200	+/-1.0	
Matrix Spike (B032223-MS1)			Lab File ID: 05DEC48.D		Analyzed: 12/06/18 04:26			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	91.3	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	95.9	74 - 121	10.15	10.14	0.0100	+/-1.0	
Matrix Spike Dup (B032223-MSD1)			Lab File ID: 05DEC49.D		Analyzed: 12/06/18 04:48			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.6	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.9	74 - 121	10.16	10.14	0.0200	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824146	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (B032223-BLK1)			Lab File ID: 05DEC52.D		Analyzed: 12/06/18 05:54			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.3	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.2	74 - 121	10.16	10.14	0.0200	+/-1.0	
Calibration Check (1824146-CCV7)			Lab File ID: 06DEC04.D		Analyzed: 12/06/18 15:23			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	92.1	80 - 120	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	106	80 - 120	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	104	80 - 120	10.16	10.14	0.0200	+/-1.0	
Calibration Blank (1824146-CCB3)			Lab File ID: 06DEC06.D		Analyzed: 12/06/18 16:11			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.9	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.2	74 - 121	10.15	10.14	0.0100	+/-1.0	

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SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824353-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824353-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824353-CCV4)			Lab File ID: 07DEC29.D		Analyzed: 12/07/18 21:39			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.9	80 - 120	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.5	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.3	80 - 120	10.15	10.14	0.0100	+/-1.0	
Calibration Blank (1824353-CCB2)			Lab File ID: 07DEC31.D		Analyzed: 12/07/18 22:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.8	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW09-01 (1838102-04)			Lab File ID: 07DEC39.D		Analyzed: 12/08/18 01:17			
1,2-Dichloroethane-d4 (Surrogate)	0.038462	114	70 - 121	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.038462	107	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.038462	103	74 - 121	10.15	10.14	0.0100	+/-1.0	
SO-VW07-01 (1838102-05)			Lab File ID: 07DEC40.D		Analyzed: 12/08/18 01:39			
1,2-Dichloroethane-d4 (Surrogate)	0.035311	110	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.035311	107	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.035311	105	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW01-01 (1838102-06)			Lab File ID: 07DEC41.D		Analyzed: 12/08/18 02:01			
1,2-Dichloroethane-d4 (Surrogate)	0.060386	118	70 - 121	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.060386	103	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.060386	96.9	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824353	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
SO-VW03-01 (1838102-07)			Lab File ID: 07DEC42.D		Analyzed: 12/08/18 02:23			
1,2-Dichloroethane-d4 (Surrogate)	0.042373	110	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.042373	105	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.042373	102	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D		Analyzed: 11/13/18 13:18			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	103		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.0		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D		Analyzed: 11/13/18 13:41			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	95.2		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D		Analyzed: 11/13/18 14:04			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	95.7		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.0		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	104		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D		Analyzed: 11/13/18 14:27			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.3		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.7		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D		Analyzed: 11/13/18 14:50			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	91.9		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D		Analyzed: 11/13/18 16:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	105		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.2		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9		10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824146-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824146-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824146-CCV4)			Lab File ID: 05DEC44.D			Analyzed: 12/06/18 02:58			
Pentafluorobenzene (IS)	83645	6.23	85192	6.21	98	50 - 200	0.0200	+/-0.50	
Chlorobenzene-d5 (IS)	73383	9.42	69865	9.41	105	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	290742	7.13	271811	7.1	107	50 - 200	0.0300	+/-0.50	
Calibration Blank (1824146-CCB2)			Lab File ID: 05DEC46.D			Analyzed: 12/06/18 03:42			
Pentafluorobenzene (IS)	96426	6.24	83645	6.23	115	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	77990	9.42	73383	9.42	106	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	295815	7.13	290742	7.13	102	50 - 200	0.0000	+/-0.50	
LCS (B032223-BS1)			Lab File ID: 05DEC47.D			Analyzed: 12/06/18 04:04			
Pentafluorobenzene (IS)	87203	6.24	83645	6.23	104	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	74454	9.42	73383	9.42	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	294688	7.13	290742	7.13	101	50 - 200	0.0000	+/-0.50	
Matrix Spike (B032223-MS1)			Lab File ID: 05DEC48.D			Analyzed: 12/06/18 04:26			
Pentafluorobenzene (IS)	93001	6.24	83645	6.23	111	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	77552	9.43	73383	9.42	106	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	299850	7.13	290742	7.13	103	50 - 200	0.0000	+/-0.50	
Matrix Spike Dup (B032223-MSD1)			Lab File ID: 05DEC49.D			Analyzed: 12/06/18 04:48			
Pentafluorobenzene (IS)	89492	6.24	83645	6.23	107	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	76915	9.42	73383	9.42	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	303568	7.13	290742	7.13	104	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids
SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B032223-BLK1)			Lab File ID: 05DEC52.D			Analyzed: 12/06/18 05:54			
Pentafluorobenzene (IS)	86374	6.24	83645	6.23	103	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	74852	9.42	73383	9.42	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	272969	7.13	290742	7.13	94	50 - 200	0.0000	+/-0.50	
Calibration Check (1824146-CCV7)			Lab File ID: 06DEC04.D			Analyzed: 12/06/18 15:23			
Pentafluorobenzene (IS)	78718	6.24	85192	6.21	92	50 - 200	0.0300	+/-0.50	
Chlorobenzene-d5 (IS)	68320	9.42	69865	9.41	98	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	259417	7.13	271811	7.1	95	50 - 200	0.0300	+/-0.50	
Calibration Blank (1824146-CCB3)			Lab File ID: 06DEC06.D			Analyzed: 12/06/18 16:11			
Pentafluorobenzene (IS)	94614	6.24	67190	6.24	141	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	80728	9.42	66816	9.42	121	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	304843	7.13	205200	7.13	149	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824353-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824353-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824353-CCV4)			Lab File ID: 07DEC29.D			Analyzed: 12/07/18 21:39			
Pentafluorobenzene (IS)	105107	6.22	85192	6.21	123	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	85377	9.41	69865	9.41	122	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	346259	7.11	271811	7.1	127	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824353-CCB2)			Lab File ID: 07DEC31.D			Analyzed: 12/07/18 22:22			
Pentafluorobenzene (IS)	104184	6.21	105107	6.22	99	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	87032	9.41	85377	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	339559	7.11	346259	7.11	98	50 - 200	0.0000	+/-0.50	
SO-VW09-01 (1838102-04)			Lab File ID: 07DEC39.D			Analyzed: 12/08/18 01:17			
Pentafluorobenzene (IS)	116232	6.22	105107	6.22	111	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	102976	9.41	85377	9.41	121	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	373173	7.11	346259	7.11	108	50 - 200	0.0000	+/-0.50	
SO-VW07-01 (1838102-05)			Lab File ID: 07DEC40.D			Analyzed: 12/08/18 01:39			
Pentafluorobenzene (IS)	119381	6.22	105107	6.22	114	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	102127	9.41	85377	9.41	120	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	377177	7.11	346259	7.11	109	50 - 200	0.0000	+/-0.50	
SO-VW01-01 (1838102-06)			Lab File ID: 07DEC41.D			Analyzed: 12/08/18 02:01			
Pentafluorobenzene (IS)	110030	6.21	105107	6.22	105	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	101656	9.41	85377	9.41	119	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	369780	7.11	346259	7.11	107	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824353	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SO-VW03-01 (1838102-07)			Lab File ID: 07DEC42.D			Analyzed: 12/08/18 02:23			
Pentafluorobenzene (IS)	115438	6.21	105107	6.22	110	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	101693	9.41	85377	9.41	119	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	373733	7.11	346259	7.11	108	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D			Analyzed: 11/13/18 13:18			
Pentafluorobenzene (IS)	82386	6.2	85192	6.21	97	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	70974	9.41	69865	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	277119	7.1	271811	7.1	102	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D			Analyzed: 11/13/18 13:41			
Pentafluorobenzene (IS)	85192	6.21	85192	6.21	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69865	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	271811	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D			Analyzed: 11/13/18 14:04			
Pentafluorobenzene (IS)	85251	6.2	85192	6.21	100	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	69041	9.41	69865	9.41	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	283685	7.1	271811	7.1	104	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D			Analyzed: 11/13/18 14:27			
Pentafluorobenzene (IS)	82966	6.21	85192	6.21	97	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	66555	9.4	69865	9.41	95	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	268813	7.1	271811	7.1	99	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D			Analyzed: 11/13/18 14:50			
Pentafluorobenzene (IS)	81182	6.2	85192	6.21	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	64689	9.4	69865	9.41	93	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	262849	7.1	271811	7.1	97	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D			Analyzed: 11/13/18 16:22			
Pentafluorobenzene (IS)	83848	6.21	85192	6.21	98	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69643	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	272090	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
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Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION STANDARDS

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Calibration: 1812002

SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
8K09001	8260 V2 BFB WORKING STD	1824979-TUN1	13NOV03.D	11/13/18 07:18
8K27020	8260 V3 1823650 REG CAL2	1824979-CAL2	13NOV13.D	11/13/18 13:18
8K27021	8260 V3 1823650 REG CAL3	1824979-CAL3	13NOV14.D	11/13/18 13:41
8K27022	8260 V3 1823650 REG CAL4	1824979-CAL4	13NOV15.D	11/13/18 14:04
8K27023	8260 V3 1823650 REG CAL5	1824979-CAL5	13NOV16.D	11/13/18 14:27
8K27024	8260 V3 1823650 REG CAL6	1824979-CAL6	13NOV17.D	11/13/18 14:50
8K27019	8260 V3 1823650 REG CAL1	1824979-CAL1	13NOV21.D	11/13/18 16:22

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF
Chloroethane	0.005	0.9313281	0.05	1.280436	0.125	1.123669	0.25	1.047286	0.375	1.06771	0.5	1.047751
1,1-Dichloroethane	0.005	2.253363	0.05	2.54945	0.125	2.321218	0.25	2.350689	0.375	2.253137	0.5	2.250896
1,2-Dichloroethane	0.005	1.146479	0.05	1.313476	0.125	1.170007	0.25	1.180664	0.375	1.126421	0.5	1.109511
1,1-Dichloroethene	0.005	0.9562542	0.05	1.254315	0.125	1.221396	0.25	1.161347	0.375	1.193917	0.5	1.056522
cis-1,2-Dichloroethene	0.005	1.213267	0.05	1.362792	0.125	1.245521	0.25	1.256239	0.375	1.227132	0.5	1.205393
trans-1,2-Dichloroethene	0.005	1.100921	0.05	1.242881	0.125	1.15423	0.25	1.133702	0.375	1.111533	0.5	1.1164
1,1,1,2-Tetrachloroethane	0.005	1.032121	0.05	1.041565	0.125	0.9871209	0.25	1.008363	0.375	0.9530864	0.5	0.922517
1,1,2,2-Tetrachloroethane	0.005	1.309823	0.05	1.361287	0.125	1.364838	0.25	1.368691	0.375	1.264155	0.5	1.313461
Tetrachloroethene	0.005	0.2811937	0.05	0.3458767	0.125	0.3362851	0.25	0.3051829	0.375	0.2984593	0.5	0.2942975
1,1,1-Trichloroethane	0.005	1.101756	0.05	1.480106	0.125	1.384257	0.25	1.367637	0.375	1.334175	0.5	1.354528
1,1,2-Trichloroethane	0.005	0.2463523	0.05	0.247493	0.125	0.2332768	0.25	0.2215901	0.375	0.2211758	0.5	0.2160609
Trichloroethene	0.005	0.2871109	0.05	0.3531768	0.125	0.3378907	0.25	0.3156205	0.375	0.3192589	0.5	0.3220092
Vinyl chloride	0.005	1.449766	0.05	2.242881	0.125	2.185468	0.25	1.980629	0.375	1.929103	0.5	1.840463
1,2-Dichloroethane-d4 (Surrogate)	0.05	0.9335941	0.05	0.943	0.05	0.8892502	0.05	0.8737962	0.05	0.8606658	0.05	0.8391146
Toluene-d8 (Surrogate)	0.05	1.05224	0.05	1.058386	0.05	1.088999	0.05	1.040034	0.05	1.061548	0.05	1.061499
4-Bromofluorobenzene (Surrogate)	0.05	1.365191	0.05	1.329571	0.05	1.305475	0.05	1.427688	0.05	1.367305	0.05	1.4035

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1838102
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Chloroethane	1.08303	10.63971	2.313333	0.352722			15	
1,1-Dichloroethane	2.329792	4.957522	4.69	2.144103E-02			SPCC (0.10)	
1,2-Dichloroethane	1.174426	6.221394	6.68	1.342167E-02			15	
1,1-Dichloroethene	1.140625	9.902162	3.181667	0.1271662			CCC (20)	
cis-1,2-Dichloroethene	1.251724	4.606693	5.411667	7.615105E-02			15	
trans-1,2-Dichloroethene	1.143278	4.571262	4.145	0.1308259			15	
1,1,1,2-Tetrachloroethane	0.9907955	4.667134	9.485	5.866972E-02			15	
1,1,2,2-Tetrachloroethane	1.330376	3.136352	10.21	1.398524E-02			SPCC (0.30)	
Tetrachloroethene	0.3102159	8.168443	8.81	2.247676E-02			15	
1,1,1-Trichloroethane	1.337076	9.419156	6.125	8.905765E-02			15	
1,1,2-Trichloroethane	0.2309915	5.875976	8.758334	4.406004E-02			15	
Trichloroethene	0.3225112	6.917194	7.325	7.247583E-02			15	
Vinyl chloride	1.938052	14.66652	1.881667	0.2169596			CCC (20)	
1,2-Dichloroethane-d4 (Surrogate)	0.8899035	4.611968	6.586667	7.620565E-02			15	
Toluene-d8 (Surrogate)	1.060451	1.523989	8.38	1.581306E-02			15	
4-Bromofluorobenzene (Surrogate)	1.366455	3.305892	10.14	2.059171E-02			15	

AECOM - Sacramento
2020 L St, Suite 400
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Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

HOLDING TIME SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
SO-VW09-01	12/04/18 09:20	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 01:17	4.00	14.00	
SO-VW07-01	12/04/18 10:05	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 01:39	4.00	14.00	
SO-VW01-01	12/04/18 13:05	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 02:01	4.00	14.00	
SO-VW03-01	12/04/18 14:10	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 02:23	4.00	14.00	

* Holding time not met

Note: If Prep or Analysis are performed within the hour (if holding time is based on hours) or within the day (if holding time is based on days), then the sample is not flagged as outside holding times. Calculated number of days are based on date received or date prepared depending on the test.

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:10:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838102

Laboratory Documentation Requirements
For Data Validation of
Metals Analysis (using ppm units)

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838102
COC Number:
Cooler 1 was received at 5.2 °C
Cooler 2 was received at 0 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-6020 (TTLC)	PE-EL4

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032390	EPA-6020 (TTLC)	1838101-01	SO-B01-01

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

Post Spikes

The Post Spike recoveries were within QC limits.

Interference Checks

The Interference Check recoveries were within QC limits.

BC LABORATORIES, INC.

Chain of Custody Form

Page 1 of 1

Report To Client: Aecom/SMUD	Project #: 60570043.05
Attn: Robert Kohlhardt	Project Name: SMUD 59th Street
Street Address: 2020 L St. suite 400	
City, State, Zip: Sacramento, CA 95811	Sampler(s): Brian Whalen
Phone: 916 414 5800 Fax:	
Email: robert.kohlhardt@aecom.com	
Work Order #: 18-38102	

Analysis Requested

Please refer to the back of this page for completion instructions and method legend.

Comments:

Sample #	Description	Date Sampled	Time Sampled	Arsenic (SW6020)	VOCs (SW8260B)	Sample Matrix: Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other
1	SO-B14-01	12/4/18	840	X		X					
2	SO-B14-02		855	X							
3	SO-B13-01		920	X							
4	SO-VW09-01		920		X						
5	SO-VW07-01		1005		X						
6	SO-VW01-01		1305		X						
7	SO-VW03-01		1410		X						
8	SO-B07-01		1410	X							
9	SO-B06-02		1440	X							

Result Request **Surcharge: ☒ STD (10 Days) ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

Notes

CHK BY

DISTRIBUTION

SUB-OUT ☐

Billing

☒ Same as above

Client:

Address:

City: State Zip

Attn:

P.O. #:

EDF Required? Geotracker ☐ Yes ☐ No

Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

	Relinquished By	Date	Time	Received By	Date	Time
1.		12/4/18	1432		12/4/18	1458
2.		12/4/18	1600		12.5.18	0850
3.						

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838102 Page 2 of 3

COOLER RECEIPT FORM

Submission #: 18-38102 Page 1 of 2

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) 950

SHIPPING CONTAINER
Ice Chest ☒ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☐ No ☐ All samples containers intact? Yes ☐ No ☐ Description(s) match COC? Yes ☐ No ☐

COC Received ☒ YES ☐ NO

Emissivity: .97 Container: Glass Thermometer ID: 274 Date/Time: 12.5.18

Temperature: (A) 4.7 °C / (C) 5.2 °C Analyst Init: DS 08:50

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 541										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE	A	A	A				A	A		
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: GB Date/Time: 12/5 1821

A = Actual / C = Corrected

Rev 21 05/23/2016
I:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20

Chain of Custody and Cooler Receipt Form for 1838102 Page 3 of 3

BC LABORATORIES INC.

COOLER RECEIPT FORM

Page 2 Of 2

Submission #: 18-38102

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) GSO

SHIPPING CONTAINER
Ice Chest ☑ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 95 Container: VOA Thermometer ID: 274

Temperature: (A) 0.0 °C / (C) 0.0 °C

Date/Time 12.5.18 0858

Analyst Init

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PIA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER				ABCD	ABCD	ABCD	ABCD			

Comments:

Sample Numbering Completed By: BSB Date/Time: 12/5 1821

A = Actual / C = Corrected

Rev 21 05/23/2016

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AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838102**
Class: **METALS-PPM**
Method: **EPA-6020**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838102
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-B14-01	1838102-01
SO-B14-02	1838102-02
SO-B13-01	1838102-03
SO-B07-01	1838102-08
SO-B06-02	1838102-09

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-07-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-6020

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: PE-EL4

Analyte	MDL	PQL	Units
Arsenic	0.17	0.5	mg/kg

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B14-01

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838102-01
File ID: PE_EL4_181210-217
Sampled: 12/04/18 08:40
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:36
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.01 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	13	0.99		EPA-6020

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B14-02

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838102-02
File ID: PE_EL4_181210-218
Sampled: 12/04/18 08:55
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:39
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.01 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	4.4	0.99		EPA-6020

AECOM - Sacramento
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Sacramento, CA 95811

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B13-01

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838102-03
File ID: PE_EL4_181210-219
Sampled: 12/04/18 09:20
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:43
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.06 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	8.7	0.943		EPA-6020

AECOM - Sacramento
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Sacramento, CA 95811

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B07-01

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838102-08
File ID: PE_EL4_181210-220
Sampled: 12/04/18 14:10
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:46
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.01 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	2.7	0.99		EPA-6020

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B06-02

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838102-09
File ID: PE_EL4_181210-221
Sampled: 12/04/18 14:40
Prepared: 12/10/18 08:00
Analyzed: 12/10/18 23:49
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1 g / 250 ml
Batch: B032390
Sequence: 1824509
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	5.1	1		EPA-6020

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-6020

Laboratory: BC Laboratories
SDG: 1838102
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032390 Batch Matrix: Solids
Preparation: EPA 3050B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-B14-01	1838102-01	PE_EL4_181210-217	12/10/18 08:00	
SO-B14-02	1838102-02	PE_EL4_181210-218	12/10/18 08:00	
SO-B13-01	1838102-03	PE_EL4_181210-219	12/10/18 08:00	
SO-B07-01	1838102-08	PE_EL4_181210-220	12/10/18 08:00	
SO-B06-02	1838102-09	PE_EL4_181210-221	12/10/18 08:00	
Blank	B032390-BLK1	PE_EL4_181210-190	12/10/18 08:00	
LCS	B032390-BS1	PE_EL4_181210-189	12/10/18 08:00	
Duplicate	B032390-DUP1	PE_EL4_181210-192	12/10/18 08:00	
Matrix Spike	B032390-MS1	PE_EL4_181210-194	12/10/18 08:00	
Matrix Spike Dup	B032390-MSD1	PE_EL4_181210-195	12/10/18 08:00	
Post Spike	B032390-PS1	PE_EL4_181210-196	12/10/18 08:00	[Spk] 1g->250ml; 250ml->250ml; Spiked 9.8ml

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-6020

Laboratory:	BC Laboratories			SDG:	1838102
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032390-BLK1	File ID:	PE_EL4_181210-190
Prepared:	12/10/18 08:00	Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml
Analyzed:	12/10/18 22:01	Instrument:	PE-EL4		
Batch:	B032390	Sequence:	1824509	Calibration:	UNASSIGNED

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
7440-38-2	Arsenic	0.17	U

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Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Duplicate

DUPLICATES

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032390
Preparation: EPA 3050B
Source Sample Name: Duplicate

SDG: 1838102
Project: SMUD 59th St.
Laboratory ID: B032390-DUP1
Lab Source ID: 1838101-01
Initial/Final: 1 g / 250 ml
% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/kg)	C	DUPLICATE CONCENTRATION (mg/kg)	C	RPD %	Q	METHOD
Arsenic	20	6.3820		6.4598		1.21		EPA-6020

* Values outside of QC limits

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-6020

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032390
Preparation: EPA 3050B
Source Sample Number: 1838101-01

SDG: 1838102
Project: SMUD 59th St.
Laboratory ID: B032390-MS1
Initial/Final: 1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Arsenic	25.000	6.3820	32.940	106	75 - 125

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Arsenic	25.000	33.979	110	3.11	20	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Matrix:	Solids		
Batch:	B032390	Laboratory ID:	B032390-BS1
Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Arsenic	25.000	27.308	109	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824509
Matrix: Solids

SDG: 1838102
Project: SMUD 59th St.
Instrument: PE-EL4
Calibration: UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824509-ICV1	PE_EL4_181210-022	12/10/18 10:39
Initial Cal Blank	1824509-ICB1	PE_EL4_181210-023	12/10/18 10:42
Calibration Check	1824509-CCV2	PE_EL4_181210-031	12/10/18 11:18
Calibration Blank	1824509-CCB2	PE_EL4_181210-032	12/10/18 11:22
MRL Check	1824509-CRL2	PE_EL4_181210-034	12/10/18 11:36
Interference Check A	1824509-IFA1	PE_EL4_181210-035	12/10/18 11:46
Interference Check B	1824509-IFB1	PE_EL4_181210-036	12/10/18 11:55
Calibration Check	1824509-CCV3	PE_EL4_181210-041	12/10/18 12:13
Calibration Blank	1824509-CCB3	PE_EL4_181210-042	12/10/18 12:17
Calibration Check	1824509-CCVJ	PE_EL4_181210-187	12/10/18 21:50
Calibration Blank	1824509-CCBJ	PE_EL4_181210-188	12/10/18 21:54
LCS	B032390-BS1	PE_EL4_181210-189	12/10/18 21:57
Blank	B032390-BLK1	PE_EL4_181210-190	12/10/18 22:01
Duplicate	B032390-DUP1	PE_EL4_181210-192	12/10/18 22:08
Matrix Spike	B032390-MS1	PE_EL4_181210-194	12/10/18 22:15
Matrix Spike Dup	B032390-MSD1	PE_EL4_181210-195	12/10/18 22:18
Post Spike	B032390-PS1	PE_EL4_181210-196	12/10/18 22:22
Calibration Check	1824509-CCVK	PE_EL4_181210-197	12/10/18 22:25
Calibration Blank	1824509-CCBK	PE_EL4_181210-198	12/10/18 22:29
Calibration Check	1824509-CCVM	PE_EL4_181210-213	12/10/18 23:21
Calibration Blank	1824509-CCBM	PE_EL4_181210-214	12/10/18 23:25
SO-B14-01	1838102-01	PE_EL4_181210-217	12/10/18 23:36
SO-B14-02	1838102-02	PE_EL4_181210-218	12/10/18 23:39
SO-B13-01	1838102-03	PE_EL4_181210-219	12/10/18 23:43
SO-B07-01	1838102-08	PE_EL4_181210-220	12/10/18 23:46
SO-B06-02	1838102-09	PE_EL4_181210-221	12/10/18 23:49

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1838102
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824509	Instrument:	PE-EL4
Matrix:	Solids	Calibration:	UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Check	1824509-CCVN	PE_EL4_181210-222	12/10/18 23:53
Calibration Blank	1824509-CCBN	PE_EL4_181210-223	12/10/18 23:57

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BLANKS
EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL4
Sequence: 1824509

SDG: 1838102
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	Found	PQL	Units	C	Method
1824509-ICB1	Arsenic	-0.095000	2.0	ug/L		EPA-6020
1824509-CCB2	Arsenic	-0.29800	2.0	ug/L		EPA-6020
1824509-CCB3	Arsenic	0.37900	2.0	ug/L		EPA-6020
1824509-CCBJ	Arsenic	0.36800	2.0	ug/L		EPA-6020
1824509-CCBK	Arsenic	-0.96200	2.0	ug/L		EPA-6020
1824509-CCBM	Arsenic	-1.1210	2.0	ug/L		EPA-6020
1824509-CCBN	Arsenic	-1.7500	2.0	ug/L		EPA-6020

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INITIAL AND CONTINUING CALIBRATION CHECK

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL4
Control Limt: +/- 10.00%

SDG: 1838102
Project: SMUD 59th St.
Calibration: UNASSIGNED
Sequence: 1824509

Lab Sample ID	Analyte	True	Found	%R	Units	Method
1824509-ICV1	Arsenic	125.00	128.95	103	ug/L	EPA-6020
1824509-CCV2	Arsenic	100.00	102.96	103	ug/L	EPA-6020
1824509-CCV3	Arsenic	100.00	101.14	101	ug/L	EPA-6020
1824509-CCVJ	Arsenic	100.00	99.240	99.2	ug/L	EPA-6020
1824509-CCVK	Arsenic	100.00	100.32	100	ug/L	EPA-6020
1824509-CCVM	Arsenic	100.00	98.720	98.7	ug/L	EPA-6020
1824509-CCVN	Arsenic	100.00	96.660	96.7	ug/L	EPA-6020

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

POST DIGEST SPIKE SAMPLE RECOVERY

EPA-6020

Post Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032390
Preparation: EPA 3050B

SDG: 1838102
Project: SMUD 59th St.
Laboratory ID: B032390-PS1
Lab Source ID: 1838101-01
Initial/Final: 0.0392 g / 10 ml

Source Sample Name: Post Spike
% Solids:

Analyte	Control Limit %R	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R
Arsenic	75 - 125	126.63	25.017	100.00	102

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ICP INTERFERENCE CHECK SAMPLE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL4
Sequence: 1824509

SDG: 1838102
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	True	Found	%R	Units
1824509-IFA1	Arsenic		0.32900		ug/L
1824509-IFB1	Arsenic	20.000	20.83	104	mg/kg

* Values outside of QC limits

Raw Data From Instrument PE-EL4

Raw Data - Calibration Standards

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 09:34:14
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.005
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	15.000				ug/L
|	B	11	214.669				ug/L
|	Al	27	7268.915				ug/L
| >	Sc	45	517580.258				ug/L
|	V	51	7020.517				ug/L
|	Cr	52	10887.685				ug/L
|	Cr	53	82325.784				ug/L
|	Mn	55	986.722				ug/L
|	Co	59	301.339				ug/L
⌊	Ni	60	66.334				ug/L
⌈	Cu	63	154.335				ug/L
|	Cu	65	85.000				ug/L
|	Zn	66	157.335				ug/L
|	Zn	68	356.340				ug/L
| >	Ge	72	478148.995				ug/L
|	As	75	969.142				ug/L
|	Se	77	3931.183				ug/L
|	Se	82	97.246				ug/L
⌊	Sr	88	342.340				ug/L
⌈	Mo	98	147.197				ug/L
| >	Rh	103	293807.017				ug/L
⌊	Ag	107	144.668				ug/L
⌈	Cd	111	36.412				ug/L
|	Cd	114	59.129				ug/L
| >	In	115	348842.498				ug/L
|	Sn	120	442.661				ug/L
⌊	Sb	121	568.684				ug/L
⌈	Ba	137	86.271				ug/L
|	Ba	138	544.621				ug/L
| >	Tb	159	460228.100				ug/L
|	Tl	205	371.009				ug/L
⌊	Pb	208	392.671				ug/L
⌈	Hg	200	21.945				ug/L
|	Hg	201	17.333				ug/L
| >	Bi	209	249788.773				ug/L
⌊	U	238	585.362				ug/L
	C	13	10272.480				ug/L
	W	184	8.666				ug/L
	Pd	106	0.760				ug/L
	Kr	83	29.333				ug/L
⌈	Na	23	33341.037				ug/L
|	Mg	24	546.683				ug/L

K	39	340403.710		ug/L
Ca	44	9468.267		ug/L
Ti	47	336.673		ug/L
Sc-1	45	517580.258		ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000000	0.000	0.000000	Linear Thru Zero
B	11.009	0.000000	0.000	0.000000	Linear Thru Zero
Al	26.982	0.000000	0.000	0.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.000000	0.000	0.000000	Linear Thru Zero
Cr	51.941	0.000000	0.000	0.000000	Linear Thru Zero
Cr	52.941	0.000000	0.000	0.000000	Linear Thru Zero
Mn	54.938	0.000000	0.000	0.000000	Linear Thru Zero
Co	58.933	0.000000	0.000	0.000000	Linear Thru Zero
Ni	59.933	0.000000	0.000	0.000000	Linear Thru Zero
Cu	62.930	0.000000	0.000	0.000000	Linear Thru Zero
Cu	64.928	0.000000	0.000	0.000000	Linear Thru Zero
Zn	65.926	0.000000	0.000	0.000000	Linear Thru Zero
Zn	67.925	0.000000	0.000	0.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000000	0.000	0.000000	Linear Thru Zero
Se	76.920	0.000000	0.000	0.000000	Linear Thru Zero
Se	81.917	0.000000	0.000	0.000000	Linear Thru Zero
Sr	87.906	0.000000	0.000	0.000000	Linear Thru Zero
Mo	97.906	0.000000	0.000	0.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.000000	0.000	0.000000	Linear Thru Zero
Cd	110.904	0.000000	0.000	0.000000	Linear Thru Zero
Cd	113.904	0.000000	0.000	0.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.000000	0.000	0.000000	Linear Thru Zero
Sb	120.904	0.000000	0.000	0.000000	Linear Thru Zero
Ba	136.905	0.000000	0.000	0.000000	Linear Thru Zero
Ba	137.905	0.000000	0.000	0.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.000000	0.000	0.000000	Linear Thru Zero
Pb	207.977	0.000000	0.000	0.000000	Linear Thru Zero
Hg	199.968	0.000000	0.000	0.000000	Linear Thru Zero
Hg	200.970	0.000000	0.000	0.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.000000	0.000	0.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	0.000000	0.000	0.000000	Linear Thru Zero
Mg	23.985	0.000000	0.000	0.000000	Linear Thru Zero
K	38.964	0.000000	0.000	0.000000	Linear Thru Zero
Ca	43.956	0.000000	0.000	0.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 09:37:46
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.005
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	193.002	**1.000**	0.05	5.3	ug/L
|	B	11	6006.661	**20.000**	2.11	10.6	ug/L
|	Al	27	84220.186	**20.000**	1.02	5.1	ug/L
| >	Sc	45	541551.267				ug/L
|	V	51	19945.921	**3.000**	2.39	79.7	ug/L
|	Cr	52	22866.902	**3.000**	0.03	0.9	ug/L
|	Cr	53	92196.599	**3.000**	1.61	53.7	ug/L
|	Mn	55	7177.501	**1.000**	0.06	6.3	ug/L
|	Co	59	4726.563	**1.000**	0.06	5.6	ug/L
⌊	Ni	60	1911.868	**1.000**	0.07	6.9	ug/L
⌈	Cu	63	4350.709	**2.000**	0.10	4.8	ug/L
|	Cu	65	2083.906	**2.000**	0.08	4.0	ug/L
|	Zn	66	4247.659	**5.000**	0.08	1.7	ug/L
|	Zn	68	3263.919	**5.000**	0.10	2.0	ug/L
| >	Ge	72	508656.241				ug/L
|	As	75	2082.389	**2.000**	0.69	34.5	ug/L
|	Se	77	4663.030	**2.000**	0.81	40.3	ug/L
|	Se	82	230.056	**2.000**	0.27	13.7	ug/L
⌊	Sr	88	1980.883	**0.200**	0.01	5.3	ug/L
⌈	Mo	98	1858.569	**1.000**	0.03	3.5	ug/L
| >	Rh	103	312032.701				ug/L
⌊	Ag	107	2763.087	**1.000**	0.03	3.3	ug/L
⌈	Cd	111	640.123	**1.000**	0.04	4.4	ug/L
|	Cd	114	1365.938	**1.000**	0.04	3.5	ug/L
| >	In	115	377411.235				ug/L
|	Sn	120	3149.187	**1.000**	0.07	6.6	ug/L
⌊	Sb	121	4445.088	**2.000**	0.05	2.3	ug/L
⌈	Ba	137	965.949	**1.000**	0.08	7.9	ug/L
|	Ba	138	6446.850	**1.000**	0.04	4.5	ug/L
| >	Tb	159	498763.200				ug/L
|	Tl	205	5362.916	**1.000**	0.06	5.9	ug/L
⌊	Pb	208	7414.541	**1.000**	0.07	6.9	ug/L
⌈	Hg	200	91.966	**0.200**	0.02	11.2	ug/L
|	Hg	201	61.334	**0.200**	0.05	26.5	ug/L
| >	Bi	209	259240.977				ug/L
⌊	U	238	7437.042	**1.000**	0.03	3.0	ug/L
	C	13	9818.635				ug/L
	W	184	5.333				ug/L
	Pd	106	-8.114				ug/L
	Kr	83	32.333				ug/L
⌈	Na	23	394864.687	**100.000**	5.05	5.1	ug/L
|	Mg	24	225551.351	**100.000**	4.88	4.9	ug/L

	K	39	865834.600	**100.000**	3.43	3.4	ug/L
	Ca	44	24857.285	**100.000**	4.15	4.2	ug/L
	Ti	47	336.673				ug/L
	Sc-1	45	541551.267				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000328	0.000	1.000000	Linear Thru Zero
B	11.009	0.000534	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007076	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007684	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007064	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.003762	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.011358	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008152	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003405	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004117	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001960	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001604	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.001135	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001032	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000475	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000125	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.015903	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005455	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008370	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001594	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003453	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007092	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005077	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001753	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011759	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009963	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014037	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001330	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000841	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.026371	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3615.236500	0.000	1.000000	Linear Thru Zero
Mg	23.985	2250.046677	0.000	1.000000	Linear Thru Zero
K	38.964	5254.308908	0.000	1.000000	Linear Thru Zero
Ca	43.956	153.890183	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 09:41:19
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.005
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	17926.326	**100.000**	2.46	2.5	ug/L
|	B	11	269956.573	**999.960**	35.59	3.6	ug/L
|	Al	27	889821.301	**249.821**	8.42	3.4	ug/L
| >	Sc	45	555026.759				ug/L
|	V	51	449544.230	**100.003**	0.35	0.4	ug/L
|	Cr	52	384839.807	**99.995**	1.66	1.7	ug/L
|	Cr	53	123482.816	**99.558**	2.58	2.6	ug/L
|	Mn	55	1516030.128	**250.000**	4.37	1.7	ug/L
|	Co	59	460908.040	**100.000**	1.31	1.3	ug/L
⌊	Ni	60	233684.250	**249.996**	7.42	3.0	ug/L
⌈	Cu	63	502036.255	**249.999**	14.32	5.7	ug/L
|	Cu	65	240109.635	**249.999**	11.20	4.5	ug/L
|	Zn	66	130182.321	**249.937**	9.60	3.8	ug/L
|	Zn	68	90768.363	**249.935**	6.45	2.6	ug/L
| >	Ge	72	527508.827				ug/L
|	As	75	130625.698	**249.999**	4.70	1.9	ug/L
|	Se	77	14696.371	**249.919**	12.51	5.0	ug/L
|	Se	82	13486.089	**249.996**	15.63	6.3	ug/L
⌊	Sr	88	6590.388	**19.948**	0.91	4.6	ug/L
⌈	Mo	98	183204.122	**100.001**	2.68	2.7	ug/L
| >	Rh	103	317451.817				ug/L
⌊	Ag	107	272970.893	**100.000**	1.02	1.0	ug/L
⌈	Cd	111	65552.852	**100.001**	5.57	5.6	ug/L
|	Cd	114	139127.252	**100.001**	4.59	4.6	ug/L
| >	In	115	379810.226				ug/L
|	Sn	120	272763.806	**100.000**	2.39	2.4	ug/L
⌊	Sb	121	204071.088	**100.002**	1.49	1.5	ug/L
⌈	Ba	137	91940.514	**100.000**	5.77	5.8	ug/L
|	Ba	138	584707.188	**100.000**	5.76	5.8	ug/L
| >	Tb	159	511873.542				ug/L
|	Tl	205	504719.125	**100.000**	1.16	1.2	ug/L
⌊	Pb	208	1735968.352	**250.000**	7.99	3.2	ug/L
⌈	Hg	200	9347.933	**20.001**	0.90	4.5	ug/L
|	Hg	201	5230.838	**20.000**	0.56	2.8	ug/L
| >	Bi	209	258689.465				ug/L
⌊	U	238	717368.344	**100.000**	3.77	3.8	ug/L
	C	13	9605.077				ug/L
	W	184	31.998				ug/L
	Pd	106	-263.770				ug/L
	Kr	83	33.667				ug/L
⌈	Na	23	38653146.764	**10000.064**	88.43	0.9	ug/L
|	Mg	24	24342169.853	**10000.076**	243.06	2.4	ug/L

K	39	58763172.340	**10000.101**	44.67	0.4	ug/L
Ca	44	1491366.746	**9999.962**	30.33	0.3	ug/L
Ti	47	383.341				ug/L
Sc-1	45	555026.759				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000323	0.000	1.000000	Linear Thru Zero
B	11.009	0.000486	0.000	0.999998	Linear Thru Zero
Al	26.982	0.006363	0.000	0.999960	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007964	0.000	0.999999	Linear Thru Zero
Cr	51.941	0.006723	0.000	0.999999	Linear Thru Zero
Cr	52.941	0.000637	0.000	0.989338	Linear Thru Zero
Mn	54.938	0.010919	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008299	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001684	0.000	0.999992	Linear Thru Zero
Cu	62.930	0.003812	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001823	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.000987	0.000	0.999922	Linear Thru Zero
Zn	67.925	0.000686	0.000	0.999915	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000983	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000079	0.000	0.999189	Linear Thru Zero
Se	81.917	0.000102	0.000	0.999998	Linear Thru Zero
Sr	87.906	0.000591	0.000	0.968064	Linear Thru Zero
Mo	97.906	0.005771	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008594	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001726	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003663	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007171	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005357	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001798	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011432	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009855	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013576	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001804	0.000	0.999997	Linear Thru Zero
Hg	200.970	0.001008	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027730	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3861.955901	0.000	1.000000	Linear Thru Zero
Mg	23.985	2434.143907	0.000	1.000000	Linear Thru Zero
K	38.964	5842.218072	0.000	0.999999	Linear Thru Zero
Ca	43.956	148.190418	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 10:21:34
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.017
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	3.333				ug/L
|	B	11	834.038				ug/L
|	Al	27	6375.569				ug/L
| >	Sc	45	451336.588				ug/L
|	V	51	7233.734				ug/L
|	Cr	52	10493.386				ug/L
|	Cr	53	78236.572				ug/L
|	Mn	55	647.357				ug/L
|	Co	59	46.667				ug/L
⌊	Ni	60	18.333				ug/L
⌈	Cu	63	134.334				ug/L
|	Cu	65	70.667				ug/L
|	Zn	66	230.336				ug/L
|	Zn	68	372.341				ug/L
| >	Ge	72	432951.033				ug/L
|	As	75	804.883				ug/L
|	Se	77	3965.531				ug/L
|	Se	82	93.591				ug/L
⌊	Sr	88	304.005				ug/L
⌈	Mo	98	26.931				ug/L
| >	Rh	103	269458.844				ug/L
⌊	Ag	107	12.667				ug/L
⌈	Cd	111	1.685				ug/L
|	Cd	114	2.609				ug/L
| >	In	115	321670.591				ug/L
|	Sn	120	311.988				ug/L
⌊	Sb	121	181.335				ug/L
⌈	Ba	137	39.279				ug/L
|	Ba	138	264.616				ug/L
| >	Tb	159	407930.494				ug/L
|	Tl	205	35.000				ug/L
⌊	Pb	208	71.000				ug/L
⌈	Hg	200	36.633				ug/L
|	Hg	201	18.667				ug/L
| >	Bi	209	223215.015				ug/L
⌊	U	238	101.334				ug/L
	C	13	9731.883				ug/L
	W	184	5.333				ug/L
	Pd	106	5.008				ug/L
	Kr	83	28.000				ug/L
⌈	Na	23	35328.661				ug/L
|	Mg	24	606.687				ug/L

	K	39	326803.728	ug/L
	Ca	44	9084.541	ug/L
	Ti	47	393.342	ug/L
	Sc-1	45	451336.588	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000323	0.000	1.000000	Linear Thru Zero
B	11.009	0.000486	0.000	0.999998	Linear Thru Zero
Al	26.982	0.006363	0.000	0.999960	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007964	0.000	0.999999	Linear Thru Zero
Cr	51.941	0.006723	0.000	0.999999	Linear Thru Zero
Cr	52.941	0.000637	0.000	0.989338	Linear Thru Zero
Mn	54.938	0.010919	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008299	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001684	0.000	0.999992	Linear Thru Zero
Cu	62.930	0.003812	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001823	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.000987	0.000	0.999922	Linear Thru Zero
Zn	67.925	0.000686	0.000	0.999915	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000983	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000079	0.000	0.999189	Linear Thru Zero
Se	81.917	0.000102	0.000	0.999998	Linear Thru Zero
Sr	87.906	0.000591	0.000	0.968064	Linear Thru Zero
Mo	97.906	0.005771	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008594	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001726	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003663	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007171	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005357	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001798	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011432	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009855	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013576	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001804	0.000	0.999997	Linear Thru Zero
Hg	200.970	0.001008	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027730	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3861.955901	0.000	1.000000	Linear Thru Zero
Mg	23.985	2434.143907	0.000	1.000000	Linear Thru Zero
K	38.964	5842.218072	0.000	0.999999	Linear Thru Zero
Ca	43.956	148.190418	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 10:25:06
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.017
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	150.001	**1.000**	0.07	7.4	ug/L
|	B	11	6429.620	**20.000**	1.80	9.0	ug/L
|	Al	27	85370.014	**20.000**	0.61	3.0	ug/L
| >	Sc	45	489473.769				ug/L
|	V	51	15220.965	**3.000**	3.90	130.0	ug/L
|	Cr	52	21768.213	**3.000**	0.11	3.6	ug/L
|	Cr	53	88008.792	**3.000**	1.68	56.0	ug/L
|	Mn	55	6630.420	**1.000**	0.02	1.5	ug/L
|	Co	59	4341.372	**1.000**	0.04	3.7	ug/L
⌊	Ni	60	1767.839	**1.000**	0.04	3.9	ug/L
⌈	Cu	63	4015.555	**2.000**	0.13	6.6	ug/L
|	Cu	65	1871.526	**2.000**	0.08	4.0	ug/L
|	Zn	66	4053.571	**5.000**	0.16	3.1	ug/L
|	Zn	68	3042.511	**5.000**	0.09	1.7	ug/L
| >	Ge	72	448633.643				ug/L
|	As	75	1969.797	**2.000**	0.07	3.5	ug/L
|	Se	77	4680.538	**2.000**	0.75	37.7	ug/L
|	Se	82	222.112	**2.000**	0.30	15.1	ug/L
⌊	Sr	88	1787.176	**0.200**	0.01	4.8	ug/L
⌈	Mo	98	1656.009	**1.000**	0.04	4.2	ug/L
| >	Rh	103	279434.125				ug/L
⌊	Ag	107	2473.003	**1.000**	0.01	1.4	ug/L
⌈	Cd	111	588.961	**1.000**	0.06	5.6	ug/L
|	Cd	114	1250.952	**1.000**	0.01	0.8	ug/L
| >	In	115	348342.553				ug/L
|	Sn	120	2855.740	**1.000**	0.05	5.2	ug/L
⌊	Sb	121	3914.845	**2.000**	0.09	4.7	ug/L
⌈	Ba	137	926.296	**1.000**	0.04	4.2	ug/L
|	Ba	138	5856.472	**1.000**	0.10	9.7	ug/L
| >	Tb	159	433954.755				ug/L
|	Tl	205	4782.926	**1.000**	0.05	5.4	ug/L
⌊	Pb	208	6608.610	**1.000**	0.06	6.3	ug/L
⌈	Hg	200	126.608	**0.200**	0.02	8.9	ug/L
|	Hg	201	67.334	**0.200**	0.04	18.2	ug/L
| >	Bi	209	242944.923				ug/L
⌊	U	238	6776.860	**1.000**	0.06	6.2	ug/L
	C	13	9211.335				ug/L
	W	184	9.333				ug/L
	Pd	106	2.788				ug/L
	Kr	83	25.833				ug/L
⌈	Na	23	366756.597	**100.000**	3.56	3.6	ug/L
|	Mg	24	209444.531	**100.000**	4.15	4.1	ug/L

K	39	817203.319	**100.000**	5.05	5.0	ug/L
Ca	44	23293.147	**100.000**	3.78	3.8	ug/L
Ti	47	340.007				ug/L
Sc-1	45	489473.769				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000299	0.000	1.000000	Linear Thru Zero
B	11.009	0.000564	0.000	1.000000	Linear Thru Zero
Al	26.982	0.008016	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.005017	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007078	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.002174	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012111	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008764	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003568	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004327	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002007	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001702	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.001184	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001267	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000645	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000140	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.016432	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005833	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008806	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001688	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003584	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007241	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005339	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002042	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012893	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010956	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.015091	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001780	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000974	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027489	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3314.279363	0.000	1.000000	Linear Thru Zero
Mg	23.985	2088.378436	0.000	1.000000	Linear Thru Zero
K	38.964	4903.995914	0.000	1.000000	Linear Thru Zero
Ca	43.956	142.086064	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 10:28:38
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.017
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	17621.732	**100.001**	7.01	7.0	ug/L
|	B	11	275611.937	**999.950**	42.09	4.2	ug/L
|	Al	27	869159.510	**249.563**	11.25	4.5	ug/L
| >	Sc	45	549137.719				ug/L
|	V	51	436408.824	**100.032**	4.39	4.4	ug/L
|	Cr	52	373146.234	**99.993**	6.42	6.4	ug/L
|	Cr	53	121137.160	**99.682**	30.57	30.7	ug/L
|	Mn	55	1491526.559	**250.000**	16.46	6.6	ug/L
|	Co	59	454816.223	**99.999**	5.69	5.7	ug/L
⌊	Ni	60	229298.057	**249.995**	10.89	4.4	ug/L
⌈	Cu	63	491014.195	**249.999**	9.20	3.7	ug/L
|	Cu	65	233092.488	**249.999**	10.80	4.3	ug/L
|	Zn	66	126679.821	**249.935**	11.07	4.4	ug/L
|	Zn	68	88673.147	**249.935**	7.73	3.1	ug/L
| >	Ge	72	491336.218				ug/L
|	As	75	126153.099	**249.996**	4.78	1.9	ug/L
|	Se	77	14153.848	**249.885**	2.39	1.0	ug/L
|	Se	82	13132.410	**249.995**	8.74	3.5	ug/L
⌊	Sr	88	6246.146	**19.947**	0.62	3.1	ug/L
⌈	Mo	98	174994.960	**100.000**	4.58	4.6	ug/L
| >	Rh	103	298090.686				ug/L
⌊	Ag	107	263046.199	**100.000**	2.65	2.6	ug/L
⌈	Cd	111	62099.131	**100.000**	3.00	3.0	ug/L
|	Cd	114	133745.433	**100.000**	2.20	2.2	ug/L
| >	In	115	368296.513				ug/L
|	Sn	120	259863.718	**100.000**	2.58	2.6	ug/L
⌊	Sb	121	198382.540	**100.000**	3.57	3.6	ug/L
⌈	Ba	137	91243.884	**99.999**	3.08	3.1	ug/L
|	Ba	138	576265.254	**99.999**	3.27	3.3	ug/L
| >	Tb	159	493821.991				ug/L
|	Tl	205	485007.828	**99.999**	5.94	5.9	ug/L
⌊	Pb	208	1670806.661	**250.000**	14.51	5.8	ug/L
⌈	Hg	200	9046.306	**20.000**	0.65	3.2	ug/L
|	Hg	201	5221.500	**20.000**	0.53	2.6	ug/L
| >	Bi	209	255629.324				ug/L
⌊	U	238	703172.326	**100.000**	0.24	0.2	ug/L
	C	13	9524.992				ug/L
	W	184	30.663				ug/L
	Pd	106	-213.245				ug/L
	Kr	83	32.667				ug/L
⌈	Na	23	37699969.528	**10000.120**	126.86	1.3	ug/L
|	Mg	24	23995478.343	**10000.130**	97.20	1.0	ug/L

	K	39	58604323.347	**10000.158**	233.82	2.3	ug/L
	Ca	44	1472958.246	**10000.029**	190.43	1.9	ug/L
	Ti	47	376.675				ug/L
	Sc-1	45	549137.719				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000322	0.000	1.000000	Linear Thru Zero
B	11.009	0.000501	0.000	0.999997	Linear Thru Zero
Al	26.982	0.006296	0.000	0.999761	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007796	0.000	0.999943	Linear Thru Zero
Cr	51.941	0.006578	0.000	0.999997	Linear Thru Zero
Cr	52.941	0.000479	0.000	0.994420	Linear Thru Zero
Mn	54.938	0.010884	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008298	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001673	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.003998	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001898	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001030	0.000	0.999915	Linear Thru Zero
Zn	67.925	0.000719	0.000	0.999916	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001020	0.000	0.999998	Linear Thru Zero
Se	76.920	0.000079	0.000	0.998346	Linear Thru Zero
Se	81.917	0.000106	0.000	0.999997	Linear Thru Zero
Sr	87.906	0.000602	0.000	0.967152	Linear Thru Zero
Mo	97.906	0.005877	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008830	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001687	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003633	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007050	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005385	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001849	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.011675	0.000	0.999999	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009838	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013557	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001761	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001017	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027503	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3766.418873	0.000	0.999999	Linear Thru Zero
Mg	23.985	2399.456058	0.000	0.999999	Linear Thru Zero
K	38.964	5827.659596	0.000	0.999999	Linear Thru Zero
Ca	43.956	146.386940	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 11:04:10
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.027
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	2.000				ug/L
|	B	11	1271.422				ug/L
|	Al	27	7300.931				ug/L
| >	Sc	45	518969.321				ug/L
|	V	51	4250.410				ug/L
|	Cr	52	10557.627				ug/L
|	Cr	53	78404.585				ug/L
|	Mn	55	739.363				ug/L
|	Co	59	63.334				ug/L
⌊	Ni	60	31.000				ug/L
⌈	Cu	63	180.668				ug/L
|	Cu	65	101.667				ug/L
|	Zn	66	258.670				ug/L
|	Zn	68	413.009				ug/L
| >	Ge	72	482642.407				ug/L
|	As	75	869.456				ug/L
|	Se	77	3911.675				ug/L
|	Se	82	112.140				ug/L
⌊	Sr	88	357.007				ug/L
⌈	Mo	98	32.415				ug/L
| >	Rh	103	298222.348				ug/L
⌊	Ag	107	28.667				ug/L
⌈	Cd	111	1.127				ug/L
|	Cd	114	9.255				ug/L
| >	In	115	360891.043				ug/L
|	Sn	120	284.646				ug/L
⌊	Sb	121	186.002				ug/L
⌈	Ba	137	47.596				ug/L
|	Ba	138	315.935				ug/L
| >	Tb	159	474123.721				ug/L
|	Tl	205	51.000				ug/L
⌊	Pb	208	109.334				ug/L
⌈	Hg	200	41.957				ug/L
|	Hg	201	23.333				ug/L
| >	Bi	209	248815.213				ug/L
⌊	U	238	113.334				ug/L
	C	13	9311.439				ug/L
	W	184	6.666				ug/L
	Pd	106	4.276				ug/L
	Kr	83	22.333				ug/L
⌈	Na	23	38267.049				ug/L
|	Mg	24	1600.142				ug/L

K	39	337042.034	ug/L
Ca	44	7930.134	ug/L
Ti	47	326.673	ug/L
Sc-1	45	518969.321	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000322	0.000	1.000000	Linear Thru Zero
B	11.009	0.000501	0.000	0.999997	Linear Thru Zero
Al	26.982	0.006296	0.000	0.999761	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007796	0.000	0.999943	Linear Thru Zero
Cr	51.941	0.006578	0.000	0.999997	Linear Thru Zero
Cr	52.941	0.000479	0.000	0.994420	Linear Thru Zero
Mn	54.938	0.010884	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008298	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001673	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.003998	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001898	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001030	0.000	0.999915	Linear Thru Zero
Zn	67.925	0.000719	0.000	0.999916	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001020	0.000	0.999998	Linear Thru Zero
Se	76.920	0.000079	0.000	0.998346	Linear Thru Zero
Se	81.917	0.000106	0.000	0.999997	Linear Thru Zero
Sr	87.906	0.000602	0.000	0.967152	Linear Thru Zero
Mo	97.906	0.005877	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008830	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001687	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003633	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007050	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005385	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001849	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.011675	0.000	0.999999	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009838	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013557	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001761	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001017	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027503	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3766.418873	0.000	0.999999	Linear Thru Zero
Mg	23.985	2399.456058	0.000	0.999999	Linear Thru Zero
K	38.964	5827.659596	0.000	0.999999	Linear Thru Zero
Ca	43.956	146.386940	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 11:07:42
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.027
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	179.668	**1.000**	0.09	9.1	ug/L
|	B	11	7084.093	**20.000**	1.13	5.6	ug/L
|	Al	27	98182.701	**20.000**	0.74	3.7	ug/L
| >	Sc	45	524319.427				ug/L
|	V	51	14459.337	**3.000**	1.50	50.0	ug/L
|	Cr	52	22944.920	**3.000**	0.19	6.4	ug/L
|	Cr	53	90421.259	**3.000**	1.42	47.3	ug/L
|	Mn	55	7244.887	**1.000**	0.07	6.5	ug/L
|	Co	59	4799.601	**1.000**	0.07	7.2	ug/L
⌊	Ni	60	1931.872	**1.000**	0.07	7.0	ug/L
⌈	Cu	63	4309.355	**2.000**	0.01	0.4	ug/L
|	Cu	65	2049.231	**2.000**	0.01	0.7	ug/L
|	Zn	66	4321.027	**5.000**	0.13	2.6	ug/L
|	Zn	68	3240.911	**5.000**	0.10	2.0	ug/L
| >	Ge	72	490053.427				ug/L
|	As	75	1912.151	**2.000**	0.33	16.4	ug/L
|	Se	77	4706.385	**2.000**	0.25	12.3	ug/L
|	Se	82	221.296	**2.000**	0.16	7.9	ug/L
⌊	Sr	88	1892.530	**0.200**	0.00	1.7	ug/L
⌈	Mo	98	1724.095	**1.000**	0.01	0.9	ug/L
| >	Rh	103	306344.001				ug/L
⌊	Ag	107	2773.757	**1.000**	0.05	5.2	ug/L
⌈	Cd	111	680.810	**1.000**	0.07	6.8	ug/L
|	Cd	114	1398.622	**1.000**	0.09	8.9	ug/L
| >	In	115	383775.531				ug/L
|	Sn	120	3103.824	**1.000**	0.08	8.0	ug/L
⌊	Sb	121	4192.300	**2.000**	0.07	3.7	ug/L
⌈	Ba	137	1014.625	**1.000**	0.05	4.5	ug/L
|	Ba	138	6432.844	**1.000**	0.05	4.9	ug/L
| >	Tb	159	485414.937				ug/L
|	Tl	205	5102.765	**1.000**	0.05	4.6	ug/L
⌊	Pb	208	7191.457	**1.000**	0.06	5.9	ug/L
⌈	Hg	200	123.287	**0.200**	0.04	20.2	ug/L
|	Hg	201	72.667	**0.200**	0.03	14.7	ug/L
| >	Bi	209	256618.957				ug/L
⌊	U	238	7018.375	**1.000**	0.04	3.8	ug/L
	C	13	9371.502				ug/L
	W	184	7.333				ug/L
	Pd	106	-7.335				ug/L
	Kr	83	23.833				ug/L
⌈	Na	23	400144.634	**100.000**	1.66	1.7	ug/L
|	Mg	24	228437.863	**100.000**	0.41	0.4	ug/L

K	39	854192.002	**100.000**	1.65	1.7	ug/L
Ca	44	24018.372	**100.000**	4.46	4.5	ug/L
Ti	47	360.007				ug/L
Sc-1	45	524319.427				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000340	0.000	1.000000	Linear Thru Zero
B	11.009	0.000554	0.000	1.000000	Linear Thru Zero
Al	26.982	0.008668	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.006384	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007820	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.007217	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012415	0.000	1.000000	Linear Thru Zero
Co	58.933	0.009049	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003632	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004210	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001985	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001656	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.001151	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001050	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000750	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000110	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.015610	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005519	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008963	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001774	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003626	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007300	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005212	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001992	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012602	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010417	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014606	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001561	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000946	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.026916	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3618.775850	0.000	1.000000	Linear Thru Zero
Mg	23.985	2268.377207	0.000	1.000000	Linear Thru Zero
K	38.964	5171.499682	0.000	1.000000	Linear Thru Zero
Ca	43.956	160.882386	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 11:11:15
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.027
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	18431.032	**100.000**	5.93	5.9	ug/L
|	B	11	290121.450	**999.980**	59.25	5.9	ug/L
|	Al	27	887305.557	**249.445**	8.90	3.6	ug/L
| >	Sc	45	548007.123				ug/L
|	V	51	442310.556	**100.018**	2.14	2.1	ug/L
|	Cr	52	377971.366	**99.985**	1.12	1.1	ug/L
|	Cr	53	120381.872	**99.151**	5.67	5.7	ug/L
|	Mn	55	1518423.438	**250.000**	6.42	2.6	ug/L
|	Co	59	459537.054	**99.999**	3.57	3.6	ug/L
⌊	Ni	60	233791.516	**249.995**	8.63	3.5	ug/L
⌈	Cu	63	497636.662	**249.999**	7.62	3.0	ug/L
|	Cu	65	235020.162	**249.999**	4.81	1.9	ug/L
|	Zn	66	127730.865	**249.939**	1.04	0.4	ug/L
|	Zn	68	89283.459	**249.939**	2.49	1.0	ug/L
| >	Ge	72	497129.804				ug/L
|	As	75	126594.410	**249.999**	2.90	1.2	ug/L
|	Se	77	14247.659	**249.870**	11.70	4.7	ug/L
|	Se	82	13306.065	**249.999**	10.39	4.2	ug/L
⌊	Sr	88	6579.714	**19.952**	0.52	2.6	ug/L
⌈	Mo	98	178715.655	**100.001**	1.91	1.9	ug/L
| >	Rh	103	298968.747				ug/L
⌊	Ag	107	264575.027	**100.000**	3.33	3.3	ug/L
⌈	Cd	111	64339.395	**100.000**	2.71	2.7	ug/L
|	Cd	114	139099.127	**100.000**	1.60	1.6	ug/L
| >	In	115	377256.243				ug/L
|	Sn	120	271141.386	**100.000**	4.02	4.0	ug/L
⌊	Sb	121	204267.613	**100.001**	2.96	3.0	ug/L
⌈	Ba	137	92744.777	**99.999**	8.04	8.0	ug/L
|	Ba	138	585572.830	**99.999**	7.46	7.5	ug/L
| >	Tb	159	490326.978				ug/L
|	Tl	205	485299.416	**99.999**	5.03	5.0	ug/L
⌊	Pb	208	1679885.775	**250.000**	17.13	6.9	ug/L
⌈	Hg	200	8838.087	**20.000**	1.15	5.8	ug/L
|	Hg	201	5158.798	**20.000**	1.33	6.7	ug/L
| >	Bi	209	255318.331				ug/L
⌊	U	238	688403.817	**100.000**	2.47	2.5	ug/L
	C	13	9484.947				ug/L
	W	184	32.663				ug/L
	Pd	106	-403.567				ug/L
	Kr	83	23.500				ug/L
⌈	Na	23	38838955.998	**10000.067**	152.28	1.5	ug/L
|	Mg	24	24430686.835	**10000.071**	195.20	2.0	ug/L

K	39	59812123.450	**10000.130**	86.41	0.9	ug/L
Ca	44	1492288.473	**9999.916**	42.61	0.4	ug/L
Ti	47	370.008				ug/L
Sc-1	45	548007.123				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000336	0.000	1.000000	Linear Thru Zero
B	11.009	0.000527	0.000	0.999999	Linear Thru Zero
Al	26.982	0.006436	0.000	0.999615	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007987	0.000	0.999982	Linear Thru Zero
Cr	51.941	0.006694	0.000	0.999987	Linear Thru Zero
Cr	52.941	0.000692	0.000	0.962245	Linear Thru Zero
Mn	54.938	0.011079	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008386	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001707	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.004004	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001890	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001026	0.000	0.999924	Linear Thru Zero
Zn	67.925	0.000715	0.000	0.999926	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001012	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000082	0.000	0.997902	Linear Thru Zero
Se	81.917	0.000106	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000626	0.000	0.972565	Linear Thru Zero
Mo	97.906	0.005977	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008852	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001706	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003688	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007183	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005411	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001896	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011969	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009915	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013738	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001725	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001007	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.026973	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3880.042768	0.000	1.000000	Linear Thru Zero
Mg	23.985	2442.891218	0.000	1.000000	Linear Thru Zero
K	38.964	5947.430548	0.000	0.999999	Linear Thru Zero
Ca	43.956	148.437078	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 14:36:53
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.075
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	4.000				ug/L
|	B	11	779.367				ug/L
|	Al	27	6172.762				ug/L
| >	Sc	45	453110.276				ug/L
|	V	51	7497.216				ug/L
|	Cr	52	12482.566				ug/L
|	Cr	53	85053.275				ug/L
|	Mn	55	746.697				ug/L
|	Co	59	41.000				ug/L
⌊	Ni	60	22.667				ug/L
⌈	Cu	63	56.000				ug/L
|	Cu	65	36.667				ug/L
|	Zn	66	144.001				ug/L
|	Zn	68	293.338				ug/L
| >	Ge	72	422595.112				ug/L
|	As	75	1259.218				ug/L
|	Se	77	5193.984				ug/L
|	Se	82	96.285				ug/L
⌊	Sr	88	322.006				ug/L
⌈	Mo	98	17.781				ug/L
| >	Rh	103	258002.798				ug/L
⌊	Ag	107	15.333				ug/L
⌈	Cd	111	7.614				ug/L
|	Cd	114	2.791				ug/L
| >	In	115	321267.623				ug/L
|	Sn	120	209.994				ug/L
⌊	Sb	121	101.334				ug/L
⌈	Ba	137	31.609				ug/L
|	Ba	138	248.613				ug/L
| >	Tb	159	421152.846				ug/L
|	Tl	205	25.000				ug/L
⌊	Pb	208	43.000				ug/L
⌈	Hg	200	35.940				ug/L
|	Hg	201	16.667				ug/L
| >	Bi	209	218624.868				ug/L
⌊	U	238	100.334				ug/L
	C	13	9238.037				ug/L
	W	184	9.333				ug/L
	Pd	106	8.081				ug/L
	Kr	83	24.833				ug/L
⌈	Na	23	37845.333				ug/L
|	Mg	24	1196.751				ug/L

K	39	314743.211	ug/L
Ca	44	7619.864	ug/L
Ti	47	293.338	ug/L
Sc-1	45	453110.276	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000336	0.000	1.000000	Linear Thru Zero
B	11.009	0.000527	0.000	0.999999	Linear Thru Zero
Al	26.982	0.006436	0.000	0.999615	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007987	0.000	0.999982	Linear Thru Zero
Cr	51.941	0.006694	0.000	0.999987	Linear Thru Zero
Cr	52.941	0.000692	0.000	0.962245	Linear Thru Zero
Mn	54.938	0.011079	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008386	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001707	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.004004	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001890	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001026	0.000	0.999924	Linear Thru Zero
Zn	67.925	0.000715	0.000	0.999926	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001012	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000082	0.000	0.997902	Linear Thru Zero
Se	81.917	0.000106	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000626	0.000	0.972565	Linear Thru Zero
Mo	97.906	0.005977	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008852	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001706	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003688	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007183	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005411	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001896	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011969	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009915	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013738	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001725	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001007	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.026973	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3880.042768	0.000	1.000000	Linear Thru Zero
Mg	23.985	2442.891218	0.000	1.000000	Linear Thru Zero
K	38.964	5947.430548	0.000	0.999999	Linear Thru Zero
Ca	43.956	148.437078	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 14:40:25
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.075
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	153.335	**1.000**	0.07	6.7	ug/L
|	B	11	5973.299	**20.000**	1.45	7.3	ug/L
|	Al	27	69229.956	**20.000**	0.58	2.9	ug/L
| >	Sc	45	467773.593				ug/L
|	V	51	18339.966	**3.000**	2.48	82.5	ug/L
|	Cr	52	23331.240	**3.000**	0.06	2.0	ug/L
|	Cr	53	95513.753	**3.000**	1.40	46.6	ug/L
|	Mn	55	6455.625	**1.000**	0.04	3.7	ug/L
|	Co	59	4144.611	**1.000**	0.00	0.0	ug/L
⌊	Ni	60	1739.500	**1.000**	0.04	3.9	ug/L
⌈	Cu	63	3789.456	**2.000**	0.11	5.6	ug/L
|	Cu	65	1777.841	**2.000**	0.10	4.8	ug/L
|	Zn	66	2447.330	**5.000**	0.15	3.1	ug/L
|	Zn	68	1953.543	**5.000**	0.32	6.4	ug/L
| >	Ge	72	438421.924				ug/L
|	As	75	2333.996	**2.000**	0.29	14.7	ug/L
|	Se	77	5722.301	**2.000**	1.69	84.6	ug/L
|	Se	82	195.639	**2.000**	0.40	19.9	ug/L
⌊	Sr	88	1704.493	**0.200**	0.01	6.3	ug/L
⌈	Mo	98	1612.778	**1.000**	0.01	0.6	ug/L
| >	Rh	103	270250.130				ug/L
⌊	Ag	107	2370.309	**1.000**	0.01	1.2	ug/L
⌈	Cd	111	571.772	**1.000**	0.03	3.1	ug/L
|	Cd	114	1247.500	**1.000**	0.03	3.0	ug/L
| >	In	115	330517.730				ug/L
|	Sn	120	2530.293	**1.000**	0.06	5.8	ug/L
⌊	Sb	121	3842.813	**2.000**	0.04	2.0	ug/L
⌈	Ba	137	842.967	**1.000**	0.10	10.2	ug/L
|	Ba	138	5604.993	**1.000**	0.10	10.0	ug/L
| >	Tb	159	442013.709				ug/L
|	Tl	205	4582.822	**1.000**	0.05	4.7	ug/L
⌊	Pb	208	6205.176	**1.000**	0.05	4.9	ug/L
⌈	Hg	200	101.300	**0.200**	0.02	12.5	ug/L
|	Hg	201	50.667	**0.200**	0.04	20.4	ug/L
| >	Bi	209	225625.710				ug/L
⌊	U	238	6415.596	**1.000**	0.03	3.1	ug/L
	C	13	9091.212				ug/L
	W	184	5.333				ug/L
	Pd	106	0.936				ug/L
	Kr	83	22.667				ug/L
⌈	Na	23	360132.017	**100.000**	3.34	3.3	ug/L
|	Mg	24	200159.980	**100.000**	1.80	1.8	ug/L

	K	39	787485.571	**100.000**	1.06	1.1	ug/L
	Ca	44	22511.177	**100.000**	2.93	2.9	ug/L
	Ti	47	326.673				ug/L
	Sc-1	45	467773.593				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000319	0.000	1.000000	Linear Thru Zero
B	11.009	0.000553	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006721	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007495	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007444	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.005526	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012157	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008770	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003670	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004262	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001986	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001049	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000754	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001177	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000389	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000110	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.015657	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005898	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008713	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001708	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003765	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007015	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005657	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001838	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012123	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010326	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013958	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001421	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000739	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027992	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3222.866836	0.000	1.000000	Linear Thru Zero
Mg	23.985	1989.632284	0.000	1.000000	Linear Thru Zero
K	38.964	4727.423595	0.000	1.000000	Linear Thru Zero
Ca	43.956	148.913136	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 14:43:58
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.075
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	17126.791	**100.001**	6.75	6.7	ug/L
|	B	11	254350.422	**999.956**	74.80	7.5	ug/L
|	Al	27	817187.216	**249.910**	13.64	5.5	ug/L
| >	Sc	45	510413.074				ug/L
|	V	51	419512.190	**100.006**	1.11	1.1	ug/L
|	Cr	52	355884.966	**99.990**	2.77	2.8	ug/L
|	Cr	53	118428.101	**98.985**	23.69	23.9	ug/L
|	Mn	55	1410624.639	**250.000**	15.01	6.0	ug/L
|	Co	59	421749.975	**99.999**	5.19	5.2	ug/L
⌊	Ni	60	214154.843	**249.995**	12.87	5.1	ug/L
⌈	Cu	63	458863.999	**249.999**	10.01	4.0	ug/L
|	Cu	65	218216.768	**249.999**	9.58	3.8	ug/L
|	Zn	66	119643.697	**249.997**	6.05	2.4	ug/L
|	Zn	68	83704.339	**249.994**	6.45	2.6	ug/L
| >	Ge	72	471085.604				ug/L
|	As	75	119273.159	**249.997**	5.21	2.1	ug/L
|	Se	77	13843.873	**249.925**	17.06	6.8	ug/L
|	Se	82	12176.093	**249.999**	11.44	4.6	ug/L
⌊	Sr	88	6075.030	**19.951**	0.95	4.8	ug/L
⌈	Mo	98	168035.606	**100.000**	1.72	1.7	ug/L
| >	Rh	103	283347.687				ug/L
⌊	Ag	107	245743.353	**100.000**	1.68	1.7	ug/L
⌈	Cd	111	59846.853	**100.000**	5.95	6.0	ug/L
|	Cd	114	127890.702	**100.000**	4.85	4.8	ug/L
| >	In	115	341765.892				ug/L
|	Sn	120	246781.398	**100.000**	2.56	2.6	ug/L
⌊	Sb	121	190591.717	**99.999**	3.22	3.2	ug/L
⌈	Ba	137	84551.011	**100.000**	8.33	8.3	ug/L
|	Ba	138	540946.661	**100.000**	7.29	7.3	ug/L
| >	Tb	159	458211.136				ug/L
|	Tl	205	463463.396	**100.000**	4.60	4.6	ug/L
⌊	Pb	208	1586573.357	**250.000**	17.85	7.1	ug/L
⌈	Hg	200	8739.968	**20.000**	1.54	7.7	ug/L
|	Hg	201	4900.654	**20.001**	1.11	5.6	ug/L
| >	Bi	209	236205.376				ug/L
⌊	U	238	669833.615	**100.000**	4.41	4.4	ug/L
	C	13	9378.176				ug/L
	W	184	36.665				ug/L
	Pd	106	-193.290				ug/L
	Kr	83	30.333				ug/L
⌈	Na	23	36037338.855	**10000.105**	46.08	0.5	ug/L
|	Mg	24	22678788.247	**10000.123**	187.12	1.9	ug/L

K	39	55564282.272	**10000.144**	63.54	0.6	ug/L
Ca	44	1399091.330	**9999.930**	80.99	0.8	ug/L
Ti	47	326.673				ug/L
Sc-1	45	510413.074				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000336	0.000	1.000000	Linear Thru Zero
B	11.009	0.000498	0.000	0.999998	Linear Thru Zero
Al	26.982	0.006361	0.000	0.999990	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008055	0.000	0.999998	Linear Thru Zero
Cr	51.941	0.006703	0.000	0.999995	Linear Thru Zero
Cr	52.941	0.000450	0.000	0.947271	Linear Thru Zero
Mn	54.938	0.011066	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008273	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001680	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.003900	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001855	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001015	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000709	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001001	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000069	0.000	0.999299	Linear Thru Zero
Se	81.917	0.000103	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000609	0.000	0.970795	Linear Thru Zero
Mo	97.906	0.005930	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008674	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001755	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003748	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007220	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005580	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001851	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011836	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010134	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013892	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001846	0.000	0.999997	Linear Thru Zero
Hg	200.970	0.001035	0.000	0.999996	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.028392	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3599.911648	0.000	0.999999	Linear Thru Zero
Mg	23.985	2267.731340	0.000	0.999999	Linear Thru Zero
K	38.964	5524.874161	0.000	0.999999	Linear Thru Zero
Ca	43.956	139.148123	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 17:09:18
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.109
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	2.000				ug/L
|	B	11	2092.908				ug/L
|	Al	27	7252.228				ug/L
| >	Sc	45	497482.480				ug/L
|	V	51	6057.890				ug/L
|	Cr	52	13296.884				ug/L
|	Cr	53	94455.055				ug/L
|	Mn	55	738.030				ug/L
|	Co	59	31.000				ug/L
⌊	Ni	60	18.333				ug/L
⌈	Cu	63	51.333				ug/L
|	Cu	65	33.000				ug/L
|	Zn	66	166.335				ug/L
|	Zn	68	331.339				ug/L
| >	Ge	72	462980.506				ug/L
|	As	75	1245.659				ug/L
|	Se	77	5738.144				ug/L
|	Se	82	114.776				ug/L
⌊	Sr	88	451.345				ug/L
⌈	Mo	98	12.155				ug/L
| >	Rh	103	285481.156				ug/L
⌊	Ag	107	9.333				ug/L
⌈	Cd	111	0.715				ug/L
|	Cd	114	-5.908				ug/L
| >	In	115	356578.079				ug/L
|	Sn	120	229.944				ug/L
⌊	Sb	121	85.334				ug/L
⌈	Ba	137	55.584				ug/L
|	Ba	138	337.923				ug/L
| >	Tb	159	464021.234				ug/L
|	Tl	205	15.000				ug/L
⌊	Pb	208	38.000				ug/L
⌈	Hg	200	21.957				ug/L
|	Hg	201	18.000				ug/L
| >	Bi	209	231110.802				ug/L
⌊	U	238	97.334				ug/L
	C	13	9845.343				ug/L
	W	184	6.667				ug/L
	Pd	106	7.479				ug/L
	Kr	83	25.833				ug/L
⌈	Na	23	42807.644				ug/L
|	Mg	24	1980.222				ug/L

K	39	325843.836	ug/L
Ca	44	7679.911	ug/L
Ti	47	326.673	ug/L
Sc-1	45	497482.480	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000336	0.000	1.000000	Linear Thru Zero
B	11.009	0.000498	0.000	0.999998	Linear Thru Zero
Al	26.982	0.006361	0.000	0.999990	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008055	0.000	0.999998	Linear Thru Zero
Cr	51.941	0.006703	0.000	0.999995	Linear Thru Zero
Cr	52.941	0.000450	0.000	0.947271	Linear Thru Zero
Mn	54.938	0.011066	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008273	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001680	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.003900	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001855	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001015	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000709	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001001	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000069	0.000	0.999299	Linear Thru Zero
Se	81.917	0.000103	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000609	0.000	0.970795	Linear Thru Zero
Mo	97.906	0.005930	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008674	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001755	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003748	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007220	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005580	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001851	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011836	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010134	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013892	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001846	0.000	0.999997	Linear Thru Zero
Hg	200.970	0.001035	0.000	0.999996	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.028392	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3599.911648	0.000	0.999999	Linear Thru Zero
Mg	23.985	2267.731340	0.000	0.999999	Linear Thru Zero
K	38.964	5524.874161	0.000	0.999999	Linear Thru Zero
Ca	43.956	139.148123	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 17:12:52
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.109
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	185.002	**1.000**	0.10	9.7	ug/L
|	B	11	7961.485	**20.000**	1.30	6.5	ug/L
|	Al	27	76900.816	**20.000**	0.64	3.2	ug/L
| >	Sc	45	506718.512				ug/L
|	V	51	18425.669	**3.000**	0.54	18.1	ug/L
|	Cr	52	24534.228	**3.000**	0.40	13.2	ug/L
|	Cr	53	100148.227	**3.000**	5.23	174.3	ug/L
|	Mn	55	7058.073	**1.000**	0.08	7.5	ug/L
|	Co	59	4569.482	**1.000**	0.06	5.7	ug/L
⌊	Ni	60	1838.186	**1.000**	0.07	6.5	ug/L
⌈	Cu	63	4051.570	**2.000**	0.10	4.9	ug/L
|	Cu	65	1890.196	**2.000**	0.02	0.8	ug/L
|	Zn	66	2588.035	**5.000**	0.09	1.8	ug/L
|	Zn	68	2041.896	**5.000**	0.21	4.2	ug/L
| >	Ge	72	474242.836				ug/L
|	As	75	2741.004	**2.000**	0.60	29.8	ug/L
|	Se	77	6088.372	**2.000**	1.49	74.5	ug/L
|	Se	82	223.131	**2.000**	0.11	5.7	ug/L
⌊	Sr	88	2026.559	**0.200**	0.01	3.8	ug/L
⌈	Mo	98	1671.122	**1.000**	0.06	5.7	ug/L
| >	Rh	103	298220.860				ug/L
⌊	Ag	107	2735.079	**1.000**	0.08	7.7	ug/L
⌈	Cd	111	621.988	**1.000**	0.04	4.3	ug/L
|	Cd	114	1411.886	**1.000**	0.03	3.0	ug/L
| >	In	115	377658.416				ug/L
|	Sn	120	2963.766	**1.000**	0.07	6.5	ug/L
⌊	Sb	121	4193.634	**2.000**	0.08	3.9	ug/L
⌈	Ba	137	1000.300	**1.000**	0.06	5.7	ug/L
|	Ba	138	6292.757	**1.000**	0.02	1.8	ug/L
| >	Tb	159	474907.706				ug/L
|	Tl	205	4848.293	**1.000**	0.05	4.6	ug/L
⌊	Pb	208	6708.302	**1.000**	0.04	4.1	ug/L
⌈	Hg	200	103.296	**0.200**	0.03	13.5	ug/L
|	Hg	201	58.667	**0.200**	0.08	39.9	ug/L
| >	Bi	209	239150.465				ug/L
⌊	U	238	6444.617	**1.000**	0.00	0.3	ug/L
	C	13	9545.009				ug/L
	W	184	6.000				ug/L
	Pd	106	-16.827				ug/L
	Kr	83	23.667				ug/L
⌈	Na	23	388560.177	**100.000**	2.88	2.9	ug/L
|	Mg	24	223388.901	**100.000**	2.28	2.3	ug/L

K	39	827485.224	**100.000**	3.69	3.7	ug/L
Ca	44	22644.843	**100.000**	3.06	3.1	ug/L
Ti	47	340.006				ug/L
Sc-1	45	506718.512				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000362	0.000	1.000000	Linear Thru Zero
B	11.009	0.000577	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006867	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008119	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007268	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.002781	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012480	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008974	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003597	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004218	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001957	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001020	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000718	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001543	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000224	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000111	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.016493	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005568	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009153	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001645	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003757	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007207	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005436	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001990	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012528	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010190	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014060	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001687	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000841	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.026528	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3457.525330	0.000	1.000000	Linear Thru Zero
Mg	23.985	2214.086795	0.000	1.000000	Linear Thru Zero
K	38.964	5016.413873	0.000	1.000000	Linear Thru Zero
Ca	43.956	149.649321	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD
Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 17:16:24
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.109
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	18773.709	**100.000**	4.59	4.6	ug/L
|	B	11	296732.650	**999.983**	53.05	5.3	ug/L
|	Al	27	877748.546	**249.918**	9.22	3.7	ug/L
| >	Sc	45	533111.676				ug/L
|	V	51	426259.031	**99.997**	2.57	2.6	ug/L
|	Cr	52	367719.138	**99.991**	1.70	1.7	ug/L
|	Cr	53	119170.433	**99.354**	27.29	27.5	ug/L
|	Mn	55	1512770.794	**250.000**	12.00	4.8	ug/L
|	Co	59	454733.501	**99.999**	5.08	5.1	ug/L
⌊	Ni	60	227252.312	**249.996**	9.98	4.0	ug/L
⌈	Cu	63	482916.644	**249.999**	7.76	3.1	ug/L
|	Cu	65	229978.390	**249.999**	4.73	1.9	ug/L
|	Zn	66	124529.814	**250.000**	1.13	0.5	ug/L
|	Zn	68	86260.118	**249.998**	2.89	1.2	ug/L
| >	Ge	72	486731.258				ug/L
|	As	75	124617.029	**249.992**	2.99	1.2	ug/L
|	Se	77	14642.795	**249.965**	18.58	7.4	ug/L
|	Se	82	13335.580	**250.000**	7.62	3.0	ug/L
⌊	Sr	88	6451.288	**19.948**	0.15	0.7	ug/L
⌈	Mo	98	173627.945	**100.000**	4.13	4.1	ug/L
| >	Rh	103	298623.057				ug/L
⌊	Ag	107	259244.111	**99.999**	1.19	1.2	ug/L
⌈	Cd	111	64774.447	**100.000**	4.44	4.4	ug/L
|	Cd	114	139110.017	**100.000**	3.73	3.7	ug/L
| >	In	115	379436.710				ug/L
|	Sn	120	272713.897	**100.000**	2.50	2.5	ug/L
⌊	Sb	121	205927.835	**100.000**	3.32	3.3	ug/L
⌈	Ba	137	93143.862	**99.999**	6.68	6.7	ug/L
|	Ba	138	581791.455	**99.999**	5.62	5.6	ug/L
| >	Tb	159	492768.508				ug/L
|	Tl	205	472961.459	**99.999**	5.28	5.3	ug/L
⌊	Pb	208	1633281.061	**250.000**	14.41	5.8	ug/L
⌈	Hg	200	8659.920	**20.000**	0.99	4.9	ug/L
|	Hg	201	4929.337	**20.000**	0.55	2.7	ug/L
| >	Bi	209	242583.036				ug/L
⌊	U	238	662802.861	**100.000**	3.27	3.3	ug/L
	C	13	8964.421				ug/L
	W	184	31.997				ug/L
	Pd	106	-369.658				ug/L
	Kr	83	27.167				ug/L
⌈	Na	23	38571101.129	**10000.103**	271.36	2.7	ug/L
|	Mg	24	24334793.438	**10000.090**	156.78	1.6	ug/L

K	39	59209592.786	**10000.148**	81.08	0.8	ug/L
Ca	44	1482084.300	**9999.985**	224.53	2.2	ug/L
Ti	47	363.341				ug/L
Sc-1	45	533111.676				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000352	0.000	1.000000	Linear Thru Zero
B	11.009	0.000553	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006533	0.000	0.999992	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007874	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.006632	0.000	0.999996	Linear Thru Zero
Cr	52.941	0.000340	0.000	0.977581	Linear Thru Zero
Mn	54.938	0.011353	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008535	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001706	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.003969	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001890	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001022	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000706	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001013	0.000	0.999991	Linear Thru Zero
Se	76.920	0.000071	0.000	0.999851	Linear Thru Zero
Se	81.917	0.000109	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000616	0.000	0.968310	Linear Thru Zero
Mo	97.906	0.005817	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008682	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001710	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003672	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007188	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005433	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001893	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011819	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009613	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013281	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001782	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001012	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027340	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3852.789822	0.000	0.999999	Linear Thru Zero
Mg	23.985	2433.259404	0.000	1.000000	Linear Thru Zero
K	38.964	5888.287708	0.000	0.999999	Linear Thru Zero
Ca	43.956	147.440660	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Monday, December 10, 2018 20:11:00
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.159
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	2.000				ug/L
|	B	11	2699.067				ug/L
|	Al	27	9395.527				ug/L
| >	Sc	45	519688.151				ug/L
|	V	51	11223.231				ug/L
|	Cr	52	16141.823				ug/L
|	Cr	53	111998.917				ug/L
|	Mn	55	994.721				ug/L
|	Co	59	33.667				ug/L
⌊	Ni	60	26.667				ug/L
⌈	Cu	63	57.000				ug/L
|	Cu	65	38.667				ug/L
|	Zn	66	145.668				ug/L
|	Zn	68	326.006				ug/L
| >	Ge	72	477849.111				ug/L
|	As	75	1723.627				ug/L
|	Se	77	6830.398				ug/L
|	Se	82	114.307				ug/L
⌊	Sr	88	647.023				ug/L
⌈	Mo	98	11.447				ug/L
| >	Rh	103	285925.511				ug/L
⌊	Ag	107	9.333				ug/L
⌈	Cd	111	-0.607				ug/L
|	Cd	114	2.864				ug/L
| >	In	115	341167.566				ug/L
|	Sn	120	321.307				ug/L
⌊	Sb	121	77.334				ug/L
⌈	Ba	137	71.591				ug/L
|	Ba	138	471.936				ug/L
| >	Tb	159	432955.469				ug/L
|	Tl	205	23.000				ug/L
⌊	Pb	208	47.667				ug/L
⌈	Hg	200	33.235				ug/L
|	Hg	201	23.333				ug/L
| >	Bi	209	236984.452				ug/L
⌊	U	238	99.667				ug/L
	C	13	9811.962				ug/L
	W	184	15.332				ug/L
	Pd	106	2.943				ug/L
	Kr	83	22.333				ug/L
⌈	Na	23	60990.690				ug/L
|	Mg	24	23386.926				ug/L

	K	39	357328.789	ug/L
	Ca	44	8463.940	ug/L
	Ti	47	306.672	ug/L
	Sc-1	45	519688.151	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000352	0.000	1.000000	Linear Thru Zero
B	11.009	0.000553	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006533	0.000	0.999992	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007874	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.006632	0.000	0.999996	Linear Thru Zero
Cr	52.941	0.000340	0.000	0.977581	Linear Thru Zero
Mn	54.938	0.011353	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008535	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001706	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.003969	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001890	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001022	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000706	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001013	0.000	0.999991	Linear Thru Zero
Se	76.920	0.000071	0.000	0.999851	Linear Thru Zero
Se	81.917	0.000109	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000616	0.000	0.968310	Linear Thru Zero
Mo	97.906	0.005817	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008682	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001710	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003672	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007188	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005433	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001893	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011819	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009613	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013281	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001782	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001012	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027340	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3852.789822	0.000	0.999999	Linear Thru Zero
Mg	23.985	2433.259404	0.000	1.000000	Linear Thru Zero
K	38.964	5888.287708	0.000	0.999999	Linear Thru Zero
Ca	43.956	147.440660	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Monday, December 10, 2018 20:14:32
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.159
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	200.336	**1.000**	0.14	13.6	ug/L
|	B	11	8054.909	**20.000**	2.38	11.9	ug/L
|	Al	27	95693.927	**20.000**	6.76	33.8	ug/L
| >	Sc	45	528629.518				ug/L
|	V	51	27793.863	**3.000**	1.74	58.2	ug/L
|	Cr	52	27661.687	**3.000**	0.20	6.7	ug/L
|	Cr	53	115473.752	**3.000**	7.03	234.5	ug/L
|	Mn	55	8411.430	**1.000**	0.35	35.1	ug/L
|	Co	59	4626.177	**1.000**	0.03	2.5	ug/L
⌊	Ni	60	1949.543	**1.000**	0.07	6.6	ug/L
⌈	Cu	63	4286.011	**2.000**	0.16	8.0	ug/L
|	Cu	65	2044.230	**2.000**	0.12	6.1	ug/L
|	Zn	66	2654.054	**5.000**	0.14	2.8	ug/L
|	Zn	68	2114.579	**5.000**	0.27	5.5	ug/L
| >	Ge	72	488678.976				ug/L
|	As	75	3029.525	**2.000**	0.94	47.1	ug/L
|	Se	77	7214.862	**2.000**	3.28	164.1	ug/L
|	Se	82	224.818	**2.000**	0.22	10.8	ug/L
⌊	Sr	88	5497.026	**0.200**	0.25	127.0	ug/L
⌈	Mo	98	1688.495	**1.000**	0.07	6.6	ug/L
| >	Rh	103	291965.464				ug/L
⌊	Ag	107	2593.703	**1.000**	0.04	3.6	ug/L
⌈	Cd	111	635.802	**1.000**	0.12	12.3	ug/L
|	Cd	114	1327.365	**1.000**	0.08	8.4	ug/L
| >	In	115	350037.842				ug/L
|	Sn	120	2745.714	**1.000**	0.08	8.2	ug/L
⌊	Sb	121	4022.892	**2.000**	0.08	4.0	ug/L
⌈	Ba	137	1150.382	**1.000**	0.27	27.4	ug/L
|	Ba	138	7057.147	**1.000**	0.27	26.5	ug/L
| >	Tb	159	446065.643				ug/L
|	Tl	205	4849.627	**1.000**	0.05	5.0	ug/L
⌊	Pb	208	6922.360	**1.000**	0.07	6.5	ug/L
⌈	Hg	200	97.924	**0.200**	0.03	14.4	ug/L
|	Hg	201	67.334	**0.200**	0.05	25.5	ug/L
| >	Bi	209	236462.759				ug/L
⌊	U	238	7095.101	**1.000**	0.10	9.8	ug/L
	C	13	10319.188				ug/L
	W	184	11.998				ug/L
	Pd	106	11.563				ug/L
	Kr	83	21.333				ug/L
⌈	Na	23	691187.928	**100.000**	74.71	74.7	ug/L
|	Mg	24	404243.931	**100.000**	76.55	76.5	ug/L

K	39	899307.025	**100.000**	4.06	4.1	ug/L
Ca	44	30097.223	**100.000**	49.31	49.3	ug/L
Ti	47	380.008				ug/L
Sc-1	45	528629.518				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000376	0.000	1.000000	Linear Thru Zero
B	11.009	0.000503	0.000	1.000000	Linear Thru Zero
Al	26.982	0.008192	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.010341	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007098	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.001013	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.014078	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008689	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003641	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004335	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002054	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001026	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000730	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001303	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000246	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000111	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.049981	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005751	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008857	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001830	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003798	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006935	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005645	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002421	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014775	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010836	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.015434	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001366	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000944	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.029755	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	6301.972383	0.000	1.000000	Linear Thru Zero
Mg	23.985	3808.570043	0.000	1.000000	Linear Thru Zero
K	38.964	5419.782365	0.000	1.000000	Linear Thru Zero
Ca	43.956	216.332832	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD
Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Monday, December 10, 2018 20:18:04
Sample File: C:\Elandata\Sample\PE_EL4_181210.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.159
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181210.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	19517.951	**100.000**	4.19	4.2	ug/L
|	B	11	275566.788	**1000.004**	47.89	4.8	ug/L
|	Al	27	891347.162	**249.610**	3.90	1.6	ug/L
| >	Sc	45	536380.771				ug/L
|	V	51	433086.373	**99.972**	4.33	4.3	ug/L
|	Cr	52	370309.060	**99.993**	2.82	2.8	ug/L
|	Cr	53	131178.382	**99.777**	34.85	34.9	ug/L
|	Mn	55	1464108.975	**249.999**	7.72	3.1	ug/L
|	Co	59	451261.599	**100.000**	3.82	3.8	ug/L
⌊	Ni	60	227926.590	**249.995**	10.19	4.1	ug/L
⌈	Cu	63	486927.930	**249.999**	16.33	6.5	ug/L
|	Cu	65	231999.449	**249.999**	14.94	6.0	ug/L
|	Zn	66	126393.934	**250.001**	11.62	4.6	ug/L
|	Zn	68	86978.599	**249.997**	7.22	2.9	ug/L
| >	Ge	72	487416.006				ug/L
|	As	75	126933.251	**249.996**	8.38	3.4	ug/L
|	Se	77	15415.230	**249.959**	32.66	13.1	ug/L
|	Se	82	12748.253	**249.999**	16.16	6.5	ug/L
⌊	Sr	88	7439.057	**19.860**	2.56	12.9	ug/L
⌈	Mo	98	170089.538	**100.000**	1.08	1.1	ug/L
| >	Rh	103	289675.902				ug/L
⌊	Ag	107	251543.035	**100.000**	1.30	1.3	ug/L
⌈	Cd	111	61085.403	**99.999**	5.40	5.4	ug/L
|	Cd	114	133400.313	**100.000**	3.15	3.2	ug/L
| >	In	115	366566.106				ug/L
|	Sn	120	255833.444	**100.000**	1.29	1.3	ug/L
⌊	Sb	121	196376.275	**99.998**	1.55	1.5	ug/L
⌈	Ba	137	86143.465	**99.998**	7.50	7.5	ug/L
|	Ba	138	541574.287	**99.998**	5.53	5.5	ug/L
| >	Tb	159	435885.957				ug/L
|	Tl	205	461939.693	**100.000**	3.39	3.4	ug/L
⌊	Pb	208	1609584.039	**250.000**	14.37	5.7	ug/L
⌈	Hg	200	8736.676	**20.000**	1.02	5.1	ug/L
|	Hg	201	5046.734	**20.000**	1.15	5.8	ug/L
| >	Bi	209	244279.901				ug/L
⌊	U	238	690145.169	**99.999**	4.46	4.5	ug/L
	C	13	9791.939				ug/L
	W	184	29.328				ug/L
	Pd	106	-125.935				ug/L
	Kr	83	24.833				ug/L
⌈	Na	23	40323016.758	**9999.435**	43.60	0.4	ug/L
|	Mg	24	24912612.622	**9999.470**	137.70	1.4	ug/L

K	39	60798082.717	**10000.103**	270.98	2.7	ug/L
Ca	44	1469284.155	**9999.519**	153.51	1.5	ug/L
Ti	47	413.343				ug/L
Sc-1	45	536380.771				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000364	0.000	1.000000	Linear Thru Zero
B	11.009	0.000509	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006585	0.000	0.999809	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007860	0.000	0.999955	Linear Thru Zero
Cr	51.941	0.006594	0.000	0.999997	Linear Thru Zero
Cr	52.941	0.000292	0.000	0.997259	Linear Thru Zero
Mn	54.938	0.010911	0.000	0.999999	Linear Thru Zero
Co	58.933	0.008413	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001700	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.004005	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001908	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001038	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000712	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001028	0.000	0.999998	Linear Thru Zero
Se	76.920	0.000070	0.000	0.999795	Linear Thru Zero
Se	81.917	0.000104	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000703	0.000	0.818699	Linear Thru Zero
Mo	97.906	0.005871	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008684	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001670	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003643	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006971	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005358	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001980	0.000	0.999998	Linear Thru Zero
Ba	137.905	0.012439	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010610	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014801	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001784	0.000	0.999997	Linear Thru Zero
Hg	200.970	0.001030	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.028289	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4026.430161	0.000	0.999984	Linear Thru Zero
Mg	23.985	2489.054521	0.000	0.999986	Linear Thru Zero
K	38.964	6044.012970	0.000	0.999999	Linear Thru Zero
Ca	43.956	146.089046	0.000	0.999988	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Raw Data - Instrument Tuning

Sample Information

Sample Date/Time: Monday, December 10, 2018 08:15:32
Method File: C:\Elandata\Method\EL4\BCL_EL4-Tuning.mth
Dataset File: C:\Elandata\Dataset\Default\Mass Calibration and Resolution - Retry 1.922
Tuning File: C:\Elandata\Tuning\Default.tun
Number of Sweeps: 125
Number of Readings: 1
Number of Replicates: 3
Measurement Unit: cps

Instrument Tuning Report

File Name: Default.tun
File Path: C:\Elandata\Tuning\Default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
C	12.000	12.025	2763	2081	0.697	
Mg	23.985	24.025	5672	2099	0.697	
Ar2	75.930	75.975	18309	2170	0.699	
In	114.904	114.875	27783	2229	0.714	
Ce	139.905	139.925	33869	2258	0.691	
Pb	207.977	207.975	50435	2363	0.685	
U	238.050	238.075	57744	2421	0.703	

Complete Mass Scanning Results

Mass	Meas. Intens. Mean	Meas. Intens. SD	Meas. Intens. RSD
11.000	164.403	6.158	3.746
22.000	7.600	1.833	24.119
75.000	6675.626	40.169	0.602
114.000	208.698	15.153	7.261
139.000	80.536	2.203	2.735
206.000	5370.566	111.553	2.077
235.000	133.469	4.388	3.288

Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Monday, December 10, 2018 08:31:47
Sample Description:
Method File: C:\Elandata\Method\EL4\BCL_EL4_Daily Performance.mth
Dataset File: C:\Elandata\Dataset\Default\Daily Performance Check.925
Tuning File: C:\Elandata\Tuning\Default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Dual
Acq. Dead Time(ns): 55
Current Dead Time (ns): 55

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	36710.9	36710.948	574.148	1.6
	In	114.9	120606.6	120606.611	2650.869	2.2
	U	238.1	107203.1	107203.073	1736.381	1.6
⌈>	Ba	137.9	88944.7	88944.734	1192.831	1.3
⌊	Ba++	69.0	2408.2	0.027	0.000	1.1
⌈>	Ce	139.9	113233.2	113233.226	2324.070	2.1
⌊	CeO	155.9	2516.4	0.022	0.000	1.5
	220	220.0	0.6	0.640	0.358	55.9

Current Optimization File Data

Current Value	Description
0.93	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
15.00	Plasma Gas Flow
8.00	Lens Voltage
1050.00	ICP RF Power
-1650.00	Analog Stage Voltage
950.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset Std [QRO]
-11.00	Cell Rod Offset Std [CRO]
71.00	Discriminator Threshold
-14.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.25	RPq
0.93	DRC Mode NEB
-6.00	DRC Mode QRO
-1.00	DRC Mode CRO
-15.00	DRC Mode CPV
0.00	Cell Gas A
200.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
250.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	12	45	5.5	690443.3
Mg	24	45	5.8	39800.3
In	115	45	8.0	132779.3
Ce	140	45	7.5	120750.0
Pb	208	45	9.0	63209.0

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:12:04AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838103

Laboratory Documentation Requirements
For Data Validation of
Metals Analysis (using ppm units)

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838103
COC Number:
Cooler 2 was received at 0 °C
Cooler 3 was received at 5.2 °C
Default Cooler was received at 0 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-6020 (TTLC)	PE-EL2

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032393	EPA-6020 (TTLC)	1838186-01	SO-B05-01

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

Post Spikes

The Post Spike recoveries were within QC limits.

Interference Checks

The Interference Check recoveries were within QC limits.

BC LABORATORIES, INC.

Chain of Custody Form

Page 1 of 1

Report To: Client: Aecom/SMUD	Project #: 60570043.05
Attn: Robert Kohlhardt	Project Name: SMUD 58th Street
Street Address: 2020 L St Suite 400	
City, State, Zip: Sac, CA, 95811	Sampler(s): Jack Rayl
Phone: 916 414 5800 Fax:	
Email: robert.kohlhardt@aecom.com	
Work Order #: 18-38103	

Please refer to the back of this page for completion instructions and method legend.

Analysis Requested

Comments:

Sample Matrix

Result Request **Surcharge

☒ STD (10 Days) ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

Sample #	Description	Date Sampled	Time Sampled	SW 8260B	SW 6020	Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Notes
1	SO-VW05-02	12/4/18	0815	X		X						
2	SO-VW05-03	12/4/18	0820	X		X						
3	SO-B09-02	12/4/18	0815		X	X						
4	SO-VW10-02	12/4/18	0935	X		X						
5	SO-VW10-02-DUP	12/4/18	0938	X		X						
6	SO-VW10-03	12/4/18	0940	X		X						
7	SO-VW11-02	12/4/18	1045	X		X						
8	SO-VW11-03	12/4/18	1050	X		X						
9	SO-VW08-02	12/4/18	1230	X		X						
10	SO-VW03-03	12/4/18	1235	X		X						
11	SO-VW06-02	12/4/18	1325	X		X						
12	SO-VW06-03	12/4/18	1330	X		X						
13	SO-VW04-02	12/4/18	1425	X		X						
14	SO-VW04-03	12/4/18	1430	X		X						

CHK BY

DISTRIBUTION

SUB-OUT ☐

Billing

☒ Same as above

Client:

Address:

City: State Zip

Attn:

P.O. #:

EDF Required? Geotracker ☐ Yes ☐ No

Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

	Relinquished By	Date	Time	Received By	Date	Time
1.		12.4.18	1430		12/4/18	1430
2.		12/4/18	1600		12.5.18	08:50
3.						

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838103 Page 2 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 3

Submission #: 18-38103

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) GSO

SHIPPING CONTAINER
Ice Chest ☑ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
(W) / (S)

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

☒ COC Received YES ☐ NO

Emissivity: .95 Container: Voa Thermometer ID: 274 Date/Time 12.5.18

Temperature: (A) 0.0 °C / (C) 0.0 °C Analyst Init DS 08:50

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	4	5	6	7	8	9	10	11
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
SUMMA CANISTER										

Comments:
Sample Numbering Completed By: GSP Date/Time: 12/6 1823
A = Actual / C = Corrected

Rev 21 05/23/2016
(S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20)

Chain of Custody and Cooler Receipt Form for 1838103 Page 3 of 4

BC LABORATORIES INC. — COOLER RECEIPT FORM — Page 2 Of 3

Submission #: 18-38103

SHIPPING INFORMATION: Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☐ (Specify) GSO

SHIPPING CONTAINER: Ice Chest ☑ None ☐ Box ☐ Other ☐ (Specify)

FREE LIQUID: YES ☐ NO ☐ W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 95 Container: VOA Thermometer ID: 214 Date/Time: 12.5.18

Temperature: (A) 0.0 °C / (C) 0.0 °C Analyst Init: DS 08:50

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	12	13	14	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	ABCD	ABCD	ABCD							
SUMMA CANISTER										

Comments: 14 descriptions don't match

Sample Numbering Completed By: GSO Date/Time: 12/6 1823

A = Actual / C = Corrected

Rev 21 05/23/2016

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Chain of Custody and Cooler Receipt Form for 1838103 Page 4 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 3 Of 3

Submission #: 18-38103

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☒ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☐ Other ☐ (Specify) GSO	Other ☐ (Specify)	W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

☒ COC Received ☒ YES ☐ NO

Emissivity: .97 Container: Glass Thermometer ID: 274 Date/Time 12.5.18

Temperature: (A) 4.7 °C / (C) 5.2 °C Analyst Init 08:50

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR			A							
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: Date/Time: 12/6 1823

A = Actual / C = Corrected

Rev 21 05/23/2016

I:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC.rev 20)

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838103**
Class: **METALS-PPM**
Method: **EPA-6020**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838103
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-B09-02	1838103-03

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-07-2019
Title: QA/QC Manager

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-6020

Laboratory: BC Laboratories
SDG: 1838103
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: PE-EL2

Analyte	MDL	PQL	Units
Arsenic	0.17	0.5	mg/kg

AECOM - Sacramento
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Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B09-02

Laboratory: BC Laboratories
SDG: 1838103
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838103-03
File ID: PE_EL2_181211-062
Sampled: 12/04/18 08:15
Prepared: 12/10/18 08:30
Analyzed: 12/11/18 12:14
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.05 g / 250 ml
Batch: B032393
Sequence: 1824596
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	5.2	0.952		EPA-6020

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Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-6020

Laboratory: BC Laboratories
SDG: 1838103
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032393 Batch Matrix: Solids
Preparation: EPA 3050B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-B09-02	1838103-03	PE_EL2_181211-062	12/10/18 08:30	
Blank	B032393-BLK1	PE_EL2_181211-053	12/10/18 08:30	
LCS	B032393-BS1	PE_EL2_181211-052	12/10/18 08:30	
Duplicate	B032393-DUP1	PE_EL2_181211-055	12/10/18 08:30	
Matrix Spike	B032393-MS1	PE_EL2_181211-057	12/10/18 08:30	
Matrix Spike Dup	B032393-MSD1	PE_EL2_181211-058	12/10/18 08:30	
Post Spike	B032393-PS1	PE_EL2_181211-059	12/10/18 08:30	[Spk] 1g->250ml; 250ml->250ml; Spiked 9.8ml

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Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-6020

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032393-BLK1	File ID:	PE_EL2_181211-053
Prepared:	12/10/18 08:30	Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml
Analyzed:	12/11/18 11:33	Instrument:	PE-EL2		
Batch:	B032393	Sequence:	1824596	Calibration:	UNASSIGNED

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
7440-38-2	Arsenic	0.17	U

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Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Duplicate

DUPLICATES

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032393
Preparation: EPA 3050B
Source Sample Name: Duplicate

SDG: 1838103
Project: SMUD 59th St.
Laboratory ID: B032393-DUP1
Lab Source ID: 1838186-01
Initial/Final: 1 g / 250 ml
% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/kg)	C	DUPLICATE CONCENTRATION (mg/kg)	C	RPD %	Q	METHOD
Arsenic	20	3.6815		3.5812		2.76		EPA-6020

* Values outside of QC limits

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Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-6020

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032393
Preparation: EPA 3050B
Source Sample Number: 1838186-01

SDG: 1838103
Project: SMUD 59th St.
Laboratory ID: B032393-MS1
Initial/Final: 1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Arsenic	25.000	3.6815	27.889	96.8	75 - 125

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Arsenic	25.000	29.945	105	7.11	20	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Matrix:	Solids		
Batch:	B032393	Laboratory ID:	B032393-BS1
Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Arsenic	25.000	26.756	107	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824596	Instrument:	PE-EL2
Matrix:	Solids	Calibration:	UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824596-ICV1	PE_EL2_181211-031	12/11/18 09:41
Initial Cal Blank	1824596-ICB1	PE_EL2_181211-032	12/11/18 09:45
Calibration Check	1824596-CCV2	PE_EL2_181211-041	12/11/18 10:24
Calibration Blank	1824596-CCB2	PE_EL2_181211-042	12/11/18 10:28
MRL Check	1824596-CRL2	PE_EL2_181211-043	12/11/18 10:34
Interference Check A	1824596-IFA1	PE_EL2_181211-044	12/11/18 10:40
Interference Check B	1824596-IFB1	PE_EL2_181211-045	12/11/18 10:45
Calibration Check	1824596-CCV3	PE_EL2_181211-050	12/11/18 11:16
Calibration Blank	1824596-CCB3	PE_EL2_181211-051	12/11/18 11:19
LCS	B032393-BS1	PE_EL2_181211-052	12/11/18 11:29
Blank	B032393-BLK1	PE_EL2_181211-053	12/11/18 11:33
Duplicate	B032393-DUP1	PE_EL2_181211-055	12/11/18 11:40
Matrix Spike	B032393-MS1	PE_EL2_181211-057	12/11/18 11:47
Matrix Spike Dup	B032393-MSD1	PE_EL2_181211-058	12/11/18 11:50
Post Spike	B032393-PS1	PE_EL2_181211-059	12/11/18 11:54
Calibration Check	1824596-CCV4	PE_EL2_181211-060	12/11/18 11:57
Calibration Blank	1824596-CCB4	PE_EL2_181211-061	12/11/18 12:01
SO-B09-02	1838103-03	PE_EL2_181211-062	12/11/18 12:14
Calibration Check	1824596-CCV5	PE_EL2_181211-070	12/11/18 12:42
Calibration Blank	1824596-CCB5	PE_EL2_181211-071	12/11/18 12:46

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Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BLANKS
EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Sequence: 1824596

SDG: 1838103
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	Found	PQL	Units	C	Method
1824596-ICB1	Arsenic	0.73800	2.0	ug/L		EPA-6020
1824596-CCB2	Arsenic	-0.25400	2.0	ug/L		EPA-6020
1824596-CCB3	Arsenic	-0.57800	2.0	ug/L		EPA-6020
1824596-CCB4	Arsenic	-0.35900	2.0	ug/L		EPA-6020
1824596-CCB5	Arsenic	0.0060000	2.0	ug/L		EPA-6020

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Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL AND CONTINUING CALIBRATION CHECK

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Control Limt: +/- 10.00%

SDG: 1838103
Project: SMUD 59th St.
Calibration: UNASSIGNED
Sequence: 1824596

Lab Sample ID	Analyte	True	Found	%R	Units	Method
1824596-ICV1	Arsenic	125.00	130.74	105	ug/L	EPA-6020
1824596-CCV2	Arsenic	100.00	97.977	98.0	ug/L	EPA-6020
1824596-CCV3	Arsenic	100.00	102.86	103	ug/L	EPA-6020
1824596-CCV4	Arsenic	100.00	95.036	95.0	ug/L	EPA-6020
1824596-CCV5	Arsenic	100.00	96.052	96.1	ug/L	EPA-6020

* Values outside of QC limits

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Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

POST DIGEST SPIKE SAMPLE RECOVERY

EPA-6020

Post Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032393
Preparation: EPA 3050B

SDG: 1838103
Project: SMUD 59th St.
Laboratory ID: B032393-PS1
Lab Source ID: 1838186-01
Initial/Final: 0.0392 g / 10 ml

Source Sample Name: Post Spike
% Solids:

Analyte	Control Limit %R	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R
Arsenic	75 - 125	103.50	14.431	100.00	89.1

* Values outside of QC limits

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Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ICP INTERFERENCE CHECK SAMPLE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Sequence: 1824596

SDG: 1838103
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	True	Found	%R	Units
1824596-IFA1	Arsenic		-0.33900		ug/L
1824596-IFB1	Arsenic	20.000	22.75	114	mg/kg

* Values outside of QC limits

Raw Data From Instrument PE-EL2

Raw Data - Calibration Standards

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 07:59:47
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.106
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	33.333				ug/L
|	B	11	351.341				ug/L
|	Al	27	18240.937				ug/L
| >	Sc	45	746231.087				ug/L
|	V	51	18015.737				ug/L
|	Cr	52	17549.498				ug/L
|	Cr	53	133076.582				ug/L
|	Mn	55	1022.068				ug/L
|	Co	59	269.338				ug/L
⌊	Ni	60	117.001				ug/L
⌈	Cu	63	300.339				ug/L
|	Cu	65	146.668				ug/L
|	Zn	66	367.675				ug/L
|	Zn	68	688.031				ug/L
| >	Ge	72	495907.296				ug/L
|	As	75	582.705				ug/L
|	Se	77	4715.613				ug/L
|	Se	82	47.644				ug/L
⌊	Sr	88	1025.402				ug/L
⌈	Mo	98	128.703				ug/L
| >	Rh	103	474061.547				ug/L
⌊	Ag	107	101.334				ug/L
⌈	Cd	111	93.647				ug/L
|	Cd	114	12.561				ug/L
| >	In	115	626222.432				ug/L
|	Sn	120	884.689				ug/L
⌊	Sb	121	391.344				ug/L
⌈	Ba	137	210.718				ug/L
|	Ba	138	1104.461				ug/L
| >	Tb	159	982234.789				ug/L
|	Tl	205	423.678				ug/L
⌊	Pb	208	337.336				ug/L
⌈	Hg	200	67.985				ug/L
|	Hg	201	79.334				ug/L
| >	Bi	209	599574.970				ug/L
⌊	U	238	88904.790				ug/L
	C	13	3574.166				ug/L
	W	184	106.629				ug/L
	Pd	106	92.482				ug/L
	Kr	83	98.501				ug/L
⌈	Na	23	12877.511				ug/L
|	Mg	24	2046.953				ug/L

	K	39	334997.682	ug/L
	Ca	44	28834.060	ug/L
	Ti	47	700.033	ug/L
	Sc-1	45	746231.087	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000000	0.000	0.000000	Linear Thru Zero
B	11.009	0.000000	0.000	0.000000	Linear Thru Zero
Al	26.982	0.000000	0.000	0.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.000000	0.000	0.000000	Linear Thru Zero
Cr	51.941	0.000000	0.000	0.000000	Linear Thru Zero
Cr	52.941	0.000000	0.000	0.000000	Linear Thru Zero
Mn	54.938	0.000000	0.000	0.000000	Linear Thru Zero
Co	58.933	0.000000	0.000	0.000000	Linear Thru Zero
Ni	59.933	0.000000	0.000	0.000000	Linear Thru Zero
Cu	62.930	0.000000	0.000	0.000000	Linear Thru Zero
Cu	64.928	0.000000	0.000	0.000000	Linear Thru Zero
Zn	65.926	0.000000	0.000	0.000000	Linear Thru Zero
Zn	67.925	0.000000	0.000	0.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000000	0.000	0.000000	Linear Thru Zero
Se	76.920	0.000000	0.000	0.000000	Linear Thru Zero
Se	81.917	0.000000	0.000	0.000000	Linear Thru Zero
Sr	87.906	0.000000	0.000	0.000000	Linear Thru Zero
Mo	97.906	0.000000	0.000	0.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.000000	0.000	0.000000	Linear Thru Zero
Cd	110.904	0.000000	0.000	0.000000	Linear Thru Zero
Cd	113.904	0.000000	0.000	0.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.000000	0.000	0.000000	Linear Thru Zero
Sb	120.904	0.000000	0.000	0.000000	Linear Thru Zero
Ba	136.905	0.000000	0.000	0.000000	Linear Thru Zero
Ba	137.905	0.000000	0.000	0.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.000000	0.000	0.000000	Linear Thru Zero
Pb	207.977	0.000000	0.000	0.000000	Linear Thru Zero
Hg	199.968	0.000000	0.000	0.000000	Linear Thru Zero
Hg	200.970	0.000000	0.000	0.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.000000	0.000	0.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	0.000000	0.000	0.000000	Linear Thru Zero
Mg	23.985	0.000000	0.000	0.000000	Linear Thru Zero
K	38.964	0.000000	0.000	0.000000	Linear Thru Zero
Ca	43.956	0.000000	0.000	0.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 08:03:20
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.106
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	308.340	**1.000**	0.18	18.1	ug/L
|	B	11	7579.735	**20.000**	0.52	2.6	ug/L
|	Al	27	129789.238	**20.000**	0.83	4.2	ug/L
| >	Sc	45	764465.244				ug/L
|	V	51	41914.988	**3.000**	0.38	12.8	ug/L
|	Cr	52	38332.515	**3.000**	0.22	7.3	ug/L
|	Cr	53	138196.080	**3.000**	4.62	154.1	ug/L
|	Mn	55	10671.404	**1.000**	0.06	6.3	ug/L
|	Co	59	6497.077	**1.000**	0.01	0.7	ug/L
⌊	Ni	60	2657.459	**1.000**	0.05	4.9	ug/L
⌈	Cu	63	5518.313	**2.000**	0.10	5.1	ug/L
|	Cu	65	2421.048	**2.000**	0.13	6.5	ug/L
|	Zn	66	3878.980	**5.000**	0.20	3.9	ug/L
|	Zn	68	3172.655	**5.000**	0.21	4.2	ug/L
| >	Ge	72	508358.826				ug/L
|	As	75	2610.201	**2.000**	0.18	9.2	ug/L
|	Se	77	4928.080	**2.000**	2.82	141.2	ug/L
|	Se	82	180.560	**2.000**	0.73	36.7	ug/L
⌊	Sr	88	3185.994	**0.200**	0.01	6.2	ug/L
⌈	Mo	98	3063.250	**1.000**	0.10	9.8	ug/L
| >	Rh	103	477556.853				ug/L
⌊	Ag	107	5128.378	**1.000**	0.08	7.5	ug/L
⌈	Cd	111	1228.145	**1.000**	0.14	14.5	ug/L
|	Cd	114	2685.252	**1.000**	0.05	5.4	ug/L
| >	In	115	622340.054				ug/L
|	Sn	120	6056.902	**1.000**	0.07	6.7	ug/L
⌊	Sb	121	9462.485	**2.000**	0.03	1.3	ug/L
⌈	Ba	137	2501.760	**1.000**	0.07	6.9	ug/L
|	Ba	138	15459.214	**1.000**	0.04	3.6	ug/L
| >	Tb	159	990605.580				ug/L
|	Tl	205	12233.724	**1.000**	0.05	5.3	ug/L
⌊	Pb	208	16782.939	**1.000**	0.07	7.1	ug/L
⌈	Hg	200	252.344	**0.200**	0.00	1.4	ug/L
|	Hg	201	174.002	**0.200**	0.06	29.8	ug/L
| >	Bi	209	593591.032				ug/L
⌊	U	238	113047.949	**1.000**	0.04	4.1	ug/L
	C	13	4181.188				ug/L
	W	184	155.268				ug/L
	Pd	106	65.399				ug/L
	Kr	83	108.667				ug/L
⌈	Na	23	581283.648	**100.000**	3.31	3.3	ug/L
|	Mg	24	387128.843	**100.000**	2.30	2.3	ug/L

K	39	758462.442	**100.000**	0.73	0.7	ug/L
Ca	44	47704.218	**100.000**	7.63	7.6	ug/L
Ti	47	620.025				ug/L
Sc-1	45	764465.244				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000358	0.000	1.000000	Linear Thru Zero
B	11.009	0.000472	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007268	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.010216	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.008879	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.000830	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012601	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008138	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003321	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005131	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002237	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001378	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000971	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001978	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000094	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000131	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.021015	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.006141	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.010538	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001829	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004295	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.008317	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007291	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002314	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014488	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011931	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.016622	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001559	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000809	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.042160	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5684.061370	0.000	1.000000	Linear Thru Zero
Mg	23.985	3850.818896	0.000	1.000000	Linear Thru Zero
K	38.964	4234.647593	0.000	1.000000	Linear Thru Zero
Ca	43.956	188.701579	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 08:06:54
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.106
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	28783.485	**100.000**	3.56	3.6	ug/L
|	B	11	328889.365	**999.959**	40.08	4.0	ug/L
|	Al	27	1100738.504	**249.544**	2.58	1.0	ug/L
| >	Sc	45	766571.760				ug/L
|	V	51	617704.231	**99.972**	3.69	3.7	ug/L
|	Cr	52	587675.206	**99.983**	1.46	1.5	ug/L
|	Cr	53	183489.969	**99.968**	4.94	4.9	ug/L
|	Mn	55	1653247.884	**249.998**	6.41	2.6	ug/L
|	Co	59	537162.237	**99.998**	3.18	3.2	ug/L
⌊	Ni	60	283696.550	**249.995**	6.19	2.5	ug/L
⌈	Cu	63	555601.976	**249.997**	9.00	3.6	ug/L
|	Cu	65	253943.403	**249.998**	5.76	2.3	ug/L
|	Zn	66	165729.645	**249.994**	3.81	1.5	ug/L
|	Zn	68	116758.044	**249.994**	4.43	1.8	ug/L
| >	Ge	72	507998.736				ug/L
|	As	75	166685.783	**249.992**	5.54	2.2	ug/L
|	Se	77	17185.034	**250.001**	8.48	3.4	ug/L
|	Se	82	18668.340	**250.002**	9.84	3.9	ug/L
⌊	Sr	88	8972.237	**19.948**	1.30	6.5	ug/L
⌈	Mo	98	257344.361	**99.999**	2.78	2.8	ug/L
| >	Rh	103	479898.631				ug/L
⌊	Ag	107	430428.903	**99.998**	3.59	3.6	ug/L
⌈	Cd	111	115839.500	**100.000**	1.37	1.4	ug/L
|	Cd	114	257420.797	**99.999**	1.12	1.1	ug/L
| >	In	115	636092.052				ug/L
|	Sn	120	466149.736	**99.999**	1.57	1.6	ug/L
⌊	Sb	121	417964.544	**99.996**	1.23	1.2	ug/L
⌈	Ba	137	213987.229	**99.999**	5.74	5.7	ug/L
|	Ba	138	1220491.066	**99.998**	4.83	4.8	ug/L
| >	Tb	159	1010273.592				ug/L
|	Tl	205	1010178.337	**99.998**	3.30	3.3	ug/L
⌊	Pb	208	3402257.005	**249.999**	14.78	5.9	ug/L
⌈	Hg	200	19587.395	**20.000**	0.87	4.3	ug/L
|	Hg	201	11416.469	**20.000**	1.12	5.6	ug/L
| >	Bi	209	597154.938				ug/L
⌊	U	238	2038390.188	**99.997**	2.44	2.4	ug/L
	C	13	3240.714				ug/L
	W	184	132.620				ug/L
	Pd	106	-368.331				ug/L
	Kr	83	128.834				ug/L
⌈	Na	23	51716233.993	**9999.901**	71.53	0.7	ug/L
|	Mg	24	35586842.293	**9999.918**	443.18	4.4	ug/L

K	39	42438278.686	**9999.994**	393.45	3.9	ug/L
Ca	44	1308763.464	**9999.526**	131.02	1.3	ug/L
Ti	47	820.044				ug/L
Sc-1	45	766571.760				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000429	0.000	0.999998	Linear Thru Zero
Al	26.982	0.005657	0.000	0.999740	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007822	0.000	0.999958	Linear Thru Zero
Cr	51.941	0.007434	0.000	0.999983	Linear Thru Zero
Cr	52.941	0.000610	0.000	0.999942	Linear Thru Zero
Mn	54.938	0.008623	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007004	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001480	0.000	0.999988	Linear Thru Zero
Cu	62.930	0.004376	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001999	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001303	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000914	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001309	0.000	0.999992	Linear Thru Zero
Se	76.920	0.000097	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000147	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000783	0.000	0.968165	Linear Thru Zero
Mo	97.906	0.005363	0.000	0.999999	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008975	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001820	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004046	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007315	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006565	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.002120	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012087	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010005	0.000	0.999998	Linear Thru Zero
Pb	207.977	0.013493	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001636	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000950	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032654	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5170.387016	0.000	1.000000	Linear Thru Zero
Mg	23.985	3558.508765	0.000	1.000000	Linear Thru Zero
K	38.964	4210.330532	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.999011	0.000	0.999989	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 08:39:51
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.116
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	40.333				ug/L
|	B	11	2567.100				ug/L
|	Al	27	18571.067				ug/L
| >	Sc	45	753086.263				ug/L
|	V	51	20034.126				ug/L
|	Cr	52	16570.502				ug/L
|	Cr	53	126995.668				ug/L
|	Mn	55	1117.415				ug/L
|	Co	59	211.336				ug/L
⌊	Ni	60	122.334				ug/L
⌈	Cu	63	291.672				ug/L
|	Cu	65	109.001				ug/L
|	Zn	66	401.677				ug/L
|	Zn	68	720.034				ug/L
| >	Ge	72	511973.105				ug/L
|	As	75	533.258				ug/L
|	Se	77	4507.654				ug/L
|	Se	82	41.979				ug/L
⌊	Sr	88	962.060				ug/L
⌈	Mo	98	187.823				ug/L
| >	Rh	103	482288.282				ug/L
⌊	Ag	107	74.000				ug/L
⌈	Cd	111	46.930				ug/L
|	Cd	114	-5.887				ug/L
| >	In	115	626384.649				ug/L
|	Sn	120	1192.101				ug/L
⌊	Sb	121	764.706				ug/L
⌈	Ba	137	178.687				ug/L
|	Ba	138	1076.428				ug/L
| >	Tb	159	989619.142				ug/L
|	Tl	205	387.677				ug/L
⌊	Pb	208	459.338				ug/L
⌈	Hg	200	96.596				ug/L
|	Hg	201	104.667				ug/L
| >	Bi	209	603399.619				ug/L
⌊	U	238	88169.690				ug/L
	C	13	3047.290				ug/L
	W	184	115.287				ug/L
	Pd	106	65.995				ug/L
	Kr	83	117.501				ug/L
⌈	Na	23	13865.821				ug/L
|	Mg	24	2383.706				ug/L

	K	39	322392.118	ug/L
	Ca	44	27947.506	ug/L
	Ti	47	526.685	ug/L
	Sc-1	45	753086.263	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000429	0.000	0.999998	Linear Thru Zero
Al	26.982	0.005657	0.000	0.999740	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007822	0.000	0.999958	Linear Thru Zero
Cr	51.941	0.007434	0.000	0.999983	Linear Thru Zero
Cr	52.941	0.000610	0.000	0.999942	Linear Thru Zero
Mn	54.938	0.008623	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007004	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001480	0.000	0.999988	Linear Thru Zero
Cu	62.930	0.004376	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001999	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001303	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000914	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001309	0.000	0.999992	Linear Thru Zero
Se	76.920	0.000097	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000147	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000783	0.000	0.968165	Linear Thru Zero
Mo	97.906	0.005363	0.000	0.999999	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008975	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001820	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004046	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007315	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006565	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.002120	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012087	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010005	0.000	0.999998	Linear Thru Zero
Pb	207.977	0.013493	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001636	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000950	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032654	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5170.387016	0.000	1.000000	Linear Thru Zero
Mg	23.985	3558.508765	0.000	1.000000	Linear Thru Zero
K	38.964	4210.330532	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.999011	0.000	0.999989	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 08:43:26
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.116
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	317.007	**1.000**	0.08	8.1	ug/L
|	B	11	10038.547	**20.000**	0.67	3.3	ug/L
|	Al	27	133612.241	**20.000**	0.75	3.8	ug/L
| >	Sc	45	751875.078				ug/L
|	V	51	41791.145	**3.000**	0.20	6.7	ug/L
|	Cr	52	38729.321	**3.000**	0.09	3.0	ug/L
|	Cr	53	132711.950	**3.000**	0.89	29.5	ug/L
|	Mn	55	10987.175	**1.000**	0.03	3.4	ug/L
|	Co	59	6855.723	**1.000**	0.06	6.4	ug/L
⌊	Ni	60	2604.776	**1.000**	0.08	7.9	ug/L
⌈	Cu	63	5662.419	**2.000**	0.15	7.7	ug/L
|	Cu	65	2429.051	**2.000**	0.16	7.9	ug/L
|	Zn	66	3909.661	**5.000**	0.09	1.8	ug/L
|	Zn	68	3164.653	**5.000**	0.30	5.9	ug/L
| >	Ge	72	498406.129				ug/L
|	As	75	1995.929	**2.000**	0.21	10.4	ug/L
|	Se	77	4733.625	**2.000**	0.39	19.3	ug/L
|	Se	82	187.138	**2.000**	0.56	28.2	ug/L
⌊	Sr	88	3251.021	**0.200**	0.01	5.9	ug/L
⌈	Mo	98	2914.066	**1.000**	0.04	4.0	ug/L
| >	Rh	103	476524.472				ug/L
⌊	Ag	107	5300.496	**1.000**	0.03	2.9	ug/L
⌈	Cd	111	1381.031	**1.000**	0.07	7.1	ug/L
|	Cd	114	2945.958	**1.000**	0.04	4.4	ug/L
| >	In	115	619033.343				ug/L
|	Sn	120	6167.820	**1.000**	0.04	3.7	ug/L
⌊	Sb	121	9684.093	**2.000**	0.03	1.3	ug/L
⌈	Ba	137	2488.158	**1.000**	0.08	8.1	ug/L
|	Ba	138	16173.409	**1.000**	0.06	5.7	ug/L
| >	Tb	159	1023125.392				ug/L
|	Tl	205	12231.386	**1.000**	0.05	4.9	ug/L
⌊	Pb	208	17091.076	**1.000**	0.08	8.1	ug/L
⌈	Hg	200	289.841	**0.200**	0.01	4.7	ug/L
|	Hg	201	129.334	**0.200**	0.23	115.2	ug/L
| >	Bi	209	588673.914				ug/L
⌊	U	238	111501.572	**1.000**	0.04	3.6	ug/L
	C	13	3380.755				ug/L
	W	184	129.942				ug/L
	Pd	106	81.830				ug/L
	Kr	83	99.667				ug/L
⌈	Na	23	599437.986	**100.000**	3.66	3.7	ug/L
|	Mg	24	398257.605	**100.000**	1.54	1.5	ug/L

K	39	754090.013	**100.000**	3.40	3.4	ug/L
Ca	44	45366.752	**100.000**	5.01	5.0	ug/L
Ti	47	580.023				ug/L
Sc-1	45	751875.078				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000369	0.000	1.000000	Linear Thru Zero
B	11.009	0.000497	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007653	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.009650	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.009835	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.002637	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013136	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008846	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003304	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005406	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002334	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001412	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000988	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001478	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000345	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000148	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.023234	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005720	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.010966	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.002157	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004765	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.008063	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007213	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002259	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014757	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011588	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.016297	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001663	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000236	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.043314	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5855.721647	0.000	1.000000	Linear Thru Zero
Mg	23.985	3958.738981	0.000	1.000000	Linear Thru Zero
K	38.964	4316.978953	0.000	1.000000	Linear Thru Zero
Ca	43.956	174.192465	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 08:46:59
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.116
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	28178.604	**100.000**	6.22	6.2	ug/L
|	B	11	323065.766	**999.934**	44.62	4.5	ug/L
|	Al	27	1088860.108	**249.458**	7.46	3.0	ug/L
| >	Sc	45	750816.654				ug/L
|	V	51	602536.276	**99.978**	5.03	5.0	ug/L
|	Cr	52	575324.216	**99.971**	4.03	4.0	ug/L
|	Cr	53	179846.516	**99.756**	11.34	11.4	ug/L
|	Mn	55	1645171.739	**249.998**	9.18	3.7	ug/L
|	Co	59	538700.270	**99.998**	4.82	4.8	ug/L
⌊	Ni	60	283317.314	**249.995**	11.46	4.6	ug/L
⌈	Cu	63	557679.855	**249.997**	9.71	3.9	ug/L
|	Cu	65	251807.499	**249.997**	7.23	2.9	ug/L
|	Zn	66	165738.631	**249.993**	6.83	2.7	ug/L
|	Zn	68	115277.847	**249.992**	2.92	1.2	ug/L
| >	Ge	72	500038.078				ug/L
|	As	75	166447.591	**249.998**	3.55	1.4	ug/L
|	Se	77	16938.990	**249.961**	15.28	6.1	ug/L
|	Se	82	18485.829	**250.000**	9.09	3.6	ug/L
⌊	Sr	88	8952.210	**19.944**	0.54	2.7	ug/L
⌈	Mo	98	258694.380	**100.000**	3.27	3.3	ug/L
| >	Rh	103	462047.734				ug/L
⌊	Ag	107	421983.853	**99.998**	2.58	2.6	ug/L
⌈	Cd	111	113419.560	**99.998**	3.83	3.8	ug/L
|	Cd	114	253182.315	**99.998**	3.98	4.0	ug/L
| >	In	115	621256.743				ug/L
|	Sn	120	460532.366	**99.999**	1.30	1.3	ug/L
⌊	Sb	121	413670.564	**99.997**	1.53	1.5	ug/L
⌈	Ba	137	211997.381	**100.000**	7.41	7.4	ug/L
|	Ba	138	1200411.415	**99.998**	6.79	6.8	ug/L
| >	Tb	159	972284.750				ug/L
|	Tl	205	990592.732	**99.999**	4.41	4.4	ug/L
⌊	Pb	208	3359960.146	**249.999**	14.11	5.6	ug/L
⌈	Hg	200	19510.237	**20.000**	1.14	5.7	ug/L
|	Hg	201	10984.507	**20.001**	0.83	4.1	ug/L
| >	Bi	209	586255.553				ug/L
⌊	U	238	2010530.370	**99.997**	5.26	5.3	ug/L
	C	13	2933.919				ug/L
	W	184	183.942				ug/L
	Pd	106	-644.045				ug/L
	Kr	83	112.001				ug/L
⌈	Na	23	52718302.732	**9999.889**	251.76	2.5	ug/L
|	Mg	24	35959644.796	**9999.899**	220.11	2.2	ug/L

K	39	42865748.757	**9999.985**	108.56	1.1	ug/L
Ca	44	1282856.539	**9999.612**	228.69	2.3	ug/L
Ti	47	740.036				ug/L
Sc-1	45	750816.654				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000427	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005716	0.000	0.999633	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007761	0.000	0.999973	Linear Thru Zero
Cr	51.941	0.007445	0.000	0.999954	Linear Thru Zero
Cr	52.941	0.000711	0.000	0.996717	Linear Thru Zero
Mn	54.938	0.008761	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007175	0.000	0.999997	Linear Thru Zero
Ni	59.933	0.001509	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.004462	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.002015	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001323	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000916	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001327	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000100	0.000	0.999810	Linear Thru Zero
Se	81.917	0.000148	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000804	0.000	0.963202	Linear Thru Zero
Mo	97.906	0.005593	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009133	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001825	0.000	0.999998	Linear Thru Zero
Cd	113.904	0.004073	0.000	0.999999	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007392	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006646	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.002183	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012360	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010193	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013844	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001657	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000928	0.000	0.999972	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032848	0.000	0.999995	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5270.502213	0.000	0.999999	Linear Thru Zero
Mg	23.985	3595.762407	0.000	0.999999	Linear Thru Zero
K	38.964	4254.341928	0.000	1.000000	Linear Thru Zero
Ca	43.956	125.495773	0.000	0.999992	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 09:27:43
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.128
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	36.667				ug/L
|	B	11	2270.335				ug/L
|	Al	27	17789.882				ug/L
| >	Sc	45	769188.894				ug/L
|	V	51	21061.361				ug/L
|	Cr	52	17141.250				ug/L
|	Cr	53	135167.760				ug/L
|	Mn	55	1180.759				ug/L
|	Co	59	198.003				ug/L
⌊	Ni	60	148.335				ug/L
⌈	Cu	63	320.007				ug/L
|	Cu	65	188.669				ug/L
|	Zn	66	542.019				ug/L
|	Zn	68	784.040				ug/L
| >	Ge	72	503509.838				ug/L
|	As	75	233.718				ug/L
|	Se	77	4696.436				ug/L
|	Se	82	28.108				ug/L
⌊	Sr	88	1001.399				ug/L
⌈	Mo	98	126.388				ug/L
| >	Rh	103	469742.632				ug/L
⌊	Ag	107	112.001				ug/L
⌈	Cd	111	62.140				ug/L
|	Cd	114	-14.290				ug/L
| >	In	115	634885.436				ug/L
|	Sn	120	904.298				ug/L
⌊	Sb	121	490.016				ug/L
⌈	Ba	137	224.382				ug/L
|	Ba	138	1069.121				ug/L
| >	Tb	159	991288.374				ug/L
|	Tl	205	287.005				ug/L
⌊	Pb	208	481.006				ug/L
⌈	Hg	200	138.097				ug/L
|	Hg	201	116.668				ug/L
| >	Bi	209	613753.218				ug/L
⌊	U	238	89004.195				ug/L
	C	13	3527.489				ug/L
	W	184	89.252				ug/L
	Pd	106	56.839				ug/L
	Kr	83	121.834				ug/L
⌈	Na	23	15382.056				ug/L
|	Mg	24	2870.550				ug/L

	K	39	349590.206	ug/L
	Ca	44	30547.264	ug/L
	Ti	47	603.360	ug/L
	Sc-1	45	769188.894	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000427	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005716	0.000	0.999633	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007761	0.000	0.999973	Linear Thru Zero
Cr	51.941	0.007445	0.000	0.999954	Linear Thru Zero
Cr	52.941	0.000711	0.000	0.996717	Linear Thru Zero
Mn	54.938	0.008761	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007175	0.000	0.999997	Linear Thru Zero
Ni	59.933	0.001509	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.004462	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.002015	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001323	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000916	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001327	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000100	0.000	0.999810	Linear Thru Zero
Se	81.917	0.000148	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000804	0.000	0.963202	Linear Thru Zero
Mo	97.906	0.005593	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009133	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001825	0.000	0.999998	Linear Thru Zero
Cd	113.904	0.004073	0.000	0.999999	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007392	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006646	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.002183	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012360	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010193	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013844	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001657	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000928	0.000	0.999972	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032848	0.000	0.999995	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5270.502213	0.000	0.999999	Linear Thru Zero
Mg	23.985	3595.762407	0.000	0.999999	Linear Thru Zero
K	38.964	4254.341928	0.000	1.000000	Linear Thru Zero
Ca	43.956	125.495773	0.000	0.999992	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 09:31:16
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.128
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	322.340	**1.000**	0.17	16.6	ug/L
|	B	11	10064.584	**20.000**	0.72	3.6	ug/L
|	Al	27	136114.072	**20.000**	0.12	0.6	ug/L
| >	Sc	45	784480.775				ug/L
|	V	51	42050.703	**3.000**	0.07	2.4	ug/L
|	Cr	52	38622.612	**3.000**	0.26	8.8	ug/L
|	Cr	53	135175.793	**3.000**	7.55	251.8	ug/L
|	Mn	55	11431.158	**1.000**	0.03	3.2	ug/L
|	Co	59	6538.115	**1.000**	0.03	3.3	ug/L
⌊	Ni	60	2780.838	**1.000**	0.07	7.1	ug/L
⌈	Cu	63	5656.080	**2.000**	0.10	4.8	ug/L
|	Cu	65	2352.026	**2.000**	0.06	3.0	ug/L
|	Zn	66	3802.274	**5.000**	0.28	5.7	ug/L
|	Zn	68	3102.292	**5.000**	0.13	2.5	ug/L
| >	Ge	72	520762.303				ug/L
|	As	75	2447.460	**2.000**	0.53	26.3	ug/L
|	Se	77	4799.664	**2.000**	8.60	430.1	ug/L
|	Se	82	206.528	**2.000**	0.19	9.5	ug/L
⌊	Sr	88	3301.046	**0.200**	0.02	10.1	ug/L
⌈	Mo	98	3061.758	**1.000**	0.03	2.6	ug/L
| >	Rh	103	497605.819				ug/L
⌊	Ag	107	4871.549	**1.000**	0.09	9.1	ug/L
⌈	Cd	111	1301.214	**1.000**	0.06	5.7	ug/L
|	Cd	114	2668.840	**1.000**	0.03	3.3	ug/L
| >	In	115	643434.341				ug/L
|	Sn	120	6219.965	**1.000**	0.08	7.9	ug/L
⌊	Sb	121	9816.288	**2.000**	0.13	6.3	ug/L
⌈	Ba	137	2730.857	**1.000**	0.02	2.1	ug/L
|	Ba	138	16757.959	**1.000**	0.05	5.5	ug/L
| >	Tb	159	1066870.548				ug/L
|	Tl	205	12240.743	**1.000**	0.04	4.2	ug/L
⌊	Pb	208	17401.039	**1.000**	0.05	4.9	ug/L
⌈	Hg	200	328.458	**0.200**	0.11	56.9	ug/L
|	Hg	201	198.669	**0.200**	0.06	30.8	ug/L
| >	Bi	209	622351.854				ug/L
⌊	U	238	115950.607	**1.000**	0.06	6.3	ug/L
	C	13	3340.727				ug/L
	W	184	137.946				ug/L
	Pd	106	55.150				ug/L
	Kr	83	112.501				ug/L
⌈	Na	23	605790.476	**100.000**	3.19	3.2	ug/L
|	Mg	24	396274.624	**100.000**	0.82	0.8	ug/L

K	39	771185.207	**100.000**	5.47	5.5	ug/L
Ca	44	44649.493	**100.000**	18.28	18.3	ug/L
Ti	47	490.016				ug/L
Sc-1	45	784480.775				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000362	0.000	1.000000	Linear Thru Zero
B	11.009	0.000494	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007519	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008736	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.008998	0.000	1.000000	Linear Thru Zero
Cr	52.941	-0.001074	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013043	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008077	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003352	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005116	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002072	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001246	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000880	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.002112	0.000	1.000000	Linear Thru Zero
Se	76.920	-0.000052	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000171	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.021715	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005880	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009563	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001926	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004168	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.008255	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007236	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002335	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014644	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011190	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.015838	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001522	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000642	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.041231	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5904.084198	0.000	1.000000	Linear Thru Zero
Mg	23.985	3934.040745	0.000	1.000000	Linear Thru Zero
K	38.964	4215.950012	0.000	1.000000	Linear Thru Zero
Ca	43.956	141.022291	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 09:34:50
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.128
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	28500.508	**100.000**	7.95	7.9	ug/L
|	B	11	331171.650	**999.935**	74.32	7.4	ug/L
|	Al	27	1107056.151	**249.468**	10.87	4.4	ug/L
| >	Sc	45	774177.241				ug/L
|	V	51	621346.594	**99.989**	3.70	3.7	ug/L
|	Cr	52	592232.626	**99.981**	4.05	4.1	ug/L
|	Cr	53	181062.490	**100.256**	14.81	14.8	ug/L
|	Mn	55	1672701.730	**249.998**	8.53	3.4	ug/L
|	Co	59	548380.240	**99.999**	4.32	4.3	ug/L
⌊	Ni	60	288087.326	**249.995**	11.72	4.7	ug/L
⌈	Cu	63	566437.045	**249.997**	15.82	6.3	ug/L
|	Cu	65	258316.613	**249.999**	16.48	6.6	ug/L
|	Zn	66	170662.810	**250.005**	12.75	5.1	ug/L
|	Zn	68	119763.175	**250.004**	9.92	4.0	ug/L
| >	Ge	72	519991.318				ug/L
|	As	75	170183.027	**249.990**	9.50	3.8	ug/L
|	Se	77	17088.812	**250.025**	19.27	7.7	ug/L
|	Se	82	19072.734	**249.997**	20.65	8.3	ug/L
⌊	Sr	88	8997.274	**19.946**	2.11	10.6	ug/L
⌈	Mo	98	261454.204	**99.999**	4.49	4.5	ug/L
| >	Rh	103	479902.896				ug/L
⌊	Ag	107	431982.505	**99.999**	3.91	3.9	ug/L
⌈	Cd	111	115558.723	**99.999**	1.28	1.3	ug/L
|	Cd	114	253704.397	**100.000**	2.90	2.9	ug/L
| >	In	115	638444.723				ug/L
|	Sn	120	463975.818	**99.999**	4.90	4.9	ug/L
⌊	Sb	121	412415.465	**99.995**	5.72	5.7	ug/L
⌈	Ba	137	212734.718	**99.999**	8.12	8.1	ug/L
|	Ba	138	1224183.985	**99.998**	7.62	7.6	ug/L
| >	Tb	159	1015654.135				ug/L
|	Tl	205	1016475.032	**99.999**	2.39	2.4	ug/L
⌊	Pb	208	3419535.100	**249.999**	9.61	3.8	ug/L
⌈	Hg	200	19482.604	**20.000**	0.68	3.4	ug/L
|	Hg	201	11308.982	**20.001**	0.75	3.7	ug/L
| >	Bi	209	603671.070				ug/L
⌊	U	238	2040940.684	**99.997**	5.67	5.7	ug/L
	C	13	3200.693				ug/L
	W	184	111.936				ug/L
	Pd	106	-680.740				ug/L
	Kr	83	120.834				ug/L
⌈	Na	23	53323101.616	**9999.892**	328.46	3.3	ug/L
|	Mg	24	36537804.609	**9999.923**	467.27	4.7	ug/L

K	39	43815682.247	**10000.030**	245.49	2.5	ug/L
Ca	44	1303566.563	**9999.892**	178.50	1.8	ug/L
Ti	47	710.033				ug/L
Sc-1	45	774177.241				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000368	0.000	1.000000	Linear Thru Zero
B	11.009	0.000425	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005642	0.000	0.999646	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007755	0.000	0.999993	Linear Thru Zero
Cr	51.941	0.007429	0.000	0.999980	Linear Thru Zero
Cr	52.941	0.000581	0.000	0.996367	Linear Thru Zero
Mn	54.938	0.008640	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007085	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001489	0.000	0.999987	Linear Thru Zero
Cu	62.930	0.004364	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001990	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001311	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000916	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001308	0.000	0.999988	Linear Thru Zero
Se	76.920	0.000094	0.000	0.999923	Linear Thru Zero
Se	81.917	0.000147	0.000	0.999999	Linear Thru Zero
Sr	87.906	0.000770	0.000	0.964926	Linear Thru Zero
Mo	97.906	0.005453	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009011	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001809	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003975	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007257	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006457	0.000	0.999997	Linear Thru Zero
Ba	136.905	0.002097	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.012071	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010010	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013480	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001603	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000927	0.000	0.999995	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032378	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5330.829281	0.000	0.999999	Linear Thru Zero
Mg	23.985	3653.521458	0.000	1.000000	Linear Thru Zero
K	38.964	4346.596140	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.303302	0.000	0.999999	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 10:10:15
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.138
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	35.000				ug/L
|	B	11	2455.059				ug/L
|	Al	27	17619.499				ug/L
| >	Sc	45	749043.611				ug/L
|	V	51	15959.561				ug/L
|	Cr	52	15347.308				ug/L
|	Cr	53	132534.537				ug/L
|	Mn	55	1104.747				ug/L
|	Co	59	173.669				ug/L
⌊	Ni	60	135.001				ug/L
⌈	Cu	63	339.674				ug/L
|	Cu	65	150.335				ug/L
|	Zn	66	616.359				ug/L
|	Zn	68	879.050				ug/L
| >	Ge	72	502488.828				ug/L
|	As	75	697.557				ug/L
|	Se	77	4426.273				ug/L
|	Se	82	43.981				ug/L
⌊	Sr	88	1028.736				ug/L
⌈	Mo	98	122.165				ug/L
| >	Rh	103	468425.021				ug/L
⌊	Ag	107	83.334				ug/L
⌈	Cd	111	57.534				ug/L
|	Cd	114	2.747				ug/L
| >	In	115	614910.386				ug/L
|	Sn	120	953.578				ug/L
⌊	Sb	121	452.014				ug/L
⌈	Ba	137	187.421				ug/L
|	Ba	138	971.147				ug/L
| >	Tb	159	938989.708				ug/L
|	Tl	205	266.338				ug/L
⌊	Pb	208	410.004				ug/L
⌈	Hg	200	143.841				ug/L
|	Hg	201	95.334				ug/L
| >	Bi	209	602644.071				ug/L
⌊	U	238	86002.312				ug/L
	C	13	3354.078				ug/L
	W	184	129.273				ug/L
	Pd	106	50.823				ug/L
	Kr	83	117.334				ug/L
⌈	Na	23	15315.319				ug/L
|	Mg	24	2793.844				ug/L

	K	39	349772.045	ug/L
	Ca	44	31086.284	ug/L
	Ti	47	716.702	ug/L
	Sc-1	45	749043.611	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000368	0.000	1.000000	Linear Thru Zero
B	11.009	0.000425	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005642	0.000	0.999646	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007755	0.000	0.999993	Linear Thru Zero
Cr	51.941	0.007429	0.000	0.999980	Linear Thru Zero
Cr	52.941	0.000581	0.000	0.996367	Linear Thru Zero
Mn	54.938	0.008640	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007085	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001489	0.000	0.999987	Linear Thru Zero
Cu	62.930	0.004364	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001990	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001311	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000916	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001308	0.000	0.999988	Linear Thru Zero
Se	76.920	0.000094	0.000	0.999923	Linear Thru Zero
Se	81.917	0.000147	0.000	0.999999	Linear Thru Zero
Sr	87.906	0.000770	0.000	0.964926	Linear Thru Zero
Mo	97.906	0.005453	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009011	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001809	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003975	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007257	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006457	0.000	0.999997	Linear Thru Zero
Ba	136.905	0.002097	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.012071	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010010	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013480	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001603	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000927	0.000	0.999995	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032378	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5330.829281	0.000	0.999999	Linear Thru Zero
Mg	23.985	3653.521458	0.000	1.000000	Linear Thru Zero
K	38.964	4346.596140	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.303302	0.000	0.999999	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 10:13:49
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.138
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	294.006	**1.000**	0.12	12.0	ug/L
|	B	11	9760.193	**20.000**	1.48	7.4	ug/L
|	Al	27	134788.104	**20.000**	0.25	1.2	ug/L
| >	Sc	45	791891.147				ug/L
|	V	51	40029.234	**3.000**	0.45	15.0	ug/L
|	Cr	52	38391.013	**3.000**	0.06	2.1	ug/L
|	Cr	53	140829.401	**3.000**	17.49	583.0	ug/L
|	Mn	55	11611.430	**1.000**	0.07	7.0	ug/L
|	Co	59	6722.274	**1.000**	0.05	4.8	ug/L
⌊	Ni	60	2784.504	**1.000**	0.05	5.5	ug/L
⌈	Cu	63	5796.190	**2.000**	0.07	3.7	ug/L
|	Cu	65	2446.056	**2.000**	0.03	1.6	ug/L
|	Zn	66	4129.109	**5.000**	0.14	2.8	ug/L
|	Zn	68	3120.969	**5.000**	0.21	4.3	ug/L
| >	Ge	72	528029.238				ug/L
|	As	75	2378.125	**2.000**	0.69	34.3	ug/L
|	Se	77	4720.449	**2.000**	3.28	164.2	ug/L
|	Se	82	200.820	**2.000**	0.80	40.0	ug/L
⌊	Sr	88	3172.655	**0.200**	0.01	4.7	ug/L
⌈	Mo	98	3140.797	**1.000**	0.11	10.5	ug/L
| >	Rh	103	489289.399				ug/L
⌊	Ag	107	4840.860	**1.000**	0.09	8.8	ug/L
⌈	Cd	111	1303.148	**1.000**	0.06	6.0	ug/L
|	Cd	114	2901.888	**1.000**	0.01	1.2	ug/L
| >	In	115	637443.784				ug/L
|	Sn	120	6041.677	**1.000**	0.04	3.8	ug/L
⌊	Sb	121	9967.121	**2.000**	0.08	3.9	ug/L
⌈	Ba	137	2369.662	**1.000**	0.04	4.0	ug/L
|	Ba	138	16047.021	**1.000**	0.06	5.7	ug/L
| >	Tb	159	1012389.558				ug/L
|	Tl	205	11938.594	**1.000**	0.05	4.5	ug/L
⌊	Pb	208	17022.125	**1.000**	0.09	9.4	ug/L
⌈	Hg	200	335.291	**0.200**	0.03	13.5	ug/L
|	Hg	201	228.004	**0.200**	0.09	45.1	ug/L
| >	Bi	209	614895.346				ug/L
⌊	U	238	113682.357	**1.000**	0.07	7.0	ug/L
	C	13	3720.930				ug/L
	W	184	111.936				ug/L
	Pd	106	22.058				ug/L
	Kr	83	117.168				ug/L
⌈	Na	23	598350.365	**100.000**	4.22	4.2	ug/L
|	Mg	24	397098.705	**100.000**	3.33	3.3	ug/L

	K	39	779737.706	**100.000**	4.05	4.0	ug/L
	Ca	44	48408.697	**100.000**	12.04	12.0	ug/L
	Ti	47	430.012				ug/L
	Sc-1	45	791891.147				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000324	0.000	1.000000	Linear Thru Zero
B	11.009	0.000453	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007338	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.009723	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.009337	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.000368	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013216	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008264	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003343	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005150	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002168	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001320	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000832	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001573	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000070	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000149	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.019843	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.006160	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009733	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001955	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004550	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007938	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007461	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002140	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014852	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011531	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.016428	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001530	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001075	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.042289	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5830.350464	0.000	1.000000	Linear Thru Zero
Mg	23.985	3943.048612	0.000	1.000000	Linear Thru Zero
K	38.964	4299.656611	0.000	1.000000	Linear Thru Zero
Ca	43.956	173.224129	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 10:17:22
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.138
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
	Be	9	28845.538	**100.002**	7.78	7.8	ug/L
	B	11	326336.333	**999.985**	46.38	4.6	ug/L
	Al	27	1108534.478	**249.607**	9.34	3.7	ug/L
>	Sc	45	742185.186				ug/L
	V	51	628940.550	**99.984**	4.17	4.2	ug/L
	Cr	52	591760.699	**99.982**	3.74	3.7	ug/L
	Cr	53	181460.324	**100.041**	14.75	14.7	ug/L
	Mn	55	1662718.182	**249.998**	10.91	4.4	ug/L
	Co	59	543524.701	**99.999**	5.60	5.6	ug/L
	Ni	60	288494.645	**249.995**	12.74	5.1	ug/L
	Cu	63	565471.813	**249.998**	8.77	3.5	ug/L
	Cu	65	257693.843	**249.999**	8.81	3.5	ug/L
	Zn	66	170501.710	**250.004**	7.76	3.1	ug/L
	Zn	68	119597.937	**250.014**	7.68	3.1	ug/L
>	Ge	72	491653.626				ug/L
	As	75	171783.746	**249.998**	11.15	4.5	ug/L
	Se	77	17319.525	**250.005**	19.04	7.6	ug/L
	Se	82	18636.373	**250.000**	11.56	4.6	ug/L
	Sr	88	9311.304	**19.955**	0.77	3.9	ug/L
	Mo	98	262921.578	**99.999**	4.11	4.1	ug/L
>	Rh	103	455501.654				ug/L
	Ag	107	434017.852	**100.000**	3.18	3.2	ug/L
	Cd	111	115695.482	**100.000**	5.45	5.4	ug/L
	Cd	114	255021.992	**99.999**	5.34	5.3	ug/L
>	In	115	605729.214				ug/L
	Sn	120	467257.084	**100.000**	5.12	5.1	ug/L
	Sb	121	410060.180	**99.996**	6.41	6.4	ug/L
	Ba	137	210772.329	**100.000**	9.41	9.4	ug/L
	Ba	138	1216497.396	**99.998**	7.47	7.5	ug/L
>	Tb	159	959284.174				ug/L
	Tl	205	1016107.830	**99.999**	6.57	6.6	ug/L
	Pb	208	3418550.850	**249.999**	21.18	8.5	ug/L
	Hg	200	20112.709	**20.000**	1.30	6.5	ug/L
	Hg	201	10915.748	**20.000**	1.67	8.4	ug/L
>	Bi	209	577032.553				ug/L
	U	238	2021848.980	**99.997**	3.94	3.9	ug/L
	C	13	3354.084				ug/L
	W	184	140.637				ug/L
	Pd	106	-708.451				ug/L
	Kr	83	114.168				ug/L
	Na	23	53157078.393	**9999.903**	409.44	4.1	ug/L
	Mg	24	36752639.950	**9999.927**	326.19	3.3	ug/L

K	39	43530702.200	**10000.004**	290.29	2.9	ug/L
Ca	44	1291738.449	**9999.626**	363.42	3.6	ug/L
Ti	47	613.358				ug/L
Sc-1	45	742185.186				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000388	0.000	0.999999	Linear Thru Zero
B	11.009	0.000436	0.000	1.000000	Linear Thru Zero
Al	26.982	0.005890	0.000	0.999807	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008263	0.000	0.999986	Linear Thru Zero
Cr	51.941	0.007770	0.000	0.999982	Linear Thru Zero
Cr	52.941	0.000675	0.000	0.999907	Linear Thru Zero
Mn	54.938	0.008955	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007321	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001554	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.004597	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002095	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001382	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000966	0.000	0.999996	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001392	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000106	0.000	0.999996	Linear Thru Zero
Se	81.917	0.000151	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000846	0.000	0.975726	Linear Thru Zero
Mo	97.906	0.005771	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009527	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001912	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004217	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007706	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006772	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.002202	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012704	0.000	0.999999	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010611	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014294	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001734	0.000	0.999999	Linear Thru Zero
Hg	200.970	0.000940	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.033609	0.000	0.999997	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5314.227920	0.000	1.000000	Linear Thru Zero
Mg	23.985	3675.011414	0.000	1.000000	Linear Thru Zero
K	38.964	4318.091172	0.000	1.000000	Linear Thru Zero
Ca	43.956	126.069932	0.000	0.999993	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Raw Data - Instrument Tuning

Sample Information

Sample Date/Time: Tuesday, December 11, 2018 06:28:46
Method File: C:\Elandata\Method\BC Methods\BC-Tuning.mth
Dataset File: C:\Elandata\Dataset\Default\Mass Calibration and Resolution - Retry 1.1190
Tuning File: C:\Elandata\Tuning\default.tun
Number of Sweeps: 35
Number of Readings: 1
Number of Replicates: 5
Measurement Unit: cps

Instrument Tuning Report

File Name: default.tun
File Path: C:\Elandata\Tuning\default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
Li	7.016	6.978	1557	2078	0.719	
Mg	23.985	24.028	5680	2106	0.685	
Rh	102.905	102.929	24820	2264	0.709	
Ce	139.905	139.927	33781	2348	0.695	
Pb	207.977	207.979	50315	2509	0.694	
U	238.050	238.026	57611	2567	0.705	

Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Tuesday, December 11, 2018 06:39:32
Sample Description:
Method File: C:\Elandata\Method\BC Methods\BC_Daily Performance.mth
Dataset File: C:\Elandata\Dataset\Default\Daily Performance Check.1192
Tuning File: C:\Elandata\Tuning\default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Dual
Acq. Dead Time(ns): 65
Current Dead Time (ns): 65

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	71327.3	71327.346	2245.840	3.1
	In	114.9	256250.2	256250.181	9419.021	3.7
	U	238.1	386120.7	386120.667	11595.831	3.0
⌈>	Ba	137.9	238546.9	238546.915	8040.842	3.4
⌊	Ba++	69.0	6092.3	0.026	0.000	1.7
⌈>	Ce	139.9	302871.6	302871.605	9065.970	3.0
⌊	CeO	155.9	5561.6	0.018	0.000	1.5
	220	220.0	29.7	29.680	2.848	9.6
	8.5	8.5	29.0	29.040	2.256	7.8

Current Optimization File Data

Current Value	Description
0.97	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
15.00	Plasma Gas Flow
7.75	Lens Voltage
1500.00	ICP RF Power
-1900.00	Analog Stage Voltage
1600.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset Std [QRO]
-10.00	Cell Rod Offset Std [CRO]
60.00	Discriminator Threshold
-21.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.25	RPq
0.98	DRC Mode NEB
-8.00	DRC Mode QRO
-2.00	DRC Mode CRO
-25.00	DRC Mode CPV
0.00	Cell Gas A
0.00	Cell Gas B
210.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
450.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	12	69	6.0	502991.0
Mg	24	69	6.0	92678.3
In	115	69	7.8	269033.8
Ce	140	69	8.5	360273.8
Pb	208	69	9.0	180547.6

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:39:55AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838103

Laboratory Documentation Requirements
For Data Validation of
Volatiles Analysis

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838103
COC Number:
Cooler 2 was received at 0 °C
Cooler 3 was received at 5.2 °C
Default Cooler was received at 0 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-8260B	MS-V3

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

The Continuing Calibration Verification (CCV) recovery was not within established control limits.

Lab Number	Method	Analyte
1824146-CCV4	EPA-8260B	Chloroethane

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032223	EPA-8260B	1836707-28	<Not Client Sample>
B032340	EPA-8260B	1836707-25	<Not Client Sample>

Matrix spike recovery(s) was(were) not within the control limits.

Lab Number	Method	Analyte
B032223-MS1	EPA-8260B	Chloroethane

LCS

The LCS recoveries were within QC limits.

BC LABORATORIES, INC.

Chain of Custody Form

Page 1 of 1

Report To: Client: Aecom/SMUD	Project #: 60570043.05
Attn: Robert Kohlhardt	Project Name: SMUD 58th Street
Street Address: 2020 L St Suite 400	
City, State, Zip: Sac, CA, 95811	Sampler(s): Jack Rayl
Phone: 916 414 5800 Fax:	
Email: robert.kohlhardt@aecom.com	
Work Order #: 18-38103	

Please refer to the back of this page for completion instructions and method legend.

Analysis Requested

Sample #	Description	Date Sampled	Time Sampled	SW 8260B	SW 6020	Sample Matrix: Soil	Sludge	Drinking Water	Ground Waater	Waste Water	Other
1	SO-VW05-02	12/4/18	0815	X		X					
2	SO-VW05-03	12/4/18	0820	X		X					
3	SO-B09-02	12/4/18	0815		X	X					
4	SO-VW10-02	12/4/18	0935	X		X					
5	SO-VW10-02-DUP	12/4/18	0938	X		X					
6	SO-VW10-03	12/4/18	0940	X		X					
7	SO-VW11-02	12/4/18	1045	X		X					
8	SO-VW11-03	12/4/18	1050	X		X					
9	SO-VW08-02	12/4/18	1230	X		X					
10	SO-VW03-03	12/4/18	1235	X		X					
11	SO-VW06-02	12/4/18	1325	X		X					
12	SO-VW06-03	12/4/18	1330	X		X					
13	SO-VW04-02	12/4/18	1425	X		X					
14	SO-VW04-03	12/4/18	1430	X		X					

Comments:

Result Request **Surcharge

☒ STD (10 Days) ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

Notes

CHK BY

DISTRIBUTION

SUB-OUT ☐

Billing

☒ Same as above

Client:

Address:

City: State Zip

Attn:

P.O. #:

EDF Required? Geotracker ☐ Yes ☐ No

Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

	Relinquished By	Date	Time	Received By	Date	Time
1.		12.4.18	1430		12/4/18	1430
2.		12/4/18	1600		12.5.18	08:50
3.						

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838103 Page 2 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 3

Submission #: 18-38103

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) GSO

SHIPPING CONTAINER
Ice Chest ☑ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
(W) / (S)

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ (Intact? Yes ☐ No ☐) Containers ☐ (Intact? Yes ☐ No ☐) None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

☒ COC Received ☒ YES ☐ NO

Emissivity: 95 Container: Voa Thermometer ID: 274 Date/Time: 12.5.18

Temperature: (A) 0.0 °C / (C) 0.0 °C Analyst Init: DS 08:50

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	4	5	6	7	8	9	10	11
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
SUMMA CANISTER										

Comments:
Sample Numbering Completed By: GSP Date/Time: 12/6 1823
A = Actual / C = Corrected

Rev 21 05/23/2016
(S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20)

BC LABORATORIES INC.

COOLER RECEIPT FORM

Page 2 Of 3

Submission #: 18-38103

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) GSO

SHIPPING CONTAINER
Ice Chest ☒ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ | Containers ☐ Intact? Yes ☐ No ☐ | None ☒ Comments:

All samples received? Yes ☒ No ☐ All samples containers intact? Yes ☒ No ☐ Description(s) match COC? Yes ☒ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 95 Container: Voa Thermometer ID: 274 Date/Time 12.5.18
Temperature: (A) 0.0 °C / (C) 0.0 °C Analyst Init AD 08:50

SAMPLE CONTAINERS	12	13	14	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	ABCD	ABCD	ABCD							
SUMMA CANISTER										

Comments: 14 description doesn't match
Sample Numbering Completed By: GSP Date/Time: 12/6 1823
A = Actual / C = Corrected

Rev 21 05/23/2016
[S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20]

Chain of Custody and Cooler Receipt Form for 1838103 Page 4 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 3 Of 3

Submission #: 18-38103

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) 950

SHIPPING CONTAINER
Ice Chest ☑ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

☒ COC Received ☒ YES ☐ NO

Emissivity: .97 Container: Glass Thermometer ID: 274 Date/Time 12.5.18

Temperature: (A) 4.7 °C / (C) 5.2 °C Analyst Init 08:50

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR			A							
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: Date/Time: 12/6 1823

A = Actual / C = Corrected

Rev 21 05/23/2016

I:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC.rev 20)

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838103**
Class: **VOA**
Method: **EPA-8260B**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838103
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-VW05-02	1838103-01
SO-VW05-03	1838103-02
SO-VW10-02	1838103-04
SO-VW10-02-DUP	1838103-05
SO-VW10-03	1838103-06
SO-VW11-02	1838103-07
SO-VW11-03	1838103-08
SO-VW08-02	1838103-09
SO-VW08-03	1838103-10
SO-VW06-02	1838103-11
SO-VW06-03	1838103-12
SO-VW04-02	1838103-13
SO-VW04-03	1838103-14

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-07-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838103
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: MS-V3

Analyte	MDL	PQL	Units
Chloroethane	0.0014	0.0050	mg/kg
1,1-Dichloroethane	0.0014	0.0050	mg/kg
1,2-Dichloroethane	0.00085	0.0050	mg/kg
1,1-Dichloroethene	0.0012	0.0050	mg/kg
cis-1,2-Dichloroethene	0.0013	0.0050	mg/kg
trans-1,2-Dichloroethene	0.0014	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	0.0011	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	0.0011	0.0050	mg/kg
Tetrachloroethene	0.0013	0.0050	mg/kg
1,1,1-Trichloroethane	0.0011	0.0050	mg/kg
1,1,2-Trichloroethane	0.00077	0.0050	mg/kg
Trichloroethene	0.0011	0.0050	mg/kg
Vinyl chloride	0.0016	0.0050	mg/kg

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW05-02

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-01	File ID:	07DEC43.D
Sampled:	12/04/18 08:15	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 02:45
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	5.63 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.888	0.0012	UD
75-34-3	1,1-Dichloroethane	0.888	0.0012	UD
107-06-2	1,2-Dichloroethane	0.888	0.00075	UD
75-35-4	1,1-Dichloroethene	0.888	0.0011	UD
156-59-2	cis-1,2-Dichloroethene	0.888	0.0012	UD
156-60-5	trans-1,2-Dichloroethene	0.888	0.0012	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.888	0.00098	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.888	0.00098	UD
127-18-4	Tetrachloroethene	0.888	0.0012	UD
71-55-6	1,1,1-Trichloroethane	0.888	0.00098	UD
79-00-5	1,1,2-Trichloroethane	0.888	0.00068	UD
79-01-6	Trichloroethene	0.888	0.00098	UD
75-01-4	Vinyl chloride	0.888	0.0014	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.044405	0.050107	113	70 - 121	
Toluene-d8 (Surrogate)	0.044405	0.046901	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.044405	0.044538	100	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	104249	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	98064	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	351083	7.11	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW05-03

Laboratory: BC Laboratories
SDG: 1838103
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838103-02
File ID: 07DEC44.D
Sampled: 12/04/18 08:20
Prepared: 12/07/18 12:00
Analyzed: 12/08/18 03:07
Solids:
Preparation: EPA 5030 Soil MS
Initial/Final: 5.41 g / 5 ml
Batch: B032223
Sequence: 1824353
Calibration: 1812002
Instrument: MS-V3

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.924	0.0014	U
75-34-3	1,1-Dichloroethane	0.924	0.0014	U
107-06-2	1,2-Dichloroethane	0.924	0.00085	U
75-35-4	1,1-Dichloroethene	0.924	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.924	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.924	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.924	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.924	0.0011	U
127-18-4	Tetrachloroethene	0.924	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.924	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.924	0.00077	U
79-01-6	Trichloroethene	0.924	0.0011	U
75-01-4	Vinyl chloride	0.924	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.046211	0.052652	114	70 - 121	
Toluene-d8 (Surrogate)	0.046211	0.048660	105	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.046211	0.045444	98.3	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	109195	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	104755	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	354159	7.1	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW10-02

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-04	File ID:	07DEC45.D
Sampled:	12/04/18 09:35	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 03:29
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	5.07 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.986	0.0014	U
75-34-3	1,1-Dichloroethane	0.986	0.0014	U
107-06-2	1,2-Dichloroethane	0.986	0.00085	U
75-35-4	1,1-Dichloroethene	0.986	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.986	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.986	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.986	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.986	0.0011	U
127-18-4	Tetrachloroethene	0.986	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.986	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.986	0.00077	U
79-01-6	Trichloroethene	0.986	0.0011	U
75-01-4	Vinyl chloride	0.986	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.049310	0.052535	107	70 - 121	
Toluene-d8 (Surrogate)	0.049310	0.052890	107	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.049310	0.049398	100	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	119386	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	110215	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	382356	7.11	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW10-02-DUP

Laboratory: BC Laboratories
SDG: 1838103
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838103-05
File ID: 07DEC46.D
Sampled: 12/04/18 09:38
Prepared: 12/07/18 12:00
Analyzed: 12/08/18 03:51
Solids:
Preparation: EPA 5030 Soil MS
Initial/Final: 6.55 g / 5 ml
Batch: B032223
Sequence: 1824353
Calibration: 1812002
Instrument: MS-V3

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.763	0.0011	UD
75-34-3	1,1-Dichloroethane	0.763	0.0011	UD
107-06-2	1,2-Dichloroethane	0.763	0.00065	UD
75-35-4	1,1-Dichloroethene	0.763	0.00092	UD
156-59-2	cis-1,2-Dichloroethene	0.763	0.00099	UD
156-60-5	trans-1,2-Dichloroethene	0.763	0.0011	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.763	0.00084	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.763	0.00084	UD
127-18-4	Tetrachloroethene	0.763	0.00099	UD
71-55-6	1,1,1-Trichloroethane	0.763	0.00084	UD
79-00-5	1,1,2-Trichloroethane	0.763	0.00059	UD
79-01-6	Trichloroethene	0.763	0.00084	UD
75-01-4	Vinyl chloride	0.763	0.0012	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.038168	0.042588	112	70 - 121	
Toluene-d8 (Surrogate)	0.038168	0.040718	107	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.038168	0.038046	99.7	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	113921	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	102428	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	373244	7.11	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW10-03

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-06	File ID:	07DEC47.D
Sampled:	12/04/18 09:40	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 04:12
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	5.93 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.843	0.0012	UD
75-34-3	1,1-Dichloroethane	0.843	0.0012	UD
107-06-2	1,2-Dichloroethane	0.843	0.00072	UD
75-35-4	1,1-Dichloroethene	0.843	0.0010	UD
156-59-2	cis-1,2-Dichloroethene	0.843	0.0011	UD
156-60-5	trans-1,2-Dichloroethene	0.843	0.0012	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.843	0.00093	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.843	0.00093	UD
127-18-4	Tetrachloroethene	0.843	0.0011	UD
71-55-6	1,1,1-Trichloroethane	0.843	0.00093	UD
79-00-5	1,1,2-Trichloroethane	0.843	0.00065	UD
79-01-6	Trichloroethene	0.843	0.00093	UD
75-01-4	Vinyl chloride	0.843	0.0013	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.042159	0.048980	116	70 - 121	
Toluene-d8 (Surrogate)	0.042159	0.040548	96.2	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.042159	0.043347	103	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	118328	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	111810	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	400577	7.11	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW11-02

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-07	File ID:	07DEC48.D
Sampled:	12/04/18 10:45	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 04:34
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	7.47 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.669	0.00094	UD
75-34-3	1,1-Dichloroethane	0.669	0.00094	UD
107-06-2	1,2-Dichloroethane	0.669	0.00057	UD
75-35-4	1,1-Dichloroethene	0.669	0.00080	UD
156-59-2	cis-1,2-Dichloroethene	0.669	0.00087	UD
156-60-5	trans-1,2-Dichloroethene	0.669	0.00094	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.669	0.00074	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.669	0.00074	UD
127-18-4	Tetrachloroethene	0.669	0.00087	UD
71-55-6	1,1,1-Trichloroethane	0.669	0.00074	UD
79-00-5	1,1,2-Trichloroethane	0.669	0.00052	UD
79-01-6	Trichloroethene	0.669	0.00074	UD
75-01-4	Vinyl chloride	0.669	0.0011	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.033467	0.038983	116	70 - 121	
Toluene-d8 (Surrogate)	0.033467	0.033688	101	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.033467	0.034585	103	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	114760	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	103149	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	388625	7.11	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW11-03

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-08	File ID:	07DEC49.D
Sampled:	12/04/18 10:50	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 04:56
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	7.04 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.71	0.00099	UD
75-34-3	1,1-Dichloroethane	0.71	0.00099	UD
107-06-2	1,2-Dichloroethane	0.71	0.00060	UD
75-35-4	1,1-Dichloroethene	0.71	0.00085	UD
156-59-2	cis-1,2-Dichloroethene	0.71	0.00092	UD
156-60-5	trans-1,2-Dichloroethene	0.71	0.00099	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.71	0.00078	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.71	0.00078	UD
127-18-4	Tetrachloroethene	0.71	0.00092	UD
71-55-6	1,1,1-Trichloroethane	0.71	0.00078	UD
79-00-5	1,1,2-Trichloroethane	0.71	0.00055	UD
79-01-6	Trichloroethene	0.71	0.00078	UD
75-01-4	Vinyl chloride	0.71	0.0011	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.035511	0.042003	118	70 - 121	
Toluene-d8 (Surrogate)	0.035511	0.036250	102	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.035511	0.037166	105	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	114467	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	106469	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	385952	7.1	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW08-02

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-09	File ID:	07DEC50.D
Sampled:	12/04/18 12:30	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 05:18
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	6.87 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.728	0.0010	UD
75-34-3	1,1-Dichloroethane	0.728	0.0010	UD
107-06-2	1,2-Dichloroethane	0.728	0.00062	UD
75-35-4	1,1-Dichloroethene	0.728	0.00087	UD
156-59-2	cis-1,2-Dichloroethene	0.728	0.00095	UD
156-60-5	trans-1,2-Dichloroethene	0.728	0.0010	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.728	0.00080	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.728	0.00080	UD
127-18-4	Tetrachloroethene	0.728	0.00095	UD
71-55-6	1,1,1-Trichloroethane	0.728	0.00080	UD
79-00-5	1,1,2-Trichloroethane	0.728	0.00056	UD
79-01-6	Trichloroethene	0.728	0.00080	UD
75-01-4	Vinyl chloride	0.728	0.0012	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.036390	0.040131	110	70 - 121	
Toluene-d8 (Surrogate)	0.036390	0.036419	100	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.036390	0.036332	99.8	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	117615	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	105792	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	393436	7.11	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW08-03

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-10	File ID:	07DEC51.D
Sampled:	12/04/18 12:35	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 05:40
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	6.56 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.762	0.0011	UD
75-34-3	1,1-Dichloroethane	0.762	0.0011	UD
107-06-2	1,2-Dichloroethane	0.762	0.00065	UD
75-35-4	1,1-Dichloroethene	0.762	0.00091	UD
156-59-2	cis-1,2-Dichloroethene	0.762	0.00099	UD
156-60-5	trans-1,2-Dichloroethene	0.762	0.0011	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.762	0.00084	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.762	0.00084	UD
127-18-4	Tetrachloroethene	0.762	0.00099	UD
71-55-6	1,1,1-Trichloroethane	0.762	0.00084	UD
79-00-5	1,1,2-Trichloroethane	0.762	0.00059	UD
79-01-6	Trichloroethene	0.762	0.00084	UD
75-01-4	Vinyl chloride	0.762	0.0012	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.038110	0.042523	112	70 - 121	
Toluene-d8 (Surrogate)	0.038110	0.039352	103	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.038110	0.039245	103	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	112171	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	102732	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	370654	7.1	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW06-02

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-11	File ID:	07DEC52.D
Sampled:	12/04/18 13:25	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 06:01
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	7.32 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.683	0.00096	UD
75-34-3	1,1-Dichloroethane	0.683	0.00096	UD
107-06-2	1,2-Dichloroethane	0.683	0.00058	UD
75-35-4	1,1-Dichloroethene	0.683	0.00082	UD
156-59-2	cis-1,2-Dichloroethene	0.683	0.00089	UD
156-60-5	trans-1,2-Dichloroethene	0.683	0.00096	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.683	0.00075	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.683	0.00075	UD
127-18-4	Tetrachloroethene	0.683	0.00089	UD
71-55-6	1,1,1-Trichloroethane	0.683	0.00075	UD
79-00-5	1,1,2-Trichloroethane	0.683	0.00053	UD
79-01-6	Trichloroethene	0.683	0.00075	UD
75-01-4	Vinyl chloride	0.683	0.0011	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.034153	0.037678	110	70 - 121	
Toluene-d8 (Surrogate)	0.034153	0.034802	102	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.034153	0.034529	101	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	110862	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	101640	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	375785	7.1	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW06-03

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-12	File ID:	11DEC17.D
Sampled:	12/04/18 13:30	Prepared:	12/09/18 13:00	Analyzed:	12/11/18 15:43
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	5.45 g / 5 ml
Batch:	B032340	Sequence:	1824530	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.917	0.0014	U
75-34-3	1,1-Dichloroethane	0.917	0.0014	U
107-06-2	1,2-Dichloroethane	0.917	0.00085	U
75-35-4	1,1-Dichloroethene	0.917	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.917	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.917	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.917	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.917	0.0011	U
127-18-4	Tetrachloroethene	0.917	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.917	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.917	0.00077	U
79-01-6	Trichloroethene	0.917	0.0011	U
75-01-4	Vinyl chloride	0.917	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.045872	0.050202	109	70 - 121	
Toluene-d8 (Surrogate)	0.045872	0.048771	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.045872	0.048128	105	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	114845	6.22	131358	6.21	
Chlorobenzene-d5 (IS)	91043	9.41	110054	9.41	
1,4-Difluorobenzene (IS)	339875	7.11	419812	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW04-02

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-13	File ID:	07DEC54.D
Sampled:	12/04/18 14:25	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 06:45
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	6.58 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.76	0.0011	UD
75-34-3	1,1-Dichloroethane	0.76	0.0011	UD
107-06-2	1,2-Dichloroethane	0.76	0.00065	UD
75-35-4	1,1-Dichloroethene	0.76	0.00091	UD
156-59-2	cis-1,2-Dichloroethene	0.76	0.00099	UD
156-60-5	trans-1,2-Dichloroethene	0.76	0.0011	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.76	0.00084	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.76	0.00084	UD
127-18-4	Tetrachloroethene	0.76	0.00099	UD
71-55-6	1,1,1-Trichloroethane	0.76	0.00084	UD
79-00-5	1,1,2-Trichloroethane	0.76	0.00059	UD
79-01-6	Trichloroethene	0.76	0.00084	UD
75-01-4	Vinyl chloride	0.76	0.0012	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.037994	0.040729	107	70 - 121	
Toluene-d8 (Surrogate)	0.037994	0.041216	108	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.037994	0.039749	105	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	117405	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	109335	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	379761	7.1	346259	7.11	

* Values outside of QC limits

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Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW04-03

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838103-14	File ID:	07DEC55.D
Sampled:	12/04/18 14:30	Prepared:	12/07/18 12:00	Analyzed:	12/08/18 07:07
Solids:		Preparation:	EPA 5030 Soil MS	Initial/Final:	5.91 g / 5 ml
Batch:	B032223	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.846	0.0012	UD
75-34-3	1,1-Dichloroethane	0.846	0.0012	UD
107-06-2	1,2-Dichloroethane	0.846	0.00072	UD
75-35-4	1,1-Dichloroethene	0.846	0.0010	UD
156-59-2	cis-1,2-Dichloroethene	0.846	0.0011	UD
156-60-5	trans-1,2-Dichloroethene	0.846	0.0012	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.846	0.00093	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.846	0.00093	UD
127-18-4	Tetrachloroethene	0.846	0.0011	UD
71-55-6	1,1,1-Trichloroethane	0.846	0.00093	UD
79-00-5	1,1,2-Trichloroethane	0.846	0.00065	UD
79-01-6	Trichloroethene	0.846	0.00093	UD
75-01-4	Vinyl chloride	0.846	0.0014	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.042301	0.046159	109	70 - 121	
Toluene-d8 (Surrogate)	0.042301	0.044027	104	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.042301	0.043215	102	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	113240	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	107525	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	370538	7.1	346259	7.11	

* Values outside of QC limits

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Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838103
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032223 Batch Matrix: Solids
Preparation: EPA 5030 Soil MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW05-02	1838103-01	07DEC43.D	12/07/18 12:00	Updated List 12/10/18
SO-VW05-03	1838103-02	07DEC44.D	12/07/18 12:00	Updated List 12/10/18
SO-VW10-02	1838103-04	07DEC45.D	12/07/18 12:00	Updated List 12/10/18
SO-VW10-02-DUP	1838103-05	07DEC46.D	12/07/18 12:00	Updated List 12/10/18
SO-VW10-03	1838103-06	07DEC47.D	12/07/18 12:00	Updated List 12/10/18
SO-VW11-02	1838103-07	07DEC48.D	12/07/18 12:00	Updated List 12/10/18
SO-VW11-03	1838103-08	07DEC49.D	12/07/18 12:00	Updated List 12/10/18
SO-VW08-02	1838103-09	07DEC50.D	12/07/18 12:00	Updated List 12/10/18
SO-VW08-03	1838103-10	07DEC51.D	12/07/18 12:00	Updated List 12/10/18
SO-VW06-02	1838103-11	07DEC52.D	12/07/18 12:00	Updated List 12/10/18
SO-VW04-02	1838103-13	07DEC54.D	12/07/18 12:00	Updated List 12/10/18
SO-VW04-03	1838103-14	07DEC55.D	12/07/18 12:00	Updated List 12/10/18
Blank	B032223-BLK1	05DEC52.D	12/05/18 16:00	
LCS	B032223-BS1	05DEC47.D	12/05/18 16:00	
Matrix Spike	B032223-MS1	05DEC48.D	12/05/18 16:00	
Matrix Spike Dup	B032223-MSD1	05DEC49.D	12/05/18 16:00	

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PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838103
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032340 Batch Matrix: Solids
Preparation: EPA 5035 Soil MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW06-03	1838103-12	11DEC17.D	12/09/18 13:00	Updated List 12/10/18
Blank	B032340-BLK1	07DEC37.D	12/07/18 16:00	
LCS	B032340-BS1	07DEC32.D	12/07/18 16:00	
Matrix Spike	B032340-MS1	07DEC33.D	12/07/18 16:00	
Matrix Spike Dup	B032340-MSD1	07DEC34.D	12/07/18 16:00	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032223-BLK1	File ID:	05DEC52.D
Prepared:	12/05/18 16:00	Preparation:	EPA 5030 Soil MS	Initial/Final:	5 g / 5 ml
Analyzed:	12/06/18 05:54	Instrument:	MS-V3		
Batch:	B032223	Sequence:	1824146	Calibration:	1812002

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.0014	U
75-34-3	1,1-Dichloroethane	0.0014	U
107-06-2	1,2-Dichloroethane	0.00085	U
75-35-4	1,1-Dichloroethene	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.0011	U
127-18-4	Tetrachloroethene	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.00077	U
79-01-6	Trichloroethene	0.0011	U
75-01-4	Vinyl chloride	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.048130	96.3	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.051450	103	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.048620	97.2	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	86374	6.24	83645	6.23	
Chlorobenzene-d5 (IS)	74852	9.42	73383	9.42	
1,4-Difluorobenzene (IS)	272969	7.13	290742	7.13	

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METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1838103
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032340-BLK1	File ID:	07DEC37.D
Prepared:	12/07/18 16:00	Preparation:	EPA 5035 Soil MS	Initial/Final:	5 g / 5 ml
Analyzed:	12/08/18 00:34	Instrument:	MS-V3		
Batch:	B032340	Sequence:	1824353	Calibration:	1812002

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.0014	U
75-34-3	1,1-Dichloroethane	0.0014	U
107-06-2	1,2-Dichloroethane	0.00085	U
75-35-4	1,1-Dichloroethene	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.0011	U
127-18-4	Tetrachloroethene	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.00077	U
79-01-6	Trichloroethene	0.0011	U
75-01-4	Vinyl chloride	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.048750	97.5	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.052150	104	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.050340	101	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	114979	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	100553	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	369222	7.11	346259	7.11	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032223
Preparation: EPA 5030 Soil MS
Source Sample Number: 1836707-28

SDG: 1838103
Project: SMUD 59th St.
Laboratory ID: B032223-MS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	ND	0.084840	67.9 *	70 - 130
1,1-Dichloroethane	0.12500	ND	0.10743	85.9	70 - 130
1,1-Dichloroethene	0.12500	ND	0.10285	82.3	70 - 130
Trichloroethene	0.12500	ND	0.11056	88.4	70 - 130

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	0.12500	0.091200	73.0	7.23	20	70 - 130
1,1-Dichloroethane	0.12500	0.11100	88.8	3.27	20	70 - 130
1,1-Dichloroethene	0.12500	0.10444	83.6	1.53	20	70 - 130
Trichloroethene	0.12500	0.10899	87.2	1.43	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032340
Preparation: EPA 5035 Soil MS
Source Sample Number: 1836707-25

SDG: 1838103
Project: SMUD 59th St.
Laboratory ID: B032340-MS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	ND	0.11538	92.3	70 - 130
1,1-Dichloroethane	0.12500	ND	0.13287	106	70 - 130
1,1-Dichloroethene	0.12500	ND	0.12518	100	70 - 130
Trichloroethene	0.12500	ND	0.12839	103	70 - 130

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	0.12500	0.12756	102	10.0	20	70 - 130
1,1-Dichloroethane	0.12500	0.13314	107	0.203	20	70 - 130
1,1-Dichloroethene	0.12500	0.12982	104	3.64	20	70 - 130
Trichloroethene	0.12500	0.12853	103	0.109	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY
EPA-8260B

Laboratory: BC Laboratories
SDG: 1838103
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Batch: B032223
Laboratory ID: B032223-BS1
Preparation: EPA 5030 Soil MS
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	0.097520	78.0	70 - 130
1,1-Dichloroethane	0.12500	0.11854	94.8	70 - 130
1,1-Dichloroethene	0.12500	0.11305	90.4	70 - 130
Trichloroethene	0.12500	0.12014	96.1	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032340
Preparation: EPA 5035 Soil MS

SDG: 1838103
Project: SMUD 59th St.
Laboratory ID: B032340-BS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	0.11059	88.5	70 - 130
1,1-Dichloroethane	0.12500	0.12497	100	70 - 130
1,1-Dichloroethene	0.12500	0.11764	94.1	70 - 130
Trichloroethene	0.12500	0.12549	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824146	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824146-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824146-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824146-TUN2	05DEC42.D	12/06/18 02:14
Calibration Check	1824146-CCV4	05DEC44.D	12/06/18 02:58
Calibration Blank	1824146-CCB2	05DEC46.D	12/06/18 03:42
LCS	B032223-BS1	05DEC47.D	12/06/18 04:04
Matrix Spike	B032223-MS1	05DEC48.D	12/06/18 04:26
Matrix Spike Dup	B032223-MSD1	05DEC49.D	12/06/18 04:48
Blank	B032223-BLK1	05DEC52.D	12/06/18 05:54
MS Tune	1824146-TUN3	06DEC02.D	12/06/18 14:24
Calibration Check	1824146-CCV7	06DEC04.D	12/06/18 15:23
Calibration Blank	1824146-CCB3	06DEC06.D	12/06/18 16:11

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824353	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824353-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824353-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824353-TUN2	07DEC27.D	12/07/18 20:55
Calibration Check	1824353-CCV4	07DEC29.D	12/07/18 21:39
Calibration Blank	1824353-CCB2	07DEC31.D	12/07/18 22:22
LCS	B032340-BS1	07DEC32.D	12/07/18 22:44
Matrix Spike	B032340-MS1	07DEC33.D	12/07/18 23:06
Matrix Spike Dup	B032340-MSD1	07DEC34.D	12/07/18 23:28
Blank	B032340-BLK1	07DEC37.D	12/08/18 00:34
SO-VW05-02	1838103-01	07DEC43.D	12/08/18 02:45
SO-VW05-03	1838103-02	07DEC44.D	12/08/18 03:07
SO-VW10-02	1838103-04	07DEC45.D	12/08/18 03:29
SO-VW10-02-DUP	1838103-05	07DEC46.D	12/08/18 03:51
SO-VW10-03	1838103-06	07DEC47.D	12/08/18 04:12
SO-VW11-02	1838103-07	07DEC48.D	12/08/18 04:34
SO-VW11-03	1838103-08	07DEC49.D	12/08/18 04:56
SO-VW08-02	1838103-09	07DEC50.D	12/08/18 05:18
SO-VW08-03	1838103-10	07DEC51.D	12/08/18 05:40
SO-VW06-02	1838103-11	07DEC52.D	12/08/18 06:01
SO-VW04-02	1838103-13	07DEC54.D	12/08/18 06:45
SO-VW04-03	1838103-14	07DEC55.D	12/08/18 07:07

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824530
Matrix: Solids
SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824530-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824530-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824530-TUN1	11DEC02.D	12/11/18 10:02
Calibration Check	1824530-CCV1	11DEC04.D	12/11/18 11:00
Calibration Blank	1824530-CCB1	11DEC06.D	12/11/18 11:44
SO-VW06-03	1838103-12	11DEC17.D	12/11/18 15:43
MS Tune	1824530-TUN2	11DEC32.D	12/11/18 21:15
Calibration Check	1824530-CCV4	11DEC34.D	12/11/18 21:59
Calibration Blank	1824530-CCB2	11DEC36.D	12/11/18 22:42

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Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824979	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1824979-TUN1	13NOV03.D	11/13/18 07:18
Cal Standard	1824979-CAL2	13NOV13.D	11/13/18 13:18
Cal Standard	1824979-CAL3	13NOV14.D	11/13/18 13:41
Cal Standard	1824979-CAL4	13NOV15.D	11/13/18 14:04
Cal Standard	1824979-CAL5	13NOV16.D	11/13/18 14:27
Cal Standard	1824979-CAL6	13NOV17.D	11/13/18 14:50
Cal Standard	1824979-CAL1	13NOV21.D	11/13/18 16:22

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	05DEC42.D	Injection Date:	12/06/18
Instrument ID:	MS-V3	Injection Time:	02:14
Sequence:	1824146	Lab Sample ID:	1824146-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.9	PASS
Mass 75	30 - 60% of Mass 95	41.2	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	8.22	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	94.1	PASS
Mass 175	5 - 9% of Mass 174	7.45	PASS
Mass 176	95 - 101% of Mass 174	96.5	PASS
Mass 177	5 - 9% of Mass 176	6.49	PASS

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	06DEC02.D	Injection Date:	12/06/18
Instrument ID:	MS-V3	Injection Time:	14:24
Sequence:	1824146	Lab Sample ID:	1824146-TUN3

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	19.7	PASS
Mass 75	30 - 60% of Mass 95	43.5	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.54	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	70.3	PASS
Mass 175	5 - 9% of Mass 174	5.6	PASS
Mass 176	95 - 101% of Mass 174	96.9	PASS
Mass 177	5 - 9% of Mass 176	7.36	PASS

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Project Manager: Robert Kohlhardt

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	07DEC27.D	Injection Date:	12/07/18
Instrument ID:	MS-V3	Injection Time:	20:55
Sequence:	1824353	Lab Sample ID:	1824353-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.1	PASS
Mass 75	30 - 60% of Mass 95	43.1	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.33	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	78.9	PASS
Mass 175	5 - 9% of Mass 174	7.51	PASS
Mass 176	95 - 101% of Mass 174	98.2	PASS
Mass 177	5 - 9% of Mass 176	6.57	PASS

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Project: SMUD 59th St.
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Project Manager: Robert Kohlhardt

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	11DEC02.D	Injection Date:	12/11/18
Instrument ID:	MS-V3	Injection Time:	10:02
Sequence:	1824530	Lab Sample ID:	1824530-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	18.5	PASS
Mass 75	30 - 60% of Mass 95	44.4	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.55	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	84	PASS
Mass 175	5 - 9% of Mass 174	6.4	PASS
Mass 176	95 - 101% of Mass 174	95.4	PASS
Mass 177	5 - 9% of Mass 176	6.31	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	11DEC32.D	Injection Date:	12/11/18
Instrument ID:	MS-V3	Injection Time:	21:15
Sequence:	1824530	Lab Sample ID:	1824530-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	19.4	PASS
Mass 75	30 - 60% of Mass 95	42.6	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.43	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	81.4	PASS
Mass 175	5 - 9% of Mass 174	8.08	PASS
Mass 176	95 - 101% of Mass 174	97.1	PASS
Mass 177	5 - 9% of Mass 176	6.84	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	13NOV03.D	Injection Date:	11/13/18
Instrument ID:	MS-V3	Injection Time:	07:18
Sequence:	1824979	Lab Sample ID:	1824979-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	20.4	PASS
Mass 75	30 - 60% of Mass 95	50.7	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.36	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	59.8	PASS
Mass 175	5 - 9% of Mass 174	8.79	PASS
Mass 176	95 - 101% of Mass 174	98.4	PASS
Mass 177	5 - 9% of Mass 176	7.95	PASS

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	11/13/18
Lab Sample ID:	1824146-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
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Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	05DEC44.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	12/06/18
Lab Sample ID:	1824146-CCV4	Injection Time:	02:58

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.099050	1.08303	0.8581649		-20.8	20 *
1,1-Dichloroethane	A	0.12500	0.11984	2.329792	2.23364	0.1	-4.1	20
1,2-Dichloroethane	A	0.12500	0.12855	1.174426	1.207814		2.8	20
1,1-Dichloroethene	A	0.12500	0.11503	1.140625	1.049669		-8.0	20
cis-1,2-Dichloroethene	A	0.12500	0.12810	1.251724	1.282735		2.5	20
trans-1,2-Dichloroethene	A	0.12500	0.12074	1.143278	1.104291		-3.4	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.12291	0.9907955	0.9742529		-1.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12449	1.330376	1.324966	0.3	-0.4	20
Tetrachloroethene	A	0.12500	0.11355	0.3102159	0.2818086		-9.2	20
1,1,1-Trichloroethane	A	0.12500	0.12242	1.337076	1.309443		-2.1	20
1,1,2-Trichloroethane	A	0.12500	0.12050	0.2309915	0.2226813		-3.6	20
Trichloroethene	A	0.12500	0.11467	0.3225112	0.2958472		-8.3	20
Vinyl chloride	A	0.12500	0.11182	1.938052	1.733708		-10.5	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
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Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	06DEC04.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	12/06/18
Lab Sample ID:	1824146-CCV7	Injection Time:	15:23

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11716	1.08303	1.015143		-6.3	50
1,1-Dichloroethane	A	0.12500	0.12438	2.329792	2.318179	0.1	-0.5	50
1,2-Dichloroethane	A	0.12500	0.12097	1.174426	1.136604		-3.2	50
1,1-Dichloroethene	A	0.12500	0.12688	1.140625	1.157768		1.5	50
cis-1,2-Dichloroethene	A	0.12500	0.12670	1.251724	1.268757		1.4	50
trans-1,2-Dichloroethene	A	0.12500	0.12774	1.143278	1.168333		2.2	50
1,1,1,2-Tetrachloroethane	A	0.12500	0.12703	0.9907955	1.006885		1.6	50
1,1,2,2-Tetrachloroethane	A	0.12500	0.12315	1.330376	1.310685	0.3	-1.5	50
Tetrachloroethene	A	0.12500	0.14048	0.3102159	0.3486448		12.4	50
1,1,1-Trichloroethane	A	0.12500	0.13261	1.337076	1.418471		6.1	50
1,1,2-Trichloroethane	A	0.12500	0.12180	0.2309915	0.2250832		-2.6	50
Trichloroethene	A	0.12500	0.13072	0.3225112	0.3372593		4.6	50
Vinyl chloride	A	0.12500	0.13571	1.938052	2.104113		8.6	50

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
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Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	11/13/18
Lab Sample ID:	1824353-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	07DEC29.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	12/07/18
Lab Sample ID:	1824353-CCV4	Injection Time:	21:39

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11512	1.08303	0.9974103		-7.9	20
1,1-Dichloroethane	A	0.12500	0.12622	2.329792	2.352528	0.1	1.0	20
1,2-Dichloroethane	A	0.12500	0.12701	1.174426	1.193313		1.6	20
1,1-Dichloroethene	A	0.12500	0.12274	1.140625	1.120005		-1.8	20
cis-1,2-Dichloroethene	A	0.12500	0.13064	1.251724	1.308164		4.5	20
trans-1,2-Dichloroethene	A	0.12500	0.13013	1.143278	1.190162		4.1	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.13330	0.9907955	1.056561		6.6	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12841	1.330376	1.366644	0.3	2.7	20
Tetrachloroethene	A	0.12500	0.12834	0.3102159	0.3185061		2.7	20
1,1,1-Trichloroethane	A	0.12500	0.13100	1.337076	1.401284		4.8	20
1,1,2-Trichloroethane	A	0.12500	0.12724	0.2309915	0.2351315		1.8	20
Trichloroethene	A	0.12500	0.13150	0.3225112	0.3392697		5.2	20
Vinyl chloride	A	0.12500	0.13220	1.938052	2.049614		5.8	20

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824530	Injection Date:	11/13/18
Lab Sample ID:	1824530-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	11DEC04.D	Calibration Date:	11/13/18 13:18
Sequence:	1824530	Injection Date:	12/11/18
Lab Sample ID:	1824530-CCV1	Injection Time:	11:00

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11647	1.08303	1.009154		-6.8	20
1,1-Dichloroethane	A	0.12500	0.13505	2.329792	2.517082	0.1	8.0	20
1,2-Dichloroethane	A	0.12500	0.13641	1.174426	1.281615		9.1	20
1,1-Dichloroethene	A	0.12500	0.12722	1.140625	1.160904		1.8	20
cis-1,2-Dichloroethene	A	0.12500	0.13341	1.251724	1.335903		6.7	20
trans-1,2-Dichloroethene	A	0.12500	0.13573	1.143278	1.241392		8.6	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.13522	0.9907955	1.071812		8.2	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.13211	1.330376	1.406026	0.3	5.7	20
Tetrachloroethene	A	0.12500	0.13818	0.3102159	0.3429173		10.5	20
1,1,1-Trichloroethane	A	0.12500	0.14123	1.337076	1.510684		13.0	20
1,1,2-Trichloroethane	A	0.12500	0.13508	0.2309915	0.2496251		8.1	20
Trichloroethene	A	0.12500	0.14241	0.3225112	0.3674254		13.9	20
Vinyl chloride	A	0.12500	0.12589	1.938052	1.951878		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
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Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838103
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	11DEC34.D	Calibration Date:	11/13/18 13:18
Sequence:	1824530	Injection Date:	12/11/18
Lab Sample ID:	1824530-CCV4	Injection Time:	21:59

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.10757	1.08303	0.931978		-13.9	50
1,1-Dichloroethane	A	0.12500	0.12672	2.329792	2.361916	0.1	1.4	50
1,2-Dichloroethane	A	0.12500	0.13621	1.174426	1.279793		9.0	50
1,1-Dichloroethene	A	0.12500	0.11387	1.140625	1.039029		-8.9	50
cis-1,2-Dichloroethene	A	0.12500	0.12554	1.251724	1.257181		0.4	50
trans-1,2-Dichloroethene	A	0.12500	0.12090	1.143278	1.105813		-3.3	50
1,1,1,2-Tetrachloroethane	A	0.12500	0.13618	0.9907955	1.079393		8.9	50
1,1,2,2-Tetrachloroethane	A	0.12500	0.13116	1.330376	1.395968	0.3	4.9	50
Tetrachloroethene	A	0.12500	0.12703	0.3102159	0.3152563		1.6	50
1,1,1-Trichloroethane	A	0.12500	0.12897	1.337076	1.379561		3.2	50
1,1,2-Trichloroethane	A	0.12500	0.13947	0.2309915	0.2577293		11.6	50
Trichloroethene	A	0.12500	0.12769	0.3225112	0.3294592		2.2	50
Vinyl chloride	A	0.12500	0.11118	1.938052	1.723713		-11.1	50

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824146-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824146-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824146-CCV4)			Lab File ID: 05DEC44.D		Analyzed: 12/06/18 02:58			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	80 - 120	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9	80 - 120	10.16	10.14	0.0200	+/-1.0	
Calibration Blank (1824146-CCB2)			Lab File ID: 05DEC46.D		Analyzed: 12/06/18 03:42			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	93.2	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.8	74 - 121	10.16	10.14	0.0200	+/-1.0	
LCS (B032223-BS1)			Lab File ID: 05DEC47.D		Analyzed: 12/06/18 04:04			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	102	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.16	10.14	0.0200	+/-1.0	
Matrix Spike (B032223-MS1)			Lab File ID: 05DEC48.D		Analyzed: 12/06/18 04:26			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	91.3	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	95.9	74 - 121	10.15	10.14	0.0100	+/-1.0	
Matrix Spike Dup (B032223-MSD1)			Lab File ID: 05DEC49.D		Analyzed: 12/06/18 04:48			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.6	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.9	74 - 121	10.16	10.14	0.0200	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (B032223-BLK1)			Lab File ID: 05DEC52.D		Analyzed: 12/06/18 05:54			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.3	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.2	74 - 121	10.16	10.14	0.0200	+/-1.0	
Calibration Check (1824146-CCV7)			Lab File ID: 06DEC04.D		Analyzed: 12/06/18 15:23			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	92.1	80 - 120	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	106	80 - 120	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	104	80 - 120	10.16	10.14	0.0200	+/-1.0	
Calibration Blank (1824146-CCB3)			Lab File ID: 06DEC06.D		Analyzed: 12/06/18 16:11			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.9	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.2	74 - 121	10.15	10.14	0.0100	+/-1.0	

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824353-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824353-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824353-CCV4)			Lab File ID: 07DEC29.D		Analyzed: 12/07/18 21:39			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.9	80 - 120	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.5	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.3	80 - 120	10.15	10.14	0.0100	+/-1.0	
Calibration Blank (1824353-CCB2)			Lab File ID: 07DEC31.D		Analyzed: 12/07/18 22:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.8	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.14	10.14	0.0000	+/-1.0	
LCS (B032340-BS1)			Lab File ID: 07DEC32.D		Analyzed: 12/07/18 22:44			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.3	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	98.6	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.4	74 - 121	10.14	10.14	0.0000	+/-1.0	
Matrix Spike (B032340-MS1)			Lab File ID: 07DEC33.D		Analyzed: 12/07/18 23:06			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.5	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.4	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.3	74 - 121	10.15	10.14	0.0100	+/-1.0	
Matrix Spike Dup (B032340-MSD1)			Lab File ID: 07DEC34.D		Analyzed: 12/07/18 23:28			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	100	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.1	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (B032340-BLK1)			Lab File ID: 07DEC37.D		Analyzed: 12/08/18 00:34			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.5	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW05-02 (1838103-01)			Lab File ID: 07DEC43.D		Analyzed: 12/08/18 02:45			
1,2-Dichloroethane-d4 (Surrogate)	0.044405	113	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.044405	106	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.044405	100	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW05-03 (1838103-02)			Lab File ID: 07DEC44.D		Analyzed: 12/08/18 03:07			
1,2-Dichloroethane-d4 (Surrogate)	0.046211	114	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.046211	105	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.046211	98.3	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW10-02 (1838103-04)			Lab File ID: 07DEC45.D		Analyzed: 12/08/18 03:29			
1,2-Dichloroethane-d4 (Surrogate)	0.049310	107	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.049310	107	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.049310	100	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW10-02-DUP (1838103-05)			Lab File ID: 07DEC46.D		Analyzed: 12/08/18 03:51			
1,2-Dichloroethane-d4 (Surrogate)	0.038168	112	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.038168	107	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.038168	99.7	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW10-03 (1838103-06)			Lab File ID: 07DEC47.D		Analyzed: 12/08/18 04:12			
1,2-Dichloroethane-d4 (Surrogate)	0.042159	116	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.042159	96.2	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.042159	103	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW11-02 (1838103-07)			Lab File ID: 07DEC48.D		Analyzed: 12/08/18 04:34			
1,2-Dichloroethane-d4 (Surrogate)	0.033467	116	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.033467	101	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.033467	103	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
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Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
SO-VW11-03 (1838103-08)			Lab File ID: 07DEC49.D		Analyzed: 12/08/18 04:56			
1,2-Dichloroethane-d4 (Surrogate)	0.035511	118	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.035511	102	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.035511	105	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW08-02 (1838103-09)			Lab File ID: 07DEC50.D		Analyzed: 12/08/18 05:18			
1,2-Dichloroethane-d4 (Surrogate)	0.036390	110	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.036390	100	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.036390	99.8	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW08-03 (1838103-10)			Lab File ID: 07DEC51.D		Analyzed: 12/08/18 05:40			
1,2-Dichloroethane-d4 (Surrogate)	0.038110	112	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.038110	103	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.038110	103	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW06-02 (1838103-11)			Lab File ID: 07DEC52.D		Analyzed: 12/08/18 06:01			
1,2-Dichloroethane-d4 (Surrogate)	0.034153	110	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.034153	102	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.034153	101	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW04-02 (1838103-13)			Lab File ID: 07DEC54.D		Analyzed: 12/08/18 06:45			
1,2-Dichloroethane-d4 (Surrogate)	0.037994	107	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.037994	108	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.037994	105	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW04-03 (1838103-14)			Lab File ID: 07DEC55.D		Analyzed: 12/08/18 07:07			
1,2-Dichloroethane-d4 (Surrogate)	0.042301	109	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.042301	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.042301	102	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824530
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824530-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824530-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824530-CCV1)			Lab File ID: 11DEC04.D		Analyzed: 12/11/18 11:00			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.5	80 - 120	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	96.8	80 - 120	10.14	10.14	0.0000	+/-1.0	
Calibration Blank (1824530-CCB1)			Lab File ID: 11DEC06.D		Analyzed: 12/11/18 11:44			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	102	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	98.0	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.15	10.14	0.0100	+/-1.0	
SO-VW06-03 (1838103-12)			Lab File ID: 11DEC17.D		Analyzed: 12/11/18 15:43			
1,2-Dichloroethane-d4 (Surrogate)	0.045872	109	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.045872	106	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.045872	105	74 - 121	10.15	10.14	0.0100	+/-1.0	
Calibration Check (1824530-CCV4)			Lab File ID: 11DEC34.D		Analyzed: 12/11/18 21:59			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	99.7	80 - 120	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	80 - 120	10.14	10.14	0.0000	+/-1.0	
Calibration Blank (1824530-CCB2)			Lab File ID: 11DEC36.D		Analyzed: 12/11/18 22:42			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	108	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.2	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	100	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D		Analyzed: 11/13/18 13:18			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	103		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.0		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D		Analyzed: 11/13/18 13:41			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	95.2		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D		Analyzed: 11/13/18 14:04			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	95.7		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.0		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	104		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D		Analyzed: 11/13/18 14:27			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.3		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.7		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D		Analyzed: 11/13/18 14:50			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	91.9		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D		Analyzed: 11/13/18 16:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	105		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.2		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9		10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824146-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824146-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824146-CCV4)			Lab File ID: 05DEC44.D			Analyzed: 12/06/18 02:58			
Pentafluorobenzene (IS)	83645	6.23	85192	6.21	98	50 - 200	0.0200	+/-0.50	
Chlorobenzene-d5 (IS)	73383	9.42	69865	9.41	105	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	290742	7.13	271811	7.1	107	50 - 200	0.0300	+/-0.50	
Calibration Blank (1824146-CCB2)			Lab File ID: 05DEC46.D			Analyzed: 12/06/18 03:42			
Pentafluorobenzene (IS)	96426	6.24	83645	6.23	115	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	77990	9.42	73383	9.42	106	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	295815	7.13	290742	7.13	102	50 - 200	0.0000	+/-0.50	
LCS (B032223-BS1)			Lab File ID: 05DEC47.D			Analyzed: 12/06/18 04:04			
Pentafluorobenzene (IS)	87203	6.24	83645	6.23	104	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	74454	9.42	73383	9.42	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	294688	7.13	290742	7.13	101	50 - 200	0.0000	+/-0.50	
Matrix Spike (B032223-MS1)			Lab File ID: 05DEC48.D			Analyzed: 12/06/18 04:26			
Pentafluorobenzene (IS)	93001	6.24	83645	6.23	111	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	77552	9.43	73383	9.42	106	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	299850	7.13	290742	7.13	103	50 - 200	0.0000	+/-0.50	
Matrix Spike Dup (B032223-MSD1)			Lab File ID: 05DEC49.D			Analyzed: 12/06/18 04:48			
Pentafluorobenzene (IS)	89492	6.24	83645	6.23	107	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	76915	9.42	73383	9.42	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	303568	7.13	290742	7.13	104	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B032223-BLK1)			Lab File ID: 05DEC52.D			Analyzed: 12/06/18 05:54			
Pentafluorobenzene (IS)	86374	6.24	83645	6.23	103	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	74852	9.42	73383	9.42	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	272969	7.13	290742	7.13	94	50 - 200	0.0000	+/-0.50	
Calibration Check (1824146-CCV7)			Lab File ID: 06DEC04.D			Analyzed: 12/06/18 15:23			
Pentafluorobenzene (IS)	78718	6.24	85192	6.21	92	50 - 200	0.0300	+/-0.50	
Chlorobenzene-d5 (IS)	68320	9.42	69865	9.41	98	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	259417	7.13	271811	7.1	95	50 - 200	0.0300	+/-0.50	
Calibration Blank (1824146-CCB3)			Lab File ID: 06DEC06.D			Analyzed: 12/06/18 16:11			
Pentafluorobenzene (IS)	94614	6.24	67190	6.24	141	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	80728	9.42	66816	9.42	121	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	304843	7.13	205200	7.13	149	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824353-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824353-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824353-CCV4)			Lab File ID: 07DEC29.D			Analyzed: 12/07/18 21:39			
Pentafluorobenzene (IS)	105107	6.22	85192	6.21	123	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	85377	9.41	69865	9.41	122	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	346259	7.11	271811	7.1	127	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824353-CCB2)			Lab File ID: 07DEC31.D			Analyzed: 12/07/18 22:22			
Pentafluorobenzene (IS)	104184	6.21	105107	6.22	99	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	87032	9.41	85377	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	339559	7.11	346259	7.11	98	50 - 200	0.0000	+/-0.50	
LCS (B032340-BS1)			Lab File ID: 07DEC32.D			Analyzed: 12/07/18 22:44			
Pentafluorobenzene (IS)	104245	6.22	105107	6.22	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	87095	9.41	85377	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	347883	7.11	346259	7.11	100	50 - 200	0.0000	+/-0.50	
Matrix Spike (B032340-MS1)			Lab File ID: 07DEC33.D			Analyzed: 12/07/18 23:06			
Pentafluorobenzene (IS)	99697	6.21	105107	6.22	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	86973	9.41	85377	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	342559	7.11	346259	7.11	99	50 - 200	0.0000	+/-0.50	
Matrix Spike Dup (B032340-MSD1)			Lab File ID: 07DEC34.D			Analyzed: 12/07/18 23:28			
Pentafluorobenzene (IS)	93683	6.21	105107	6.22	89	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	80240	9.41	85377	9.41	94	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	324395	7.11	346259	7.11	94	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B032340-BLK1)			Lab File ID: 07DEC37.D			Analyzed: 12/08/18 00:34			
Pentafluorobenzene (IS)	114979	6.21	105107	6.22	109	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	100553	9.41	85377	9.41	118	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	369222	7.11	346259	7.11	107	50 - 200	0.0000	+/-0.50	
SO-VW05-02 (1838103-01)			Lab File ID: 07DEC43.D			Analyzed: 12/08/18 02:45			
Pentafluorobenzene (IS)	104249	6.21	105107	6.22	99	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	98064	9.41	85377	9.41	115	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	351083	7.11	346259	7.11	101	50 - 200	0.0000	+/-0.50	
SO-VW05-03 (1838103-02)			Lab File ID: 07DEC44.D			Analyzed: 12/08/18 03:07			
Pentafluorobenzene (IS)	109195	6.21	105107	6.22	104	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	104755	9.41	85377	9.41	123	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	354159	7.1	346259	7.11	102	50 - 200	-0.0100	+/-0.50	
SO-VW10-02 (1838103-04)			Lab File ID: 07DEC45.D			Analyzed: 12/08/18 03:29			
Pentafluorobenzene (IS)	119386	6.21	105107	6.22	114	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	110215	9.41	85377	9.41	129	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	382356	7.11	346259	7.11	110	50 - 200	0.0000	+/-0.50	
SO-VW10-02-DUP (1838103-05)			Lab File ID: 07DEC46.D			Analyzed: 12/08/18 03:51			
Pentafluorobenzene (IS)	113921	6.21	105107	6.22	108	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	102428	9.41	85377	9.41	120	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	373244	7.11	346259	7.11	108	50 - 200	0.0000	+/-0.50	
SO-VW10-03 (1838103-06)			Lab File ID: 07DEC47.D			Analyzed: 12/08/18 04:12			
Pentafluorobenzene (IS)	118328	6.21	105107	6.22	113	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	111810	9.41	85377	9.41	131	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	400577	7.11	346259	7.11	116	50 - 200	0.0000	+/-0.50	
SO-VW11-02 (1838103-07)			Lab File ID: 07DEC48.D			Analyzed: 12/08/18 04:34			
Pentafluorobenzene (IS)	114760	6.21	105107	6.22	109	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	103149	9.41	85377	9.41	121	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	388625	7.11	346259	7.11	112	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SO-VW11-03 (1838103-08)			Lab File ID: 07DEC49.D			Analyzed: 12/08/18 04:56			
Pentafluorobenzene (IS)	114467	6.21	105107	6.22	109	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	106469	9.41	85377	9.41	125	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	385952	7.1	346259	7.11	111	50 - 200	-0.0100	+/-0.50	
SO-VW08-02 (1838103-09)			Lab File ID: 07DEC50.D			Analyzed: 12/08/18 05:18			
Pentafluorobenzene (IS)	117615	6.21	105107	6.22	112	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	105792	9.41	85377	9.41	124	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	393436	7.11	346259	7.11	114	50 - 200	0.0000	+/-0.50	
SO-VW08-03 (1838103-10)			Lab File ID: 07DEC51.D			Analyzed: 12/08/18 05:40			
Pentafluorobenzene (IS)	112171	6.21	105107	6.22	107	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	102732	9.41	85377	9.41	120	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	370654	7.1	346259	7.11	107	50 - 200	-0.0100	+/-0.50	
SO-VW06-02 (1838103-11)			Lab File ID: 07DEC52.D			Analyzed: 12/08/18 06:01			
Pentafluorobenzene (IS)	110862	6.21	105107	6.22	105	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	101640	9.41	85377	9.41	119	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	375785	7.1	346259	7.11	109	50 - 200	-0.0100	+/-0.50	
SO-VW04-02 (1838103-13)			Lab File ID: 07DEC54.D			Analyzed: 12/08/18 06:45			
Pentafluorobenzene (IS)	117405	6.21	105107	6.22	112	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	109335	9.41	85377	9.41	128	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	379761	7.1	346259	7.11	110	50 - 200	-0.0100	+/-0.50	
SO-VW04-03 (1838103-14)			Lab File ID: 07DEC55.D			Analyzed: 12/08/18 07:07			
Pentafluorobenzene (IS)	113240	6.21	105107	6.22	108	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	107525	9.41	85377	9.41	126	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	370538	7.1	346259	7.11	107	50 - 200	-0.0100	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824530
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824530-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824530-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824530-CCV1)			Lab File ID: 11DEC04.D			Analyzed: 12/11/18 11:00			
Pentafluorobenzene (IS)	131358	6.21	85192	6.21	154	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	110054	9.41	69865	9.41	158	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	419812	7.11	271811	7.1	154	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824530-CCB1)			Lab File ID: 11DEC06.D			Analyzed: 12/11/18 11:44			
Pentafluorobenzene (IS)	139540	6.21	131358	6.21	106	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	113714	9.41	110054	9.41	103	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	438731	7.11	419812	7.11	105	50 - 200	0.0000	+/-0.50	
SO-VW06-03 (1838103-12)			Lab File ID: 11DEC17.D			Analyzed: 12/11/18 15:43			
Pentafluorobenzene (IS)	114845	6.22	131358	6.21	87	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	91043	9.41	110054	9.41	83	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	339875	7.11	419812	7.11	81	50 - 200	0.0000	+/-0.50	
Calibration Check (1824530-CCV4)			Lab File ID: 11DEC34.D			Analyzed: 12/11/18 21:59			
Pentafluorobenzene (IS)	138117	6.21	85192	6.21	162	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	111118	9.41	69865	9.41	159	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	429238	7.11	271811	7.1	158	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824530-CCB2)			Lab File ID: 11DEC36.D			Analyzed: 12/11/18 22:42			
Pentafluorobenzene (IS)	139833	6.21	142735	6.2	98	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	117937	9.41	118990	9.41	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	453411	7.11	459112	7.11	99	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D			Analyzed: 11/13/18 13:18			
Pentafluorobenzene (IS)	82386	6.2	85192	6.21	97	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	70974	9.41	69865	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	277119	7.1	271811	7.1	102	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D			Analyzed: 11/13/18 13:41			
Pentafluorobenzene (IS)	85192	6.21	85192	6.21	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69865	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	271811	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D			Analyzed: 11/13/18 14:04			
Pentafluorobenzene (IS)	85251	6.2	85192	6.21	100	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	69041	9.41	69865	9.41	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	283685	7.1	271811	7.1	104	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D			Analyzed: 11/13/18 14:27			
Pentafluorobenzene (IS)	82966	6.21	85192	6.21	97	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	66555	9.4	69865	9.41	95	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	268813	7.1	271811	7.1	99	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D			Analyzed: 11/13/18 14:50			
Pentafluorobenzene (IS)	81182	6.2	85192	6.21	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	64689	9.4	69865	9.41	93	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	262849	7.1	271811	7.1	97	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D			Analyzed: 11/13/18 16:22			
Pentafluorobenzene (IS)	83848	6.21	85192	6.21	98	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69643	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	272090	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION STANDARDS

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Calibration: 1812002

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
8K09001	8260 V2 BFB WORKING STD	1824979-TUN1	13NOV03.D	11/13/18 07:18
8K27020	8260 V3 1823650 REG CAL2	1824979-CAL2	13NOV13.D	11/13/18 13:18
8K27021	8260 V3 1823650 REG CAL3	1824979-CAL3	13NOV14.D	11/13/18 13:41
8K27022	8260 V3 1823650 REG CAL4	1824979-CAL4	13NOV15.D	11/13/18 14:04
8K27023	8260 V3 1823650 REG CAL5	1824979-CAL5	13NOV16.D	11/13/18 14:27
8K27024	8260 V3 1823650 REG CAL6	1824979-CAL6	13NOV17.D	11/13/18 14:50
8K27019	8260 V3 1823650 REG CAL1	1824979-CAL1	13NOV21.D	11/13/18 16:22

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF
Chloroethane	0.005	0.9313281	0.05	1.280436	0.125	1.123669	0.25	1.047286	0.375	1.06771	0.5	1.047751
1,1-Dichloroethane	0.005	2.253363	0.05	2.54945	0.125	2.321218	0.25	2.350689	0.375	2.253137	0.5	2.250896
1,2-Dichloroethane	0.005	1.146479	0.05	1.313476	0.125	1.170007	0.25	1.180664	0.375	1.126421	0.5	1.109511
1,1-Dichloroethene	0.005	0.9562542	0.05	1.254315	0.125	1.221396	0.25	1.161347	0.375	1.193917	0.5	1.056522
cis-1,2-Dichloroethene	0.005	1.213267	0.05	1.362792	0.125	1.245521	0.25	1.256239	0.375	1.227132	0.5	1.205393
trans-1,2-Dichloroethene	0.005	1.100921	0.05	1.242881	0.125	1.15423	0.25	1.133702	0.375	1.111533	0.5	1.1164
1,1,1,2-Tetrachloroethane	0.005	1.032121	0.05	1.041565	0.125	0.9871209	0.25	1.008363	0.375	0.9530864	0.5	0.922517
1,1,2,2-Tetrachloroethane	0.005	1.309823	0.05	1.361287	0.125	1.364838	0.25	1.368691	0.375	1.264155	0.5	1.313461
Tetrachloroethene	0.005	0.2811937	0.05	0.3458767	0.125	0.3362851	0.25	0.3051829	0.375	0.2984593	0.5	0.2942975
1,1,1-Trichloroethane	0.005	1.101756	0.05	1.480106	0.125	1.384257	0.25	1.367637	0.375	1.334175	0.5	1.354528
1,1,2-Trichloroethane	0.005	0.2463523	0.05	0.247493	0.125	0.2332768	0.25	0.2215901	0.375	0.2211758	0.5	0.2160609
Trichloroethene	0.005	0.2871109	0.05	0.3531768	0.125	0.3378907	0.25	0.3156205	0.375	0.3192589	0.5	0.3220092
Vinyl chloride	0.005	1.449766	0.05	2.242881	0.125	2.185468	0.25	1.980629	0.375	1.929103	0.5	1.840463
1,2-Dichloroethane-d4 (Surrogate)	0.05	0.9335941	0.05	0.943	0.05	0.8892502	0.05	0.8737962	0.05	0.8606658	0.05	0.8391146
Toluene-d8 (Surrogate)	0.05	1.05224	0.05	1.058386	0.05	1.088999	0.05	1.040034	0.05	1.061548	0.05	1.061499
4-Bromofluorobenzene (Surrogate)	0.05	1.365191	0.05	1.329571	0.05	1.305475	0.05	1.427688	0.05	1.367305	0.05	1.4035

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1838103
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Chloroethane	1.08303	10.63971	2.313333	0.352722			15	
1,1-Dichloroethane	2.329792	4.957522	4.69	2.144103E-02			SPCC (0.10)	
1,2-Dichloroethane	1.174426	6.221394	6.68	1.342167E-02			15	
1,1-Dichloroethene	1.140625	9.902162	3.181667	0.1271662			CCC (20)	
cis-1,2-Dichloroethene	1.251724	4.606693	5.411667	7.615105E-02			15	
trans-1,2-Dichloroethene	1.143278	4.571262	4.145	0.1308259			15	
1,1,1,2-Tetrachloroethane	0.9907955	4.667134	9.485	5.866972E-02			15	
1,1,2,2-Tetrachloroethane	1.330376	3.136352	10.21	1.398524E-02			SPCC (0.30)	
Tetrachloroethene	0.3102159	8.168443	8.81	2.247676E-02			15	
1,1,1-Trichloroethane	1.337076	9.419156	6.125	8.905765E-02			15	
1,1,2-Trichloroethane	0.2309915	5.875976	8.758334	4.406004E-02			15	
Trichloroethene	0.3225112	6.917194	7.325	7.247583E-02			15	
Vinyl chloride	1.938052	14.66652	1.881667	0.2169596			CCC (20)	
1,2-Dichloroethane-d4 (Surrogate)	0.8899035	4.611968	6.586667	7.620565E-02			15	
Toluene-d8 (Surrogate)	1.060451	1.523989	8.38	1.581306E-02			15	
4-Bromofluorobenzene (Surrogate)	1.366455	3.305892	10.14	2.059171E-02			15	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

HOLDING TIME SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838103
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
SO-VW05-02	12/04/18 08:15	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 02:45	4.00	14.00	
SO-VW05-03	12/04/18 08:20	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 03:07	4.00	14.00	
SO-VW10-02	12/04/18 09:35	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 03:29	4.00	14.00	
SO-VW10-02-DUP	12/04/18 09:38	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 03:51	4.00	14.00	
SO-VW10-03	12/04/18 09:40	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 04:12	4.00	14.00	
SO-VW11-02	12/04/18 10:45	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 04:34	4.00	14.00	
SO-VW11-03	12/04/18 10:50	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 04:56	4.00	14.00	
SO-VW08-02	12/04/18 12:30	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 05:18	4.00	14.00	
SO-VW08-03	12/04/18 12:35	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 05:40	4.00	14.00	
SO-VW06-02	12/04/18 13:25	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 06:01	4.00	14.00	
SO-VW06-03	12/04/18 13:30	12/05/18 08:50	12/09/18 13:00	7.00	14.00	12/11/18 15:43	7.00	14.00	
SO-VW04-02	12/04/18 14:25	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 06:45	4.00	14.00	
SO-VW04-03	12/04/18 14:30	12/05/18 08:50	12/07/18 12:00	4.00	14.00	12/08/18 07:07	4.00	14.00	

* Holding time not met

Note: If Prep or Analysis are performed within the hour (if holding time is based on hours) or within the day (if holding time is based on days), then the sample is not flagged as outside holding times. Calculated number of days are based on date received or date prepared depending on the test.

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 11:42:11AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838104

Laboratory Documentation Requirements
For Data Validation of
Metals Analysis (using ppm units)

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838104
COC Number:
Default Cooler was received at 0 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-6020 (TTLC)	PE-EL2

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032393	EPA-6020 (TTLC)	1838186-01	SO-B05-01

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

Post Spikes

The Post Spike recoveries were within QC limits.

Interference Checks

The Interference Check recoveries were within QC limits.

BC LABORATORIES, INC.

Chain of Custody Form

Page 1 of 1

Report To: Client: AECOM	Project #: 60570013.05
Attn: Robert Kohlhardt	Project Name: SMUD 57th ST.
Street Address: 2020 L ST suite 400	
City, State, Zip: Sacramento CA	Sampler(s): Jack Ryan
Phone: 916-414-5800 Fax:	
Email: Robert.Kohlhardt@aecom.com	
Work Order #: 18-38104	

Analysis Requested

Please refer to the back of this page for completion instructions and method legend.

Comments:

Sample #	Description	Date Sampled	Time Sampled	SW8260B	SW6020	Sample Matrix: Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other
1	SO-VW02-02	12/5/18	0850	X		X					
2	SO-VW02-02-DUP	12/5/18	0853	X		X					
3	SO-VW02-03	12/5/18	0900	X		X					
4	SO-VW09-02	12/5/18	0950	X		X					
5	SO-B13-02	12/5/18	0955		X	X					
6	SO-VW09-03	12/5/18	1010	X		X					
7	SO-VW01-02	12/5/18	1120	X		X					
8	SO-VW01-03	12/5/18	1125	X		X					
9	SO-VW03-02	12/5/18	1415	X		X					
10	SO-B07-02	12/5/18	1425		X	X					
11	SO-VW07-02	12/5/18	13:15	X							
12	SO-VW07DUP-02	12/5/18	13:20	X							

Sample Matrix: Soil, Sludge, Drinking Water, Ground Water, Waste Water, Other

Result Request **Surcharge

[X] STD (10 Day) ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

Notes

DISTRIBUTION
WHITE
YELLOW
PINK
SUB-OUT

12.5.18

Billing	EDF Required? Geotracker	Global ID (Needed for EDF)	System # (Needed for EDT)
[X] Same as above	☐ Yes ☐ No		
Client:	Send Copy to State of CA? (EDT)		
Address:	☐ Yes ☐ No		
City: State Zip			
Attn:			
P.O. #:			

	Relinquished By	Date	Time	Received By	Date	Time
1	Jack Ryan	12.5.18	1450	Ozzie Brown	12/5/18	1450
2	Bill Benton	12-5-18	1534		12.6.18	09:08
3						

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838104 Page 2 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 1838104

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☑ (Specify) GSO

SHIPPING CONTAINER
Ice Chest ☑ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: .95 Container: Voa Thermometer ID: 274 Date/Time 12-10-18

Temperature: (A) 0.0 °C / (C) 0.0 °C Analyst Init RD 09:08

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PTA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE					A				A	
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	ABCD	ABCD	ABCD	ABCD		ABCD	ABCD	ABCD	ABCD	
SUMMA CANISTER										

Comments:
Sample Numbering Completed By: Date/Time: 12/6 1834
A = Actual / C = Corrected

Rev 21 05/23*

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Natalie Serda

From: Rayl, Jack E. <Jack.Rayl@aecom.com>
Sent: Monday, December 10, 2018 8:57 AM
To: Natalie Serda; Kohlhardt, Robert
Subject: Re: 1838104 Samples recvd not on coc

Good morning Natalie,

Yes please add them. Apologies for not getting them on the COC. I obviously missed those. Thanks for catching that.

Robert did we already fix my mistake from Thursday? Collected sample from B12 not B17.

Sent from my iPhone

On Dec 10, 2018, at 8:51 AM, Natalie Serda <natalie.serda@bclabs.com> wrote:

> Good Morning,
>
> We received smart kit samples that were not listed on the coc, would you like for these to be added?
>
> SO-VW07-02 12/5 13:15
> SO-VW07-03 12/05 13:20
>
> <image001.jpg>
>
> **Thanks,**
>
> **Natalie Serda**
> **Project Manager**
> **BC Laboratories, Inc.**
> **Phone: (661) 327-4911 ext. 281**
> **Direct: (661) 852-4281**
> **Cell: (661) 912-4694**

Chain of Custody and Cooler Receipt Form for 1838104 Page 4 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 18 - 38104

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☑ (Specify) 7501	Ice Chest ☑ None ☐ Box ☐ Other ☐ (Specify)	YES ☐ NO ☐ W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ | Containers ☐ Intact? Yes ☐ No ☐ | None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: .95 Container: Voa Thermometer ID: 274 Date/Time 12.10.18

Temperature: (A) 0.0 °C / (C) 0.0 °C Analyst Init: AD 09:08

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr*										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PIA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	MBLD	MBLD								
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: MC Date/Time: 12/10/18 0915

A = Actual / C = Corrected

Rev 21 05/23/2016

(S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20)

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838104**
Class: **METALS-PPM**
Method: **EPA-6020**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838104
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-B13-02	1838104-05
SO-B07-02	1838104-10

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-07-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-6020

Laboratory: BC Laboratories
SDG: 1838104
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: PE-EL2

Analyte	MDL	PQL	Units
Arsenic	0.17	0.5	mg/kg

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B13-02

Laboratory: BC Laboratories
SDG: 1838104
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838104-05
File ID: PE_EL2_181211-063
Sampled: 12/05/18 09:55
Prepared: 12/10/18 08:30
Analyzed: 12/11/18 12:17
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.06 g / 250 ml
Batch: B032393
Sequence: 1824596
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	3.9	0.943		EPA-6020

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B07-02

Laboratory: BC Laboratories
SDG: 1838104
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838104-10
File ID: PE_EL2_181211-064
Sampled: 12/05/18 14:25
Prepared: 12/10/18 08:30
Analyzed: 12/11/18 12:21
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.04 g / 250 ml
Batch: B032393
Sequence: 1824596
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	4.9	0.962		EPA-6020

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-6020

Laboratory: BC Laboratories
SDG: 1838104
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032393 Batch Matrix: Solids
Preparation: EPA 3050B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-B13-02	1838104-05	PE_EL2_181211-063	12/10/18 08:30	
SO-B07-02	1838104-10	PE_EL2_181211-064	12/10/18 08:30	
Blank	B032393-BLK1	PE_EL2_181211-053	12/10/18 08:30	
LCS	B032393-BS1	PE_EL2_181211-052	12/10/18 08:30	
Duplicate	B032393-DUP1	PE_EL2_181211-055	12/10/18 08:30	
Matrix Spike	B032393-MS1	PE_EL2_181211-057	12/10/18 08:30	
Matrix Spike Dup	B032393-MSD1	PE_EL2_181211-058	12/10/18 08:30	
Post Spike	B032393-PS1	PE_EL2_181211-059	12/10/18 08:30	[Spk] 1g->250ml; 250ml->250ml; Spiked 9.8ml

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-6020

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032393-BLK1	File ID:	PE_EL2_181211-053
Prepared:	12/10/18 08:30	Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml
Analyzed:	12/11/18 11:33	Instrument:	PE-EL2		
Batch:	B032393	Sequence:	1824596	Calibration:	UNASSIGNED

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
7440-38-2	Arsenic	0.17	U

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Duplicate

DUPLICATES

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032393
Preparation: EPA 3050B
Source Sample Name: Duplicate

SDG: 1838104
Project: SMUD 59th St.
Laboratory ID: B032393-DUP1
Lab Source ID: 1838186-01
Initial/Final: 1 g / 250 ml
% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/kg)	C	DUPLICATE CONCENTRATION (mg/kg)	C	RPD %	Q	METHOD
Arsenic	20	3.6815		3.5812		2.76		EPA-6020

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-6020

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032393
Preparation: EPA 3050B
Source Sample Number: 1838186-01

SDG: 1838104
Project: SMUD 59th St.
Laboratory ID: B032393-MS1
Initial/Final: 1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Arsenic	25.000	3.6815	27.889	96.8	75 - 125

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Arsenic	25.000	29.945	105	7.11	20	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Matrix:	Solids		
Batch:	B032393	Laboratory ID:	B032393-BS1
Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Arsenic	25.000	26.756	107	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824596
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: PE-EL2
Calibration: UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824596-ICV1	PE_EL2_181211-031	12/11/18 09:41
Initial Cal Blank	1824596-ICB1	PE_EL2_181211-032	12/11/18 09:45
Calibration Check	1824596-CCV2	PE_EL2_181211-041	12/11/18 10:24
Calibration Blank	1824596-CCB2	PE_EL2_181211-042	12/11/18 10:28
MRL Check	1824596-CRL2	PE_EL2_181211-043	12/11/18 10:34
Interference Check A	1824596-IFA1	PE_EL2_181211-044	12/11/18 10:40
Interference Check B	1824596-IFB1	PE_EL2_181211-045	12/11/18 10:45
Calibration Check	1824596-CCV3	PE_EL2_181211-050	12/11/18 11:16
Calibration Blank	1824596-CCB3	PE_EL2_181211-051	12/11/18 11:19
LCS	B032393-BS1	PE_EL2_181211-052	12/11/18 11:29
Blank	B032393-BLK1	PE_EL2_181211-053	12/11/18 11:33
Duplicate	B032393-DUP1	PE_EL2_181211-055	12/11/18 11:40
Matrix Spike	B032393-MS1	PE_EL2_181211-057	12/11/18 11:47
Matrix Spike Dup	B032393-MSD1	PE_EL2_181211-058	12/11/18 11:50
Post Spike	B032393-PS1	PE_EL2_181211-059	12/11/18 11:54
Calibration Check	1824596-CCV4	PE_EL2_181211-060	12/11/18 11:57
Calibration Blank	1824596-CCB4	PE_EL2_181211-061	12/11/18 12:01
SO-B13-02	1838104-05	PE_EL2_181211-063	12/11/18 12:17
SO-B07-02	1838104-10	PE_EL2_181211-064	12/11/18 12:21
Calibration Check	1824596-CCV5	PE_EL2_181211-070	12/11/18 12:42
Calibration Blank	1824596-CCB5	PE_EL2_181211-071	12/11/18 12:46

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BLANKS
EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Sequence: 1824596

SDG: 1838104
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	Found	PQL	Units	C	Method
1824596-ICB1	Arsenic	0.73800	2.0	ug/L		EPA-6020
1824596-CCB2	Arsenic	-0.25400	2.0	ug/L		EPA-6020
1824596-CCB3	Arsenic	-0.57800	2.0	ug/L		EPA-6020
1824596-CCB4	Arsenic	-0.35900	2.0	ug/L		EPA-6020
1824596-CCB5	Arsenic	0.0060000	2.0	ug/L		EPA-6020

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL AND CONTINUING CALIBRATION CHECK

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Control Limt: +/- 10.00%

SDG: 1838104
Project: SMUD 59th St.
Calibration: UNASSIGNED
Sequence: 1824596

Lab Sample ID	Analyte	True	Found	%R	Units	Method
1824596-ICV1	Arsenic	125.00	130.74	105	ug/L	EPA-6020
1824596-CCV2	Arsenic	100.00	97.977	98.0	ug/L	EPA-6020
1824596-CCV3	Arsenic	100.00	102.86	103	ug/L	EPA-6020
1824596-CCV4	Arsenic	100.00	95.036	95.0	ug/L	EPA-6020
1824596-CCV5	Arsenic	100.00	96.052	96.1	ug/L	EPA-6020

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

POST DIGEST SPIKE SAMPLE RECOVERY

EPA-6020

Post Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032393
Preparation: EPA 3050B

SDG: 1838104
Project: SMUD 59th St.
Laboratory ID: B032393-PS1
Lab Source ID: 1838186-01
Initial/Final: 0.0392 g / 10 ml

Source Sample Name: Post Spike
% Solids:

Analyte	Control Limit %R	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R
Arsenic	75 - 125	103.50	14.431	100.00	89.1

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ICP INTERFERENCE CHECK SAMPLE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Sequence: 1824596

SDG: 1838104
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	True	Found	%R	Units
1824596-IFA1	Arsenic		-0.33900		ug/L
1824596-IFB1	Arsenic	20.000	22.75	114	mg/kg

* Values outside of QC limits

Raw Data From Instrument PE-EL2

Raw Data - Calibration Standards

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 07:59:47
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.106
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	33.333				ug/L
|	B	11	351.341				ug/L
|	Al	27	18240.937				ug/L
| >	Sc	45	746231.087				ug/L
|	V	51	18015.737				ug/L
|	Cr	52	17549.498				ug/L
|	Cr	53	133076.582				ug/L
|	Mn	55	1022.068				ug/L
|	Co	59	269.338				ug/L
⌊	Ni	60	117.001				ug/L
⌈	Cu	63	300.339				ug/L
|	Cu	65	146.668				ug/L
|	Zn	66	367.675				ug/L
|	Zn	68	688.031				ug/L
| >	Ge	72	495907.296				ug/L
|	As	75	582.705				ug/L
|	Se	77	4715.613				ug/L
|	Se	82	47.644				ug/L
⌊	Sr	88	1025.402				ug/L
⌈	Mo	98	128.703				ug/L
| >	Rh	103	474061.547				ug/L
⌊	Ag	107	101.334				ug/L
⌈	Cd	111	93.647				ug/L
|	Cd	114	12.561				ug/L
| >	In	115	626222.432				ug/L
|	Sn	120	884.689				ug/L
⌊	Sb	121	391.344				ug/L
⌈	Ba	137	210.718				ug/L
|	Ba	138	1104.461				ug/L
| >	Tb	159	982234.789				ug/L
|	Tl	205	423.678				ug/L
⌊	Pb	208	337.336				ug/L
⌈	Hg	200	67.985				ug/L
|	Hg	201	79.334				ug/L
| >	Bi	209	599574.970				ug/L
⌊	U	238	88904.790				ug/L
	C	13	3574.166				ug/L
	W	184	106.629				ug/L
	Pd	106	92.482				ug/L
	Kr	83	98.501				ug/L
⌈	Na	23	12877.511				ug/L
|	Mg	24	2046.953				ug/L

	K	39	334997.682	ug/L
	Ca	44	28834.060	ug/L
	Ti	47	700.033	ug/L
	Sc-1	45	746231.087	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000000	0.000	0.000000	Linear Thru Zero
B	11.009	0.000000	0.000	0.000000	Linear Thru Zero
Al	26.982	0.000000	0.000	0.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.000000	0.000	0.000000	Linear Thru Zero
Cr	51.941	0.000000	0.000	0.000000	Linear Thru Zero
Cr	52.941	0.000000	0.000	0.000000	Linear Thru Zero
Mn	54.938	0.000000	0.000	0.000000	Linear Thru Zero
Co	58.933	0.000000	0.000	0.000000	Linear Thru Zero
Ni	59.933	0.000000	0.000	0.000000	Linear Thru Zero
Cu	62.930	0.000000	0.000	0.000000	Linear Thru Zero
Cu	64.928	0.000000	0.000	0.000000	Linear Thru Zero
Zn	65.926	0.000000	0.000	0.000000	Linear Thru Zero
Zn	67.925	0.000000	0.000	0.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000000	0.000	0.000000	Linear Thru Zero
Se	76.920	0.000000	0.000	0.000000	Linear Thru Zero
Se	81.917	0.000000	0.000	0.000000	Linear Thru Zero
Sr	87.906	0.000000	0.000	0.000000	Linear Thru Zero
Mo	97.906	0.000000	0.000	0.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.000000	0.000	0.000000	Linear Thru Zero
Cd	110.904	0.000000	0.000	0.000000	Linear Thru Zero
Cd	113.904	0.000000	0.000	0.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.000000	0.000	0.000000	Linear Thru Zero
Sb	120.904	0.000000	0.000	0.000000	Linear Thru Zero
Ba	136.905	0.000000	0.000	0.000000	Linear Thru Zero
Ba	137.905	0.000000	0.000	0.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.000000	0.000	0.000000	Linear Thru Zero
Pb	207.977	0.000000	0.000	0.000000	Linear Thru Zero
Hg	199.968	0.000000	0.000	0.000000	Linear Thru Zero
Hg	200.970	0.000000	0.000	0.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.000000	0.000	0.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	0.000000	0.000	0.000000	Linear Thru Zero
Mg	23.985	0.000000	0.000	0.000000	Linear Thru Zero
K	38.964	0.000000	0.000	0.000000	Linear Thru Zero
Ca	43.956	0.000000	0.000	0.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 08:03:20
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.106
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	308.340	**1.000**	0.18	18.1	ug/L
|	B	11	7579.735	**20.000**	0.52	2.6	ug/L
|	Al	27	129789.238	**20.000**	0.83	4.2	ug/L
| >	Sc	45	764465.244				ug/L
|	V	51	41914.988	**3.000**	0.38	12.8	ug/L
|	Cr	52	38332.515	**3.000**	0.22	7.3	ug/L
|	Cr	53	138196.080	**3.000**	4.62	154.1	ug/L
|	Mn	55	10671.404	**1.000**	0.06	6.3	ug/L
|	Co	59	6497.077	**1.000**	0.01	0.7	ug/L
⌊	Ni	60	2657.459	**1.000**	0.05	4.9	ug/L
⌈	Cu	63	5518.313	**2.000**	0.10	5.1	ug/L
|	Cu	65	2421.048	**2.000**	0.13	6.5	ug/L
|	Zn	66	3878.980	**5.000**	0.20	3.9	ug/L
|	Zn	68	3172.655	**5.000**	0.21	4.2	ug/L
| >	Ge	72	508358.826				ug/L
|	As	75	2610.201	**2.000**	0.18	9.2	ug/L
|	Se	77	4928.080	**2.000**	2.82	141.2	ug/L
|	Se	82	180.560	**2.000**	0.73	36.7	ug/L
⌊	Sr	88	3185.994	**0.200**	0.01	6.2	ug/L
⌈	Mo	98	3063.250	**1.000**	0.10	9.8	ug/L
| >	Rh	103	477556.853				ug/L
⌊	Ag	107	5128.378	**1.000**	0.08	7.5	ug/L
⌈	Cd	111	1228.145	**1.000**	0.14	14.5	ug/L
|	Cd	114	2685.252	**1.000**	0.05	5.4	ug/L
| >	In	115	622340.054				ug/L
|	Sn	120	6056.902	**1.000**	0.07	6.7	ug/L
⌊	Sb	121	9462.485	**2.000**	0.03	1.3	ug/L
⌈	Ba	137	2501.760	**1.000**	0.07	6.9	ug/L
|	Ba	138	15459.214	**1.000**	0.04	3.6	ug/L
| >	Tb	159	990605.580				ug/L
|	Tl	205	12233.724	**1.000**	0.05	5.3	ug/L
⌊	Pb	208	16782.939	**1.000**	0.07	7.1	ug/L
⌈	Hg	200	252.344	**0.200**	0.00	1.4	ug/L
|	Hg	201	174.002	**0.200**	0.06	29.8	ug/L
| >	Bi	209	593591.032				ug/L
⌊	U	238	113047.949	**1.000**	0.04	4.1	ug/L
	C	13	4181.188				ug/L
	W	184	155.268				ug/L
	Pd	106	65.399				ug/L
	Kr	83	108.667				ug/L
⌈	Na	23	581283.648	**100.000**	3.31	3.3	ug/L
|	Mg	24	387128.843	**100.000**	2.30	2.3	ug/L

K	39	758462.442	**100.000**	0.73	0.7	ug/L
Ca	44	47704.218	**100.000**	7.63	7.6	ug/L
Ti	47	620.025				ug/L
Sc-1	45	764465.244				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000358	0.000	1.000000	Linear Thru Zero
B	11.009	0.000472	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007268	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.010216	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.008879	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.000830	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012601	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008138	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003321	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005131	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002237	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001378	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000971	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001978	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000094	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000131	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.021015	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.006141	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.010538	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001829	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004295	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.008317	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007291	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002314	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014488	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011931	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.016622	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001559	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000809	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.042160	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5684.061370	0.000	1.000000	Linear Thru Zero
Mg	23.985	3850.818896	0.000	1.000000	Linear Thru Zero
K	38.964	4234.647593	0.000	1.000000	Linear Thru Zero
Ca	43.956	188.701579	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 08:06:54
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.106
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	28783.485	**100.000**	3.56	3.6	ug/L
|	B	11	328889.365	**999.959**	40.08	4.0	ug/L
|	Al	27	1100738.504	**249.544**	2.58	1.0	ug/L
| >	Sc	45	766571.760				ug/L
|	V	51	617704.231	**99.972**	3.69	3.7	ug/L
|	Cr	52	587675.206	**99.983**	1.46	1.5	ug/L
|	Cr	53	183489.969	**99.968**	4.94	4.9	ug/L
|	Mn	55	1653247.884	**249.998**	6.41	2.6	ug/L
|	Co	59	537162.237	**99.998**	3.18	3.2	ug/L
⌊	Ni	60	283696.550	**249.995**	6.19	2.5	ug/L
⌈	Cu	63	555601.976	**249.997**	9.00	3.6	ug/L
|	Cu	65	253943.403	**249.998**	5.76	2.3	ug/L
|	Zn	66	165729.645	**249.994**	3.81	1.5	ug/L
|	Zn	68	116758.044	**249.994**	4.43	1.8	ug/L
| >	Ge	72	507998.736				ug/L
|	As	75	166685.783	**249.992**	5.54	2.2	ug/L
|	Se	77	17185.034	**250.001**	8.48	3.4	ug/L
|	Se	82	18668.340	**250.002**	9.84	3.9	ug/L
⌊	Sr	88	8972.237	**19.948**	1.30	6.5	ug/L
⌈	Mo	98	257344.361	**99.999**	2.78	2.8	ug/L
| >	Rh	103	479898.631				ug/L
⌊	Ag	107	430428.903	**99.998**	3.59	3.6	ug/L
⌈	Cd	111	115839.500	**100.000**	1.37	1.4	ug/L
|	Cd	114	257420.797	**99.999**	1.12	1.1	ug/L
| >	In	115	636092.052				ug/L
|	Sn	120	466149.736	**99.999**	1.57	1.6	ug/L
⌊	Sb	121	417964.544	**99.996**	1.23	1.2	ug/L
⌈	Ba	137	213987.229	**99.999**	5.74	5.7	ug/L
|	Ba	138	1220491.066	**99.998**	4.83	4.8	ug/L
| >	Tb	159	1010273.592				ug/L
|	Tl	205	1010178.337	**99.998**	3.30	3.3	ug/L
⌊	Pb	208	3402257.005	**249.999**	14.78	5.9	ug/L
⌈	Hg	200	19587.395	**20.000**	0.87	4.3	ug/L
|	Hg	201	11416.469	**20.000**	1.12	5.6	ug/L
| >	Bi	209	597154.938				ug/L
⌊	U	238	2038390.188	**99.997**	2.44	2.4	ug/L
	C	13	3240.714				ug/L
	W	184	132.620				ug/L
	Pd	106	-368.331				ug/L
	Kr	83	128.834				ug/L
⌈	Na	23	51716233.993	**9999.901**	71.53	0.7	ug/L
|	Mg	24	35586842.293	**9999.918**	443.18	4.4	ug/L

K	39	42438278.686	**9999.994**	393.45	3.9	ug/L
Ca	44	1308763.464	**9999.526**	131.02	1.3	ug/L
Ti	47	820.044				ug/L
Sc-1	45	766571.760				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000429	0.000	0.999998	Linear Thru Zero
Al	26.982	0.005657	0.000	0.999740	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007822	0.000	0.999958	Linear Thru Zero
Cr	51.941	0.007434	0.000	0.999983	Linear Thru Zero
Cr	52.941	0.000610	0.000	0.999942	Linear Thru Zero
Mn	54.938	0.008623	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007004	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001480	0.000	0.999988	Linear Thru Zero
Cu	62.930	0.004376	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001999	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001303	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000914	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001309	0.000	0.999992	Linear Thru Zero
Se	76.920	0.000097	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000147	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000783	0.000	0.968165	Linear Thru Zero
Mo	97.906	0.005363	0.000	0.999999	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008975	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001820	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004046	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007315	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006565	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.002120	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012087	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010005	0.000	0.999998	Linear Thru Zero
Pb	207.977	0.013493	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001636	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000950	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032654	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5170.387016	0.000	1.000000	Linear Thru Zero
Mg	23.985	3558.508765	0.000	1.000000	Linear Thru Zero
K	38.964	4210.330532	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.999011	0.000	0.999989	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 08:39:51
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.116
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	40.333				ug/L
|	B	11	2567.100				ug/L
|	Al	27	18571.067				ug/L
| >	Sc	45	753086.263				ug/L
|	V	51	20034.126				ug/L
|	Cr	52	16570.502				ug/L
|	Cr	53	126995.668				ug/L
|	Mn	55	1117.415				ug/L
|	Co	59	211.336				ug/L
⌊	Ni	60	122.334				ug/L
⌈	Cu	63	291.672				ug/L
|	Cu	65	109.001				ug/L
|	Zn	66	401.677				ug/L
|	Zn	68	720.034				ug/L
| >	Ge	72	511973.105				ug/L
|	As	75	533.258				ug/L
|	Se	77	4507.654				ug/L
|	Se	82	41.979				ug/L
⌊	Sr	88	962.060				ug/L
⌈	Mo	98	187.823				ug/L
| >	Rh	103	482288.282				ug/L
⌊	Ag	107	74.000				ug/L
⌈	Cd	111	46.930				ug/L
|	Cd	114	-5.887				ug/L
| >	In	115	626384.649				ug/L
|	Sn	120	1192.101				ug/L
⌊	Sb	121	764.706				ug/L
⌈	Ba	137	178.687				ug/L
|	Ba	138	1076.428				ug/L
| >	Tb	159	989619.142				ug/L
|	Tl	205	387.677				ug/L
⌊	Pb	208	459.338				ug/L
⌈	Hg	200	96.596				ug/L
|	Hg	201	104.667				ug/L
| >	Bi	209	603399.619				ug/L
⌊	U	238	88169.690				ug/L
	C	13	3047.290				ug/L
	W	184	115.287				ug/L
	Pd	106	65.995				ug/L
	Kr	83	117.501				ug/L
⌈	Na	23	13865.821				ug/L
|	Mg	24	2383.706				ug/L

	K	39	322392.118	ug/L
	Ca	44	27947.506	ug/L
	Ti	47	526.685	ug/L
	Sc-1	45	753086.263	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000429	0.000	0.999998	Linear Thru Zero
Al	26.982	0.005657	0.000	0.999740	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007822	0.000	0.999958	Linear Thru Zero
Cr	51.941	0.007434	0.000	0.999983	Linear Thru Zero
Cr	52.941	0.000610	0.000	0.999942	Linear Thru Zero
Mn	54.938	0.008623	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007004	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001480	0.000	0.999988	Linear Thru Zero
Cu	62.930	0.004376	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001999	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001303	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000914	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001309	0.000	0.999992	Linear Thru Zero
Se	76.920	0.000097	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000147	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000783	0.000	0.968165	Linear Thru Zero
Mo	97.906	0.005363	0.000	0.999999	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008975	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001820	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004046	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007315	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006565	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.002120	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012087	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010005	0.000	0.999998	Linear Thru Zero
Pb	207.977	0.013493	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001636	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000950	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032654	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5170.387016	0.000	1.000000	Linear Thru Zero
Mg	23.985	3558.508765	0.000	1.000000	Linear Thru Zero
K	38.964	4210.330532	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.999011	0.000	0.999989	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 08:43:26
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.116
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	317.007	**1.000**	0.08	8.1	ug/L
|	B	11	10038.547	**20.000**	0.67	3.3	ug/L
|	Al	27	133612.241	**20.000**	0.75	3.8	ug/L
| >	Sc	45	751875.078				ug/L
|	V	51	41791.145	**3.000**	0.20	6.7	ug/L
|	Cr	52	38729.321	**3.000**	0.09	3.0	ug/L
|	Cr	53	132711.950	**3.000**	0.89	29.5	ug/L
|	Mn	55	10987.175	**1.000**	0.03	3.4	ug/L
|	Co	59	6855.723	**1.000**	0.06	6.4	ug/L
⌊	Ni	60	2604.776	**1.000**	0.08	7.9	ug/L
⌈	Cu	63	5662.419	**2.000**	0.15	7.7	ug/L
|	Cu	65	2429.051	**2.000**	0.16	7.9	ug/L
|	Zn	66	3909.661	**5.000**	0.09	1.8	ug/L
|	Zn	68	3164.653	**5.000**	0.30	5.9	ug/L
| >	Ge	72	498406.129				ug/L
|	As	75	1995.929	**2.000**	0.21	10.4	ug/L
|	Se	77	4733.625	**2.000**	0.39	19.3	ug/L
|	Se	82	187.138	**2.000**	0.56	28.2	ug/L
⌊	Sr	88	3251.021	**0.200**	0.01	5.9	ug/L
⌈	Mo	98	2914.066	**1.000**	0.04	4.0	ug/L
| >	Rh	103	476524.472				ug/L
⌊	Ag	107	5300.496	**1.000**	0.03	2.9	ug/L
⌈	Cd	111	1381.031	**1.000**	0.07	7.1	ug/L
|	Cd	114	2945.958	**1.000**	0.04	4.4	ug/L
| >	In	115	619033.343				ug/L
|	Sn	120	6167.820	**1.000**	0.04	3.7	ug/L
⌊	Sb	121	9684.093	**2.000**	0.03	1.3	ug/L
⌈	Ba	137	2488.158	**1.000**	0.08	8.1	ug/L
|	Ba	138	16173.409	**1.000**	0.06	5.7	ug/L
| >	Tb	159	1023125.392				ug/L
|	Tl	205	12231.386	**1.000**	0.05	4.9	ug/L
⌊	Pb	208	17091.076	**1.000**	0.08	8.1	ug/L
⌈	Hg	200	289.841	**0.200**	0.01	4.7	ug/L
|	Hg	201	129.334	**0.200**	0.23	115.2	ug/L
| >	Bi	209	588673.914				ug/L
⌊	U	238	111501.572	**1.000**	0.04	3.6	ug/L
	C	13	3380.755				ug/L
	W	184	129.942				ug/L
	Pd	106	81.830				ug/L
	Kr	83	99.667				ug/L
⌈	Na	23	599437.986	**100.000**	3.66	3.7	ug/L
|	Mg	24	398257.605	**100.000**	1.54	1.5	ug/L

K	39	754090.013	**100.000**	3.40	3.4	ug/L
Ca	44	45366.752	**100.000**	5.01	5.0	ug/L
Ti	47	580.023				ug/L
Sc-1	45	751875.078				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000369	0.000	1.000000	Linear Thru Zero
B	11.009	0.000497	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007653	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.009650	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.009835	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.002637	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013136	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008846	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003304	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005406	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002334	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001412	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000988	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001478	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000345	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000148	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.023234	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005720	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.010966	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.002157	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004765	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.008063	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007213	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002259	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014757	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011588	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.016297	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001663	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000236	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.043314	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5855.721647	0.000	1.000000	Linear Thru Zero
Mg	23.985	3958.738981	0.000	1.000000	Linear Thru Zero
K	38.964	4316.978953	0.000	1.000000	Linear Thru Zero
Ca	43.956	174.192465	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 08:46:59
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.116
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	28178.604	**100.000**	6.22	6.2	ug/L
|	B	11	323065.766	**999.934**	44.62	4.5	ug/L
|	Al	27	1088860.108	**249.458**	7.46	3.0	ug/L
| >	Sc	45	750816.654				ug/L
|	V	51	602536.276	**99.978**	5.03	5.0	ug/L
|	Cr	52	575324.216	**99.971**	4.03	4.0	ug/L
|	Cr	53	179846.516	**99.756**	11.34	11.4	ug/L
|	Mn	55	1645171.739	**249.998**	9.18	3.7	ug/L
|	Co	59	538700.270	**99.998**	4.82	4.8	ug/L
⌊	Ni	60	283317.314	**249.995**	11.46	4.6	ug/L
⌈	Cu	63	557679.855	**249.997**	9.71	3.9	ug/L
|	Cu	65	251807.499	**249.997**	7.23	2.9	ug/L
|	Zn	66	165738.631	**249.993**	6.83	2.7	ug/L
|	Zn	68	115277.847	**249.992**	2.92	1.2	ug/L
| >	Ge	72	500038.078				ug/L
|	As	75	166447.591	**249.998**	3.55	1.4	ug/L
|	Se	77	16938.990	**249.961**	15.28	6.1	ug/L
|	Se	82	18485.829	**250.000**	9.09	3.6	ug/L
⌊	Sr	88	8952.210	**19.944**	0.54	2.7	ug/L
⌈	Mo	98	258694.380	**100.000**	3.27	3.3	ug/L
| >	Rh	103	462047.734				ug/L
⌊	Ag	107	421983.853	**99.998**	2.58	2.6	ug/L
⌈	Cd	111	113419.560	**99.998**	3.83	3.8	ug/L
|	Cd	114	253182.315	**99.998**	3.98	4.0	ug/L
| >	In	115	621256.743				ug/L
|	Sn	120	460532.366	**99.999**	1.30	1.3	ug/L
⌊	Sb	121	413670.564	**99.997**	1.53	1.5	ug/L
⌈	Ba	137	211997.381	**100.000**	7.41	7.4	ug/L
|	Ba	138	1200411.415	**99.998**	6.79	6.8	ug/L
| >	Tb	159	972284.750				ug/L
|	Tl	205	990592.732	**99.999**	4.41	4.4	ug/L
⌊	Pb	208	3359960.146	**249.999**	14.11	5.6	ug/L
⌈	Hg	200	19510.237	**20.000**	1.14	5.7	ug/L
|	Hg	201	10984.507	**20.001**	0.83	4.1	ug/L
| >	Bi	209	586255.553				ug/L
⌊	U	238	2010530.370	**99.997**	5.26	5.3	ug/L
	C	13	2933.919				ug/L
	W	184	183.942				ug/L
	Pd	106	-644.045				ug/L
	Kr	83	112.001				ug/L
⌈	Na	23	52718302.732	**9999.889**	251.76	2.5	ug/L
|	Mg	24	35959644.796	**9999.899**	220.11	2.2	ug/L

K	39	42865748.757	**9999.985**	108.56	1.1	ug/L
Ca	44	1282856.539	**9999.612**	228.69	2.3	ug/L
Ti	47	740.036				ug/L
Sc-1	45	750816.654				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000427	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005716	0.000	0.999633	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007761	0.000	0.999973	Linear Thru Zero
Cr	51.941	0.007445	0.000	0.999954	Linear Thru Zero
Cr	52.941	0.000711	0.000	0.996717	Linear Thru Zero
Mn	54.938	0.008761	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007175	0.000	0.999997	Linear Thru Zero
Ni	59.933	0.001509	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.004462	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.002015	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001323	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000916	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001327	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000100	0.000	0.999810	Linear Thru Zero
Se	81.917	0.000148	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000804	0.000	0.963202	Linear Thru Zero
Mo	97.906	0.005593	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009133	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001825	0.000	0.999998	Linear Thru Zero
Cd	113.904	0.004073	0.000	0.999999	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007392	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006646	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.002183	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012360	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010193	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013844	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001657	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000928	0.000	0.999972	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032848	0.000	0.999995	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5270.502213	0.000	0.999999	Linear Thru Zero
Mg	23.985	3595.762407	0.000	0.999999	Linear Thru Zero
K	38.964	4254.341928	0.000	1.000000	Linear Thru Zero
Ca	43.956	125.495773	0.000	0.999992	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 09:27:43
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.128
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	36.667				ug/L
|	B	11	2270.335				ug/L
|	Al	27	17789.882				ug/L
| >	Sc	45	769188.894				ug/L
|	V	51	21061.361				ug/L
|	Cr	52	17141.250				ug/L
|	Cr	53	135167.760				ug/L
|	Mn	55	1180.759				ug/L
|	Co	59	198.003				ug/L
⌊	Ni	60	148.335				ug/L
⌈	Cu	63	320.007				ug/L
|	Cu	65	188.669				ug/L
|	Zn	66	542.019				ug/L
|	Zn	68	784.040				ug/L
| >	Ge	72	503509.838				ug/L
|	As	75	233.718				ug/L
|	Se	77	4696.436				ug/L
|	Se	82	28.108				ug/L
⌊	Sr	88	1001.399				ug/L
⌈	Mo	98	126.388				ug/L
| >	Rh	103	469742.632				ug/L
⌊	Ag	107	112.001				ug/L
⌈	Cd	111	62.140				ug/L
|	Cd	114	-14.290				ug/L
| >	In	115	634885.436				ug/L
|	Sn	120	904.298				ug/L
⌊	Sb	121	490.016				ug/L
⌈	Ba	137	224.382				ug/L
|	Ba	138	1069.121				ug/L
| >	Tb	159	991288.374				ug/L
|	Tl	205	287.005				ug/L
⌊	Pb	208	481.006				ug/L
⌈	Hg	200	138.097				ug/L
|	Hg	201	116.668				ug/L
| >	Bi	209	613753.218				ug/L
⌊	U	238	89004.195				ug/L
	C	13	3527.489				ug/L
	W	184	89.252				ug/L
	Pd	106	56.839				ug/L
	Kr	83	121.834				ug/L
⌈	Na	23	15382.056				ug/L
|	Mg	24	2870.550				ug/L

K	39	349590.206	ug/L
Ca	44	30547.264	ug/L
Ti	47	603.360	ug/L
Sc-1	45	769188.894	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000427	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005716	0.000	0.999633	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007761	0.000	0.999973	Linear Thru Zero
Cr	51.941	0.007445	0.000	0.999954	Linear Thru Zero
Cr	52.941	0.000711	0.000	0.996717	Linear Thru Zero
Mn	54.938	0.008761	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007175	0.000	0.999997	Linear Thru Zero
Ni	59.933	0.001509	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.004462	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.002015	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001323	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000916	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001327	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000100	0.000	0.999810	Linear Thru Zero
Se	81.917	0.000148	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000804	0.000	0.963202	Linear Thru Zero
Mo	97.906	0.005593	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009133	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001825	0.000	0.999998	Linear Thru Zero
Cd	113.904	0.004073	0.000	0.999999	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007392	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006646	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.002183	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012360	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010193	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013844	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001657	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000928	0.000	0.999972	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032848	0.000	0.999995	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5270.502213	0.000	0.999999	Linear Thru Zero
Mg	23.985	3595.762407	0.000	0.999999	Linear Thru Zero
K	38.964	4254.341928	0.000	1.000000	Linear Thru Zero
Ca	43.956	125.495773	0.000	0.999992	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 09:31:16
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.128
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	322.340	**1.000**	0.17	16.6	ug/L
|	B	11	10064.584	**20.000**	0.72	3.6	ug/L
|	Al	27	136114.072	**20.000**	0.12	0.6	ug/L
| >	Sc	45	784480.775				ug/L
|	V	51	42050.703	**3.000**	0.07	2.4	ug/L
|	Cr	52	38622.612	**3.000**	0.26	8.8	ug/L
|	Cr	53	135175.793	**3.000**	7.55	251.8	ug/L
|	Mn	55	11431.158	**1.000**	0.03	3.2	ug/L
|	Co	59	6538.115	**1.000**	0.03	3.3	ug/L
⌊	Ni	60	2780.838	**1.000**	0.07	7.1	ug/L
⌈	Cu	63	5656.080	**2.000**	0.10	4.8	ug/L
|	Cu	65	2352.026	**2.000**	0.06	3.0	ug/L
|	Zn	66	3802.274	**5.000**	0.28	5.7	ug/L
|	Zn	68	3102.292	**5.000**	0.13	2.5	ug/L
| >	Ge	72	520762.303				ug/L
|	As	75	2447.460	**2.000**	0.53	26.3	ug/L
|	Se	77	4799.664	**2.000**	8.60	430.1	ug/L
|	Se	82	206.528	**2.000**	0.19	9.5	ug/L
⌊	Sr	88	3301.046	**0.200**	0.02	10.1	ug/L
⌈	Mo	98	3061.758	**1.000**	0.03	2.6	ug/L
| >	Rh	103	497605.819				ug/L
⌊	Ag	107	4871.549	**1.000**	0.09	9.1	ug/L
⌈	Cd	111	1301.214	**1.000**	0.06	5.7	ug/L
|	Cd	114	2668.840	**1.000**	0.03	3.3	ug/L
| >	In	115	643434.341				ug/L
|	Sn	120	6219.965	**1.000**	0.08	7.9	ug/L
⌊	Sb	121	9816.288	**2.000**	0.13	6.3	ug/L
⌈	Ba	137	2730.857	**1.000**	0.02	2.1	ug/L
|	Ba	138	16757.959	**1.000**	0.05	5.5	ug/L
| >	Tb	159	1066870.548				ug/L
|	Tl	205	12240.743	**1.000**	0.04	4.2	ug/L
⌊	Pb	208	17401.039	**1.000**	0.05	4.9	ug/L
⌈	Hg	200	328.458	**0.200**	0.11	56.9	ug/L
|	Hg	201	198.669	**0.200**	0.06	30.8	ug/L
| >	Bi	209	622351.854				ug/L
⌊	U	238	115950.607	**1.000**	0.06	6.3	ug/L
	C	13	3340.727				ug/L
	W	184	137.946				ug/L
	Pd	106	55.150				ug/L
	Kr	83	112.501				ug/L
⌈	Na	23	605790.476	**100.000**	3.19	3.2	ug/L
|	Mg	24	396274.624	**100.000**	0.82	0.8	ug/L

	K	39	771185.207	**100.000**	5.47	5.5	ug/L
	Ca	44	44649.493	**100.000**	18.28	18.3	ug/L
	Ti	47	490.016				ug/L
	Sc-1	45	784480.775				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000362	0.000	1.000000	Linear Thru Zero
B	11.009	0.000494	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007519	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008736	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.008998	0.000	1.000000	Linear Thru Zero
Cr	52.941	-0.001074	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013043	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008077	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003352	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005116	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002072	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001246	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000880	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.002112	0.000	1.000000	Linear Thru Zero
Se	76.920	-0.000052	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000171	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.021715	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005880	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009563	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001926	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004168	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.008255	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007236	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002335	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014644	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011190	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.015838	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001522	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000642	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.041231	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5904.084198	0.000	1.000000	Linear Thru Zero
Mg	23.985	3934.040745	0.000	1.000000	Linear Thru Zero
K	38.964	4215.950012	0.000	1.000000	Linear Thru Zero
Ca	43.956	141.022291	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 09:34:50
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.128
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	28500.508	**100.000**	7.95	7.9	ug/L
|	B	11	331171.650	**999.935**	74.32	7.4	ug/L
|	Al	27	1107056.151	**249.468**	10.87	4.4	ug/L
| >	Sc	45	774177.241				ug/L
|	V	51	621346.594	**99.989**	3.70	3.7	ug/L
|	Cr	52	592232.626	**99.981**	4.05	4.1	ug/L
|	Cr	53	181062.490	**100.256**	14.81	14.8	ug/L
|	Mn	55	1672701.730	**249.998**	8.53	3.4	ug/L
|	Co	59	548380.240	**99.999**	4.32	4.3	ug/L
⌊	Ni	60	288087.326	**249.995**	11.72	4.7	ug/L
⌈	Cu	63	566437.045	**249.997**	15.82	6.3	ug/L
|	Cu	65	258316.613	**249.999**	16.48	6.6	ug/L
|	Zn	66	170662.810	**250.005**	12.75	5.1	ug/L
|	Zn	68	119763.175	**250.004**	9.92	4.0	ug/L
| >	Ge	72	519991.318				ug/L
|	As	75	170183.027	**249.990**	9.50	3.8	ug/L
|	Se	77	17088.812	**250.025**	19.27	7.7	ug/L
|	Se	82	19072.734	**249.997**	20.65	8.3	ug/L
⌊	Sr	88	8997.274	**19.946**	2.11	10.6	ug/L
⌈	Mo	98	261454.204	**99.999**	4.49	4.5	ug/L
| >	Rh	103	479902.896				ug/L
⌊	Ag	107	431982.505	**99.999**	3.91	3.9	ug/L
⌈	Cd	111	115558.723	**99.999**	1.28	1.3	ug/L
|	Cd	114	253704.397	**100.000**	2.90	2.9	ug/L
| >	In	115	638444.723				ug/L
|	Sn	120	463975.818	**99.999**	4.90	4.9	ug/L
⌊	Sb	121	412415.465	**99.995**	5.72	5.7	ug/L
⌈	Ba	137	212734.718	**99.999**	8.12	8.1	ug/L
|	Ba	138	1224183.985	**99.998**	7.62	7.6	ug/L
| >	Tb	159	1015654.135				ug/L
|	Tl	205	1016475.032	**99.999**	2.39	2.4	ug/L
⌊	Pb	208	3419535.100	**249.999**	9.61	3.8	ug/L
⌈	Hg	200	19482.604	**20.000**	0.68	3.4	ug/L
|	Hg	201	11308.982	**20.001**	0.75	3.7	ug/L
| >	Bi	209	603671.070				ug/L
⌊	U	238	2040940.684	**99.997**	5.67	5.7	ug/L
	C	13	3200.693				ug/L
	W	184	111.936				ug/L
	Pd	106	-680.740				ug/L
	Kr	83	120.834				ug/L
⌈	Na	23	53323101.616	**9999.892**	328.46	3.3	ug/L
|	Mg	24	36537804.609	**9999.923**	467.27	4.7	ug/L

K	39	43815682.247	**10000.030**	245.49	2.5	ug/L
Ca	44	1303566.563	**9999.892**	178.50	1.8	ug/L
Ti	47	710.033				ug/L
Sc-1	45	774177.241				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000368	0.000	1.000000	Linear Thru Zero
B	11.009	0.000425	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005642	0.000	0.999646	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007755	0.000	0.999993	Linear Thru Zero
Cr	51.941	0.007429	0.000	0.999980	Linear Thru Zero
Cr	52.941	0.000581	0.000	0.996367	Linear Thru Zero
Mn	54.938	0.008640	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007085	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001489	0.000	0.999987	Linear Thru Zero
Cu	62.930	0.004364	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001990	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001311	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000916	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001308	0.000	0.999988	Linear Thru Zero
Se	76.920	0.000094	0.000	0.999923	Linear Thru Zero
Se	81.917	0.000147	0.000	0.999999	Linear Thru Zero
Sr	87.906	0.000770	0.000	0.964926	Linear Thru Zero
Mo	97.906	0.005453	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009011	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001809	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003975	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007257	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006457	0.000	0.999997	Linear Thru Zero
Ba	136.905	0.002097	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.012071	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010010	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013480	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001603	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000927	0.000	0.999995	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032378	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5330.829281	0.000	0.999999	Linear Thru Zero
Mg	23.985	3653.521458	0.000	1.000000	Linear Thru Zero
K	38.964	4346.596140	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.303302	0.000	0.999999	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 10:10:15
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.138
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	35.000				ug/L
|	B	11	2455.059				ug/L
|	Al	27	17619.499				ug/L
| >	Sc	45	749043.611				ug/L
|	V	51	15959.561				ug/L
|	Cr	52	15347.308				ug/L
|	Cr	53	132534.537				ug/L
|	Mn	55	1104.747				ug/L
|	Co	59	173.669				ug/L
⌊	Ni	60	135.001				ug/L
⌈	Cu	63	339.674				ug/L
|	Cu	65	150.335				ug/L
|	Zn	66	616.359				ug/L
|	Zn	68	879.050				ug/L
| >	Ge	72	502488.828				ug/L
|	As	75	697.557				ug/L
|	Se	77	4426.273				ug/L
|	Se	82	43.981				ug/L
⌊	Sr	88	1028.736				ug/L
⌈	Mo	98	122.165				ug/L
| >	Rh	103	468425.021				ug/L
⌊	Ag	107	83.334				ug/L
⌈	Cd	111	57.534				ug/L
|	Cd	114	2.747				ug/L
| >	In	115	614910.386				ug/L
|	Sn	120	953.578				ug/L
⌊	Sb	121	452.014				ug/L
⌈	Ba	137	187.421				ug/L
|	Ba	138	971.147				ug/L
| >	Tb	159	938989.708				ug/L
|	Tl	205	266.338				ug/L
⌊	Pb	208	410.004				ug/L
⌈	Hg	200	143.841				ug/L
|	Hg	201	95.334				ug/L
| >	Bi	209	602644.071				ug/L
⌊	U	238	86002.312				ug/L
	C	13	3354.078				ug/L
	W	184	129.273				ug/L
	Pd	106	50.823				ug/L
	Kr	83	117.334				ug/L
⌈	Na	23	15315.319				ug/L
|	Mg	24	2793.844				ug/L

	K	39	349772.045	ug/L
	Ca	44	31086.284	ug/L
	Ti	47	716.702	ug/L
	Sc-1	45	749043.611	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000368	0.000	1.000000	Linear Thru Zero
B	11.009	0.000425	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005642	0.000	0.999646	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007755	0.000	0.999993	Linear Thru Zero
Cr	51.941	0.007429	0.000	0.999980	Linear Thru Zero
Cr	52.941	0.000581	0.000	0.996367	Linear Thru Zero
Mn	54.938	0.008640	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007085	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001489	0.000	0.999987	Linear Thru Zero
Cu	62.930	0.004364	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001990	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001311	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000916	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001308	0.000	0.999988	Linear Thru Zero
Se	76.920	0.000094	0.000	0.999923	Linear Thru Zero
Se	81.917	0.000147	0.000	0.999999	Linear Thru Zero
Sr	87.906	0.000770	0.000	0.964926	Linear Thru Zero
Mo	97.906	0.005453	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009011	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001809	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003975	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007257	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006457	0.000	0.999997	Linear Thru Zero
Ba	136.905	0.002097	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.012071	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010010	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013480	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001603	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000927	0.000	0.999995	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032378	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5330.829281	0.000	0.999999	Linear Thru Zero
Mg	23.985	3653.521458	0.000	1.000000	Linear Thru Zero
K	38.964	4346.596140	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.303302	0.000	0.999999	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 10:13:49
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.138
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	294.006	**1.000**	0.12	12.0	ug/L
|	B	11	9760.193	**20.000**	1.48	7.4	ug/L
|	Al	27	134788.104	**20.000**	0.25	1.2	ug/L
| >	Sc	45	791891.147				ug/L
|	V	51	40029.234	**3.000**	0.45	15.0	ug/L
|	Cr	52	38391.013	**3.000**	0.06	2.1	ug/L
|	Cr	53	140829.401	**3.000**	17.49	583.0	ug/L
|	Mn	55	11611.430	**1.000**	0.07	7.0	ug/L
|	Co	59	6722.274	**1.000**	0.05	4.8	ug/L
⌊	Ni	60	2784.504	**1.000**	0.05	5.5	ug/L
⌈	Cu	63	5796.190	**2.000**	0.07	3.7	ug/L
|	Cu	65	2446.056	**2.000**	0.03	1.6	ug/L
|	Zn	66	4129.109	**5.000**	0.14	2.8	ug/L
|	Zn	68	3120.969	**5.000**	0.21	4.3	ug/L
| >	Ge	72	528029.238				ug/L
|	As	75	2378.125	**2.000**	0.69	34.3	ug/L
|	Se	77	4720.449	**2.000**	3.28	164.2	ug/L
|	Se	82	200.820	**2.000**	0.80	40.0	ug/L
⌊	Sr	88	3172.655	**0.200**	0.01	4.7	ug/L
⌈	Mo	98	3140.797	**1.000**	0.11	10.5	ug/L
| >	Rh	103	489289.399				ug/L
⌊	Ag	107	4840.860	**1.000**	0.09	8.8	ug/L
⌈	Cd	111	1303.148	**1.000**	0.06	6.0	ug/L
|	Cd	114	2901.888	**1.000**	0.01	1.2	ug/L
| >	In	115	637443.784				ug/L
|	Sn	120	6041.677	**1.000**	0.04	3.8	ug/L
⌊	Sb	121	9967.121	**2.000**	0.08	3.9	ug/L
⌈	Ba	137	2369.662	**1.000**	0.04	4.0	ug/L
|	Ba	138	16047.021	**1.000**	0.06	5.7	ug/L
| >	Tb	159	1012389.558				ug/L
|	Tl	205	11938.594	**1.000**	0.05	4.5	ug/L
⌊	Pb	208	17022.125	**1.000**	0.09	9.4	ug/L
⌈	Hg	200	335.291	**0.200**	0.03	13.5	ug/L
|	Hg	201	228.004	**0.200**	0.09	45.1	ug/L
| >	Bi	209	614895.346				ug/L
⌊	U	238	113682.357	**1.000**	0.07	7.0	ug/L
	C	13	3720.930				ug/L
	W	184	111.936				ug/L
	Pd	106	22.058				ug/L
	Kr	83	117.168				ug/L
⌈	Na	23	598350.365	**100.000**	4.22	4.2	ug/L
|	Mg	24	397098.705	**100.000**	3.33	3.3	ug/L

	K	39	779737.706	**100.000**	4.05	4.0	ug/L
	Ca	44	48408.697	**100.000**	12.04	12.0	ug/L
	Ti	47	430.012				ug/L
	Sc-1	45	791891.147				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000324	0.000	1.000000	Linear Thru Zero
B	11.009	0.000453	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007338	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.009723	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.009337	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.000368	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013216	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008264	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003343	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005150	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002168	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001320	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000832	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001573	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000070	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000149	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.019843	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.006160	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009733	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001955	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004550	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007938	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007461	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002140	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014852	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011531	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.016428	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001530	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001075	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.042289	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5830.350464	0.000	1.000000	Linear Thru Zero
Mg	23.985	3943.048612	0.000	1.000000	Linear Thru Zero
K	38.964	4299.656611	0.000	1.000000	Linear Thru Zero
Ca	43.956	173.224129	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 10:17:22
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.138
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
	Be	9	28845.538	**100.002**	7.78	7.8	ug/L
	B	11	326336.333	**999.985**	46.38	4.6	ug/L
	Al	27	1108534.478	**249.607**	9.34	3.7	ug/L
>	Sc	45	742185.186				ug/L
	V	51	628940.550	**99.984**	4.17	4.2	ug/L
	Cr	52	591760.699	**99.982**	3.74	3.7	ug/L
	Cr	53	181460.324	**100.041**	14.75	14.7	ug/L
	Mn	55	1662718.182	**249.998**	10.91	4.4	ug/L
	Co	59	543524.701	**99.999**	5.60	5.6	ug/L
	Ni	60	288494.645	**249.995**	12.74	5.1	ug/L
	Cu	63	565471.813	**249.998**	8.77	3.5	ug/L
	Cu	65	257693.843	**249.999**	8.81	3.5	ug/L
	Zn	66	170501.710	**250.004**	7.76	3.1	ug/L
	Zn	68	119597.937	**250.014**	7.68	3.1	ug/L
>	Ge	72	491653.626				ug/L
	As	75	171783.746	**249.998**	11.15	4.5	ug/L
	Se	77	17319.525	**250.005**	19.04	7.6	ug/L
	Se	82	18636.373	**250.000**	11.56	4.6	ug/L
	Sr	88	9311.304	**19.955**	0.77	3.9	ug/L
	Mo	98	262921.578	**99.999**	4.11	4.1	ug/L
>	Rh	103	455501.654				ug/L
	Ag	107	434017.852	**100.000**	3.18	3.2	ug/L
	Cd	111	115695.482	**100.000**	5.45	5.4	ug/L
	Cd	114	255021.992	**99.999**	5.34	5.3	ug/L
>	In	115	605729.214				ug/L
	Sn	120	467257.084	**100.000**	5.12	5.1	ug/L
	Sb	121	410060.180	**99.996**	6.41	6.4	ug/L
	Ba	137	210772.329	**100.000**	9.41	9.4	ug/L
	Ba	138	1216497.396	**99.998**	7.47	7.5	ug/L
>	Tb	159	959284.174				ug/L
	Tl	205	1016107.830	**99.999**	6.57	6.6	ug/L
	Pb	208	3418550.850	**249.999**	21.18	8.5	ug/L
	Hg	200	20112.709	**20.000**	1.30	6.5	ug/L
	Hg	201	10915.748	**20.000**	1.67	8.4	ug/L
>	Bi	209	577032.553				ug/L
	U	238	2021848.980	**99.997**	3.94	3.9	ug/L
	C	13	3354.084				ug/L
	W	184	140.637				ug/L
	Pd	106	-708.451				ug/L
	Kr	83	114.168				ug/L
	Na	23	53157078.393	**9999.903**	409.44	4.1	ug/L
	Mg	24	36752639.950	**9999.927**	326.19	3.3	ug/L

K	39	43530702.200	**10000.004**	290.29	2.9	ug/L
Ca	44	1291738.449	**9999.626**	363.42	3.6	ug/L
Ti	47	613.358				ug/L
Sc-1	45	742185.186				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000388	0.000	0.999999	Linear Thru Zero
B	11.009	0.000436	0.000	1.000000	Linear Thru Zero
Al	26.982	0.005890	0.000	0.999807	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008263	0.000	0.999986	Linear Thru Zero
Cr	51.941	0.007770	0.000	0.999982	Linear Thru Zero
Cr	52.941	0.000675	0.000	0.999907	Linear Thru Zero
Mn	54.938	0.008955	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007321	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001554	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.004597	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002095	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001382	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000966	0.000	0.999996	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001392	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000106	0.000	0.999996	Linear Thru Zero
Se	81.917	0.000151	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000846	0.000	0.975726	Linear Thru Zero
Mo	97.906	0.005771	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009527	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001912	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004217	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007706	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006772	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.002202	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012704	0.000	0.999999	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010611	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014294	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001734	0.000	0.999999	Linear Thru Zero
Hg	200.970	0.000940	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.033609	0.000	0.999997	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5314.227920	0.000	1.000000	Linear Thru Zero
Mg	23.985	3675.011414	0.000	1.000000	Linear Thru Zero
K	38.964	4318.091172	0.000	1.000000	Linear Thru Zero
Ca	43.956	126.069932	0.000	0.999993	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Raw Data - Instrument Tuning

Sample Information

Sample Date/Time: Tuesday, December 11, 2018 06:28:46
Method File: C:\Elandata\Method\BC Methods\BC-Tuning.mth
Dataset File: C:\Elandata\Dataset\Default\Mass Calibration and Resolution - Retry 1.1190
Tuning File: C:\Elandata\Tuning\default.tun
Number of Sweeps: 35
Number of Readings: 1
Number of Replicates: 5
Measurement Unit: cps

Instrument Tuning Report

File Name: default.tun
File Path: C:\Elandata\Tuning\default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
Li	7.016	6.978	1557	2078	0.719	
Mg	23.985	24.028	5680	2106	0.685	
Rh	102.905	102.929	24820	2264	0.709	
Ce	139.905	139.927	33781	2348	0.695	
Pb	207.977	207.979	50315	2509	0.694	
U	238.050	238.026	57611	2567	0.705	

Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Tuesday, December 11, 2018 06:39:32
Sample Description:
Method File: C:\Elandata\Method\BC Methods\BC_Daily Performance.mth
Dataset File: C:\Elandata\Dataset\Default\Daily Performance Check.1192
Tuning File: C:\Elandata\Tuning\default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Dual
Acq. Dead Time(ns): 65
Current Dead Time (ns): 65

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	71327.3	71327.346	2245.840	3.1
	In	114.9	256250.2	256250.181	9419.021	3.7
	U	238.1	386120.7	386120.667	11595.831	3.0
⌈>	Ba	137.9	238546.9	238546.915	8040.842	3.4
⌊	Ba++	69.0	6092.3	0.026	0.000	1.7
⌈>	Ce	139.9	302871.6	302871.605	9065.970	3.0
⌊	CeO	155.9	5561.6	0.018	0.000	1.5
	220	220.0	29.7	29.680	2.848	9.6
	8.5	8.5	29.0	29.040	2.256	7.8

Current Optimization File Data

Current Value	Description
0.97	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
15.00	Plasma Gas Flow
7.75	Lens Voltage
1500.00	ICP RF Power
-1900.00	Analog Stage Voltage
1600.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset Std [QRO]
-10.00	Cell Rod Offset Std [CRO]
60.00	Discriminator Threshold
-21.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.25	RPq
0.98	DRC Mode NEB
-8.00	DRC Mode QRO
-2.00	DRC Mode CRO
-25.00	DRC Mode CPV
0.00	Cell Gas A
0.00	Cell Gas B
210.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
450.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	12	69	6.0	502991.0
Mg	24	69	6.0	92678.3
In	115	69	7.8	269033.8
Ce	140	69	8.5	360273.8
Pb	208	69	9.0	180547.6

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:16:19PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838104

Laboratory Documentation Requirements
For Data Validation of
Volatiles Analysis

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838104
COC Number:
Default Cooler was received at 0 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-8260B	MS-V3

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

The Continuing Calibration Verification (CCV) recovery was not within established control limits.

Lab Number	Method	Analyte
1824055-CCV4	EPA-8260B	Chloroethane

Matrix Spikes

Source Samples Used For QC

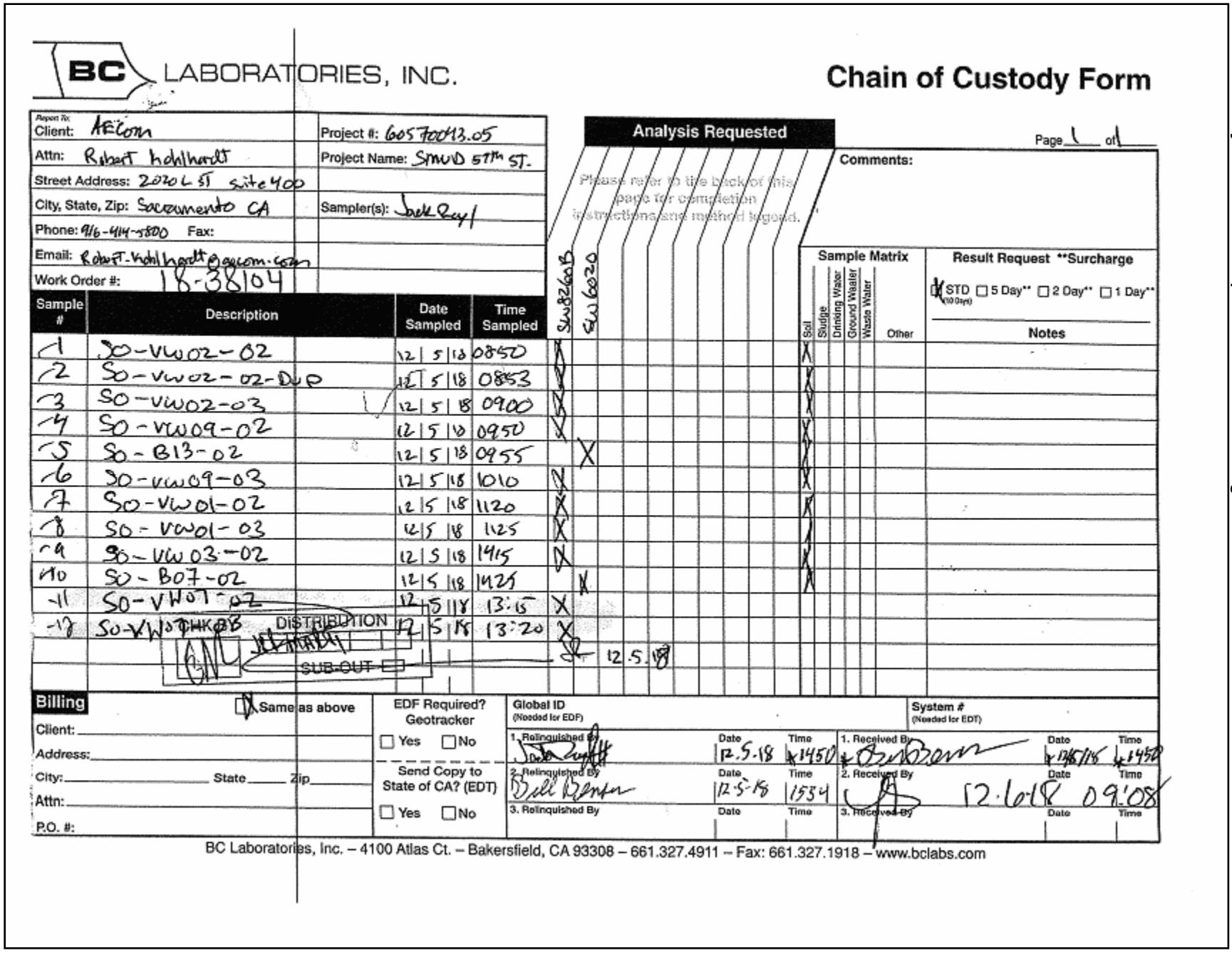
Batch	Method	Source Lab Number	Client Sample Name
B032050	EPA-8260B	1836707-24	<Not Client Sample>
B032340	EPA-8260B	1836707-25	<Not Client Sample>

Matrix spike recovery(s) was(were) not within the control limits.

Lab Number	Method	Analyte
B032050-MS1	EPA-8260B	Chloroethane
B032050-MSD1	EPA-8260B	Chloroethane

LCS

The LCS recoveries were within QC limits.



BC LABORATORIES, INC.

Chain of Custody Form

Report To:
Client: AECOM
Attn: Robert Kohlhardt
Street Address: 2020 L St Suite 400
City, State, Zip: Sacramento CA
Phone: 916-414-5800 Fax:
Email: Robert.Kohlhardt@aecom.com
Work Order #: 18-38104

Project #: 60570013.05
Project Name: SMUD 57th St.
Sampler(s): Jack Ryan

Analysis Requested

Please refer to the back of this page for completion instructions and method legend.

Page 1 of 1

Comments:

Sample #	Description	Date Sampled	Time Sampled	SW8260B	SW6020	Sample Matrix: Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other
1	SO-VW02-02	12/5/18	0850	X		X					
2	SO-VW02-02-DUP	12/5/18	0853	X		X					
3	SO-VW02-03	12/5/18	0900	X		X					
4	SO-VW09-02	12/5/18	0950	X		X					
5	SO-B13-02	12/5/18	0955		X	X					
6	SO-VW09-03	12/5/18	1010	X		X					
7	SO-VW01-02	12/5/18	1120	X		X					
8	SO-VW01-03	12/5/18	1125	X		X					
9	SO-VW03-02	12/5/18	1415	X		X					
10	SO-B07-02	12/5/18	1425		X	X					
11	SO-VW07-02	12/5/18	13:15	X							
12	SO-VW07-DUP-02	12/5/18	13:20	X							

DISTRIBUTION
WHITE
YELLOW
PINK
SUB-OUT

12.5.18

Result Request **Surcharge: [X] STD (10 Days) ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

Notes

Billing
[X] Same as above
Client:
Address:
City: State Zip
Attn:
P.O. #:

EDF Required? Geotracker ☐ Yes ☐ No
Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

	Relinquished By	Date	Time	Received By	Date	Time
1		12.5.18	1450		12/6/18	1450
2	Bill Benton	12.5.18	1534		12.6.18	09:08
3						

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1838104 Page 1 of 4

Chain of Custody and Cooler Receipt Form for 1838104 Page 2 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 1838104

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) GSO

SHIPPING CONTAINER
Ice Chest ☑ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: .95 Container: Voa Thermometer ID: 274 Date/Time 12-10-18

Temperature: (A) 0.0 °C / (C) 0.0 °C Analyst Init 09:08

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PTA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE					A				A	
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	ABCD	ABCD	ABCD	ABCD		ABCD	ABCD	ABCD	ABCD	
SUMMA CANISTER										

Comments:
Sample Numbering Completed By: Date/Time: 12/6 1834
A = Actual / C = Corrected

Rev 21 05/23*

I:\IWP\Dad\WordPerfect\LAB_DOCS\FORMS\SAMRE...

Natalie Serda

From: Rayl, Jack E. <Jack.Rayl@aecom.com>
Sent: Monday, December 10, 2018 8:57 AM
To: Natalie Serda; Kohlhardt, Robert
Subject: Re: 1838104 Samples recvd not on coc

Good morning Natalie,

Yes please add them. Apologies for not getting them on the COC. I obviously missed those. Thanks for catching that.

Robert did we already fix my mistake from Thursday? Collected sample from B12 not B17.

Sent from my iPhone

On Dec 10, 2018, at 8:51 AM, Natalie Serda <natalie.serda@bclabs.com> wrote:

> Good Morning,
>
> We received smart kit samples that were not listed on the coc, would you like for these to be added?
>
> SO-VW07-02 12/5 13:15
> SO-VW07-03 12/05 13:20
>
> <image001.jpg>
>
> **Thanks,**
>
> **Natalie Serda**
> **Project Manager**
> **BC Laboratories, Inc.**
> **Phone: (661) 327-4911 ext. 281**
> **Direct: (661) 852-4281**
> **Cell: (661) 912-4694**

Chain of Custody and Cooler Receipt Form for 1838104 Page 4 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 18 - 38104

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☑ (Specify) 780	Ice Chest ☑ None ☐ Box ☐ Other ☐ (Specify)	YES ☐ NO ☐ W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ | Containers ☐ Intact? Yes ☐ No ☐ | None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: .95 Container: Voa Thermometer ID: 274 Date/Time 12.10.18

Temperature: (A) 0.0 °C / (C) 0.0 °C Analyst Init: AD 09:08

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr*										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PIA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	ARLD	ARLD								
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: MC Date/Time: 12/10/18 0815

A = Actual / C = Corrected

Rev 21 05/23/2016

[S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20]

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838104**
Class: **VOA**
Method: **EPA-8260B**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838104
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-VW02-02	1838104-01
SO-VW02-02-Dup	1838104-02
SO-VW02-03	1838104-03
SO-VW09-02	1838104-04
SO-VW09-03	1838104-06
SO-VW01-02	1838104-07
SO-VW01-03	1838104-08
SO-VW03-02	1838104-09
SO-VW07-02	1838104-11
SO-VW07-03	1838104-12

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-08-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838104
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: MS-V3

Analyte	MDL	PQL	Units
Chloroethane	0.0014	0.0050	mg/kg
1,1-Dichloroethane	0.0014	0.0050	mg/kg
1,2-Dichloroethane	0.00085	0.0050	mg/kg
1,1-Dichloroethene	0.0012	0.0050	mg/kg
cis-1,2-Dichloroethene	0.0013	0.0050	mg/kg
trans-1,2-Dichloroethene	0.0014	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	0.0011	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	0.0011	0.0050	mg/kg
Tetrachloroethene	0.0013	0.0050	mg/kg
1,1,1-Trichloroethane	0.0011	0.0050	mg/kg
1,1,2-Trichloroethane	0.00077	0.0050	mg/kg
Trichloroethene	0.0011	0.0050	mg/kg
Vinyl chloride	0.0016	0.0050	mg/kg

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW02-02

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838104-01	File ID:	07DEC56.D
Sampled:	12/05/18 08:50	Prepared:	12/07/18 16:00	Analyzed:	12/08/18 07:29
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	6.32 g / 5 ml
Batch:	B032340	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.791	0.0011	UD
75-34-3	1,1-Dichloroethane	0.791	0.0011	UD
107-06-2	1,2-Dichloroethane	0.791	0.00067	UD
75-35-4	1,1-Dichloroethene	0.791	0.00095	UD
156-59-2	cis-1,2-Dichloroethene	0.791	0.0010	UD
156-60-5	trans-1,2-Dichloroethene	0.791	0.0011	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.791	0.00087	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.791	0.00087	UD
127-18-4	Tetrachloroethene	0.791	0.0010	UD
71-55-6	1,1,1-Trichloroethane	0.791	0.00087	UD
79-00-5	1,1,2-Trichloroethane	0.791	0.00061	UD
79-01-6	Trichloroethene	0.791	0.00087	UD
75-01-4	Vinyl chloride	0.791	0.0013	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.039557	0.045965	116	70 - 121	
Toluene-d8 (Surrogate)	0.039557	0.041503	105	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.039557	0.039620	100	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	116753	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	110407	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	392441	7.1	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW02-02-Dup

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838104-02	File ID:	07DEC57.D
Sampled:	12/05/18 08:53	Prepared:	12/07/18 16:00	Analyzed:	12/08/18 07:51
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	5.97 g / 5 ml
Batch:	B032340	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.838	0.0012	UD
75-34-3	1,1-Dichloroethane	0.838	0.0012	UD
107-06-2	1,2-Dichloroethane	0.838	0.00071	UD
75-35-4	1,1-Dichloroethene	0.838	0.0010	UD
156-59-2	cis-1,2-Dichloroethene	0.838	0.0011	UD
156-60-5	trans-1,2-Dichloroethene	0.838	0.0012	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.838	0.00092	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.838	0.00092	UD
127-18-4	Tetrachloroethene	0.838	0.0011	UD
71-55-6	1,1,1-Trichloroethane	0.838	0.00092	UD
79-00-5	1,1,2-Trichloroethane	0.838	0.00064	UD
79-01-6	Trichloroethene	0.838	0.00092	UD
75-01-4	Vinyl chloride	0.838	0.0013	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.041876	0.048291	115	70 - 121	
Toluene-d8 (Surrogate)	0.041876	0.043442	104	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.041876	0.042044	100	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	122621	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	111523	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	404480	7.1	346259	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW02-03

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838104-03	File ID:	07DEC58.D
Sampled:	12/05/18 09:00	Prepared:	12/07/18 16:00	Analyzed:	12/08/18 08:12
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	6.27 g / 5 ml
Batch:	B032340	Sequence:	1824353	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.797	0.0011	UD
75-34-3	1,1-Dichloroethane	0.797	0.0011	UD
107-06-2	1,2-Dichloroethane	0.797	0.00068	UD
75-35-4	1,1-Dichloroethene	0.797	0.00096	UD
156-59-2	cis-1,2-Dichloroethene	0.797	0.0010	UD
156-60-5	trans-1,2-Dichloroethene	0.797	0.0011	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.797	0.00088	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.797	0.00088	UD
127-18-4	Tetrachloroethene	0.797	0.0010	UD
71-55-6	1,1,1-Trichloroethane	0.797	0.00088	UD
79-00-5	1,1,2-Trichloroethane	0.797	0.00061	UD
79-01-6	Trichloroethene	0.797	0.00088	UD
75-01-4	Vinyl chloride	0.797	0.0013	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.039872	0.047400	119	70 - 121	
Toluene-d8 (Surrogate)	0.039872	0.041595	104	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.039872	0.038900	97.6	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	120142	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	111523	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	399355	7.1	346259	7.11	

* Values outside of QC limits

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Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW09-02

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838104-04	File ID:	09DEC07.D
Sampled:	12/05/18 09:50	Prepared:	12/09/18 10:00	Analyzed:	12/09/18 14:50
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	5.88 g / 5 ml
Batch:	B032050	Sequence:	1824414	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.85	0.0012	UD
75-34-3	1,1-Dichloroethane	0.85	0.0012	UD
107-06-2	1,2-Dichloroethane	0.85	0.00072	UD
75-35-4	1,1-Dichloroethene	0.85	0.0010	UD
156-59-2	cis-1,2-Dichloroethene	0.85	0.0011	UD
156-60-5	trans-1,2-Dichloroethene	0.85	0.0012	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.85	0.00094	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.85	0.00094	UD
127-18-4	Tetrachloroethene	0.85	0.0011	UD
71-55-6	1,1,1-Trichloroethane	0.85	0.00094	UD
79-00-5	1,1,2-Trichloroethane	0.85	0.00065	UD
79-01-6	Trichloroethene	0.85	0.00094	UD
75-01-4	Vinyl chloride	0.85	0.0014	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.042517	0.046607	110	70 - 121	
Toluene-d8 (Surrogate)	0.042517	0.044719	105	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.042517	0.042406	99.7	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	118905	6.21	119959	6.22	
Chlorobenzene-d5 (IS)	117964	9.41	104551	9.41	
1,4-Difluorobenzene (IS)	405068	7.11	395399	7.11	

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW09-03

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838104-06	File ID:	09DEC08.D
Sampled:	12/05/18 10:10	Prepared:	12/09/18 10:00	Analyzed:	12/09/18 15:12
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	6.07 g / 5 ml
Batch:	B032050	Sequence:	1824414	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.824	0.0012	UD
75-34-3	1,1-Dichloroethane	0.824	0.0012	UD
107-06-2	1,2-Dichloroethane	0.824	0.00070	UD
75-35-4	1,1-Dichloroethene	0.824	0.00099	UD
156-59-2	cis-1,2-Dichloroethene	0.824	0.0011	UD
156-60-5	trans-1,2-Dichloroethene	0.824	0.0012	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.824	0.00091	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.824	0.00091	UD
127-18-4	Tetrachloroethene	0.824	0.0011	UD
71-55-6	1,1,1-Trichloroethane	0.824	0.00091	UD
79-00-5	1,1,2-Trichloroethane	0.824	0.00063	UD
79-01-6	Trichloroethene	0.824	0.00091	UD
75-01-4	Vinyl chloride	0.824	0.0013	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.041186	0.046697	113	70 - 121	
Toluene-d8 (Surrogate)	0.041186	0.043221	105	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.041186	0.042990	104	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	124336	6.22	119959	6.22	
Chlorobenzene-d5 (IS)	113859	9.41	104551	9.41	
1,4-Difluorobenzene (IS)	414740	7.11	395399	7.11	

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW01-02

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838104-07	File ID:	09DEC09.D
Sampled:	12/05/18 11:20	Prepared:	12/09/18 10:00	Analyzed:	12/09/18 15:34
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	6.23 g / 5 ml
Batch:	B032050	Sequence:	1824414	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.803	0.0011	UD
75-34-3	1,1-Dichloroethane	0.803	0.0011	UD
107-06-2	1,2-Dichloroethane	0.803	0.00068	UD
75-35-4	1,1-Dichloroethene	0.803	0.00096	UD
156-59-2	cis-1,2-Dichloroethene	0.803	0.0010	UD
156-60-5	trans-1,2-Dichloroethene	0.803	0.0011	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.803	0.00088	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.803	0.00088	UD
127-18-4	Tetrachloroethene	0.803	0.0010	UD
71-55-6	1,1,1-Trichloroethane	0.803	0.00088	UD
79-00-5	1,1,2-Trichloroethane	0.803	0.00062	UD
79-01-6	Trichloroethene	0.803	0.00088	UD
75-01-4	Vinyl chloride	0.803	0.0013	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.040128	0.046998	117	70 - 121	
Toluene-d8 (Surrogate)	0.040128	0.040385	101	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.040128	0.039334	98.0	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	134733	6.22	119959	6.22	
Chlorobenzene-d5 (IS)	126378	9.41	104551	9.41	
1,4-Difluorobenzene (IS)	454319	7.11	395399	7.11	

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW01-03

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838104-08	File ID:	09DEC10.D
Sampled:	12/05/18 11:25	Prepared:	12/09/18 13:00	Analyzed:	12/09/18 15:55
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	5.29 g / 5 ml
Batch:	B032340	Sequence:	1824414	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.945	0.0014	U
75-34-3	1,1-Dichloroethane	0.945	0.0014	U
107-06-2	1,2-Dichloroethane	0.945	0.00085	U
75-35-4	1,1-Dichloroethene	0.945	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.945	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.945	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.945	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.945	0.0011	U
127-18-4	Tetrachloroethene	0.945	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.945	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.945	0.00077	U
79-01-6	Trichloroethene	0.945	0.0011	U
75-01-4	Vinyl chloride	0.945	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.047259	0.056597	120	70 - 121	
Toluene-d8 (Surrogate)	0.047259	0.048403	102	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.047259	0.046890	99.2	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	128327	6.21	119959	6.22	
Chlorobenzene-d5 (IS)	123071	9.41	104551	9.41	
1,4-Difluorobenzene (IS)	436684	7.11	395399	7.11	

* Values outside of QC limits

AECOM - Sacramento
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Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW03-02

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838104-09	File ID:	11DEC14.D
Sampled:	12/05/18 14:15	Prepared:	12/11/18 10:00	Analyzed:	12/11/18 14:38
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	6.9 g / 5 ml
Batch:	B032340	Sequence:	1824530	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.725	0.0010	UD
75-34-3	1,1-Dichloroethane	0.725	0.0010	UD
107-06-2	1,2-Dichloroethane	0.725	0.00062	UD
75-35-4	1,1-Dichloroethene	0.725	0.00087	UD
156-59-2	cis-1,2-Dichloroethene	0.725	0.00094	UD
156-60-5	trans-1,2-Dichloroethene	0.725	0.0010	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.725	0.00080	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.725	0.00080	UD
127-18-4	Tetrachloroethene	0.725	0.00094	UD
71-55-6	1,1,1-Trichloroethane	0.725	0.00080	UD
79-00-5	1,1,2-Trichloroethane	0.725	0.00056	UD
79-01-6	Trichloroethene	0.725	0.00080	UD
75-01-4	Vinyl chloride	0.725	0.0012	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.036232	0.042630	118	70 - 121	
Toluene-d8 (Surrogate)	0.036232	0.039812	110	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.036232	0.036116	99.7	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	132969	6.21	131358	6.21	
Chlorobenzene-d5 (IS)	115373	9.41	110054	9.41	
1,4-Difluorobenzene (IS)	407208	7.11	419812	7.11	

* Values outside of QC limits

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Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW07-02

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838104-11	File ID:	11DEC15.D
Sampled:	12/05/18 13:15	Prepared:	12/11/18 10:00	Analyzed:	12/11/18 14:59
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	7.73 g / 5 ml
Batch:	B032340	Sequence:	1824530	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.647	0.00091	UD
75-34-3	1,1-Dichloroethane	0.647	0.00091	UD
107-06-2	1,2-Dichloroethane	0.647	0.00055	UD
75-35-4	1,1-Dichloroethene	0.647	0.00078	UD
156-59-2	cis-1,2-Dichloroethene	0.647	0.00084	UD
156-60-5	trans-1,2-Dichloroethene	0.647	0.00091	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.647	0.00071	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.647	0.00071	UD
127-18-4	Tetrachloroethene	0.647	0.00084	UD
71-55-6	1,1,1-Trichloroethane	0.647	0.00071	UD
79-00-5	1,1,2-Trichloroethane	0.647	0.00050	UD
79-01-6	Trichloroethene	0.647	0.00071	UD
75-01-4	Vinyl chloride	0.647	0.0010	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.032342	0.037542	116	70 - 121	
Toluene-d8 (Surrogate)	0.032342	0.034373	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.032342	0.033765	104	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	124684	6.21	131358	6.21	
Chlorobenzene-d5 (IS)	110064	9.41	110054	9.41	
1,4-Difluorobenzene (IS)	383825	7.11	419812	7.11	

* Values outside of QC limits

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Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW07-03

Laboratory: BC Laboratories
SDG: 1838104
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838104-12
File ID: 11DEC16.D
Sampled: 12/05/18 13:20
Prepared: 12/11/18 10:00
Analyzed: 12/11/18 15:21
Solids:
Preparation: EPA 5035 Soil MS
Initial/Final: 7.15 g / 5 ml
Batch: B032340
Sequence: 1824530
Calibration: 1812002
Instrument: MS-V3

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.699	0.00098	UD
75-34-3	1,1-Dichloroethane	0.699	0.00098	UD
107-06-2	1,2-Dichloroethane	0.699	0.00059	UD
75-35-4	1,1-Dichloroethene	0.699	0.00084	UD
156-59-2	cis-1,2-Dichloroethene	0.699	0.00091	UD
156-60-5	trans-1,2-Dichloroethene	0.699	0.00098	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.699	0.00077	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.699	0.00077	UD
127-18-4	Tetrachloroethene	0.699	0.00091	UD
71-55-6	1,1,1-Trichloroethane	0.699	0.00077	UD
79-00-5	1,1,2-Trichloroethane	0.699	0.00054	UD
79-01-6	Trichloroethene	0.699	0.00077	UD
75-01-4	Vinyl chloride	0.699	0.0011	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.034965	0.042021	120	70 - 121	
Toluene-d8 (Surrogate)	0.034965	0.037224	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.034965	0.036231	104	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	124204	6.21	131358	6.21	
Chlorobenzene-d5 (IS)	112912	9.41	110054	9.41	
1,4-Difluorobenzene (IS)	396184	7.11	419812	7.11	

* Values outside of QC limits

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Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838104
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032050 Batch Matrix: Solids
Preparation: EPA 5035 Soil MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW09-02	1838104-04	09DEC07.D	12/09/18 10:00	VOCs + TPHg
SO-VW09-03	1838104-06	09DEC08.D	12/09/18 10:00	VOCs + TPHg
SO-VW01-02	1838104-07	09DEC09.D	12/09/18 10:00	VOCs + TPHg
Blank	B032050-BLK1	04DEC44.D	12/04/18 16:00	
LCS	B032050-BS1	04DEC40.D	12/04/18 16:00	
Matrix Spike	B032050-MS1	04DEC39.D	12/04/18 16:00	
Matrix Spike Dup	B032050-MSD1	04DEC41.D	12/04/18 16:00	

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Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838104
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032340 Batch Matrix: Solids
Preparation: EPA 5035 Soil MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW02-02	1838104-01	07DEC56.D	12/07/18 16:00	VOCs + TPHg
SO-VW02-02-Dup	1838104-02	07DEC57.D	12/07/18 16:00	VOCs + TPHg
SO-VW02-03	1838104-03	07DEC58.D	12/07/18 16:00	VOCs + TPHg
SO-VW01-03	1838104-08	09DEC10.D	12/09/18 13:00	VOCs + TPHg
SO-VW03-02	1838104-09	11DEC14.D	12/11/18 10:00	VOCs + TPHg
SO-VW07-02	1838104-11	11DEC15.D	12/11/18 10:00	VOCs + TPHg
SO-VW07-03	1838104-12	11DEC16.D	12/11/18 10:00	VOCs + TPHg
Blank	B032340-BLK1	07DEC37.D	12/07/18 16:00	
LCS	B032340-BS1	07DEC32.D	12/07/18 16:00	
Matrix Spike	B032340-MS1	07DEC33.D	12/07/18 16:00	
Matrix Spike Dup	B032340-MSD1	07DEC34.D	12/07/18 16:00	

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Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032050-BLK1	File ID:	04DEC44.D
Prepared:	12/04/18 16:00	Preparation:	EPA 5035 Soil MS	Initial/Final:	5 g / 5 ml
Analyzed:	12/05/18 01:58	Instrument:	MS-V3		
Batch:	B032050	Sequence:	1824055	Calibration:	1812002

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.0014	U
75-34-3	1,1-Dichloroethane	0.0014	U
107-06-2	1,2-Dichloroethane	0.00085	U
75-35-4	1,1-Dichloroethene	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.0011	U
127-18-4	Tetrachloroethene	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.00077	U
79-01-6	Trichloroethene	0.0011	U
75-01-4	Vinyl chloride	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.048550	97.1	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.052890	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.051570	103	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	108731	6.24	106573	6.24	
Chlorobenzene-d5 (IS)	96817	9.42	88706	9.42	
1,4-Difluorobenzene (IS)	353895	7.13	347367	7.12	

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METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1838104
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032340-BLK1	File ID:	07DEC37.D
Prepared:	12/07/18 16:00	Preparation:	EPA 5035 Soil MS	Initial/Final:	5 g / 5 ml
Analyzed:	12/08/18 00:34	Instrument:	MS-V3		
Batch:	B032340	Sequence:	1824353	Calibration:	1812002

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.0014	U
75-34-3	1,1-Dichloroethane	0.0014	U
107-06-2	1,2-Dichloroethane	0.00085	U
75-35-4	1,1-Dichloroethene	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.0011	U
127-18-4	Tetrachloroethene	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.00077	U
79-01-6	Trichloroethene	0.0011	U
75-01-4	Vinyl chloride	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.048750	97.5	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.052150	104	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.050340	101	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	114979	6.21	105107	6.22	
Chlorobenzene-d5 (IS)	100553	9.41	85377	9.41	
1,4-Difluorobenzene (IS)	369222	7.11	346259	7.11	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032050
Preparation: EPA 5035 Soil MS
Source Sample Number: 1836707-24

SDG: 1838104
Project: SMUD 59th St.
Laboratory ID: B032050-MS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	ND	0.085480	68.4 *	70 - 130
1,1-Dichloroethane	0.12500	ND	0.10976	87.8	70 - 130
1,1-Dichloroethene	0.12500	ND	0.10155	81.2	70 - 130
Trichloroethene	0.12500	ND	0.11158	89.3	70 - 130

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	0.12500	0.084480	67.6 *	1.18	20	70 - 130
1,1-Dichloroethane	0.12500	0.10672	85.4	2.81	20	70 - 130
1,1-Dichloroethene	0.12500	0.10499	84.0	3.33	20	70 - 130
Trichloroethene	0.12500	0.11245	90.0	0.777	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032340
Preparation: EPA 5035 Soil MS
Source Sample Number: 1836707-25

SDG: 1838104
Project: SMUD 59th St.
Laboratory ID: B032340-MS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	ND	0.11538	92.3	70 - 130
1,1-Dichloroethane	0.12500	ND	0.13287	106	70 - 130
1,1-Dichloroethene	0.12500	ND	0.12518	100	70 - 130
Trichloroethene	0.12500	ND	0.12839	103	70 - 130

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	0.12500	0.12756	102	10.0	20	70 - 130
1,1-Dichloroethane	0.12500	0.13314	107	0.203	20	70 - 130
1,1-Dichloroethene	0.12500	0.12982	104	3.64	20	70 - 130
Trichloroethene	0.12500	0.12853	103	0.109	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Reported: 1/8/2019 9:49:06AM
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Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032050
Preparation: EPA 5035 Soil MS

SDG: 1838104
Project: SMUD 59th St.
Laboratory ID: B032050-BS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	0.090550	72.4	70 - 130
1,1-Dichloroethane	0.12500	0.10697	85.6	70 - 130
1,1-Dichloroethene	0.12500	0.10478	83.8	70 - 130
Trichloroethene	0.12500	0.11036	88.3	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838104
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Batch: B032340
Laboratory ID: B032340-BS1
Preparation: EPA 5035 Soil MS
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	0.11059	88.5	70 - 130
1,1-Dichloroethane	0.12500	0.12497	100	70 - 130
1,1-Dichloroethene	0.12500	0.11764	94.1	70 - 130
Trichloroethene	0.12500	0.12549	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824055
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824055-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824055-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824055-TUN2	04DEC34.D	12/04/18 22:19
Calibration Check	1824055-CCV4	04DEC36.D	12/04/18 23:02
Calibration Blank	1824055-CCB2	04DEC38.D	12/04/18 23:46
Matrix Spike	B032050-MS1	04DEC39.D	12/05/18 00:08
LCS	B032050-BS1	04DEC40.D	12/05/18 00:30
Matrix Spike Dup	B032050-MSD1	04DEC41.D	12/05/18 00:52
Blank	B032050-BLK1	04DEC44.D	12/05/18 01:58

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824353	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824353-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824353-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824353-TUN2	07DEC27.D	12/07/18 20:55
Calibration Check	1824353-CCV4	07DEC29.D	12/07/18 21:39
Calibration Blank	1824353-CCB2	07DEC31.D	12/07/18 22:22
LCS	B032340-BS1	07DEC32.D	12/07/18 22:44
Matrix Spike	B032340-MS1	07DEC33.D	12/07/18 23:06
Matrix Spike Dup	B032340-MSD1	07DEC34.D	12/07/18 23:28
Blank	B032340-BLK1	07DEC37.D	12/08/18 00:34
SO-VW02-02	1838104-01	07DEC56.D	12/08/18 07:29
SO-VW02-02-Dup	1838104-02	07DEC57.D	12/08/18 07:51
SO-VW02-03	1838104-03	07DEC58.D	12/08/18 08:12

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824414
Matrix: Solids
SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824414-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824414-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824414-TUN1	09DEC02.D	12/09/18 12:50
Calibration Check	1824414-CCV1	09DEC04.D	12/09/18 13:45
Calibration Blank	1824414-CCB1	09DEC06.D	12/09/18 14:29
SO-VW09-02	1838104-04	09DEC07.D	12/09/18 14:50
SO-VW09-03	1838104-06	09DEC08.D	12/09/18 15:12
SO-VW01-02	1838104-07	09DEC09.D	12/09/18 15:34
SO-VW01-03	1838104-08	09DEC10.D	12/09/18 15:55

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824530	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824530-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824530-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824530-TUN1	11DEC02.D	12/11/18 10:02
Calibration Check	1824530-CCV1	11DEC04.D	12/11/18 11:00
Calibration Blank	1824530-CCB1	11DEC06.D	12/11/18 11:44
SO-VW03-02	1838104-09	11DEC14.D	12/11/18 14:38
SO-VW07-02	1838104-11	11DEC15.D	12/11/18 14:59
SO-VW07-03	1838104-12	11DEC16.D	12/11/18 15:21
MS Tune	1824530-TUN2	11DEC32.D	12/11/18 21:15
Calibration Check	1824530-CCV4	11DEC34.D	12/11/18 21:59
Calibration Blank	1824530-CCB2	11DEC36.D	12/11/18 22:42

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824979	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1824979-TUN1	13NOV03.D	11/13/18 07:18
Cal Standard	1824979-CAL2	13NOV13.D	11/13/18 13:18
Cal Standard	1824979-CAL3	13NOV14.D	11/13/18 13:41
Cal Standard	1824979-CAL4	13NOV15.D	11/13/18 14:04
Cal Standard	1824979-CAL5	13NOV16.D	11/13/18 14:27
Cal Standard	1824979-CAL6	13NOV17.D	11/13/18 14:50
Cal Standard	1824979-CAL1	13NOV21.D	11/13/18 16:22

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	04DEC34.D	Injection Date:	12/04/18
Instrument ID:	MS-V3	Injection Time:	22:19
Sequence:	1824055	Lab Sample ID:	1824055-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.4	PASS
Mass 75	30 - 60% of Mass 95	46.2	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	8	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	99.9	PASS
Mass 175	5 - 9% of Mass 174	6.17	PASS
Mass 176	95 - 101% of Mass 174	99.1	PASS
Mass 177	5 - 9% of Mass 176	5.81	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	07DEC27.D	Injection Date:	12/07/18
Instrument ID:	MS-V3	Injection Time:	20:55
Sequence:	1824353	Lab Sample ID:	1824353-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.1	PASS
Mass 75	30 - 60% of Mass 95	43.1	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.33	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	78.9	PASS
Mass 175	5 - 9% of Mass 174	7.51	PASS
Mass 176	95 - 101% of Mass 174	98.2	PASS
Mass 177	5 - 9% of Mass 176	6.57	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	09DEC02.D	Injection Date:	12/09/18
Instrument ID:	MS-V3	Injection Time:	12:50
Sequence:	1824414	Lab Sample ID:	1824414-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.6	PASS
Mass 75	30 - 60% of Mass 95	41	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.56	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	87.5	PASS
Mass 175	5 - 9% of Mass 174	6.26	PASS
Mass 176	95 - 101% of Mass 174	95.4	PASS
Mass 177	5 - 9% of Mass 176	6.6	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	11DEC02.D	Injection Date:	12/11/18
Instrument ID:	MS-V3	Injection Time:	10:02
Sequence:	1824530	Lab Sample ID:	1824530-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	18.5	PASS
Mass 75	30 - 60% of Mass 95	44.4	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.55	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	84	PASS
Mass 175	5 - 9% of Mass 174	6.4	PASS
Mass 176	95 - 101% of Mass 174	95.4	PASS
Mass 177	5 - 9% of Mass 176	6.31	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	11DEC32.D	Injection Date:	12/11/18
Instrument ID:	MS-V3	Injection Time:	21:15
Sequence:	1824530	Lab Sample ID:	1824530-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	19.4	PASS
Mass 75	30 - 60% of Mass 95	42.6	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.43	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	81.4	PASS
Mass 175	5 - 9% of Mass 174	8.08	PASS
Mass 176	95 - 101% of Mass 174	97.1	PASS
Mass 177	5 - 9% of Mass 176	6.84	PASS

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	13NOV03.D	Injection Date:	11/13/18
Instrument ID:	MS-V3	Injection Time:	07:18
Sequence:	1824979	Lab Sample ID:	1824979-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	20.4	PASS
Mass 75	30 - 60% of Mass 95	50.7	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.36	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	59.8	PASS
Mass 175	5 - 9% of Mass 174	8.79	PASS
Mass 176	95 - 101% of Mass 174	98.4	PASS
Mass 177	5 - 9% of Mass 176	7.95	PASS

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Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
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Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824055	Injection Date:	11/13/18
Lab Sample ID:	1824055-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	04DEC36.D	Calibration Date:	11/13/18 13:18
Sequence:	1824055	Injection Date:	12/04/18
Lab Sample ID:	1824055-CCV4	Injection Time:	23:02

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.094470	1.08303	0.8185375		-24.4	20 *
1,1-Dichloroethane	A	0.12500	0.10797	2.329792	2.012375	0.1	-13.6	20
1,2-Dichloroethane	A	0.12500	0.10978	1.174426	1.031402		-12.2	20
1,1-Dichloroethene	A	0.12500	0.10625	1.140625	0.9695139		-15.0	20
cis-1,2-Dichloroethene	A	0.12500	0.11522	1.251724	1.153801		-7.8	20
trans-1,2-Dichloroethene	A	0.12500	0.11232	1.143278	1.027296		-10.1	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11767	0.9907955	0.9327035		-5.9	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11128	1.330376	1.184366	0.3	-11.0	20
Tetrachloroethene	A	0.12500	0.11267	0.3102159	0.2796259		-9.9	20
1,1,1-Trichloroethane	A	0.12500	0.11353	1.337076	1.214353		-9.2	20
1,1,2-Trichloroethane	A	0.12500	0.11250	0.2309915	0.2078873		-10.0	20
Trichloroethene	A	0.12500	0.11426	0.3225112	0.2948064		-8.6	20
Vinyl chloride	A	0.12500	0.10325	1.938052	1.600848		-17.4	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	11/13/18
Lab Sample ID:	1824353-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	07DEC29.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	12/07/18
Lab Sample ID:	1824353-CCV4	Injection Time:	21:39

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11512	1.08303	0.9974103		-7.9	20
1,1-Dichloroethane	A	0.12500	0.12622	2.329792	2.352528	0.1	1.0	20
1,2-Dichloroethane	A	0.12500	0.12701	1.174426	1.193313		1.6	20
1,1-Dichloroethene	A	0.12500	0.12274	1.140625	1.120005		-1.8	20
cis-1,2-Dichloroethene	A	0.12500	0.13064	1.251724	1.308164		4.5	20
trans-1,2-Dichloroethene	A	0.12500	0.13013	1.143278	1.190162		4.1	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.13330	0.9907955	1.056561		6.6	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12841	1.330376	1.366644	0.3	2.7	20
Tetrachloroethene	A	0.12500	0.12834	0.3102159	0.3185061		2.7	20
1,1,1-Trichloroethane	A	0.12500	0.13100	1.337076	1.401284		4.8	20
1,1,2-Trichloroethane	A	0.12500	0.12724	0.2309915	0.2351315		1.8	20
Trichloroethene	A	0.12500	0.13150	0.3225112	0.3392697		5.2	20
Vinyl chloride	A	0.12500	0.13220	1.938052	2.049614		5.8	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824414	Injection Date:	11/13/18
Lab Sample ID:	1824414-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	09DEC04.D	Calibration Date:	11/13/18 13:18
Sequence:	1824414	Injection Date:	12/09/18
Lab Sample ID:	1824414-CCV1	Injection Time:	13:45

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11833	1.08303	1.025217		-5.3	20
1,1-Dichloroethane	A	0.12500	0.12961	2.329792	2.415625	0.1	3.7	20
1,2-Dichloroethane	A	0.12500	0.12585	1.174426	1.182427		0.7	20
1,1-Dichloroethene	A	0.12500	0.12269	1.140625	1.119583		-1.8	20
cis-1,2-Dichloroethene	A	0.12500	0.13237	1.251724	1.325553		5.9	20
trans-1,2-Dichloroethene	A	0.12500	0.12914	1.143278	1.181114		3.3	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.12724	0.9907955	1.00856		1.8	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11998	1.330376	1.276984	0.3	-4.0	20
Tetrachloroethene	A	0.12500	0.13394	0.3102159	0.3323954		7.1	20
1,1,1-Trichloroethane	A	0.12500	0.12999	1.337076	1.390465		4.0	20
1,1,2-Trichloroethane	A	0.12500	0.12574	0.2309915	0.2323658		0.6	20
Trichloroethene	A	0.12500	0.13001	0.3225112	0.3354414		4.0	20
Vinyl chloride	A	0.12500	0.13094	1.938052	2.030124		4.8	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824530	Injection Date:	11/13/18
Lab Sample ID:	1824530-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	11DEC04.D	Calibration Date:	11/13/18 13:18
Sequence:	1824530	Injection Date:	12/11/18
Lab Sample ID:	1824530-CCV1	Injection Time:	11:00

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11647	1.08303	1.009154		-6.8	20
1,1-Dichloroethane	A	0.12500	0.13505	2.329792	2.517082	0.1	8.0	20
1,2-Dichloroethane	A	0.12500	0.13641	1.174426	1.281615		9.1	20
1,1-Dichloroethene	A	0.12500	0.12722	1.140625	1.160904		1.8	20
cis-1,2-Dichloroethene	A	0.12500	0.13341	1.251724	1.335903		6.7	20
trans-1,2-Dichloroethene	A	0.12500	0.13573	1.143278	1.241392		8.6	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.13522	0.9907955	1.071812		8.2	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.13211	1.330376	1.406026	0.3	5.7	20
Tetrachloroethene	A	0.12500	0.13818	0.3102159	0.3429173		10.5	20
1,1,1-Trichloroethane	A	0.12500	0.14123	1.337076	1.510684		13.0	20
1,1,2-Trichloroethane	A	0.12500	0.13508	0.2309915	0.2496251		8.1	20
Trichloroethene	A	0.12500	0.14241	0.3225112	0.3674254		13.9	20
Vinyl chloride	A	0.12500	0.12589	1.938052	1.951878		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	11DEC34.D	Calibration Date:	11/13/18 13:18
Sequence:	1824530	Injection Date:	12/11/18
Lab Sample ID:	1824530-CCV4	Injection Time:	21:59

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.10757	1.08303	0.931978		-13.9	50
1,1-Dichloroethane	A	0.12500	0.12672	2.329792	2.361916	0.1	1.4	50
1,2-Dichloroethane	A	0.12500	0.13621	1.174426	1.279793		9.0	50
1,1-Dichloroethene	A	0.12500	0.11387	1.140625	1.039029		-8.9	50
cis-1,2-Dichloroethene	A	0.12500	0.12554	1.251724	1.257181		0.4	50
trans-1,2-Dichloroethene	A	0.12500	0.12090	1.143278	1.105813		-3.3	50
1,1,1,2-Tetrachloroethane	A	0.12500	0.13618	0.9907955	1.079393		8.9	50
1,1,2,2-Tetrachloroethane	A	0.12500	0.13116	1.330376	1.395968	0.3	4.9	50
Tetrachloroethene	A	0.12500	0.12703	0.3102159	0.3152563		1.6	50
1,1,1-Trichloroethane	A	0.12500	0.12897	1.337076	1.379561		3.2	50
1,1,2-Trichloroethane	A	0.12500	0.13947	0.2309915	0.2577293		11.6	50
Trichloroethene	A	0.12500	0.12769	0.3225112	0.3294592		2.2	50
Vinyl chloride	A	0.12500	0.11118	1.938052	1.723713		-11.1	50

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
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Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824055
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824055-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824055-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824055-CCV4)			Lab File ID: 04DEC36.D		Analyzed: 12/04/18 23:02			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.5	80 - 120	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	80 - 120	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.2	80 - 120	10.15	10.14	0.0100	+/-1.0	
Calibration Blank (1824055-CCB2)			Lab File ID: 04DEC38.D		Analyzed: 12/04/18 23:46			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.6	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.16	10.14	0.0200	+/-1.0	
Matrix Spike (B032050-MS1)			Lab File ID: 04DEC39.D		Analyzed: 12/05/18 00:08			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	95.3	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.5	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.15	10.14	0.0100	+/-1.0	
LCS (B032050-BS1)			Lab File ID: 04DEC40.D		Analyzed: 12/05/18 00:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	93.9	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.16	10.14	0.0200	+/-1.0	
Matrix Spike Dup (B032050-MSD1)			Lab File ID: 04DEC41.D		Analyzed: 12/05/18 00:52			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.5	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	100	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.16	10.14	0.0200	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824055	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (B032050-BLK1)			Lab File ID: 04DEC44.D		Analyzed: 12/05/18 01:58			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.1	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	106	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	103	74 - 121	10.16	10.14	0.0200	+/-1.0	

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SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824353-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824353-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824353-CCV4)			Lab File ID: 07DEC29.D		Analyzed: 12/07/18 21:39			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.9	80 - 120	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.5	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.3	80 - 120	10.15	10.14	0.0100	+/-1.0	
Calibration Blank (1824353-CCB2)			Lab File ID: 07DEC31.D		Analyzed: 12/07/18 22:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.8	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.14	10.14	0.0000	+/-1.0	
LCS (B032340-BS1)			Lab File ID: 07DEC32.D		Analyzed: 12/07/18 22:44			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.3	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	98.6	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.4	74 - 121	10.14	10.14	0.0000	+/-1.0	
Matrix Spike (B032340-MS1)			Lab File ID: 07DEC33.D		Analyzed: 12/07/18 23:06			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.5	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.4	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.3	74 - 121	10.15	10.14	0.0100	+/-1.0	
Matrix Spike Dup (B032340-MSD1)			Lab File ID: 07DEC34.D		Analyzed: 12/07/18 23:28			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	100	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.1	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
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Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (B032340-BLK1)			Lab File ID: 07DEC37.D		Analyzed: 12/08/18 00:34			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.5	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW02-02 (1838104-01)			Lab File ID: 07DEC56.D		Analyzed: 12/08/18 07:29			
1,2-Dichloroethane-d4 (Surrogate)	0.039557	116	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.039557	105	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.039557	100	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW02-02-Dup (1838104-02)			Lab File ID: 07DEC57.D		Analyzed: 12/08/18 07:51			
1,2-Dichloroethane-d4 (Surrogate)	0.041876	115	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.041876	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.041876	100	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW02-03 (1838104-03)			Lab File ID: 07DEC58.D		Analyzed: 12/08/18 08:12			
1,2-Dichloroethane-d4 (Surrogate)	0.039872	119	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.039872	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.039872	97.6	74 - 121	10.14	10.14	0.0000	+/-1.0	

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SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824414
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824414-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824414-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824414-CCV1)			Lab File ID: 09DEC04.D		Analyzed: 12/09/18 13:45			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	80 - 120	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	80 - 120	10.14	10.14	0.0000	+/-1.0	
Calibration Blank (1824414-CCB1)			Lab File ID: 09DEC06.D		Analyzed: 12/09/18 14:29			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.7	70 - 121	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.1	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW09-02 (1838104-04)			Lab File ID: 09DEC07.D		Analyzed: 12/09/18 14:50			
1,2-Dichloroethane-d4 (Surrogate)	0.042517	110	70 - 121	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.042517	105	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.042517	99.7	74 - 121	10.15	10.14	0.0100	+/-1.0	
SO-VW09-03 (1838104-06)			Lab File ID: 09DEC08.D		Analyzed: 12/09/18 15:12			
1,2-Dichloroethane-d4 (Surrogate)	0.041186	113	70 - 121	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.041186	105	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.041186	104	74 - 121	10.15	10.14	0.0100	+/-1.0	
SO-VW01-02 (1838104-07)			Lab File ID: 09DEC09.D		Analyzed: 12/09/18 15:34			
1,2-Dichloroethane-d4 (Surrogate)	0.040128	117	70 - 121	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.040128	101	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.040128	98.0	74 - 121	10.14	10.14	0.0000	+/-1.0	

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SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824414	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
SO-VW01-03 (1838104-08)			Lab File ID: 09DEC10.D		Analyzed: 12/09/18 15:55			
1,2-Dichloroethane-d4 (Surrogate)	0.047259	120	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.047259	102	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.047259	99.2	74 - 121	10.14	10.14	0.0000	+/-1.0	

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SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824530
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824530-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824530-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824530-CCV1)			Lab File ID: 11DEC04.D		Analyzed: 12/11/18 11:00			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.5	80 - 120	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	96.8	80 - 120	10.14	10.14	0.0000	+/-1.0	
Calibration Blank (1824530-CCB1)			Lab File ID: 11DEC06.D		Analyzed: 12/11/18 11:44			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	102	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	98.0	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.15	10.14	0.0100	+/-1.0	
SO-VW03-02 (1838104-09)			Lab File ID: 11DEC14.D		Analyzed: 12/11/18 14:38			
1,2-Dichloroethane-d4 (Surrogate)	0.036232	118	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.036232	110	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.036232	99.7	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW07-02 (1838104-11)			Lab File ID: 11DEC15.D		Analyzed: 12/11/18 14:59			
1,2-Dichloroethane-d4 (Surrogate)	0.032342	116	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.032342	106	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.032342	104	74 - 121	10.15	10.14	0.0100	+/-1.0	
SO-VW07-03 (1838104-12)			Lab File ID: 11DEC16.D		Analyzed: 12/11/18 15:21			
1,2-Dichloroethane-d4 (Surrogate)	0.034965	120	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.034965	106	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.034965	104	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824530
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (1824530-CCV4)			Lab File ID: 11DEC34.D		Analyzed: 12/11/18 21:59			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	99.7	80 - 120	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	80 - 120	10.14	10.14	0.0000	+/-1.0	
Calibration Blank (1824530-CCB2)			Lab File ID: 11DEC36.D		Analyzed: 12/11/18 22:42			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	108	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.2	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	100	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D		Analyzed: 11/13/18 13:18			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	103		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.0		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D		Analyzed: 11/13/18 13:41			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	95.2		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D		Analyzed: 11/13/18 14:04			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	95.7		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.0		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	104		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D		Analyzed: 11/13/18 14:27			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.3		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.7		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D		Analyzed: 11/13/18 14:50			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	91.9		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D		Analyzed: 11/13/18 16:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	105		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.2		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9		10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824055
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824055-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824055-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824055-CCV4)			Lab File ID: 04DEC36.D			Analyzed: 12/04/18 23:02			
Pentafluorobenzene (IS)	106573	6.24	85192	6.21	125	50 - 200	0.0300	+/-0.50	
Chlorobenzene-d5 (IS)	88706	9.42	69865	9.41	127	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	347367	7.12	271811	7.1	128	50 - 200	0.0200	+/-0.50	
Calibration Blank (1824055-CCB2)			Lab File ID: 04DEC38.D			Analyzed: 12/04/18 23:46			
Pentafluorobenzene (IS)	106479	6.23	106573	6.24	100	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	90331	9.42	88706	9.42	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	334769	7.13	347367	7.12	96	50 - 200	0.0100	+/-0.50	
Matrix Spike (B032050-MS1)			Lab File ID: 04DEC39.D			Analyzed: 12/05/18 00:08			
Pentafluorobenzene (IS)	106903	6.24	106573	6.24	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	87952	9.42	88706	9.42	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	357960	7.13	347367	7.12	103	50 - 200	0.0100	+/-0.50	
LCS (B032050-BS1)			Lab File ID: 04DEC40.D			Analyzed: 12/05/18 00:30			
Pentafluorobenzene (IS)	109471	6.24	106573	6.24	103	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	90854	9.42	88706	9.42	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	363954	7.13	347367	7.12	105	50 - 200	0.0100	+/-0.50	
Matrix Spike Dup (B032050-MSD1)			Lab File ID: 04DEC41.D			Analyzed: 12/05/18 00:52			
Pentafluorobenzene (IS)	112842	6.24	106573	6.24	106	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	95225	9.42	88706	9.42	107	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	366390	7.13	347367	7.12	105	50 - 200	0.0100	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824055	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B032050-BLK1)			Lab File ID: 04DEC44.D			Analyzed: 12/05/18 01:58			
Pentafluorobenzene (IS)	108731	6.24	106573	6.24	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	96817	9.42	88706	9.42	109	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	353895	7.13	347367	7.12	102	50 - 200	0.0100	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824353-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824353-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824353-CCV4)			Lab File ID: 07DEC29.D			Analyzed: 12/07/18 21:39			
Pentafluorobenzene (IS)	105107	6.22	85192	6.21	123	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	85377	9.41	69865	9.41	122	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	346259	7.11	271811	7.1	127	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824353-CCB2)			Lab File ID: 07DEC31.D			Analyzed: 12/07/18 22:22			
Pentafluorobenzene (IS)	104184	6.21	105107	6.22	99	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	87032	9.41	85377	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	339559	7.11	346259	7.11	98	50 - 200	0.0000	+/-0.50	
LCS (B032340-BS1)			Lab File ID: 07DEC32.D			Analyzed: 12/07/18 22:44			
Pentafluorobenzene (IS)	104245	6.22	105107	6.22	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	87095	9.41	85377	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	347883	7.11	346259	7.11	100	50 - 200	0.0000	+/-0.50	
Matrix Spike (B032340-MS1)			Lab File ID: 07DEC33.D			Analyzed: 12/07/18 23:06			
Pentafluorobenzene (IS)	99697	6.21	105107	6.22	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	86973	9.41	85377	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	342559	7.11	346259	7.11	99	50 - 200	0.0000	+/-0.50	
Matrix Spike Dup (B032340-MSD1)			Lab File ID: 07DEC34.D			Analyzed: 12/07/18 23:28			
Pentafluorobenzene (IS)	93683	6.21	105107	6.22	89	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	80240	9.41	85377	9.41	94	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	324395	7.11	346259	7.11	94	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids
SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B032340-BLK1)			Lab File ID: 07DEC37.D			Analyzed: 12/08/18 00:34			
Pentafluorobenzene (IS)	114979	6.21	105107	6.22	109	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	100553	9.41	85377	9.41	118	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	369222	7.11	346259	7.11	107	50 - 200	0.0000	+/-0.50	
SO-VW02-02 (1838104-01)			Lab File ID: 07DEC56.D			Analyzed: 12/08/18 07:29			
Pentafluorobenzene (IS)	116753	6.21	105107	6.22	111	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	110407	9.41	85377	9.41	129	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	392441	7.1	346259	7.11	113	50 - 200	-0.0100	+/-0.50	
SO-VW02-02-Dup (1838104-02)			Lab File ID: 07DEC57.D			Analyzed: 12/08/18 07:51			
Pentafluorobenzene (IS)	122621	6.21	105107	6.22	117	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	111523	9.41	85377	9.41	131	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	404480	7.1	346259	7.11	117	50 - 200	-0.0100	+/-0.50	
SO-VW02-03 (1838104-03)			Lab File ID: 07DEC58.D			Analyzed: 12/08/18 08:12			
Pentafluorobenzene (IS)	120142	6.21	105107	6.22	114	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	111523	9.41	85377	9.41	131	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	399355	7.1	346259	7.11	115	50 - 200	-0.0100	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824414
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824414-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824414-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824414-CCV1)			Lab File ID: 09DEC04.D			Analyzed: 12/09/18 13:45			
Pentafluorobenzene (IS)	119959	6.22	85192	6.21	141	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	104551	9.41	69865	9.41	150	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	395399	7.11	271811	7.1	145	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824414-CCB1)			Lab File ID: 09DEC06.D			Analyzed: 12/09/18 14:29			
Pentafluorobenzene (IS)	114364	6.21	119959	6.22	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	108084	9.41	104551	9.41	103	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	387812	7.11	395399	7.11	98	50 - 200	0.0000	+/-0.50	
SO-VW09-02 (1838104-04)			Lab File ID: 09DEC07.D			Analyzed: 12/09/18 14:50			
Pentafluorobenzene (IS)	118905	6.21	119959	6.22	99	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	117964	9.41	104551	9.41	113	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	405068	7.11	395399	7.11	102	50 - 200	0.0000	+/-0.50	
SO-VW09-03 (1838104-06)			Lab File ID: 09DEC08.D			Analyzed: 12/09/18 15:12			
Pentafluorobenzene (IS)	124336	6.22	119959	6.22	104	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	113859	9.41	104551	9.41	109	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	414740	7.11	395399	7.11	105	50 - 200	0.0000	+/-0.50	
SO-VW01-02 (1838104-07)			Lab File ID: 09DEC09.D			Analyzed: 12/09/18 15:34			
Pentafluorobenzene (IS)	134733	6.22	119959	6.22	112	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	126378	9.41	104551	9.41	121	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	454319	7.11	395399	7.11	115	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838104
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824414	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SO-VW01-03 (1838104-08)			Lab File ID: 09DEC10.D			Analyzed: 12/09/18 15:55			
Pentafluorobenzene (IS)	128327	6.21	119959	6.22	107	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	123071	9.41	104551	9.41	118	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	436684	7.11	395399	7.11	110	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824530
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824530-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824530-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824530-CCV1)			Lab File ID: 11DEC04.D			Analyzed: 12/11/18 11:00			
Pentafluorobenzene (IS)	131358	6.21	85192	6.21	154	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	110054	9.41	69865	9.41	158	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	419812	7.11	271811	7.1	154	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824530-CCB1)			Lab File ID: 11DEC06.D			Analyzed: 12/11/18 11:44			
Pentafluorobenzene (IS)	139540	6.21	131358	6.21	106	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	113714	9.41	110054	9.41	103	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	438731	7.11	419812	7.11	105	50 - 200	0.0000	+/-0.50	
SO-VW03-02 (1838104-09)			Lab File ID: 11DEC14.D			Analyzed: 12/11/18 14:38			
Pentafluorobenzene (IS)	132969	6.21	131358	6.21	101	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	115373	9.41	110054	9.41	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	407208	7.11	419812	7.11	97	50 - 200	0.0000	+/-0.50	
SO-VW07-02 (1838104-11)			Lab File ID: 11DEC15.D			Analyzed: 12/11/18 14:59			
Pentafluorobenzene (IS)	124684	6.21	131358	6.21	95	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	110064	9.41	110054	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	383825	7.11	419812	7.11	91	50 - 200	0.0000	+/-0.50	
SO-VW07-03 (1838104-12)			Lab File ID: 11DEC16.D			Analyzed: 12/11/18 15:21			
Pentafluorobenzene (IS)	124204	6.21	131358	6.21	95	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	112912	9.41	110054	9.41	103	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	396184	7.11	419812	7.11	94	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824530
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Calibration Check (1824530-CCV4)			Lab File ID: 11DEC34.D			Analyzed: 12/11/18 21:59			
Pentafluorobenzene (IS)	138117	6.21	85192	6.21	162	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	111118	9.41	69865	9.41	159	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	429238	7.11	271811	7.1	158	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824530-CCB2)			Lab File ID: 11DEC36.D			Analyzed: 12/11/18 22:42			
Pentafluorobenzene (IS)	139833	6.21	142735	6.2	98	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	117937	9.41	118990	9.41	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	453411	7.11	459112	7.11	99	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D			Analyzed: 11/13/18 13:18			
Pentafluorobenzene (IS)	82386	6.2	85192	6.21	97	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	70974	9.41	69865	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	277119	7.1	271811	7.1	102	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D			Analyzed: 11/13/18 13:41			
Pentafluorobenzene (IS)	85192	6.21	85192	6.21	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69865	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	271811	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D			Analyzed: 11/13/18 14:04			
Pentafluorobenzene (IS)	85251	6.2	85192	6.21	100	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	69041	9.41	69865	9.41	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	283685	7.1	271811	7.1	104	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D			Analyzed: 11/13/18 14:27			
Pentafluorobenzene (IS)	82966	6.21	85192	6.21	97	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	66555	9.4	69865	9.41	95	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	268813	7.1	271811	7.1	99	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D			Analyzed: 11/13/18 14:50			
Pentafluorobenzene (IS)	81182	6.2	85192	6.21	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	64689	9.4	69865	9.41	93	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	262849	7.1	271811	7.1	97	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D			Analyzed: 11/13/18 16:22			
Pentafluorobenzene (IS)	83848	6.21	85192	6.21	98	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69643	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	272090	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION STANDARDS

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Calibration: 1812002

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
8K09001	8260 V2 BFB WORKING STD	1824979-TUN1	13NOV03.D	11/13/18 07:18
8K27020	8260 V3 1823650 REG CAL2	1824979-CAL2	13NOV13.D	11/13/18 13:18
8K27021	8260 V3 1823650 REG CAL3	1824979-CAL3	13NOV14.D	11/13/18 13:41
8K27022	8260 V3 1823650 REG CAL4	1824979-CAL4	13NOV15.D	11/13/18 14:04
8K27023	8260 V3 1823650 REG CAL5	1824979-CAL5	13NOV16.D	11/13/18 14:27
8K27024	8260 V3 1823650 REG CAL6	1824979-CAL6	13NOV17.D	11/13/18 14:50
8K27019	8260 V3 1823650 REG CAL1	1824979-CAL1	13NOV21.D	11/13/18 16:22

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF
Chloroethane	0.005	0.9313281	0.05	1.280436	0.125	1.123669	0.25	1.047286	0.375	1.06771	0.5	1.047751
1,1-Dichloroethane	0.005	2.253363	0.05	2.54945	0.125	2.321218	0.25	2.350689	0.375	2.253137	0.5	2.250896
1,2-Dichloroethane	0.005	1.146479	0.05	1.313476	0.125	1.170007	0.25	1.180664	0.375	1.126421	0.5	1.109511
1,1-Dichloroethene	0.005	0.9562542	0.05	1.254315	0.125	1.221396	0.25	1.161347	0.375	1.193917	0.5	1.056522
cis-1,2-Dichloroethene	0.005	1.213267	0.05	1.362792	0.125	1.245521	0.25	1.256239	0.375	1.227132	0.5	1.205393
trans-1,2-Dichloroethene	0.005	1.100921	0.05	1.242881	0.125	1.15423	0.25	1.133702	0.375	1.111533	0.5	1.1164
1,1,1,2-Tetrachloroethane	0.005	1.032121	0.05	1.041565	0.125	0.9871209	0.25	1.008363	0.375	0.9530864	0.5	0.922517
1,1,2,2-Tetrachloroethane	0.005	1.309823	0.05	1.361287	0.125	1.364838	0.25	1.368691	0.375	1.264155	0.5	1.313461
Tetrachloroethene	0.005	0.2811937	0.05	0.3458767	0.125	0.3362851	0.25	0.3051829	0.375	0.2984593	0.5	0.2942975
1,1,1-Trichloroethane	0.005	1.101756	0.05	1.480106	0.125	1.384257	0.25	1.367637	0.375	1.334175	0.5	1.354528
1,1,2-Trichloroethane	0.005	0.2463523	0.05	0.247493	0.125	0.2332768	0.25	0.2215901	0.375	0.2211758	0.5	0.2160609
Trichloroethene	0.005	0.2871109	0.05	0.3531768	0.125	0.3378907	0.25	0.3156205	0.375	0.3192589	0.5	0.3220092
Vinyl chloride	0.005	1.449766	0.05	2.242881	0.125	2.185468	0.25	1.980629	0.375	1.929103	0.5	1.840463
1,2-Dichloroethane-d4 (Surrogate)	0.05	0.9335941	0.05	0.943	0.05	0.8892502	0.05	0.8737962	0.05	0.8606658	0.05	0.8391146
Toluene-d8 (Surrogate)	0.05	1.05224	0.05	1.058386	0.05	1.088999	0.05	1.040034	0.05	1.061548	0.05	1.061499
4-Bromofluorobenzene (Surrogate)	0.05	1.365191	0.05	1.329571	0.05	1.305475	0.05	1.427688	0.05	1.367305	0.05	1.4035

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1838104
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Chloroethane	1.08303	10.63971	2.313333	0.352722			15	
1,1-Dichloroethane	2.329792	4.957522	4.69	2.144103E-02			SPCC (0.10)	
1,2-Dichloroethane	1.174426	6.221394	6.68	1.342167E-02			15	
1,1-Dichloroethene	1.140625	9.902162	3.181667	0.1271662			CCC (20)	
cis-1,2-Dichloroethene	1.251724	4.606693	5.411667	7.615105E-02			15	
trans-1,2-Dichloroethene	1.143278	4.571262	4.145	0.1308259			15	
1,1,1,2-Tetrachloroethane	0.9907955	4.667134	9.485	5.866972E-02			15	
1,1,2,2-Tetrachloroethane	1.330376	3.136352	10.21	1.398524E-02			SPCC (0.30)	
Tetrachloroethene	0.3102159	8.168443	8.81	2.247676E-02			15	
1,1,1-Trichloroethane	1.337076	9.419156	6.125	8.905765E-02			15	
1,1,2-Trichloroethane	0.2309915	5.875976	8.758334	4.406004E-02			15	
Trichloroethene	0.3225112	6.917194	7.325	7.247583E-02			15	
Vinyl chloride	1.938052	14.66652	1.881667	0.2169596			CCC (20)	
1,2-Dichloroethane-d4 (Surrogate)	0.8899035	4.611968	6.586667	7.620565E-02			15	
Toluene-d8 (Surrogate)	1.060451	1.523989	8.38	1.581306E-02			15	
4-Bromofluorobenzene (Surrogate)	1.366455	3.305892	10.14	2.059171E-02			15	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

HOLDING TIME SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838104
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
SO-VW02-02	12/05/18 08:50	12/06/18 09:08	12/07/18 16:00	3.00	14.00	12/08/18 07:29	3.00	14.00	
SO-VW02-02-Dup	12/05/18 08:53	12/06/18 09:08	12/07/18 16:00	3.00	14.00	12/08/18 07:51	3.00	14.00	
SO-VW02-03	12/05/18 09:00	12/06/18 09:08	12/07/18 16:00	3.00	14.00	12/08/18 08:12	3.00	14.00	
SO-VW09-02	12/05/18 09:50	12/06/18 09:08	12/09/18 10:00	4.00	14.00	12/09/18 14:50	4.00	14.00	
SO-VW09-03	12/05/18 10:10	12/06/18 09:08	12/09/18 10:00	4.00	14.00	12/09/18 15:12	4.00	14.00	
SO-VW01-02	12/05/18 11:20	12/06/18 09:08	12/09/18 10:00	4.00	14.00	12/09/18 15:34	4.00	14.00	
SO-VW01-03	12/05/18 11:25	12/06/18 09:08	12/09/18 13:00	4.00	14.00	12/09/18 15:55	4.00	14.00	
SO-VW03-02	12/05/18 14:15	12/06/18 09:08	12/11/18 10:00	6.00	14.00	12/11/18 14:38	6.00	14.00	
SO-VW07-02	12/05/18 13:15	12/06/18 09:08	12/11/18 10:00	6.00	14.00	12/11/18 14:59	6.00	14.00	
SO-VW07-03	12/05/18 13:20	12/06/18 09:08	12/11/18 10:00	6.00	14.00	12/11/18 15:21	6.00	14.00	

* Holding time not met

Note: If Prep or Analysis are performed within the hour (if holding time is based on hours) or within the day (if holding time is based on days), then the sample is not flagged as outside holding times. Calculated number of days are based on date received or date prepared depending on the test.

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 9:49:06AM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838186

Laboratory Documentation Requirements
For Data Validation of
Metals Analysis (using ppm units)

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838186
COC Number:
Default Cooler was received at 3.6 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-6020 (TTLC)	PE-EL2

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032393	EPA-6020 (TTLC)	1838186-01	SO-B05-01

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

Post Spikes

The Post Spike recoveries were within QC limits.

Interference Checks

The Interference Check recoveries were within QC limits.

Chain of Custody and Cooler Receipt Form for 1838186 Page 1 of 2

Chain of Custody Form

BC LABORATORIES, INC.

Report To: Client: AECOM | Project #: 605 70043.05
Attn: Robert Kuhlhardt | Project Name: SMUD 5th ST
Street Address: 2020 L St Suite 400
City, State, Zip: Sacramento, CA 95811 | Sampler(s): Jack Ray
Phone: 916 444-5900 Fax:
Email: Robert.kuhlhardt@aecom.com
Work Order #: 18-38186 | Page 1 of 1

Analysis Requested: Please refer to the back of this page for completion instructions and method legend.

Comments:

Sample Matrix: Soil, Sludge, Drinking Water, Ground Water, Waste Water, Other

Result Request **Surcharge: STD (10 Days) X, 5 Day** ☐, 2 Day** ☐, 1 Day** ☐

Sample #	Description	Date Sampled	Time Sampled	Notes
1	SO-B05-01	12/6/18	0800	
2	SO-VW12-01	12/6/18	0805	
3	SO-B17-01	12/6/18	0825	
4	SO-VW13-01	12/6/18	0825	
5	SO-VW14-01	12/6/18	1050	
6	SO-VW15-01	12/6/18	1150	
7	SO-B04-01	12/6/18	1325	
8	SO-B04-02	12/6/18	1320	
9	SO-B11-01	12/6/18	1410	
10	SO-B11-01	12/6/18	1420	

CHK BY [illegible] DISTRIBUTION

SUB-OUT ☐

Billing: ☐ Same as above
Client:
Address:
City: State Zip
Attn:
P.O. #:

EDF Required? Geotracker ☐ Yes ☐ No
Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

	Relinquished By	Date	Time	Received By	Date	Time
1.	[signature]	12.6.18	1430	[signature]	12-6-18	1430
2.	[signature]	12.6.18	1510	[signature]	12.7.18	09:30
3.	[signature]	Date	Time	3. Received By	Date	Time

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838186 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 18-3818Ø

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☒ (Specify) GSO	Ice Chest ☒ None ☐ Box ☐ Other ☐ (Specify)	YES ☐ NO ☐ W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☒ No ☐ All samples containers intact? Yes ☒ No ☐ Description(s) match COC? Yes ☒ No ☐

COC Received ☒ YES ☐ NO

Emissivity: .97 Container: Glass Thermometer ID: 274 Date/Time 12-7-18

Temperature: (A) 3.1 °C / (C) 3.4 °C Analyst Init ND 0930

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PTA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR	A		A				A	A	A	A
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT		ABCD		ABCD	ABCD	ABCD				
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: Date/Time: 12-7-18 0951

A = Actual / C = Corrected

Rev 21 05/23/2016

[S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20]

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Reported: 1/7/2019 5:18:54PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838186**
Class: **METALS-PPM**
Method: **EPA-6020**

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838186
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-B05-01	1838186-01
SO-B12-01	1838186-03
SO-B04-01	1838186-07
SO-B04-02	1838186-08
SO-B11-01	1838186-09
SO-B11-02	1838186-10

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-07-2019
Title: QA/QC Manager

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-6020

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: PE-EL2

Analyte	MDL	PQL	Units
Arsenic	0.17	0.5	mg/kg

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Project: SMUD 59th St.
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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B05-01

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838186-01
File ID: PE_EL2_181211-054
Sampled: 12/06/18 08:00
Prepared: 12/10/18 08:30
Analyzed: 12/11/18 11:36
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1 g / 250 ml
Batch: B032393
Sequence: 1824596
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	3.7	1		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B12-01

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838186-03
File ID: PE_EL2_181211-065
Sampled: 12/06/18 08:25
Prepared: 12/10/18 08:30
Analyzed: 12/11/18 12:24
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.04 g / 250 ml
Batch: B032393
Sequence: 1824596
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	13	0.962		EPA-6020

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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B04-01

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838186-07
File ID: PE_EL2_181211-066
Sampled: 12/06/18 13:25
Prepared: 12/10/18 08:30
Analyzed: 12/11/18 12:28
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.04 g / 250 ml
Batch: B032393
Sequence: 1824596
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	16	0.962		EPA-6020

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B04-02

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838186-08
File ID: PE_EL2_181211-067
Sampled: 12/06/18 13:30
Prepared: 12/10/18 08:30
Analyzed: 12/11/18 12:32
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.06 g / 250 ml
Batch: B032393
Sequence: 1824596
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	3.3	0.943		EPA-6020

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Project Number: 60570043.05
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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B11-01

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838186-09
File ID: PE_EL2_181211-068
Sampled: 12/06/18 14:10
Prepared: 12/10/18 08:30
Analyzed: 12/11/18 12:35
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.06 g / 250 ml
Batch: B032393
Sequence: 1824596
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	260	0.943		EPA-6020

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Project: SMUD 59th St.
Project Number: 60570043.05
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INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B11-02

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838186-10
File ID: PE_EL2_181211-069
Sampled: 12/06/18 14:20
Prepared: 12/10/18 08:30
Analyzed: 12/11/18 12:39
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.07 g / 250 ml
Batch: B032393
Sequence: 1824596
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	190	0.935		EPA-6020

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-6020

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032393 Batch Matrix: Solids
Preparation: EPA 3050B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-B05-01	1838186-01	PE_EL2_181211-054	12/10/18 08:30	
SO-B12-01	1838186-03	PE_EL2_181211-065	12/10/18 08:30	
SO-B04-01	1838186-07	PE_EL2_181211-066	12/10/18 08:30	
SO-B04-02	1838186-08	PE_EL2_181211-067	12/10/18 08:30	
SO-B11-01	1838186-09	PE_EL2_181211-068	12/10/18 08:30	
SO-B11-02	1838186-10	PE_EL2_181211-069	12/10/18 08:30	
Blank	B032393-BLK1	PE_EL2_181211-053	12/10/18 08:30	
LCS	B032393-BS1	PE_EL2_181211-052	12/10/18 08:30	
SO-B05-01	B032393-DUP1	PE_EL2_181211-055	12/10/18 08:30	
SO-B05-01	B032393-MS1	PE_EL2_181211-057	12/10/18 08:30	
SO-B05-01	B032393-MSD1	PE_EL2_181211-058	12/10/18 08:30	
SO-B05-01	B032393-PS1	PE_EL2_181211-059	12/10/18 08:30	[Spk] 1g->250ml; 250ml->250ml; Spiked 9.8ml

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Reported: 1/7/2019 5:18:54PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-6020

Laboratory:	BC Laboratories			SDG:	1838186
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032393-BLK1	File ID:	PE_EL2_181211-053
Prepared:	12/10/18 08:30	Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml
Analyzed:	12/11/18 11:33	Instrument:	PE-EL2		
Batch:	B032393	Sequence:	1824596	Calibration:	UNASSIGNED

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
7440-38-2	Arsenic	0.17	U

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Project Number: 60570043.05
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SO-B05-01

DUPLICATES

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032393
Preparation: EPA 3050B
Source Sample Name: SO-B05-01

SDG: 1838186
Project: SMUD 59th St.
Laboratory ID: B032393-DUP1
Lab Source ID: 1838186-01
Initial/Final: 1 g / 250 ml
% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/kg)	C	DUPLICATE CONCENTRATION (mg/kg)	C	RPD %	Q	METHOD
Arsenic	20	3.6815		3.5812		2.76		EPA-6020

* Values outside of QC limits

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Reported: 1/7/2019 5:18:54PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-6020

SO-B05-01

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032393
Preparation: EPA 3050B
Source Sample Number: 1838186-01

SDG: 1838186
Project: SMUD 59th St.
Laboratory ID: B032393-MS1
Initial/Final: 1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Arsenic	25.000	3.6815	27.889	96.8	75 - 125

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Arsenic	25.000	29.945	105	7.11	20	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Reported: 1/7/2019 5:18:54PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Matrix:	Solids		
Batch:	B032393	Laboratory ID:	B032393-BS1
Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Arsenic	25.000	26.756	107	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Reported: 1/7/2019 5:18:54PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824596
Matrix: Solids

SDG: 1838186
Project: SMUD 59th St.
Instrument: PE-EL2
Calibration: UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824596-ICV1	PE_EL2_181211-031	12/11/18 09:41
Initial Cal Blank	1824596-ICB1	PE_EL2_181211-032	12/11/18 09:45
Calibration Check	1824596-CCV2	PE_EL2_181211-041	12/11/18 10:24
Calibration Blank	1824596-CCB2	PE_EL2_181211-042	12/11/18 10:28
MRL Check	1824596-CRL2	PE_EL2_181211-043	12/11/18 10:34
Interference Check A	1824596-IFA1	PE_EL2_181211-044	12/11/18 10:40
Interference Check B	1824596-IFB1	PE_EL2_181211-045	12/11/18 10:45
Calibration Check	1824596-CCV3	PE_EL2_181211-050	12/11/18 11:16
Calibration Blank	1824596-CCB3	PE_EL2_181211-051	12/11/18 11:19
LCS	B032393-BS1	PE_EL2_181211-052	12/11/18 11:29
Blank	B032393-BLK1	PE_EL2_181211-053	12/11/18 11:33
SO-B05-01	1838186-01	PE_EL2_181211-054	12/11/18 11:36
SO-B05-01	B032393-DUP1	PE_EL2_181211-055	12/11/18 11:40
SO-B05-01	B032393-MS1	PE_EL2_181211-057	12/11/18 11:47
SO-B05-01	B032393-MSD1	PE_EL2_181211-058	12/11/18 11:50
SO-B05-01	B032393-PS1	PE_EL2_181211-059	12/11/18 11:54
Calibration Check	1824596-CCV4	PE_EL2_181211-060	12/11/18 11:57
Calibration Blank	1824596-CCB4	PE_EL2_181211-061	12/11/18 12:01
SO-B12-01	1838186-03	PE_EL2_181211-065	12/11/18 12:24
SO-B04-01	1838186-07	PE_EL2_181211-066	12/11/18 12:28
SO-B04-02	1838186-08	PE_EL2_181211-067	12/11/18 12:32
SO-B11-01	1838186-09	PE_EL2_181211-068	12/11/18 12:35
SO-B11-02	1838186-10	PE_EL2_181211-069	12/11/18 12:39
Calibration Check	1824596-CCV5	PE_EL2_181211-070	12/11/18 12:42
Calibration Blank	1824596-CCB5	PE_EL2_181211-071	12/11/18 12:46

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BLANKS
EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Sequence: 1824596

SDG: 1838186
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	Found	PQL	Units	C	Method
1824596-ICB1	Arsenic	0.73800	2.0	ug/L		EPA-6020
1824596-CCB2	Arsenic	-0.25400	2.0	ug/L		EPA-6020
1824596-CCB3	Arsenic	-0.57800	2.0	ug/L		EPA-6020
1824596-CCB4	Arsenic	-0.35900	2.0	ug/L		EPA-6020
1824596-CCB5	Arsenic	0.0060000	2.0	ug/L		EPA-6020

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INITIAL AND CONTINUING CALIBRATION CHECK

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Control Limt: +/- 10.00%

SDG: 1838186
Project: SMUD 59th St.
Calibration: UNASSIGNED
Sequence: 1824596

Lab Sample ID	Analyte	True	Found	%R	Units	Method
1824596-ICV1	Arsenic	125.00	130.74	105	ug/L	EPA-6020
1824596-CCV2	Arsenic	100.00	97.977	98.0	ug/L	EPA-6020
1824596-CCV3	Arsenic	100.00	102.86	103	ug/L	EPA-6020
1824596-CCV4	Arsenic	100.00	95.036	95.0	ug/L	EPA-6020
1824596-CCV5	Arsenic	100.00	96.052	96.1	ug/L	EPA-6020

* Values outside of QC limits

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POST DIGEST SPIKE SAMPLE RECOVERY

EPA-6020

SO-B05-01

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032393
Preparation: EPA 3050B

SDG: 1838186
Project: SMUD 59th St.
Laboratory ID: B032393-PS1
Lab Source ID: 1838186-01
Initial/Final: 0.0392 g / 10 ml

Source Sample Name: SO-B05-01
% Solids:

Analyte	Control Limit %R	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R
Arsenic	75 - 125	103.50	14.431	100.00	89.1

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ICP INTERFERENCE CHECK SAMPLE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Sequence: 1824596

SDG: 1838186
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	True	Found	%R	Units
1824596-IFA1	Arsenic		-0.33900		ug/L
1824596-IFB1	Arsenic	20.000	22.75	114	mg/kg

* Values outside of QC limits

Raw Data From Instrument PE-EL2

Raw Data - Calibration Standards

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 07:59:47
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.106
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	33.333				ug/L
|	B	11	351.341				ug/L
|	Al	27	18240.937				ug/L
| >	Sc	45	746231.087				ug/L
|	V	51	18015.737				ug/L
|	Cr	52	17549.498				ug/L
|	Cr	53	133076.582				ug/L
|	Mn	55	1022.068				ug/L
|	Co	59	269.338				ug/L
⌊	Ni	60	117.001				ug/L
⌈	Cu	63	300.339				ug/L
|	Cu	65	146.668				ug/L
|	Zn	66	367.675				ug/L
|	Zn	68	688.031				ug/L
| >	Ge	72	495907.296				ug/L
|	As	75	582.705				ug/L
|	Se	77	4715.613				ug/L
|	Se	82	47.644				ug/L
⌊	Sr	88	1025.402				ug/L
⌈	Mo	98	128.703				ug/L
| >	Rh	103	474061.547				ug/L
⌊	Ag	107	101.334				ug/L
⌈	Cd	111	93.647				ug/L
|	Cd	114	12.561				ug/L
| >	In	115	626222.432				ug/L
|	Sn	120	884.689				ug/L
⌊	Sb	121	391.344				ug/L
⌈	Ba	137	210.718				ug/L
|	Ba	138	1104.461				ug/L
| >	Tb	159	982234.789				ug/L
|	Tl	205	423.678				ug/L
⌊	Pb	208	337.336				ug/L
⌈	Hg	200	67.985				ug/L
|	Hg	201	79.334				ug/L
| >	Bi	209	599574.970				ug/L
⌊	U	238	88904.790				ug/L
	C	13	3574.166				ug/L
	W	184	106.629				ug/L
	Pd	106	92.482				ug/L
	Kr	83	98.501				ug/L
⌈	Na	23	12877.511				ug/L
|	Mg	24	2046.953				ug/L

	K	39	334997.682	ug/L
	Ca	44	28834.060	ug/L
	Ti	47	700.033	ug/L
	Sc-1	45	746231.087	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000000	0.000	0.000000	Linear Thru Zero
B	11.009	0.000000	0.000	0.000000	Linear Thru Zero
Al	26.982	0.000000	0.000	0.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.000000	0.000	0.000000	Linear Thru Zero
Cr	51.941	0.000000	0.000	0.000000	Linear Thru Zero
Cr	52.941	0.000000	0.000	0.000000	Linear Thru Zero
Mn	54.938	0.000000	0.000	0.000000	Linear Thru Zero
Co	58.933	0.000000	0.000	0.000000	Linear Thru Zero
Ni	59.933	0.000000	0.000	0.000000	Linear Thru Zero
Cu	62.930	0.000000	0.000	0.000000	Linear Thru Zero
Cu	64.928	0.000000	0.000	0.000000	Linear Thru Zero
Zn	65.926	0.000000	0.000	0.000000	Linear Thru Zero
Zn	67.925	0.000000	0.000	0.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000000	0.000	0.000000	Linear Thru Zero
Se	76.920	0.000000	0.000	0.000000	Linear Thru Zero
Se	81.917	0.000000	0.000	0.000000	Linear Thru Zero
Sr	87.906	0.000000	0.000	0.000000	Linear Thru Zero
Mo	97.906	0.000000	0.000	0.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.000000	0.000	0.000000	Linear Thru Zero
Cd	110.904	0.000000	0.000	0.000000	Linear Thru Zero
Cd	113.904	0.000000	0.000	0.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.000000	0.000	0.000000	Linear Thru Zero
Sb	120.904	0.000000	0.000	0.000000	Linear Thru Zero
Ba	136.905	0.000000	0.000	0.000000	Linear Thru Zero
Ba	137.905	0.000000	0.000	0.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.000000	0.000	0.000000	Linear Thru Zero
Pb	207.977	0.000000	0.000	0.000000	Linear Thru Zero
Hg	199.968	0.000000	0.000	0.000000	Linear Thru Zero
Hg	200.970	0.000000	0.000	0.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.000000	0.000	0.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	0.000000	0.000	0.000000	Linear Thru Zero
Mg	23.985	0.000000	0.000	0.000000	Linear Thru Zero
K	38.964	0.000000	0.000	0.000000	Linear Thru Zero
Ca	43.956	0.000000	0.000	0.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 08:03:20
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.106
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	308.340	**1.000**	0.18	18.1	ug/L
|	B	11	7579.735	**20.000**	0.52	2.6	ug/L
|	Al	27	129789.238	**20.000**	0.83	4.2	ug/L
| >	Sc	45	764465.244				ug/L
|	V	51	41914.988	**3.000**	0.38	12.8	ug/L
|	Cr	52	38332.515	**3.000**	0.22	7.3	ug/L
|	Cr	53	138196.080	**3.000**	4.62	154.1	ug/L
|	Mn	55	10671.404	**1.000**	0.06	6.3	ug/L
|	Co	59	6497.077	**1.000**	0.01	0.7	ug/L
⌊	Ni	60	2657.459	**1.000**	0.05	4.9	ug/L
⌈	Cu	63	5518.313	**2.000**	0.10	5.1	ug/L
|	Cu	65	2421.048	**2.000**	0.13	6.5	ug/L
|	Zn	66	3878.980	**5.000**	0.20	3.9	ug/L
|	Zn	68	3172.655	**5.000**	0.21	4.2	ug/L
| >	Ge	72	508358.826				ug/L
|	As	75	2610.201	**2.000**	0.18	9.2	ug/L
|	Se	77	4928.080	**2.000**	2.82	141.2	ug/L
|	Se	82	180.560	**2.000**	0.73	36.7	ug/L
⌊	Sr	88	3185.994	**0.200**	0.01	6.2	ug/L
⌈	Mo	98	3063.250	**1.000**	0.10	9.8	ug/L
| >	Rh	103	477556.853				ug/L
⌊	Ag	107	5128.378	**1.000**	0.08	7.5	ug/L
⌈	Cd	111	1228.145	**1.000**	0.14	14.5	ug/L
|	Cd	114	2685.252	**1.000**	0.05	5.4	ug/L
| >	In	115	622340.054				ug/L
|	Sn	120	6056.902	**1.000**	0.07	6.7	ug/L
⌊	Sb	121	9462.485	**2.000**	0.03	1.3	ug/L
⌈	Ba	137	2501.760	**1.000**	0.07	6.9	ug/L
|	Ba	138	15459.214	**1.000**	0.04	3.6	ug/L
| >	Tb	159	990605.580				ug/L
|	Tl	205	12233.724	**1.000**	0.05	5.3	ug/L
⌊	Pb	208	16782.939	**1.000**	0.07	7.1	ug/L
⌈	Hg	200	252.344	**0.200**	0.00	1.4	ug/L
|	Hg	201	174.002	**0.200**	0.06	29.8	ug/L
| >	Bi	209	593591.032				ug/L
⌊	U	238	113047.949	**1.000**	0.04	4.1	ug/L
	C	13	4181.188				ug/L
	W	184	155.268				ug/L
	Pd	106	65.399				ug/L
	Kr	83	108.667				ug/L
⌈	Na	23	581283.648	**100.000**	3.31	3.3	ug/L
|	Mg	24	387128.843	**100.000**	2.30	2.3	ug/L

K	39	758462.442	**100.000**	0.73	0.7	ug/L
Ca	44	47704.218	**100.000**	7.63	7.6	ug/L
Ti	47	620.025				ug/L
Sc-1	45	764465.244				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000358	0.000	1.000000	Linear Thru Zero
B	11.009	0.000472	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007268	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.010216	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.008879	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.000830	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012601	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008138	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003321	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005131	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002237	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001378	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000971	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001978	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000094	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000131	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.021015	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.006141	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.010538	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001829	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004295	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.008317	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007291	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002314	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014488	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011931	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.016622	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001559	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000809	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.042160	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5684.061370	0.000	1.000000	Linear Thru Zero
Mg	23.985	3850.818896	0.000	1.000000	Linear Thru Zero
K	38.964	4234.647593	0.000	1.000000	Linear Thru Zero
Ca	43.956	188.701579	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 08:06:54
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.106
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	28783.485	**100.000**	3.56	3.6	ug/L
|	B	11	328889.365	**999.959**	40.08	4.0	ug/L
|	Al	27	1100738.504	**249.544**	2.58	1.0	ug/L
| >	Sc	45	766571.760				ug/L
|	V	51	617704.231	**99.972**	3.69	3.7	ug/L
|	Cr	52	587675.206	**99.983**	1.46	1.5	ug/L
|	Cr	53	183489.969	**99.968**	4.94	4.9	ug/L
|	Mn	55	1653247.884	**249.998**	6.41	2.6	ug/L
|	Co	59	537162.237	**99.998**	3.18	3.2	ug/L
⌊	Ni	60	283696.550	**249.995**	6.19	2.5	ug/L
⌈	Cu	63	555601.976	**249.997**	9.00	3.6	ug/L
|	Cu	65	253943.403	**249.998**	5.76	2.3	ug/L
|	Zn	66	165729.645	**249.994**	3.81	1.5	ug/L
|	Zn	68	116758.044	**249.994**	4.43	1.8	ug/L
| >	Ge	72	507998.736				ug/L
|	As	75	166685.783	**249.992**	5.54	2.2	ug/L
|	Se	77	17185.034	**250.001**	8.48	3.4	ug/L
|	Se	82	18668.340	**250.002**	9.84	3.9	ug/L
⌊	Sr	88	8972.237	**19.948**	1.30	6.5	ug/L
⌈	Mo	98	257344.361	**99.999**	2.78	2.8	ug/L
| >	Rh	103	479898.631				ug/L
⌊	Ag	107	430428.903	**99.998**	3.59	3.6	ug/L
⌈	Cd	111	115839.500	**100.000**	1.37	1.4	ug/L
|	Cd	114	257420.797	**99.999**	1.12	1.1	ug/L
| >	In	115	636092.052				ug/L
|	Sn	120	466149.736	**99.999**	1.57	1.6	ug/L
⌊	Sb	121	417964.544	**99.996**	1.23	1.2	ug/L
⌈	Ba	137	213987.229	**99.999**	5.74	5.7	ug/L
|	Ba	138	1220491.066	**99.998**	4.83	4.8	ug/L
| >	Tb	159	1010273.592				ug/L
|	Tl	205	1010178.337	**99.998**	3.30	3.3	ug/L
⌊	Pb	208	3402257.005	**249.999**	14.78	5.9	ug/L
⌈	Hg	200	19587.395	**20.000**	0.87	4.3	ug/L
|	Hg	201	11416.469	**20.000**	1.12	5.6	ug/L
| >	Bi	209	597154.938				ug/L
⌊	U	238	2038390.188	**99.997**	2.44	2.4	ug/L
	C	13	3240.714				ug/L
	W	184	132.620				ug/L
	Pd	106	-368.331				ug/L
	Kr	83	128.834				ug/L
⌈	Na	23	51716233.993	**9999.901**	71.53	0.7	ug/L
|	Mg	24	35586842.293	**9999.918**	443.18	4.4	ug/L

K	39	42438278.686	**9999.994**	393.45	3.9	ug/L
Ca	44	1308763.464	**9999.526**	131.02	1.3	ug/L
Ti	47	820.044				ug/L
Sc-1	45	766571.760				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000429	0.000	0.999998	Linear Thru Zero
Al	26.982	0.005657	0.000	0.999740	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007822	0.000	0.999958	Linear Thru Zero
Cr	51.941	0.007434	0.000	0.999983	Linear Thru Zero
Cr	52.941	0.000610	0.000	0.999942	Linear Thru Zero
Mn	54.938	0.008623	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007004	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001480	0.000	0.999988	Linear Thru Zero
Cu	62.930	0.004376	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001999	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001303	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000914	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001309	0.000	0.999992	Linear Thru Zero
Se	76.920	0.000097	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000147	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000783	0.000	0.968165	Linear Thru Zero
Mo	97.906	0.005363	0.000	0.999999	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008975	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001820	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004046	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007315	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006565	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.002120	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012087	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010005	0.000	0.999998	Linear Thru Zero
Pb	207.977	0.013493	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001636	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000950	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032654	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5170.387016	0.000	1.000000	Linear Thru Zero
Mg	23.985	3558.508765	0.000	1.000000	Linear Thru Zero
K	38.964	4210.330532	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.999011	0.000	0.999989	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 08:39:51
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.116
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	40.333				ug/L
|	B	11	2567.100				ug/L
|	Al	27	18571.067				ug/L
| >	Sc	45	753086.263				ug/L
|	V	51	20034.126				ug/L
|	Cr	52	16570.502				ug/L
|	Cr	53	126995.668				ug/L
|	Mn	55	1117.415				ug/L
|	Co	59	211.336				ug/L
⌊	Ni	60	122.334				ug/L
⌈	Cu	63	291.672				ug/L
|	Cu	65	109.001				ug/L
|	Zn	66	401.677				ug/L
|	Zn	68	720.034				ug/L
| >	Ge	72	511973.105				ug/L
|	As	75	533.258				ug/L
|	Se	77	4507.654				ug/L
|	Se	82	41.979				ug/L
⌊	Sr	88	962.060				ug/L
⌈	Mo	98	187.823				ug/L
| >	Rh	103	482288.282				ug/L
⌊	Ag	107	74.000				ug/L
⌈	Cd	111	46.930				ug/L
|	Cd	114	-5.887				ug/L
| >	In	115	626384.649				ug/L
|	Sn	120	1192.101				ug/L
⌊	Sb	121	764.706				ug/L
⌈	Ba	137	178.687				ug/L
|	Ba	138	1076.428				ug/L
| >	Tb	159	989619.142				ug/L
|	Tl	205	387.677				ug/L
⌊	Pb	208	459.338				ug/L
⌈	Hg	200	96.596				ug/L
|	Hg	201	104.667				ug/L
| >	Bi	209	603399.619				ug/L
⌊	U	238	88169.690				ug/L
	C	13	3047.290				ug/L
	W	184	115.287				ug/L
	Pd	106	65.995				ug/L
	Kr	83	117.501				ug/L
⌈	Na	23	13865.821				ug/L
|	Mg	24	2383.706				ug/L

	K	39	322392.118	ug/L
	Ca	44	27947.506	ug/L
	Ti	47	526.685	ug/L
	Sc-1	45	753086.263	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000429	0.000	0.999998	Linear Thru Zero
Al	26.982	0.005657	0.000	0.999740	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007822	0.000	0.999958	Linear Thru Zero
Cr	51.941	0.007434	0.000	0.999983	Linear Thru Zero
Cr	52.941	0.000610	0.000	0.999942	Linear Thru Zero
Mn	54.938	0.008623	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007004	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001480	0.000	0.999988	Linear Thru Zero
Cu	62.930	0.004376	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001999	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001303	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000914	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001309	0.000	0.999992	Linear Thru Zero
Se	76.920	0.000097	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000147	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000783	0.000	0.968165	Linear Thru Zero
Mo	97.906	0.005363	0.000	0.999999	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008975	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001820	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004046	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007315	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006565	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.002120	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012087	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010005	0.000	0.999998	Linear Thru Zero
Pb	207.977	0.013493	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001636	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000950	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032654	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5170.387016	0.000	1.000000	Linear Thru Zero
Mg	23.985	3558.508765	0.000	1.000000	Linear Thru Zero
K	38.964	4210.330532	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.999011	0.000	0.999989	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 08:43:26
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.116
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	317.007	**1.000**	0.08	8.1	ug/L
|	B	11	10038.547	**20.000**	0.67	3.3	ug/L
|	Al	27	133612.241	**20.000**	0.75	3.8	ug/L
| >	Sc	45	751875.078				ug/L
|	V	51	41791.145	**3.000**	0.20	6.7	ug/L
|	Cr	52	38729.321	**3.000**	0.09	3.0	ug/L
|	Cr	53	132711.950	**3.000**	0.89	29.5	ug/L
|	Mn	55	10987.175	**1.000**	0.03	3.4	ug/L
|	Co	59	6855.723	**1.000**	0.06	6.4	ug/L
⌊	Ni	60	2604.776	**1.000**	0.08	7.9	ug/L
⌈	Cu	63	5662.419	**2.000**	0.15	7.7	ug/L
|	Cu	65	2429.051	**2.000**	0.16	7.9	ug/L
|	Zn	66	3909.661	**5.000**	0.09	1.8	ug/L
|	Zn	68	3164.653	**5.000**	0.30	5.9	ug/L
| >	Ge	72	498406.129				ug/L
|	As	75	1995.929	**2.000**	0.21	10.4	ug/L
|	Se	77	4733.625	**2.000**	0.39	19.3	ug/L
|	Se	82	187.138	**2.000**	0.56	28.2	ug/L
⌊	Sr	88	3251.021	**0.200**	0.01	5.9	ug/L
⌈	Mo	98	2914.066	**1.000**	0.04	4.0	ug/L
| >	Rh	103	476524.472				ug/L
⌊	Ag	107	5300.496	**1.000**	0.03	2.9	ug/L
⌈	Cd	111	1381.031	**1.000**	0.07	7.1	ug/L
|	Cd	114	2945.958	**1.000**	0.04	4.4	ug/L
| >	In	115	619033.343				ug/L
|	Sn	120	6167.820	**1.000**	0.04	3.7	ug/L
⌊	Sb	121	9684.093	**2.000**	0.03	1.3	ug/L
⌈	Ba	137	2488.158	**1.000**	0.08	8.1	ug/L
|	Ba	138	16173.409	**1.000**	0.06	5.7	ug/L
| >	Tb	159	1023125.392				ug/L
|	Tl	205	12231.386	**1.000**	0.05	4.9	ug/L
⌊	Pb	208	17091.076	**1.000**	0.08	8.1	ug/L
⌈	Hg	200	289.841	**0.200**	0.01	4.7	ug/L
|	Hg	201	129.334	**0.200**	0.23	115.2	ug/L
| >	Bi	209	588673.914				ug/L
⌊	U	238	111501.572	**1.000**	0.04	3.6	ug/L
	C	13	3380.755				ug/L
	W	184	129.942				ug/L
	Pd	106	81.830				ug/L
	Kr	83	99.667				ug/L
⌈	Na	23	599437.986	**100.000**	3.66	3.7	ug/L
|	Mg	24	398257.605	**100.000**	1.54	1.5	ug/L

K	39	754090.013	**100.000**	3.40	3.4	ug/L
Ca	44	45366.752	**100.000**	5.01	5.0	ug/L
Ti	47	580.023				ug/L
Sc-1	45	751875.078				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000369	0.000	1.000000	Linear Thru Zero
B	11.009	0.000497	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007653	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.009650	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.009835	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.002637	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013136	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008846	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003304	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005406	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002334	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001412	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000988	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001478	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000345	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000148	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.023234	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005720	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.010966	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.002157	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004765	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.008063	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007213	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002259	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014757	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011588	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.016297	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001663	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000236	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.043314	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5855.721647	0.000	1.000000	Linear Thru Zero
Mg	23.985	3958.738981	0.000	1.000000	Linear Thru Zero
K	38.964	4316.978953	0.000	1.000000	Linear Thru Zero
Ca	43.956	174.192465	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 08:46:59
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.116
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	28178.604	**100.000**	6.22	6.2	ug/L
|	B	11	323065.766	**999.934**	44.62	4.5	ug/L
|	Al	27	1088860.108	**249.458**	7.46	3.0	ug/L
| >	Sc	45	750816.654				ug/L
|	V	51	602536.276	**99.978**	5.03	5.0	ug/L
|	Cr	52	575324.216	**99.971**	4.03	4.0	ug/L
|	Cr	53	179846.516	**99.756**	11.34	11.4	ug/L
|	Mn	55	1645171.739	**249.998**	9.18	3.7	ug/L
|	Co	59	538700.270	**99.998**	4.82	4.8	ug/L
⌊	Ni	60	283317.314	**249.995**	11.46	4.6	ug/L
⌈	Cu	63	557679.855	**249.997**	9.71	3.9	ug/L
|	Cu	65	251807.499	**249.997**	7.23	2.9	ug/L
|	Zn	66	165738.631	**249.993**	6.83	2.7	ug/L
|	Zn	68	115277.847	**249.992**	2.92	1.2	ug/L
| >	Ge	72	500038.078				ug/L
|	As	75	166447.591	**249.998**	3.55	1.4	ug/L
|	Se	77	16938.990	**249.961**	15.28	6.1	ug/L
|	Se	82	18485.829	**250.000**	9.09	3.6	ug/L
⌊	Sr	88	8952.210	**19.944**	0.54	2.7	ug/L
⌈	Mo	98	258694.380	**100.000**	3.27	3.3	ug/L
| >	Rh	103	462047.734				ug/L
⌊	Ag	107	421983.853	**99.998**	2.58	2.6	ug/L
⌈	Cd	111	113419.560	**99.998**	3.83	3.8	ug/L
|	Cd	114	253182.315	**99.998**	3.98	4.0	ug/L
| >	In	115	621256.743				ug/L
|	Sn	120	460532.366	**99.999**	1.30	1.3	ug/L
⌊	Sb	121	413670.564	**99.997**	1.53	1.5	ug/L
⌈	Ba	137	211997.381	**100.000**	7.41	7.4	ug/L
|	Ba	138	1200411.415	**99.998**	6.79	6.8	ug/L
| >	Tb	159	972284.750				ug/L
|	Tl	205	990592.732	**99.999**	4.41	4.4	ug/L
⌊	Pb	208	3359960.146	**249.999**	14.11	5.6	ug/L
⌈	Hg	200	19510.237	**20.000**	1.14	5.7	ug/L
|	Hg	201	10984.507	**20.001**	0.83	4.1	ug/L
| >	Bi	209	586255.553				ug/L
⌊	U	238	2010530.370	**99.997**	5.26	5.3	ug/L
	C	13	2933.919				ug/L
	W	184	183.942				ug/L
	Pd	106	-644.045				ug/L
	Kr	83	112.001				ug/L
⌈	Na	23	52718302.732	**9999.889**	251.76	2.5	ug/L
|	Mg	24	35959644.796	**9999.899**	220.11	2.2	ug/L

	K	39	42865748.757	**9999.985**	108.56	1.1	ug/L
	Ca	44	1282856.539	**9999.612**	228.69	2.3	ug/L
	Ti	47	740.036				ug/L
	Sc-1	45	750816.654				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000427	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005716	0.000	0.999633	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007761	0.000	0.999973	Linear Thru Zero
Cr	51.941	0.007445	0.000	0.999954	Linear Thru Zero
Cr	52.941	0.000711	0.000	0.996717	Linear Thru Zero
Mn	54.938	0.008761	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007175	0.000	0.999997	Linear Thru Zero
Ni	59.933	0.001509	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.004462	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.002015	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001323	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000916	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001327	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000100	0.000	0.999810	Linear Thru Zero
Se	81.917	0.000148	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000804	0.000	0.963202	Linear Thru Zero
Mo	97.906	0.005593	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009133	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001825	0.000	0.999998	Linear Thru Zero
Cd	113.904	0.004073	0.000	0.999999	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007392	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006646	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.002183	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012360	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010193	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013844	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001657	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000928	0.000	0.999972	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032848	0.000	0.999995	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5270.502213	0.000	0.999999	Linear Thru Zero
Mg	23.985	3595.762407	0.000	0.999999	Linear Thru Zero
K	38.964	4254.341928	0.000	1.000000	Linear Thru Zero
Ca	43.956	125.495773	0.000	0.999992	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 09:27:43
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.128
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	36.667				ug/L
|	B	11	2270.335				ug/L
|	Al	27	17789.882				ug/L
| >	Sc	45	769188.894				ug/L
|	V	51	21061.361				ug/L
|	Cr	52	17141.250				ug/L
|	Cr	53	135167.760				ug/L
|	Mn	55	1180.759				ug/L
|	Co	59	198.003				ug/L
⌊	Ni	60	148.335				ug/L
⌈	Cu	63	320.007				ug/L
|	Cu	65	188.669				ug/L
|	Zn	66	542.019				ug/L
|	Zn	68	784.040				ug/L
| >	Ge	72	503509.838				ug/L
|	As	75	233.718				ug/L
|	Se	77	4696.436				ug/L
|	Se	82	28.108				ug/L
⌊	Sr	88	1001.399				ug/L
⌈	Mo	98	126.388				ug/L
| >	Rh	103	469742.632				ug/L
⌊	Ag	107	112.001				ug/L
⌈	Cd	111	62.140				ug/L
|	Cd	114	-14.290				ug/L
| >	In	115	634885.436				ug/L
|	Sn	120	904.298				ug/L
⌊	Sb	121	490.016				ug/L
⌈	Ba	137	224.382				ug/L
|	Ba	138	1069.121				ug/L
| >	Tb	159	991288.374				ug/L
|	Tl	205	287.005				ug/L
⌊	Pb	208	481.006				ug/L
⌈	Hg	200	138.097				ug/L
|	Hg	201	116.668				ug/L
| >	Bi	209	613753.218				ug/L
⌊	U	238	89004.195				ug/L
	C	13	3527.489				ug/L
	W	184	89.252				ug/L
	Pd	106	56.839				ug/L
	Kr	83	121.834				ug/L
⌈	Na	23	15382.056				ug/L
|	Mg	24	2870.550				ug/L

K	39	349590.206	ug/L
Ca	44	30547.264	ug/L
Ti	47	603.360	ug/L
Sc-1	45	769188.894	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000375	0.000	1.000000	Linear Thru Zero
B	11.009	0.000427	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005716	0.000	0.999633	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007761	0.000	0.999973	Linear Thru Zero
Cr	51.941	0.007445	0.000	0.999954	Linear Thru Zero
Cr	52.941	0.000711	0.000	0.996717	Linear Thru Zero
Mn	54.938	0.008761	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007175	0.000	0.999997	Linear Thru Zero
Ni	59.933	0.001509	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.004462	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.002015	0.000	0.999999	Linear Thru Zero
Zn	65.926	0.001323	0.000	0.999999	Linear Thru Zero
Zn	67.925	0.000916	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001327	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000100	0.000	0.999810	Linear Thru Zero
Se	81.917	0.000148	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000804	0.000	0.963202	Linear Thru Zero
Mo	97.906	0.005593	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009133	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001825	0.000	0.999998	Linear Thru Zero
Cd	113.904	0.004073	0.000	0.999999	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007392	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006646	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.002183	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012360	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010193	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013844	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001657	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000928	0.000	0.999972	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032848	0.000	0.999995	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5270.502213	0.000	0.999999	Linear Thru Zero
Mg	23.985	3595.762407	0.000	0.999999	Linear Thru Zero
K	38.964	4254.341928	0.000	1.000000	Linear Thru Zero
Ca	43.956	125.495773	0.000	0.999992	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 09:31:16
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.128
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	322.340	**1.000**	0.17	16.6	ug/L
|	B	11	10064.584	**20.000**	0.72	3.6	ug/L
|	Al	27	136114.072	**20.000**	0.12	0.6	ug/L
| >	Sc	45	784480.775				ug/L
|	V	51	42050.703	**3.000**	0.07	2.4	ug/L
|	Cr	52	38622.612	**3.000**	0.26	8.8	ug/L
|	Cr	53	135175.793	**3.000**	7.55	251.8	ug/L
|	Mn	55	11431.158	**1.000**	0.03	3.2	ug/L
|	Co	59	6538.115	**1.000**	0.03	3.3	ug/L
⌊	Ni	60	2780.838	**1.000**	0.07	7.1	ug/L
⌈	Cu	63	5656.080	**2.000**	0.10	4.8	ug/L
|	Cu	65	2352.026	**2.000**	0.06	3.0	ug/L
|	Zn	66	3802.274	**5.000**	0.28	5.7	ug/L
|	Zn	68	3102.292	**5.000**	0.13	2.5	ug/L
| >	Ge	72	520762.303				ug/L
|	As	75	2447.460	**2.000**	0.53	26.3	ug/L
|	Se	77	4799.664	**2.000**	8.60	430.1	ug/L
|	Se	82	206.528	**2.000**	0.19	9.5	ug/L
⌊	Sr	88	3301.046	**0.200**	0.02	10.1	ug/L
⌈	Mo	98	3061.758	**1.000**	0.03	2.6	ug/L
| >	Rh	103	497605.819				ug/L
⌊	Ag	107	4871.549	**1.000**	0.09	9.1	ug/L
⌈	Cd	111	1301.214	**1.000**	0.06	5.7	ug/L
|	Cd	114	2668.840	**1.000**	0.03	3.3	ug/L
| >	In	115	643434.341				ug/L
|	Sn	120	6219.965	**1.000**	0.08	7.9	ug/L
⌊	Sb	121	9816.288	**2.000**	0.13	6.3	ug/L
⌈	Ba	137	2730.857	**1.000**	0.02	2.1	ug/L
|	Ba	138	16757.959	**1.000**	0.05	5.5	ug/L
| >	Tb	159	1066870.548				ug/L
|	Tl	205	12240.743	**1.000**	0.04	4.2	ug/L
⌊	Pb	208	17401.039	**1.000**	0.05	4.9	ug/L
⌈	Hg	200	328.458	**0.200**	0.11	56.9	ug/L
|	Hg	201	198.669	**0.200**	0.06	30.8	ug/L
| >	Bi	209	622351.854				ug/L
⌊	U	238	115950.607	**1.000**	0.06	6.3	ug/L
	C	13	3340.727				ug/L
	W	184	137.946				ug/L
	Pd	106	55.150				ug/L
	Kr	83	112.501				ug/L
⌈	Na	23	605790.476	**100.000**	3.19	3.2	ug/L
|	Mg	24	396274.624	**100.000**	0.82	0.8	ug/L

K	39	771185.207	**100.000**	5.47	5.5	ug/L
Ca	44	44649.493	**100.000**	18.28	18.3	ug/L
Ti	47	490.016				ug/L
Sc-1	45	784480.775				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000362	0.000	1.000000	Linear Thru Zero
B	11.009	0.000494	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007519	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008736	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.008998	0.000	1.000000	Linear Thru Zero
Cr	52.941	-0.001074	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013043	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008077	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003352	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005116	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002072	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001246	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000880	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.002112	0.000	1.000000	Linear Thru Zero
Se	76.920	-0.000052	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000171	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.021715	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005880	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009563	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001926	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004168	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.008255	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007236	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002335	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014644	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011190	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.015838	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001522	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000642	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.041231	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5904.084198	0.000	1.000000	Linear Thru Zero
Mg	23.985	3934.040745	0.000	1.000000	Linear Thru Zero
K	38.964	4215.950012	0.000	1.000000	Linear Thru Zero
Ca	43.956	141.022291	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 09:34:50
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.128
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	28500.508	**100.000**	7.95	7.9	ug/L
|	B	11	331171.650	**999.935**	74.32	7.4	ug/L
|	Al	27	1107056.151	**249.468**	10.87	4.4	ug/L
| >	Sc	45	774177.241				ug/L
|	V	51	621346.594	**99.989**	3.70	3.7	ug/L
|	Cr	52	592232.626	**99.981**	4.05	4.1	ug/L
|	Cr	53	181062.490	**100.256**	14.81	14.8	ug/L
|	Mn	55	1672701.730	**249.998**	8.53	3.4	ug/L
|	Co	59	548380.240	**99.999**	4.32	4.3	ug/L
⌊	Ni	60	288087.326	**249.995**	11.72	4.7	ug/L
⌈	Cu	63	566437.045	**249.997**	15.82	6.3	ug/L
|	Cu	65	258316.613	**249.999**	16.48	6.6	ug/L
|	Zn	66	170662.810	**250.005**	12.75	5.1	ug/L
|	Zn	68	119763.175	**250.004**	9.92	4.0	ug/L
| >	Ge	72	519991.318				ug/L
|	As	75	170183.027	**249.990**	9.50	3.8	ug/L
|	Se	77	17088.812	**250.025**	19.27	7.7	ug/L
|	Se	82	19072.734	**249.997**	20.65	8.3	ug/L
⌊	Sr	88	8997.274	**19.946**	2.11	10.6	ug/L
⌈	Mo	98	261454.204	**99.999**	4.49	4.5	ug/L
| >	Rh	103	479902.896				ug/L
⌊	Ag	107	431982.505	**99.999**	3.91	3.9	ug/L
⌈	Cd	111	115558.723	**99.999**	1.28	1.3	ug/L
|	Cd	114	253704.397	**100.000**	2.90	2.9	ug/L
| >	In	115	638444.723				ug/L
|	Sn	120	463975.818	**99.999**	4.90	4.9	ug/L
⌊	Sb	121	412415.465	**99.995**	5.72	5.7	ug/L
⌈	Ba	137	212734.718	**99.999**	8.12	8.1	ug/L
|	Ba	138	1224183.985	**99.998**	7.62	7.6	ug/L
| >	Tb	159	1015654.135				ug/L
|	Tl	205	1016475.032	**99.999**	2.39	2.4	ug/L
⌊	Pb	208	3419535.100	**249.999**	9.61	3.8	ug/L
⌈	Hg	200	19482.604	**20.000**	0.68	3.4	ug/L
|	Hg	201	11308.982	**20.001**	0.75	3.7	ug/L
| >	Bi	209	603671.070				ug/L
⌊	U	238	2040940.684	**99.997**	5.67	5.7	ug/L
	C	13	3200.693				ug/L
	W	184	111.936				ug/L
	Pd	106	-680.740				ug/L
	Kr	83	120.834				ug/L
⌈	Na	23	53323101.616	**9999.892**	328.46	3.3	ug/L
|	Mg	24	36537804.609	**9999.923**	467.27	4.7	ug/L

K	39	43815682.247	**10000.030**	245.49	2.5	ug/L
Ca	44	1303566.563	**9999.892**	178.50	1.8	ug/L
Ti	47	710.033				ug/L
Sc-1	45	774177.241				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000368	0.000	1.000000	Linear Thru Zero
B	11.009	0.000425	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005642	0.000	0.999646	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007755	0.000	0.999993	Linear Thru Zero
Cr	51.941	0.007429	0.000	0.999980	Linear Thru Zero
Cr	52.941	0.000581	0.000	0.996367	Linear Thru Zero
Mn	54.938	0.008640	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007085	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001489	0.000	0.999987	Linear Thru Zero
Cu	62.930	0.004364	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001990	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001311	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000916	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001308	0.000	0.999988	Linear Thru Zero
Se	76.920	0.000094	0.000	0.999923	Linear Thru Zero
Se	81.917	0.000147	0.000	0.999999	Linear Thru Zero
Sr	87.906	0.000770	0.000	0.964926	Linear Thru Zero
Mo	97.906	0.005453	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009011	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001809	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003975	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007257	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006457	0.000	0.999997	Linear Thru Zero
Ba	136.905	0.002097	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.012071	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010010	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013480	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001603	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000927	0.000	0.999995	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032378	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5330.829281	0.000	0.999999	Linear Thru Zero
Mg	23.985	3653.521458	0.000	1.000000	Linear Thru Zero
K	38.964	4346.596140	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.303302	0.000	0.999999	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Tuesday, December 11, 2018 10:10:15
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.138
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	35.000				ug/L
|	B	11	2455.059				ug/L
|	Al	27	17619.499				ug/L
| >	Sc	45	749043.611				ug/L
|	V	51	15959.561				ug/L
|	Cr	52	15347.308				ug/L
|	Cr	53	132534.537				ug/L
|	Mn	55	1104.747				ug/L
|	Co	59	173.669				ug/L
⌊	Ni	60	135.001				ug/L
⌈	Cu	63	339.674				ug/L
|	Cu	65	150.335				ug/L
|	Zn	66	616.359				ug/L
|	Zn	68	879.050				ug/L
| >	Ge	72	502488.828				ug/L
|	As	75	697.557				ug/L
|	Se	77	4426.273				ug/L
|	Se	82	43.981				ug/L
⌊	Sr	88	1028.736				ug/L
⌈	Mo	98	122.165				ug/L
| >	Rh	103	468425.021				ug/L
⌊	Ag	107	83.334				ug/L
⌈	Cd	111	57.534				ug/L
|	Cd	114	2.747				ug/L
| >	In	115	614910.386				ug/L
|	Sn	120	953.578				ug/L
⌊	Sb	121	452.014				ug/L
⌈	Ba	137	187.421				ug/L
|	Ba	138	971.147				ug/L
| >	Tb	159	938989.708				ug/L
|	Tl	205	266.338				ug/L
⌊	Pb	208	410.004				ug/L
⌈	Hg	200	143.841				ug/L
|	Hg	201	95.334				ug/L
| >	Bi	209	602644.071				ug/L
⌊	U	238	86002.312				ug/L
	C	13	3354.078				ug/L
	W	184	129.273				ug/L
	Pd	106	50.823				ug/L
	Kr	83	117.334				ug/L
⌈	Na	23	15315.319				ug/L
|	Mg	24	2793.844				ug/L

	K	39	349772.045	ug/L
	Ca	44	31086.284	ug/L
	Ti	47	716.702	ug/L
	Sc-1	45	749043.611	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000368	0.000	1.000000	Linear Thru Zero
B	11.009	0.000425	0.000	0.999995	Linear Thru Zero
Al	26.982	0.005642	0.000	0.999646	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007755	0.000	0.999993	Linear Thru Zero
Cr	51.941	0.007429	0.000	0.999980	Linear Thru Zero
Cr	52.941	0.000581	0.000	0.996367	Linear Thru Zero
Mn	54.938	0.008640	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007085	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001489	0.000	0.999987	Linear Thru Zero
Cu	62.930	0.004364	0.000	0.999999	Linear Thru Zero
Cu	64.928	0.001990	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001311	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000916	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001308	0.000	0.999988	Linear Thru Zero
Se	76.920	0.000094	0.000	0.999923	Linear Thru Zero
Se	81.917	0.000147	0.000	0.999999	Linear Thru Zero
Sr	87.906	0.000770	0.000	0.964926	Linear Thru Zero
Mo	97.906	0.005453	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009011	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001809	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003975	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007257	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.006457	0.000	0.999997	Linear Thru Zero
Ba	136.905	0.002097	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.012071	0.000	0.999998	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010010	0.000	0.999999	Linear Thru Zero
Pb	207.977	0.013480	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001603	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000927	0.000	0.999995	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.032378	0.000	0.999996	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5330.829281	0.000	0.999999	Linear Thru Zero
Mg	23.985	3653.521458	0.000	1.000000	Linear Thru Zero
K	38.964	4346.596140	0.000	1.000000	Linear Thru Zero
Ca	43.956	127.303302	0.000	0.999999	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Tuesday, December 11, 2018 10:13:49
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.138
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	294.006	**1.000**	0.12	12.0	ug/L
|	B	11	9760.193	**20.000**	1.48	7.4	ug/L
|	Al	27	134788.104	**20.000**	0.25	1.2	ug/L
| >	Sc	45	791891.147				ug/L
|	V	51	40029.234	**3.000**	0.45	15.0	ug/L
|	Cr	52	38391.013	**3.000**	0.06	2.1	ug/L
|	Cr	53	140829.401	**3.000**	17.49	583.0	ug/L
|	Mn	55	11611.430	**1.000**	0.07	7.0	ug/L
|	Co	59	6722.274	**1.000**	0.05	4.8	ug/L
⌊	Ni	60	2784.504	**1.000**	0.05	5.5	ug/L
⌈	Cu	63	5796.190	**2.000**	0.07	3.7	ug/L
|	Cu	65	2446.056	**2.000**	0.03	1.6	ug/L
|	Zn	66	4129.109	**5.000**	0.14	2.8	ug/L
|	Zn	68	3120.969	**5.000**	0.21	4.3	ug/L
| >	Ge	72	528029.238				ug/L
|	As	75	2378.125	**2.000**	0.69	34.3	ug/L
|	Se	77	4720.449	**2.000**	3.28	164.2	ug/L
|	Se	82	200.820	**2.000**	0.80	40.0	ug/L
⌊	Sr	88	3172.655	**0.200**	0.01	4.7	ug/L
⌈	Mo	98	3140.797	**1.000**	0.11	10.5	ug/L
| >	Rh	103	489289.399				ug/L
⌊	Ag	107	4840.860	**1.000**	0.09	8.8	ug/L
⌈	Cd	111	1303.148	**1.000**	0.06	6.0	ug/L
|	Cd	114	2901.888	**1.000**	0.01	1.2	ug/L
| >	In	115	637443.784				ug/L
|	Sn	120	6041.677	**1.000**	0.04	3.8	ug/L
⌊	Sb	121	9967.121	**2.000**	0.08	3.9	ug/L
⌈	Ba	137	2369.662	**1.000**	0.04	4.0	ug/L
|	Ba	138	16047.021	**1.000**	0.06	5.7	ug/L
| >	Tb	159	1012389.558				ug/L
|	Tl	205	11938.594	**1.000**	0.05	4.5	ug/L
⌊	Pb	208	17022.125	**1.000**	0.09	9.4	ug/L
⌈	Hg	200	335.291	**0.200**	0.03	13.5	ug/L
|	Hg	201	228.004	**0.200**	0.09	45.1	ug/L
| >	Bi	209	614895.346				ug/L
⌊	U	238	113682.357	**1.000**	0.07	7.0	ug/L
	C	13	3720.930				ug/L
	W	184	111.936				ug/L
	Pd	106	22.058				ug/L
	Kr	83	117.168				ug/L
⌈	Na	23	598350.365	**100.000**	4.22	4.2	ug/L
|	Mg	24	397098.705	**100.000**	3.33	3.3	ug/L

	K	39	779737.706	**100.000**	4.05	4.0	ug/L
	Ca	44	48408.697	**100.000**	12.04	12.0	ug/L
	Ti	47	430.012				ug/L
	Sc-1	45	791891.147				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000324	0.000	1.000000	Linear Thru Zero
B	11.009	0.000453	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007338	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.009723	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.009337	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.000368	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.013216	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008264	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003343	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005150	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002168	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001320	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000832	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001573	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000070	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000149	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.019843	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.006160	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009733	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001955	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004550	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007938	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.007461	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.002140	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.014852	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.011531	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.016428	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001530	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.001075	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.042289	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5830.350464	0.000	1.000000	Linear Thru Zero
Mg	23.985	3943.048612	0.000	1.000000	Linear Thru Zero
K	38.964	4299.656611	0.000	1.000000	Linear Thru Zero
Ca	43.956	173.224129	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Tuesday, December 11, 2018 10:17:22
Sample File: C:\Elandata\Sample\PE_EL2_181211.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.138
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_181211.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	28845.538	**100.002**	7.78	7.8	ug/L
|	B	11	326336.333	**999.985**	46.38	4.6	ug/L
|	Al	27	1108534.478	**249.607**	9.34	3.7	ug/L
| >	Sc	45	742185.186				ug/L
|	V	51	628940.550	**99.984**	4.17	4.2	ug/L
|	Cr	52	591760.699	**99.982**	3.74	3.7	ug/L
|	Cr	53	181460.324	**100.041**	14.75	14.7	ug/L
|	Mn	55	1662718.182	**249.998**	10.91	4.4	ug/L
|	Co	59	543524.701	**99.999**	5.60	5.6	ug/L
⌊	Ni	60	288494.645	**249.995**	12.74	5.1	ug/L
⌈	Cu	63	565471.813	**249.998**	8.77	3.5	ug/L
|	Cu	65	257693.843	**249.999**	8.81	3.5	ug/L
|	Zn	66	170501.710	**250.004**	7.76	3.1	ug/L
|	Zn	68	119597.937	**250.014**	7.68	3.1	ug/L
| >	Ge	72	491653.626				ug/L
|	As	75	171783.746	**249.998**	11.15	4.5	ug/L
|	Se	77	17319.525	**250.005**	19.04	7.6	ug/L
|	Se	82	18636.373	**250.000**	11.56	4.6	ug/L
⌊	Sr	88	9311.304	**19.955**	0.77	3.9	ug/L
⌈	Mo	98	262921.578	**99.999**	4.11	4.1	ug/L
| >	Rh	103	455501.654				ug/L
⌊	Ag	107	434017.852	**100.000**	3.18	3.2	ug/L
⌈	Cd	111	115695.482	**100.000**	5.45	5.4	ug/L
|	Cd	114	255021.992	**99.999**	5.34	5.3	ug/L
| >	In	115	605729.214				ug/L
|	Sn	120	467257.084	**100.000**	5.12	5.1	ug/L
⌊	Sb	121	410060.180	**99.996**	6.41	6.4	ug/L
⌈	Ba	137	210772.329	**100.000**	9.41	9.4	ug/L
|	Ba	138	1216497.396	**99.998**	7.47	7.5	ug/L
| >	Tb	159	959284.174				ug/L
|	Tl	205	1016107.830	**99.999**	6.57	6.6	ug/L
⌊	Pb	208	3418550.850	**249.999**	21.18	8.5	ug/L
⌈	Hg	200	20112.709	**20.000**	1.30	6.5	ug/L
|	Hg	201	10915.748	**20.000**	1.67	8.4	ug/L
| >	Bi	209	577032.553				ug/L
⌊	U	238	2021848.980	**99.997**	3.94	3.9	ug/L
	C	13	3354.084				ug/L
	W	184	140.637				ug/L
	Pd	106	-708.451				ug/L
	Kr	83	114.168				ug/L
⌈	Na	23	53157078.393	**9999.903**	409.44	4.1	ug/L
|	Mg	24	36752639.950	**9999.927**	326.19	3.3	ug/L

K	39	43530702.200	**10000.004**	290.29	2.9	ug/L
Ca	44	1291738.449	**9999.626**	363.42	3.6	ug/L
Ti	47	613.358				ug/L
Sc-1	45	742185.186				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000388	0.000	0.999999	Linear Thru Zero
B	11.009	0.000436	0.000	1.000000	Linear Thru Zero
Al	26.982	0.005890	0.000	0.999807	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008263	0.000	0.999986	Linear Thru Zero
Cr	51.941	0.007770	0.000	0.999982	Linear Thru Zero
Cr	52.941	0.000675	0.000	0.999907	Linear Thru Zero
Mn	54.938	0.008955	0.000	0.999998	Linear Thru Zero
Co	58.933	0.007321	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001554	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.004597	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002095	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001382	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000966	0.000	0.999996	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001392	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000106	0.000	0.999996	Linear Thru Zero
Se	81.917	0.000151	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000846	0.000	0.975726	Linear Thru Zero
Mo	97.906	0.005771	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009527	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001912	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.004217	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.007706	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.006772	0.000	0.999998	Linear Thru Zero
Ba	136.905	0.002202	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.012704	0.000	0.999999	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.010611	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.014294	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001734	0.000	0.999999	Linear Thru Zero
Hg	200.970	0.000940	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.033609	0.000	0.999997	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	5314.227920	0.000	1.000000	Linear Thru Zero
Mg	23.985	3675.011414	0.000	1.000000	Linear Thru Zero
K	38.964	4318.091172	0.000	1.000000	Linear Thru Zero
Ca	43.956	126.069932	0.000	0.999993	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Raw Data - Instrument Tuning

Sample Information

Sample Date/Time: Tuesday, December 11, 2018 06:28:46
Method File: C:\Elandata\Method\BC Methods\BC-Tuning.mth
Dataset File: C:\Elandata\Dataset\Default\Mass Calibration and Resolution - Retry 1.1190
Tuning File: C:\Elandata\Tuning\default.tun
Number of Sweeps: 35
Number of Readings: 1
Number of Replicates: 5
Measurement Unit: cps

Instrument Tuning Report

File Name: default.tun
File Path: C:\Elandata\Tuning\default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
Li	7.016	6.978	1557	2078	0.719	
Mg	23.985	24.028	5680	2106	0.685	
Rh	102.905	102.929	24820	2264	0.709	
Ce	139.905	139.927	33781	2348	0.695	
Pb	207.977	207.979	50315	2509	0.694	
U	238.050	238.026	57611	2567	0.705	

Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Tuesday, December 11, 2018 06:39:32
Sample Description:
Method File: C:\Elandata\Method\BC Methods\BC_Daily Performance.mth
Dataset File: C:\Elandata\Dataset\Default\Daily Performance Check.1192
Tuning File: C:\Elandata\Tuning\default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Dual
Acq. Dead Time(ns): 65
Current Dead Time (ns): 65

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	71327.3	71327.346	2245.840	3.1
	In	114.9	256250.2	256250.181	9419.021	3.7
	U	238.1	386120.7	386120.667	11595.831	3.0
⌈>	Ba	137.9	238546.9	238546.915	8040.842	3.4
⌊	Ba++	69.0	6092.3	0.026	0.000	1.7
⌈>	Ce	139.9	302871.6	302871.605	9065.970	3.0
⌊	CeO	155.9	5561.6	0.018	0.000	1.5
	220	220.0	29.7	29.680	2.848	9.6
	8.5	8.5	29.0	29.040	2.256	7.8

Current Optimization File Data

Current Value	Description
0.97	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
15.00	Plasma Gas Flow
7.75	Lens Voltage
1500.00	ICP RF Power
-1900.00	Analog Stage Voltage
1600.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset Std [QRO]
-10.00	Cell Rod Offset Std [CRO]
60.00	Discriminator Threshold
-21.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.25	RPq
0.98	DRC Mode NEB
-8.00	DRC Mode QRO
-2.00	DRC Mode CRO
-25.00	DRC Mode CPV
0.00	Cell Gas A
0.00	Cell Gas B
210.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
450.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	12	69	6.0	502991.0
Mg	24	69	6.0	92678.3
In	115	69	7.8	269033.8
Ce	140	69	8.5	360273.8
Pb	208	69	9.0	180547.6

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:18:54PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838186

Laboratory Documentation Requirements
For Data Validation of
Volatiles Analysis

Prepared By
BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838186
COC Number:
Default Cooler was received at 3.6 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-8260B	MS-V3

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

The Continuing Calibration Verification (CCV) recovery was not within established control limits.

Lab Number	Method	Analyte
1824146-CCV4	EPA-8260B	Chloroethane

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032223	EPA-8260B	1836707-28	<Not Client Sample>

Matrix spike recovery(s) was(were) not within the control limits.

Lab Number	Method	Analyte
B032223-MS1	EPA-8260B	Chloroethane

LCS

The LCS recoveries were within QC limits.

Discussion

Analysis for samples 1838186-4, -5 and -6 were cancelled per client request.

Chain of Custody and Cooler Receipt Form for 1838186 Page 1 of 2

Chain of Custody Form

BC LABORATORIES, INC.

Report To: Client: AECOM | Project #: 605 70043.05
Attn: Robert Kuhlhardt | Project Name: SMUD 5th ST
Street Address: 2020 L St Suite 400
City, State, Zip: Sacramento, CA 95811 | Sampler(s): Jack Ray
Phone: 916 444-5900 Fax:
Email: Robert.kuhlhardt@aecom.com
Work Order #: 18-38186 | Page 1 of 1

Analysis Requested: Please refer to the back of this page for completion instructions and method legend.

Comments:

Sample Matrix: Soil, Sludge, Drinking Water, Ground Water, Waste Water, Other

Result Request **Surcharge: STD (10 Days) X, 5 Day** ☐, 2 Day** ☐, 1 Day** ☐

Sample #	Description	Date Sampled	Time Sampled	Notes
1	SO-B05-01	12/6/18	0800	
2	SO-VW12-01	12/6/18	0805	
3	SO-B17-01	12/6/18	0825	
4	SO-VW13-01	12/6/18	0825	
5	SO-VW14-01	12/6/18	1050	
6	SO-VW15-01	12/6/18	1150	
7	SO-B04-01	12/6/18	1325	
8	SO-B04-02	12/6/18	1320	
9	SO-B11-01	12/6/18	1410	
10	SO-B11-01	12/6/18	1420	

CHK BY [illegible] DISTRIBUTION

SUB-OUT ☐

Billing: ☐ Same as above
Client:
Address:
City: State Zip
Attn:
P.O. #:

EDF Required? Geotracker ☐ Yes ☐ No
Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

	Relinquished By	Date	Time	Received By	Date	Time
1.	[signature]	12.6.18	1432	[signature]	12-6-18	1430
2.	[signature]	12.6.18	1512	[signature]	12.7.18	09:30
3.	[signature]	Date	Time	3. Received By	Date	Time

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838186 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 18-3818Ø

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☒ (Specify) GSO	Ice Chest ☒ None ☐ Box ☐ Other ☐ (Specify)	YES ☐ NO ☐ W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☒ No ☐ All samples containers intact? Yes ☒ No ☐ Description(s) match COC? Yes ☒ No ☐

COC Received ☒ YES ☐ NO

Emissivity: .97 Container: Glass Thermometer ID: 274 Date/Time 12-7-18

Temperature: (A) 3.1 °C / (C) 3.4 °C Analyst Init ND 0930

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PTA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR	A		A				A	A	A	A
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT		ABCD		ABCD	ABCD	ABCD				
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: Date/Time: 12-7-18 0951

A = Actual / C = Corrected

Rev 21 05/23/2016

[S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20]

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838186**
Class: **VOA**
Method: **EPA-8260B**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-VW12-01	1838186-02

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-07-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: MS-V3

Analyte	MDL	PQL	Units
Chloroethane	0.0014	0.0050	mg/kg
1,1-Dichloroethane	0.0014	0.0050	mg/kg
1,2-Dichloroethane	0.00085	0.0050	mg/kg
1,1-Dichloroethene	0.0012	0.0050	mg/kg
cis-1,2-Dichloroethene	0.0013	0.0050	mg/kg
trans-1,2-Dichloroethene	0.0014	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	0.0011	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	0.0011	0.0050	mg/kg
Tetrachloroethene	0.0013	0.0050	mg/kg
1,1,1-Trichloroethane	0.0011	0.0050	mg/kg
1,1,2-Trichloroethane	0.00077	0.0050	mg/kg
Trichloroethene	0.0011	0.0050	mg/kg
Vinyl chloride	0.0016	0.0050	mg/kg

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Sacramento, CA 95811

Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW12-01

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838186-02
File ID: 09DEC15.D
Sampled: 12/06/18 08:05
Prepared: 12/09/18 12:00
Analyzed: 12/09/18 17:44
Solids:
Preparation: EPA 5030 Soil MS
Initial/Final: 5 g / 5 ml
Batch: B032223
Sequence: 1824414
Calibration: 1812002
Instrument: MS-V3

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	1	0.0014	U
75-34-3	1,1-Dichloroethane	1	0.0014	U
107-06-2	1,2-Dichloroethane	1	0.00085	U
75-35-4	1,1-Dichloroethene	1	0.0012	U
156-59-2	cis-1,2-Dichloroethene	1	0.0013	U
156-60-5	trans-1,2-Dichloroethene	1	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.0011	U
127-18-4	Tetrachloroethene	1	0.0013	U
71-55-6	1,1,1-Trichloroethane	1	0.0011	U
79-00-5	1,1,2-Trichloroethane	1	0.00077	U
79-01-6	Trichloroethene	1	0.0011	U
75-01-4	Vinyl chloride	1	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.058070	116	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.051890	104	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.049340	98.7	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	133319	6.21	119959	6.22	
Chlorobenzene-d5 (IS)	121612	9.41	104551	9.41	
1,4-Difluorobenzene (IS)	447529	7.11	395399	7.11	

* Values outside of QC limits

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Sacramento, CA 95811

Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032223 Batch Matrix: Solids
Preparation: EPA 5030 Soil MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW12-01	1838186-02	09DEC15.D	12/09/18 12:00	VOCs + TPHg
Blank	B032223-BLK1	05DEC52.D	12/05/18 16:00	
LCS	B032223-BS1	05DEC47.D	12/05/18 16:00	
Matrix Spike	B032223-MS1	05DEC48.D	12/05/18 16:00	
Matrix Spike Dup	B032223-MSD1	05DEC49.D	12/05/18 16:00	

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Sacramento, CA 95811

Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1838186
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032223-BLK1	File ID:	05DEC52.D
Prepared:	12/05/18 16:00	Preparation:	EPA 5030 Soil MS	Initial/Final:	5 g / 5 ml
Analyzed:	12/06/18 05:54	Instrument:	MS-V3		
Batch:	B032223	Sequence:	1824146	Calibration:	1812002

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.0014	U
75-34-3	1,1-Dichloroethane	0.0014	U
107-06-2	1,2-Dichloroethane	0.00085	U
75-35-4	1,1-Dichloroethene	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.0011	U
127-18-4	Tetrachloroethene	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.00077	U
79-01-6	Trichloroethene	0.0011	U
75-01-4	Vinyl chloride	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.048130	96.3	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.051450	103	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.048620	97.2	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	86374	6.24	83645	6.23	
Chlorobenzene-d5 (IS)	74852	9.42	73383	9.42	
1,4-Difluorobenzene (IS)	272969	7.13	290742	7.13	

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Sacramento, CA 95811

Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032223
Preparation: EPA 5030 Soil MS
Source Sample Number: 1836707-28

SDG: 1838186
Project: SMUD 59th St.
Laboratory ID: B032223-MS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	ND	0.084840	67.9 *	70 - 130
1,1-Dichloroethane	0.12500	ND	0.10743	85.9	70 - 130
1,1-Dichloroethene	0.12500	ND	0.10285	82.3	70 - 130
Trichloroethene	0.12500	ND	0.11056	88.4	70 - 130

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	0.12500	0.091200	73.0	7.23	20	70 - 130
1,1-Dichloroethane	0.12500	0.11100	88.8	3.27	20	70 - 130
1,1-Dichloroethene	0.12500	0.10444	83.6	1.53	20	70 - 130
Trichloroethene	0.12500	0.10899	87.2	1.43	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032223
Preparation: EPA 5030 Soil MS

SDG: 1838186
Project: SMUD 59th St.
Laboratory ID: B032223-BS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	0.097520	78.0	70 - 130
1,1-Dichloroethane	0.12500	0.11854	94.8	70 - 130
1,1-Dichloroethene	0.12500	0.11305	90.4	70 - 130
Trichloroethene	0.12500	0.12014	96.1	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824146	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824146-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824146-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824146-TUN2	05DEC42.D	12/06/18 02:14
Calibration Check	1824146-CCV4	05DEC44.D	12/06/18 02:58
Calibration Blank	1824146-CCB2	05DEC46.D	12/06/18 03:42
LCS	B032223-BS1	05DEC47.D	12/06/18 04:04
Matrix Spike	B032223-MS1	05DEC48.D	12/06/18 04:26
Matrix Spike Dup	B032223-MSD1	05DEC49.D	12/06/18 04:48
Blank	B032223-BLK1	05DEC52.D	12/06/18 05:54
MS Tune	1824146-TUN3	06DEC02.D	12/06/18 14:24
Calibration Check	1824146-CCV7	06DEC04.D	12/06/18 15:23
Calibration Blank	1824146-CCB3	06DEC06.D	12/06/18 16:11

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824414	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824414-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824414-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824414-TUN1	09DEC02.D	12/09/18 12:50
Calibration Check	1824414-CCV1	09DEC04.D	12/09/18 13:45
Calibration Blank	1824414-CCB1	09DEC06.D	12/09/18 14:29
SO-VW12-01	1838186-02	09DEC15.D	12/09/18 17:44

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824979	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1824979-TUN1	13NOV03.D	11/13/18 07:18
Cal Standard	1824979-CAL2	13NOV13.D	11/13/18 13:18
Cal Standard	1824979-CAL3	13NOV14.D	11/13/18 13:41
Cal Standard	1824979-CAL4	13NOV15.D	11/13/18 14:04
Cal Standard	1824979-CAL5	13NOV16.D	11/13/18 14:27
Cal Standard	1824979-CAL6	13NOV17.D	11/13/18 14:50
Cal Standard	1824979-CAL1	13NOV21.D	11/13/18 16:22

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	05DEC42.D	Injection Date:	12/06/18
Instrument ID:	MS-V3	Injection Time:	02:14
Sequence:	1824146	Lab Sample ID:	1824146-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.9	PASS
Mass 75	30 - 60% of Mass 95	41.2	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	8.22	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	94.1	PASS
Mass 175	5 - 9% of Mass 174	7.45	PASS
Mass 176	95 - 101% of Mass 174	96.5	PASS
Mass 177	5 - 9% of Mass 176	6.49	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	06DEC02.D	Injection Date:	12/06/18
Instrument ID:	MS-V3	Injection Time:	14:24
Sequence:	1824146	Lab Sample ID:	1824146-TUN3

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	19.7	PASS
Mass 75	30 - 60% of Mass 95	43.5	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.54	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	70.3	PASS
Mass 175	5 - 9% of Mass 174	5.6	PASS
Mass 176	95 - 101% of Mass 174	96.9	PASS
Mass 177	5 - 9% of Mass 176	7.36	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	09DEC02.D	Injection Date:	12/09/18
Instrument ID:	MS-V3	Injection Time:	12:50
Sequence:	1824414	Lab Sample ID:	1824414-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.6	PASS
Mass 75	30 - 60% of Mass 95	41	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.56	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	87.5	PASS
Mass 175	5 - 9% of Mass 174	6.26	PASS
Mass 176	95 - 101% of Mass 174	95.4	PASS
Mass 177	5 - 9% of Mass 176	6.6	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	13NOV03.D	Injection Date:	11/13/18
Instrument ID:	MS-V3	Injection Time:	07:18
Sequence:	1824979	Lab Sample ID:	1824979-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	20.4	PASS
Mass 75	30 - 60% of Mass 95	50.7	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.36	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	59.8	PASS
Mass 175	5 - 9% of Mass 174	8.79	PASS
Mass 176	95 - 101% of Mass 174	98.4	PASS
Mass 177	5 - 9% of Mass 176	7.95	PASS

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	11/13/18
Lab Sample ID:	1824146-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	05DEC44.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	12/06/18
Lab Sample ID:	1824146-CCV4	Injection Time:	02:58

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.099050	1.08303	0.8581649		-20.8	20 *
1,1-Dichloroethane	A	0.12500	0.11984	2.329792	2.23364	0.1	-4.1	20
1,2-Dichloroethane	A	0.12500	0.12855	1.174426	1.207814		2.8	20
1,1-Dichloroethene	A	0.12500	0.11503	1.140625	1.049669		-8.0	20
cis-1,2-Dichloroethene	A	0.12500	0.12810	1.251724	1.282735		2.5	20
trans-1,2-Dichloroethene	A	0.12500	0.12074	1.143278	1.104291		-3.4	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.12291	0.9907955	0.9742529		-1.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12449	1.330376	1.324966	0.3	-0.4	20
Tetrachloroethene	A	0.12500	0.11355	0.3102159	0.2818086		-9.2	20
1,1,1-Trichloroethane	A	0.12500	0.12242	1.337076	1.309443		-2.1	20
1,1,2-Trichloroethane	A	0.12500	0.12050	0.2309915	0.2226813		-3.6	20
Trichloroethene	A	0.12500	0.11467	0.3225112	0.2958472		-8.3	20
Vinyl chloride	A	0.12500	0.11182	1.938052	1.733708		-10.5	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	06DEC04.D	Calibration Date:	11/13/18 13:18
Sequence:	1824146	Injection Date:	12/06/18
Lab Sample ID:	1824146-CCV7	Injection Time:	15:23

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11716	1.08303	1.015143		-6.3	50
1,1-Dichloroethane	A	0.12500	0.12438	2.329792	2.318179	0.1	-0.5	50
1,2-Dichloroethane	A	0.12500	0.12097	1.174426	1.136604		-3.2	50
1,1-Dichloroethene	A	0.12500	0.12688	1.140625	1.157768		1.5	50
cis-1,2-Dichloroethene	A	0.12500	0.12670	1.251724	1.268757		1.4	50
trans-1,2-Dichloroethene	A	0.12500	0.12774	1.143278	1.168333		2.2	50
1,1,1,2-Tetrachloroethane	A	0.12500	0.12703	0.9907955	1.006885		1.6	50
1,1,2,2-Tetrachloroethane	A	0.12500	0.12315	1.330376	1.310685	0.3	-1.5	50
Tetrachloroethene	A	0.12500	0.14048	0.3102159	0.3486448		12.4	50
1,1,1-Trichloroethane	A	0.12500	0.13261	1.337076	1.418471		6.1	50
1,1,2-Trichloroethane	A	0.12500	0.12180	0.2309915	0.2250832		-2.6	50
Trichloroethene	A	0.12500	0.13072	0.3225112	0.3372593		4.6	50
Vinyl chloride	A	0.12500	0.13571	1.938052	2.104113		8.6	50

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824414	Injection Date:	11/13/18
Lab Sample ID:	1824414-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838186
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	09DEC04.D	Calibration Date:	11/13/18 13:18
Sequence:	1824414	Injection Date:	12/09/18
Lab Sample ID:	1824414-CCV1	Injection Time:	13:45

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11833	1.08303	1.025217		-5.3	20
1,1-Dichloroethane	A	0.12500	0.12961	2.329792	2.415625	0.1	3.7	20
1,2-Dichloroethane	A	0.12500	0.12585	1.174426	1.182427		0.7	20
1,1-Dichloroethene	A	0.12500	0.12269	1.140625	1.119583		-1.8	20
cis-1,2-Dichloroethene	A	0.12500	0.13237	1.251724	1.325553		5.9	20
trans-1,2-Dichloroethene	A	0.12500	0.12914	1.143278	1.181114		3.3	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.12724	0.9907955	1.00856		1.8	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11998	1.330376	1.276984	0.3	-4.0	20
Tetrachloroethene	A	0.12500	0.13394	0.3102159	0.3323954		7.1	20
1,1,1-Trichloroethane	A	0.12500	0.12999	1.337076	1.390465		4.0	20
1,1,2-Trichloroethane	A	0.12500	0.12574	0.2309915	0.2323658		0.6	20
Trichloroethene	A	0.12500	0.13001	0.3225112	0.3354414		4.0	20
Vinyl chloride	A	0.12500	0.13094	1.938052	2.030124		4.8	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824146-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824146-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824146-CCV4)			Lab File ID: 05DEC44.D		Analyzed: 12/06/18 02:58			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	80 - 120	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9	80 - 120	10.16	10.14	0.0200	+/-1.0	
Calibration Blank (1824146-CCB2)			Lab File ID: 05DEC46.D		Analyzed: 12/06/18 03:42			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	93.2	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.8	74 - 121	10.16	10.14	0.0200	+/-1.0	
LCS (B032223-BS1)			Lab File ID: 05DEC47.D		Analyzed: 12/06/18 04:04			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	102	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.16	10.14	0.0200	+/-1.0	
Matrix Spike (B032223-MS1)			Lab File ID: 05DEC48.D		Analyzed: 12/06/18 04:26			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	91.3	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	95.9	74 - 121	10.15	10.14	0.0100	+/-1.0	
Matrix Spike Dup (B032223-MSD1)			Lab File ID: 05DEC49.D		Analyzed: 12/06/18 04:48			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.6	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.9	74 - 121	10.16	10.14	0.0200	+/-1.0	

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Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (B032223-BLK1)			Lab File ID: 05DEC52.D		Analyzed: 12/06/18 05:54			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.3	70 - 121	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.39	8.38	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.2	74 - 121	10.16	10.14	0.0200	+/-1.0	
Calibration Check (1824146-CCV7)			Lab File ID: 06DEC04.D		Analyzed: 12/06/18 15:23			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	92.1	80 - 120	6.62	6.586667	0.0333	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	106	80 - 120	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	104	80 - 120	10.16	10.14	0.0200	+/-1.0	
Calibration Blank (1824146-CCB3)			Lab File ID: 06DEC06.D		Analyzed: 12/06/18 16:11			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.9	70 - 121	6.61	6.586667	0.0233	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.4	8.38	0.0200	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.2	74 - 121	10.15	10.14	0.0100	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824414
Matrix: Solids

SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824414-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824414-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824414-CCV1)			Lab File ID: 09DEC04.D		Analyzed: 12/09/18 13:45			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	80 - 120	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	80 - 120	10.14	10.14	0.0000	+/-1.0	
Calibration Blank (1824414-CCB1)			Lab File ID: 09DEC06.D		Analyzed: 12/09/18 14:29			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.7	70 - 121	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.1	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW12-01 (1838186-02)			Lab File ID: 09DEC15.D		Analyzed: 12/09/18 17:44			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	116	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.7	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D		Analyzed: 11/13/18 13:18			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	103		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.0		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D		Analyzed: 11/13/18 13:41			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	95.2		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D		Analyzed: 11/13/18 14:04			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	95.7		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.0		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	104		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D		Analyzed: 11/13/18 14:27			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.3		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.7		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D		Analyzed: 11/13/18 14:50			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	91.9		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D		Analyzed: 11/13/18 16:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	105		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.2		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9		10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824146-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824146-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824146-CCV4)			Lab File ID: 05DEC44.D			Analyzed: 12/06/18 02:58			
Pentafluorobenzene (IS)	83645	6.23	85192	6.21	98	50 - 200	0.0200	+/-0.50	
Chlorobenzene-d5 (IS)	73383	9.42	69865	9.41	105	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	290742	7.13	271811	7.1	107	50 - 200	0.0300	+/-0.50	
Calibration Blank (1824146-CCB2)			Lab File ID: 05DEC46.D			Analyzed: 12/06/18 03:42			
Pentafluorobenzene (IS)	96426	6.24	83645	6.23	115	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	77990	9.42	73383	9.42	106	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	295815	7.13	290742	7.13	102	50 - 200	0.0000	+/-0.50	
LCS (B032223-BS1)			Lab File ID: 05DEC47.D			Analyzed: 12/06/18 04:04			
Pentafluorobenzene (IS)	87203	6.24	83645	6.23	104	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	74454	9.42	73383	9.42	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	294688	7.13	290742	7.13	101	50 - 200	0.0000	+/-0.50	
Matrix Spike (B032223-MS1)			Lab File ID: 05DEC48.D			Analyzed: 12/06/18 04:26			
Pentafluorobenzene (IS)	93001	6.24	83645	6.23	111	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	77552	9.43	73383	9.42	106	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	299850	7.13	290742	7.13	103	50 - 200	0.0000	+/-0.50	
Matrix Spike Dup (B032223-MSD1)			Lab File ID: 05DEC49.D			Analyzed: 12/06/18 04:48			
Pentafluorobenzene (IS)	89492	6.24	83645	6.23	107	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	76915	9.42	73383	9.42	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	303568	7.13	290742	7.13	104	50 - 200	0.0000	+/-0.50	

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Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824146
Matrix: Solids

SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B032223-BLK1)			Lab File ID: 05DEC52.D			Analyzed: 12/06/18 05:54			
Pentafluorobenzene (IS)	86374	6.24	83645	6.23	103	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	74852	9.42	73383	9.42	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	272969	7.13	290742	7.13	94	50 - 200	0.0000	+/-0.50	
Calibration Check (1824146-CCV7)			Lab File ID: 06DEC04.D			Analyzed: 12/06/18 15:23			
Pentafluorobenzene (IS)	78718	6.24	85192	6.21	92	50 - 200	0.0300	+/-0.50	
Chlorobenzene-d5 (IS)	68320	9.42	69865	9.41	98	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	259417	7.13	271811	7.1	95	50 - 200	0.0300	+/-0.50	
Calibration Blank (1824146-CCB3)			Lab File ID: 06DEC06.D			Analyzed: 12/06/18 16:11			
Pentafluorobenzene (IS)	94614	6.24	67190	6.24	141	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	80728	9.42	66816	9.42	121	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	304843	7.13	205200	7.13	149	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
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Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824414
Matrix: Solids

SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824414-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824414-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824414-CCV1)			Lab File ID: 09DEC04.D			Analyzed: 12/09/18 13:45			
Pentafluorobenzene (IS)	119959	6.22	85192	6.21	141	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	104551	9.41	69865	9.41	150	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	395399	7.11	271811	7.1	145	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824414-CCB1)			Lab File ID: 09DEC06.D			Analyzed: 12/09/18 14:29			
Pentafluorobenzene (IS)	114364	6.21	119959	6.22	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	108084	9.41	104551	9.41	103	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	387812	7.11	395399	7.11	98	50 - 200	0.0000	+/-0.50	
SO-VW12-01 (1838186-02)			Lab File ID: 09DEC15.D			Analyzed: 12/09/18 17:44			
Pentafluorobenzene (IS)	133319	6.21	119959	6.22	111	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	121612	9.41	104551	9.41	116	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	447529	7.11	395399	7.11	113	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D			Analyzed: 11/13/18 13:18			
Pentafluorobenzene (IS)	82386	6.2	85192	6.21	97	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	70974	9.41	69865	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	277119	7.1	271811	7.1	102	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D			Analyzed: 11/13/18 13:41			
Pentafluorobenzene (IS)	85192	6.21	85192	6.21	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69865	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	271811	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D			Analyzed: 11/13/18 14:04			
Pentafluorobenzene (IS)	85251	6.2	85192	6.21	100	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	69041	9.41	69865	9.41	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	283685	7.1	271811	7.1	104	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D			Analyzed: 11/13/18 14:27			
Pentafluorobenzene (IS)	82966	6.21	85192	6.21	97	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	66555	9.4	69865	9.41	95	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	268813	7.1	271811	7.1	99	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D			Analyzed: 11/13/18 14:50			
Pentafluorobenzene (IS)	81182	6.2	85192	6.21	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	64689	9.4	69865	9.41	93	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	262849	7.1	271811	7.1	97	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D			Analyzed: 11/13/18 16:22			
Pentafluorobenzene (IS)	83848	6.21	85192	6.21	98	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69643	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	272090	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION STANDARDS

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Calibration: 1812002

SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
8K09001	8260 V2 BFB WORKING STD	1824979-TUN1	13NOV03.D	11/13/18 07:18
8K27020	8260 V3 1823650 REG CAL2	1824979-CAL2	13NOV13.D	11/13/18 13:18
8K27021	8260 V3 1823650 REG CAL3	1824979-CAL3	13NOV14.D	11/13/18 13:41
8K27022	8260 V3 1823650 REG CAL4	1824979-CAL4	13NOV15.D	11/13/18 14:04
8K27023	8260 V3 1823650 REG CAL5	1824979-CAL5	13NOV16.D	11/13/18 14:27
8K27024	8260 V3 1823650 REG CAL6	1824979-CAL6	13NOV17.D	11/13/18 14:50
8K27019	8260 V3 1823650 REG CAL1	1824979-CAL1	13NOV21.D	11/13/18 16:22

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2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids
SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF
Chloroethane	0.005	0.9313281	0.05	1.280436	0.125	1.123669	0.25	1.047286	0.375	1.06771	0.5	1.047751
1,1-Dichloroethane	0.005	2.253363	0.05	2.54945	0.125	2.321218	0.25	2.350689	0.375	2.253137	0.5	2.250896
1,2-Dichloroethane	0.005	1.146479	0.05	1.313476	0.125	1.170007	0.25	1.180664	0.375	1.126421	0.5	1.109511
1,1-Dichloroethene	0.005	0.9562542	0.05	1.254315	0.125	1.221396	0.25	1.161347	0.375	1.193917	0.5	1.056522
cis-1,2-Dichloroethene	0.005	1.213267	0.05	1.362792	0.125	1.245521	0.25	1.256239	0.375	1.227132	0.5	1.205393
trans-1,2-Dichloroethene	0.005	1.100921	0.05	1.242881	0.125	1.15423	0.25	1.133702	0.375	1.111533	0.5	1.1164
1,1,1,2-Tetrachloroethane	0.005	1.032121	0.05	1.041565	0.125	0.9871209	0.25	1.008363	0.375	0.9530864	0.5	0.922517
1,1,2,2-Tetrachloroethane	0.005	1.309823	0.05	1.361287	0.125	1.364838	0.25	1.368691	0.375	1.264155	0.5	1.313461
Tetrachloroethene	0.005	0.2811937	0.05	0.3458767	0.125	0.3362851	0.25	0.3051829	0.375	0.2984593	0.5	0.2942975
1,1,1-Trichloroethane	0.005	1.101756	0.05	1.480106	0.125	1.384257	0.25	1.367637	0.375	1.334175	0.5	1.354528
1,1,2-Trichloroethane	0.005	0.2463523	0.05	0.247493	0.125	0.2332768	0.25	0.2215901	0.375	0.2211758	0.5	0.2160609
Trichloroethene	0.005	0.2871109	0.05	0.3531768	0.125	0.3378907	0.25	0.3156205	0.375	0.3192589	0.5	0.3220092
Vinyl chloride	0.005	1.449766	0.05	2.242881	0.125	2.185468	0.25	1.980629	0.375	1.929103	0.5	1.840463
1,2-Dichloroethane-d4 (Surrogate)	0.05	0.9335941	0.05	0.943	0.05	0.8892502	0.05	0.8737962	0.05	0.8606658	0.05	0.8391146
Toluene-d8 (Surrogate)	0.05	1.05224	0.05	1.058386	0.05	1.088999	0.05	1.040034	0.05	1.061548	0.05	1.061499
4-Bromofluorobenzene (Surrogate)	0.05	1.365191	0.05	1.329571	0.05	1.305475	0.05	1.427688	0.05	1.367305	0.05	1.4035

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Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1838186
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Chloroethane	1.08303	10.63971	2.313333	0.352722			15	
1,1-Dichloroethane	2.329792	4.957522	4.69	2.144103E-02			SPCC (0.10)	
1,2-Dichloroethane	1.174426	6.221394	6.68	1.342167E-02			15	
1,1-Dichloroethene	1.140625	9.902162	3.181667	0.1271662			CCC (20)	
cis-1,2-Dichloroethene	1.251724	4.606693	5.411667	7.615105E-02			15	
trans-1,2-Dichloroethene	1.143278	4.571262	4.145	0.1308259			15	
1,1,1,2-Tetrachloroethane	0.9907955	4.667134	9.485	5.866972E-02			15	
1,1,2,2-Tetrachloroethane	1.330376	3.136352	10.21	1.398524E-02			SPCC (0.30)	
Tetrachloroethene	0.3102159	8.168443	8.81	2.247676E-02			15	
1,1,1-Trichloroethane	1.337076	9.419156	6.125	8.905765E-02			15	
1,1,2-Trichloroethane	0.2309915	5.875976	8.758334	4.406004E-02			15	
Trichloroethene	0.3225112	6.917194	7.325	7.247583E-02			15	
Vinyl chloride	1.938052	14.66652	1.881667	0.2169596			CCC (20)	
1,2-Dichloroethane-d4 (Surrogate)	0.8899035	4.611968	6.586667	7.620565E-02			15	
Toluene-d8 (Surrogate)	1.060451	1.523989	8.38	1.581306E-02			15	
4-Bromofluorobenzene (Surrogate)	1.366455	3.305892	10.14	2.059171E-02			15	

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Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

HOLDING TIME SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838186
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
SO-VW12-01	12/06/18 08:05	12/07/18 09:30	12/09/18 12:00	3.00	14.00	12/09/18 17:44	3.00	14.00	

* Holding time not met

Note: If Prep or Analysis are performed within the hour (if holding time is based on hours) or within the day (if holding time is based on days), then the sample is not flagged as outside holding times. Calculated number of days are based on date received or date prepared depending on the test.

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Reported: 1/7/2019 5:20:45PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838293

Laboratory Documentation Requirements
For Data Validation of
Volatiles Analysis

Prepared By
BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838293
COC Number:
Default Cooler was received at 1.1 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-8260B	MS-V14
EPA-8260B	MS-V3

Sample Qualifier Summary

The surrogate recovery for this compound was not within the control limits.

Lab Number	Method	Analyte
1838293-01	EPA-8260B	1,2-Dichloroethane-d4 (Surrogate)
1838293-02	EPA-8260B	1,2-Dichloroethane-d4 (Surrogate)

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032340	EPA-8260B	1836707-25	<Not Client Sample>
B032380	EPA-8260B	1838155-02	<Not Client Sample>

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

BC LABORATORIES, INC.

Chain of Custody Form

18-30293

Page 1 of 1

Report To:
Client: AECOM
Attn: Robert Kohlhardt
Street Address: 2020 L St Ste 400
City, State, Zip: Sacramento, CA 95811
Phone: 916 414-[illegible] Fax:
Email: Robert.Kohlhardt@aecom.com
Work Order #: 3500066

Project #: 60570043.05
Project Name: SMUD 59th St
Sampler(s): Andrew Morgan (AM)

Analysis Requested

Please refer to the back of this page for completion instructions and method legend.

Comments:

Sample #	Description	Date Sampled	Time Sampled	SW 8260B	SW 6020 (Lead)	Sample Matrix: Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Result Request **Surcharge: STD (10 Days) / 5 Day** / 2 Day** / 1 Day** — Notes
-1	SO-VW12-02	12/7/18	0804	X	X	X						4 vials
-2	SO-VW12-03	12/7/18	0806	X		X						4 vials
-3	GW-B13-01	12/7/18	1410	X					X			1 Jar
(AM)	~~GW-B13-01~~	~~12/7/18~~	~~1410~~									
-4	TB-1	12/7/18		X							Water TB	3 vials

CHK BY

DISTRIBUTION

SUB-OUT

Billing
☒ Same as above
Client:
Address:
City: State Zip
Attn:
O. #:

EDF Required? Geotracker ☐ Yes ☐ No

Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

	Relinquished By	Date	Time	Received By	Date	Time
1	AM	12/7/18	1440	Bill Benson	12-7-18	1440
2	Bill Benson	12/7/18	1516	[illegible]	12/10/18	0720
3		Date	Time		Date	Time

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838293 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: R-838293

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☑ (Specify) GSO	Ice Chest ☑ None ☐ Box ☐ Other ☐ (Specify)	YES ☐ NO ☐ W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ (Intact: Yes / No) Containers ☐ (Intact: Yes / No) None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 0.97 Container: clear glass Thermometer ID: 208 Date/Time 12/10/19 0720

Temperature: (A) 1.5 °C / (C) 1.1 °C Analyst Init JM

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PIA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK (JM)				AMBC						
40ml VOA VIAL (JM)			RMBC							
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
~~QT EPA 8270~~										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR	A									
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	VSOA	RMBD								
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: JM Date/Time: 12/10/19 0754

A = Actual / C = Corrected

Rev 21 05/23/2016

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838293**
Class: **VOA**
Method: **EPA-8260B**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838293
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-VW12-02	1838293-01
SO-VW12-03	1838293-02
GW-B13-01	1838293-03
TB-1	1838293-04

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-08-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838293
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Water
Instrument: MS-V14

Analyte	MDL	PQL	Units
Chloroethane	0.14	0.50	ug/L
1,1-Dichloroethane	0.11	0.50	ug/L
1,2-Dichloroethane	0.17	0.50	ug/L
1,1-Dichloroethene	0.18	0.50	ug/L
cis-1,2-Dichloroethene	0.085	0.50	ug/L
trans-1,2-Dichloroethene	0.15	0.50	ug/L
1,1,1,2-Tetrachloroethane	0.18	0.50	ug/L
1,1,2,2-Tetrachloroethane	0.17	0.50	ug/L
Tetrachloroethene	0.13	0.50	ug/L
1,1,1-Trichloroethane	0.11	0.50	ug/L
1,1,2-Trichloroethane	0.16	0.50	ug/L
Trichloroethene	0.085	0.50	ug/L
Vinyl chloride	0.12	0.50	ug/L

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Sacramento, CA 95811

Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838293
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: MS-V3

Analyte	MDL	PQL	Units
Chloroethane	0.0014	0.0050	mg/kg
1,1-Dichloroethane	0.0014	0.0050	mg/kg
1,2-Dichloroethane	0.00085	0.0050	mg/kg
1,1-Dichloroethene	0.0012	0.0050	mg/kg
cis-1,2-Dichloroethene	0.0013	0.0050	mg/kg
trans-1,2-Dichloroethene	0.0014	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	0.0011	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	0.0011	0.0050	mg/kg
Tetrachloroethene	0.0013	0.0050	mg/kg
1,1,1-Trichloroethane	0.0011	0.0050	mg/kg
1,1,2-Trichloroethane	0.00077	0.0050	mg/kg
Trichloroethene	0.0011	0.0050	mg/kg
Vinyl chloride	0.0016	0.0050	mg/kg

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Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW12-02

Laboratory:	BC Laboratories			SDG:	1838293
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838293-01	File ID:	11DEC54.D
Sampled:	12/07/18 08:04	Prepared:	12/11/18 16:00	Analyzed:	12/12/18 05:11
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	6.8 g / 5 ml
Batch:	B032340	Sequence:	1824530	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.735	0.0010	UD
75-34-3	1,1-Dichloroethane	0.735	0.0010	UD
107-06-2	1,2-Dichloroethane	0.735	0.00062	UD
75-35-4	1,1-Dichloroethene	0.735	0.00088	UD
156-59-2	cis-1,2-Dichloroethene	0.735	0.00096	UD
156-60-5	trans-1,2-Dichloroethene	0.735	0.0010	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.735	0.00081	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.735	0.00081	UD
127-18-4	Tetrachloroethene	0.735	0.00096	UD
71-55-6	1,1,1-Trichloroethane	0.735	0.00081	UD
79-00-5	1,1,2-Trichloroethane	0.735	0.00057	UD
79-01-6	Trichloroethene	0.735	0.00081	UD
75-01-4	Vinyl chloride	0.735	0.0012	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.036765	0.044765	122	70 - 121	*
Toluene-d8 (Surrogate)	0.036765	0.039029	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.036765	0.039250	107	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	153157	6.2	142735	6.2	
Chlorobenzene-d5 (IS)	130535	9.41	118990	9.41	
1,4-Difluorobenzene (IS)	450251	7.11	459112	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW12-03

Laboratory:	BC Laboratories			SDG:	1838293
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1838293-02	File ID:	11DEC55.D
Sampled:	12/07/18 08:06	Prepared:	12/11/18 16:00	Analyzed:	12/12/18 05:33
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	5.91 g / 5 ml
Batch:	B032340	Sequence:	1824530	Calibration:	1812002
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.846	0.0012	UD
75-34-3	1,1-Dichloroethane	0.846	0.0012	UD
107-06-2	1,2-Dichloroethane	0.846	0.00072	UD
75-35-4	1,1-Dichloroethene	0.846	0.0010	UD
156-59-2	cis-1,2-Dichloroethene	0.846	0.0011	UD
156-60-5	trans-1,2-Dichloroethene	0.846	0.0012	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.846	0.00093	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.846	0.00093	UD
127-18-4	Tetrachloroethene	0.846	0.0011	UD
71-55-6	1,1,1-Trichloroethane	0.846	0.00093	UD
79-00-5	1,1,2-Trichloroethane	0.846	0.00065	UD
79-01-6	Trichloroethene	0.846	0.00093	UD
75-01-4	Vinyl chloride	0.846	0.0014	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.042301	0.053206	126	70 - 121	*
Toluene-d8 (Surrogate)	0.042301	0.043325	102	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.042301	0.045017	106	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	157410	6.2	142735	6.2	
Chlorobenzene-d5 (IS)	123809	9.41	118990	9.41	
1,4-Difluorobenzene (IS)	467435	7.11	459112	7.11	

* Values outside of QC limits

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Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

GW-B13-01

Laboratory:	BC Laboratories			SDG:	1838293
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Water	Laboratory ID:	1838293-03	File ID:	11DEC48.D
Sampled:	12/07/18 14:10	Prepared:	12/11/18 08:00	Analyzed:	12/12/18 01:23
Solids:		Preparation:	EPA 5030 Water MS	Initial/Final:	25 ml / 25 ml
Batch:	B032380	Sequence:	1824508	Calibration:	1812013
Instrument:	MS-V14				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-00-3	Chloroethane	1	0.14	U
75-34-3	1,1-Dichloroethane	1	0.11	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.18	U
156-59-2	cis-1,2-Dichloroethene	1	0.085	U
156-60-5	trans-1,2-Dichloroethene	1	0.15	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.18	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.44	J
71-55-6	1,1,1-Trichloroethane	1	0.11	U
79-00-5	1,1,2-Trichloroethane	1	0.16	U
79-01-6	Trichloroethene	1	0.085	U
75-01-4	Vinyl chloride	1	0.12	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.070	111	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.180	102	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9800	99.8	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	147087	7.31	150196	7.31	
Chlorobenzene-d5 (IS)	52172	10.09	53035	10.08	
1,4-Difluorobenzene (IS)	198061	8.01	204745	8.01	

* Values outside of QC limits

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ORGANIC ANALYSIS DATA SHEET
EPA-8260B

TB-1

Laboratory:	BC Laboratories			SDG:	1838293
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Water	Laboratory ID:	1838293-04	File ID:	11DEC46.D
Sampled:	12/07/18 00:00	Prepared:	12/11/18 08:00	Analyzed:	12/12/18 00:36
Solids:		Preparation:	EPA 5030 Water MS	Initial/Final:	25 ml / 25 ml
Batch:	B032380	Sequence:	1824508	Calibration:	1812013
Instrument:	MS-V14				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-00-3	Chloroethane	1	0.14	U
75-34-3	1,1-Dichloroethane	1	0.11	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.18	U
156-59-2	cis-1,2-Dichloroethene	1	0.085	U
156-60-5	trans-1,2-Dichloroethene	1	0.15	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.18	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.13	U
71-55-6	1,1,1-Trichloroethane	1	0.11	U
79-00-5	1,1,2-Trichloroethane	1	0.16	U
79-01-6	Trichloroethene	1	0.085	U
75-01-4	Vinyl chloride	1	0.12	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.650	106	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.170	102	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.8400	98.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	158606	7.31	150196	7.31	
Chlorobenzene-d5 (IS)	55791	10.09	53035	10.08	
1,4-Difluorobenzene (IS)	211660	8.01	204745	8.01	

* Values outside of QC limits

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PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838293
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032340 Batch Matrix: Solids
Preparation: EPA 5035 Soil MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW12-02	1838293-01	11DEC54.D	12/11/18 16:00	Updated List 12/10/18
SO-VW12-03	1838293-02	11DEC55.D	12/11/18 16:00	Updated List 12/10/18
Blank	B032340-BLK1	07DEC37.D	12/07/18 16:00	
LCS	B032340-BS1	07DEC32.D	12/07/18 16:00	
Matrix Spike	B032340-MS1	07DEC33.D	12/07/18 16:00	
Matrix Spike Dup	B032340-MSD1	07DEC34.D	12/07/18 16:00	

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PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838293
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032380 Batch Matrix: Water
Preparation: EPA 5030 Water MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
GW-B13-01	1838293-03	11DEC48.D	12/11/18 08:00	Custom List
TB-1	1838293-04	11DEC46.D	12/11/18 08:00	Custom List
Blank	B032380-BLK1	11DEC08.D	12/11/18 08:00	
LCS	B032380-BS1	11DEC14.D	12/11/18 08:00	
Matrix Spike	B032380-MS1	11DEC15.D	12/11/18 08:00	
Matrix Spike Dup	B032380-MSD1	11DEC16.D	12/11/18 08:00	

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METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1838293
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032340-BLK1	File ID:	07DEC37.D
Prepared:	12/07/18 16:00	Preparation:	EPA 5035 Soil MS	Initial/Final:	5 g / 5 ml
Analyzed:	12/08/18 00:34	Instrument:	MS-V3		
Batch:	B032340	Sequence:	1824353	Calibration:	1812002

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.0014	U
75-34-3	1,1-Dichloroethane	0.0014	U
107-06-2	1,2-Dichloroethane	0.00085	U
75-35-4	1,1-Dichloroethene	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.0011	U
127-18-4	Tetrachloroethene	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.00077	U
79-01-6	Trichloroethene	0.0011	U
75-01-4	Vinyl chloride	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.048750	97.5	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.052150	104	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.050340	101	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	114979	6.21	91031	6.21	
Chlorobenzene-d5 (IS)	100553	9.41	83102	9.41	
1,4-Difluorobenzene (IS)	369222	7.11	314278	7.11	

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METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1838293
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Water	Laboratory ID:	B032380-BLK1	File ID:	11DEC08.D
Prepared:	12/11/18 08:00	Preparation:	EPA 5030 Water MS	Initial/Final:	25 ml / 25 ml
Analyzed:	12/11/18 09:57	Instrument:	MS-V14		
Batch:	B032380	Sequence:	1824508	Calibration:	1812013

CAS NO.	COMPOUND	CONC. (ug/L)	Q
75-00-3	Chloroethane	0.14	U
75-34-3	1,1-Dichloroethane	0.11	U
107-06-2	1,2-Dichloroethane	0.17	U
75-35-4	1,1-Dichloroethene	0.18	U
156-59-2	cis-1,2-Dichloroethene	0.085	U
156-60-5	trans-1,2-Dichloroethene	0.15	U
630-20-6	1,1,1,2-Tetrachloroethane	0.18	U
79-34-5	1,1,2,2-Tetrachloroethane	0.17	U
127-18-4	Tetrachloroethene	0.13	U
71-55-6	1,1,1-Trichloroethane	0.11	U
79-00-5	1,1,2-Trichloroethane	0.16	U
79-01-6	Trichloroethene	0.085	U
75-01-4	Vinyl chloride	0.12	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.9400	99.4	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8600	98.6	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.160	102	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	161852	7.31	149941	7.32	
Chlorobenzene-d5 (IS)	53621	10.09	52478	10.08	
1,4-Difluorobenzene (IS)	214651	8.01	206077	8.01	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032340
Preparation: EPA 5035 Soil MS
Source Sample Number: 1836707-25

SDG: 1838293
Project: SMUD 59th St.
Laboratory ID: B032340-MS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	ND	0.11538	92.3	70 - 130
1,1-Dichloroethane	0.12500	ND	0.13287	106	70 - 130
1,1-Dichloroethene	0.12500	ND	0.12518	100	70 - 130
Trichloroethene	0.12500	ND	0.12839	103	70 - 130

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	0.12500	0.12756	102	10.0	20	70 - 130
1,1-Dichloroethane	0.12500	0.13314	107	0.203	20	70 - 130
1,1-Dichloroethene	0.12500	0.12982	104	3.64	20	70 - 130
Trichloroethene	0.12500	0.12853	103	0.109	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Water
Batch: B032380
Preparation: EPA 5030 Water MS
Source Sample Number: 1838155-02

SDG: 1838293
Project: SMUD 59th St.
Laboratory ID: B032380-MS1
Initial/Final: 25 ml / 25 ml

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC. #	QC LIMITS REC.
Chloroethane	25.000	ND	28.798	115	70 - 130
1,1-Dichloroethane	25.000	ND	29.495	118	70 - 130
1,1-Dichloroethene	25.000	ND	31.040	124	70 - 130
Trichloroethene	25.000	ND	27.200	109	70 - 130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	25.000	28.052	112	2.62	20	70 - 130
1,1-Dichloroethane	25.000	28.955	116	1.85	20	70 - 130
1,1-Dichloroethene	25.000	30.117	120	3.02	20	70 - 130
Trichloroethene	25.000	26.931	108	0.994	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032340
Preparation: EPA 5035 Soil MS

SDG: 1838293
Project: SMUD 59th St.
Laboratory ID: B032340-BS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	0.11059	88.5	70 - 130
1,1-Dichloroethane	0.12500	0.12497	100	70 - 130
1,1-Dichloroethene	0.12500	0.11764	94.1	70 - 130
Trichloroethene	0.12500	0.12549	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838293
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Water
Batch: B032380
Laboratory ID: B032380-BS1
Preparation: EPA 5030 Water MS
Initial/Final: 25 ml / 25 ml

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC. #	QC LIMITS REC.
Chloroethane	25.000	27.108	108	70 - 130
1,1-Dichloroethane	25.000	28.089	112	70 - 130
1,1-Dichloroethene	25.000	29.461	118	70 - 130
Trichloroethene	25.000	26.807	107	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824353	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824353-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824353-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824353-TUN2	07DEC27.D	12/07/18 20:55
Calibration Check	1824353-CCV4	07DEC29.D	12/07/18 21:39
Calibration Check	1824353-CCV6	07DEC30.D	12/07/18 22:01
Calibration Blank	1824353-CCB2	07DEC31.D	12/07/18 22:22
LCS	B032340-BS1	07DEC32.D	12/07/18 22:44
Matrix Spike	B032340-MS1	07DEC33.D	12/07/18 23:06
Matrix Spike Dup	B032340-MSD1	07DEC34.D	12/07/18 23:28
Blank	B032340-BLK1	07DEC37.D	12/08/18 00:34

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824508	Instrument:	MS-V14
Matrix:	Water	Calibration:	1812013

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824508-ICV1	18OCT24.D	10/18/18 19:42
Initial Cal Blank	1824508-ICB1	18OCT26.D	10/18/18 20:28
MS Tune	1824508-TUN1	11DEC03.D	12/11/18 08:01
Calibration Check	1824508-CCV2	11DEC05.D	12/11/18 08:47
Calibration Check	1824508-CCV3	11DEC06.D	12/11/18 09:11
Calibration Blank	1824508-CCB1	11DEC07.D	12/11/18 09:34
Blank	B032380-BLK1	11DEC08.D	12/11/18 09:57
LCS	B032380-BS1	11DEC14.D	12/11/18 12:16
Matrix Spike	B032380-MS1	11DEC15.D	12/11/18 12:39
Matrix Spike Dup	B032380-MSD1	11DEC16.D	12/11/18 13:02
MS Tune	1824508-TUN2	11DEC34.D	12/11/18 19:59
Calibration Check	1824508-CCV4	11DEC35.D	12/11/18 20:22
Calibration Check	1824508-CCV5	11DEC36.D	12/11/18 20:45
Calibration Check	1824508-CCV6	11DEC37.D	12/11/18 21:08
Calibration Blank	1824508-CCB2	11DEC39.D	12/11/18 21:54
TB-1	1838293-04	11DEC46.D	12/12/18 00:36
GW-B13-01	1838293-03	11DEC48.D	12/12/18 01:23

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824530	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824530-ICV1	13NOV23.D	11/13/18 17:07
Initial Cal Blank	1824530-ICB1	13NOV24.D	11/13/18 17:30
MS Tune	1824530-TUN2	11DEC32.D	12/11/18 21:15
Calibration Check	1824530-CCV4	11DEC34.D	12/11/18 21:59
Calibration Check	1824530-CCV6	11DEC35.D	12/11/18 22:20
Calibration Blank	1824530-CCB2	11DEC36.D	12/11/18 22:42
SO-VW12-02	1838293-01	11DEC54.D	12/12/18 05:11
SO-VW12-03	1838293-02	11DEC55.D	12/12/18 05:33

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824757	Instrument:	MS-V14
Matrix:	Water	Calibration:	1812013

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1824757-TUN1	18OCT13.D	10/18/18 15:28
Cal Standard	1824757-CAL1	18OCT15.D	10/18/18 16:14
Cal Standard	1824757-CAL2	18OCT17.D	10/18/18 17:00
Cal Standard	1824757-CAL3	18OCT18.D	10/18/18 17:23
Cal Standard	1824757-CAL4	18OCT19.D	10/18/18 17:46
Cal Standard	1824757-CAL5	18OCT20.D	10/18/18 18:10
Cal Standard	1824757-CAL6	18OCT21.D	10/18/18 18:33

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Sacramento, CA 95811

Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824979	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1824979-TUN1	13NOV03.D	11/13/18 07:18
Cal Standard	1824979-CAL2	13NOV13.D	11/13/18 13:18
Cal Standard	1824979-CAL3	13NOV14.D	11/13/18 13:41
Cal Standard	1824979-CAL4	13NOV15.D	11/13/18 14:04
Cal Standard	1824979-CAL5	13NOV16.D	11/13/18 14:27
Cal Standard	1824979-CAL6	13NOV17.D	11/13/18 14:50
Cal Standard	1824979-CAL1	13NOV21.D	11/13/18 16:22

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	07DEC27.D	Injection Date:	12/07/18
Instrument ID:	MS-V3	Injection Time:	20:55
Sequence:	1824353	Lab Sample ID:	1824353-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	17.1	PASS
Mass 75	30 - 60% of Mass 95	43.1	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.33	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	78.9	PASS
Mass 175	5 - 9% of Mass 174	7.51	PASS
Mass 176	95 - 101% of Mass 174	98.2	PASS
Mass 177	5 - 9% of Mass 176	6.57	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	11DEC03.D	Injection Date:	12/11/18
Instrument ID:	MS-V14	Injection Time:	08:01
Sequence:	1824508	Lab Sample ID:	1824508-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	22.5	PASS
Mass 75	30 - 60% of Mass 95	49.7	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.61	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	88.1	PASS
Mass 175	5 - 9% of Mass 174	8.79	PASS
Mass 176	95 - 101% of Mass 174	96.5	PASS
Mass 177	5 - 9% of Mass 176	5.95	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	11DEC34.D	Injection Date:	12/11/18
Instrument ID:	MS-V14	Injection Time:	19:59
Sequence:	1824508	Lab Sample ID:	1824508-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	25.2	PASS
Mass 75	30 - 60% of Mass 95	50.8	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.31	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	97	PASS
Mass 175	5 - 9% of Mass 174	7.06	PASS
Mass 176	95 - 101% of Mass 174	99.1	PASS
Mass 177	5 - 9% of Mass 176	6.21	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	11DEC32.D	Injection Date:	12/11/18
Instrument ID:	MS-V3	Injection Time:	21:15
Sequence:	1824530	Lab Sample ID:	1824530-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	19.4	PASS
Mass 75	30 - 60% of Mass 95	42.6	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.43	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	81.4	PASS
Mass 175	5 - 9% of Mass 174	8.08	PASS
Mass 176	95 - 101% of Mass 174	97.1	PASS
Mass 177	5 - 9% of Mass 176	6.84	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	18OCT13.D	Injection Date:	10/18/18
Instrument ID:	MS-V14	Injection Time:	15:28
Sequence:	1824757	Lab Sample ID:	1824757-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	20.4	PASS
Mass 75	30 - 60% of Mass 95	45.7	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	8.23	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	93.8	PASS
Mass 175	5 - 9% of Mass 174	6.8	PASS
Mass 176	95 - 101% of Mass 174	99.1	PASS
Mass 177	5 - 9% of Mass 176	5.68	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	13NOV03.D	Injection Date:	11/13/18
Instrument ID:	MS-V3	Injection Time:	07:18
Sequence:	1824979	Lab Sample ID:	1824979-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	20.4	PASS
Mass 75	30 - 60% of Mass 95	50.7	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.36	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	59.8	PASS
Mass 175	5 - 9% of Mass 174	8.79	PASS
Mass 176	95 - 101% of Mass 174	98.4	PASS
Mass 177	5 - 9% of Mass 176	7.95	PASS

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	11/13/18
Lab Sample ID:	1824353-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	07DEC29.D	Calibration Date:	11/13/18 13:18
Sequence:	1824353	Injection Date:	12/07/18
Lab Sample ID:	1824353-CCV4	Injection Time:	21:39

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11512	1.08303	0.9974103		-7.9	20
1,1-Dichloroethane	A	0.12500	0.12622	2.329792	2.352528	0.1	1.0	20
1,2-Dichloroethane	A	0.12500	0.12701	1.174426	1.193313		1.6	20
1,1-Dichloroethene	A	0.12500	0.12274	1.140625	1.120005		-1.8	20
cis-1,2-Dichloroethene	A	0.12500	0.13064	1.251724	1.308164		4.5	20
trans-1,2-Dichloroethene	A	0.12500	0.13013	1.143278	1.190162		4.1	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.13330	0.9907955	1.056561		6.6	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12841	1.330376	1.366644	0.3	2.7	20
Tetrachloroethene	A	0.12500	0.12834	0.3102159	0.3185061		2.7	20
1,1,1-Trichloroethane	A	0.12500	0.13100	1.337076	1.401284		4.8	20
1,1,2-Trichloroethane	A	0.12500	0.12724	0.2309915	0.2351315		1.8	20
Trichloroethene	A	0.12500	0.13150	0.3225112	0.3392697		5.2	20
Vinyl chloride	A	0.12500	0.13220	1.938052	2.049614		5.8	20

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(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V14	Calibration:	1812013
Lab File ID:	18OCT24.D	Calibration Date:	10/18/18 16:14
Sequence:	1824508	Injection Date:	10/18/18
Lab Sample ID:	1824508-ICV1	Injection Time:	19:42

	(1) CAL	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	25.000	24.655	0.3572721	0.3523393		-1.4	20
1,1-Dichloroethane	A	25.000	26.139	0.7479952	0.7820821	0.1	4.6	20
1,2-Dichloroethane	A	25.000	26.658	0.3216657	0.3429956		6.6	20
1,1-Dichloroethene	A	25.000	27.253	0.6541871	0.7131484		9.0	20
cis-1,2-Dichloroethene	A	25.000	25.618	0.4351146	0.4458654		2.5	20
trans-1,2-Dichloroethene	A	25.000	25.559	0.4351471	0.4448812		2.2	20
1,1,1,2-Tetrachloroethane	A	25.000	25.180	0.9848066	0.991909		0.7	20
1,1,2,2-Tetrachloroethane	A	25.000	25.470	0.4634256	0.4721399	0.3	1.9	20
Tetrachloroethene	A	25.000	24.086	0.359064	0.3459336		-3.7	20
1,1,1-Trichloroethane	A	25.000	25.670	0.6964465	0.7151078		2.7	20
1,1,2-Trichloroethane	A	25.000	25.075	0.1328428	0.1332394		0.3	20
Trichloroethene	A	25.000	26.335	0.3494213	0.3680854		5.3	20
Vinyl chloride	A	25.000	27.781	0.5934526	0.6594693		11.1	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V14	Calibration:	1812013
Lab File ID:	11DEC05.D	Calibration Date:	10/18/18 16:14
Sequence:	1824508	Injection Date:	12/11/18
Lab Sample ID:	1824508-CCV2	Injection Time:	08:47

	(1) CAL	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	25.000	25.121	0.3572721	0.3590077		0.5	20
1,1-Dichloroethane	A	25.000	26.007	0.7479952	0.7781309	0.1	4.0	20
1,2-Dichloroethane	A	25.000	27.359	0.3216657	0.3520171		9.4	20
1,1-Dichloroethene	A	25.000	26.545	0.6541871	0.6946202		6.2	20
cis-1,2-Dichloroethene	A	25.000	25.620	0.4351146	0.4459043		2.5	20
trans-1,2-Dichloroethene	A	25.000	24.850	0.4351471	0.4325329		-0.6	20
1,1,1,2-Tetrachloroethane	A	25.000	25.174	0.9848066	0.9916682		0.7	20
1,1,2,2-Tetrachloroethane	A	25.000	26.237	0.4634256	0.4863494	0.3	4.9	20
Tetrachloroethene	A	25.000	22.042	0.359064	0.3165809		-11.8	20
1,1,1-Trichloroethane	A	25.000	24.192	0.6964465	0.6739409		-3.2	20
1,1,2-Trichloroethane	A	25.000	24.615	0.1328428	0.1307995		-1.5	20
Trichloroethene	A	25.000	25.036	0.3494213	0.3499285		0.1	20
Vinyl chloride	A	25.000	29.629	0.5934526	0.7033285		18.5	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V14	Calibration:	1812013
Lab File ID:	11DEC36.D	Calibration Date:	10/18/18 16:14
Sequence:	1824508	Injection Date:	12/11/18
Lab Sample ID:	1824508-CCV5	Injection Time:	20:45

	(1) CAL	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	25.000	25.757	0.3572721	0.3680946		3.0	20
1,1-Dichloroethane	A	25.000	26.586	0.7479952	0.7954409	0.1	6.3	20
1,2-Dichloroethane	A	25.000	26.352	0.3216657	0.3390589		5.4	20
1,1-Dichloroethene	A	25.000	26.575	0.6541871	0.6953913		6.3	20
cis-1,2-Dichloroethene	A	25.000	25.251	0.4351146	0.4394813		1.0	20
trans-1,2-Dichloroethene	A	25.000	24.516	0.4351471	0.4267234		-1.9	20
1,1,1,2-Tetrachloroethane	A	25.000	24.415	0.9848066	0.9617784		-2.3	20
1,1,2,2-Tetrachloroethane	A	25.000	25.570	0.4634256	0.4739969	0.3	2.3	20
Tetrachloroethene	A	25.000	21.637	0.359064	0.3107687		-13.5	20
1,1,1-Trichloroethane	A	25.000	23.945	0.6964465	0.6670493		-4.2	20
1,1,2-Trichloroethane	A	25.000	23.620	0.1328428	0.1255095		-5.5	20
Trichloroethene	A	25.000	24.230	0.3494213	0.3386616		-3.1	20
Vinyl chloride	A	25.000	29.522	0.5934526	0.7007991		18.1	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	13NOV23.D	Calibration Date:	11/13/18 13:18
Sequence:	1824530	Injection Date:	11/13/18
Lab Sample ID:	1824530-ICV1	Injection Time:	17:07

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12404	1.08303	1.074698		-0.8	20
1,1-Dichloroethane	A	0.12500	0.12016	2.329792	2.239582	0.1	-3.9	20
1,2-Dichloroethane	A	0.12500	0.11802	1.174426	1.108861		-5.6	20
1,1-Dichloroethene	A	0.12500	0.12610	1.140625	1.150705		0.9	20
cis-1,2-Dichloroethene	A	0.12500	0.11693	1.251724	1.170936		-6.5	20
trans-1,2-Dichloroethene	A	0.12500	0.11898	1.143278	1.088247		-4.8	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11909	0.9907955	0.9439627		-4.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11523	1.330376	1.226393	0.3	-7.8	20
Tetrachloroethene	A	0.12500	0.12377	0.3102159	0.3071523		-1.0	20
1,1,1-Trichloroethane	A	0.12500	0.12092	1.337076	1.293436		-3.3	20
1,1,2-Trichloroethane	A	0.12500	0.11435	0.2309915	0.2113181		-8.5	20
Trichloroethene	A	0.12500	0.12236	0.3225112	0.315706		-2.1	20
Vinyl chloride	A	0.12500	0.12582	1.938052	1.950811		0.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1812002
Lab File ID:	11DEC34.D	Calibration Date:	11/13/18 13:18
Sequence:	1824530	Injection Date:	12/11/18
Lab Sample ID:	1824530-CCV4	Injection Time:	21:59

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.10757	1.08303	0.931978		-13.9	20
1,1-Dichloroethane	A	0.12500	0.12672	2.329792	2.361916	0.1	1.4	20
1,2-Dichloroethane	A	0.12500	0.13621	1.174426	1.279793		9.0	20
1,1-Dichloroethene	A	0.12500	0.11387	1.140625	1.039029		-8.9	20
cis-1,2-Dichloroethene	A	0.12500	0.12554	1.251724	1.257181		0.4	20
trans-1,2-Dichloroethene	A	0.12500	0.12090	1.143278	1.105813		-3.3	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.13618	0.9907955	1.079393		8.9	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.13116	1.330376	1.395968	0.3	4.9	20
Tetrachloroethene	A	0.12500	0.12703	0.3102159	0.3152563		1.6	20
1,1,1-Trichloroethane	A	0.12500	0.12897	1.337076	1.379561		3.2	20
1,1,2-Trichloroethane	A	0.12500	0.13947	0.2309915	0.2577293		11.6	20
Trichloroethene	A	0.12500	0.12769	0.3225112	0.3294592		2.2	20
Vinyl chloride	A	0.12500	0.11118	1.938052	1.723713		-11.1	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Sacramento, CA 95811

Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824353-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824353-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824353-CCV4)			Lab File ID: 07DEC29.D		Analyzed: 12/07/18 21:39			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.9	80 - 120	6.6	6.586667	0.0133	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.5	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.3	80 - 120	10.15	10.14	0.0100	+/-1.0	
Calibration Blank (1824353-CCB2)			Lab File ID: 07DEC31.D		Analyzed: 12/07/18 22:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.8	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.14	10.14	0.0000	+/-1.0	
LCS (B032340-BS1)			Lab File ID: 07DEC32.D		Analyzed: 12/07/18 22:44			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.3	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	98.6	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.4	74 - 121	10.14	10.14	0.0000	+/-1.0	
Matrix Spike (B032340-MS1)			Lab File ID: 07DEC33.D		Analyzed: 12/07/18 23:06			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.5	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.4	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.3	74 - 121	10.15	10.14	0.0100	+/-1.0	
Matrix Spike Dup (B032340-MSD1)			Lab File ID: 07DEC34.D		Analyzed: 12/07/18 23:28			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	100	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.1	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824353	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (B032340-BLK1)			Lab File ID: 07DEC37.D		Analyzed: 12/08/18 00:34			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.5	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824508
Matrix: Water
SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V14
Calibration: 1812013

Surrogate Compound	Spike Level ug/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824508-ICV1)			Lab File ID: 18OCT24.D		Analyzed: 10/18/18 19:42			
1,2-Dichloroethane-d4 (Surrogate)	10.000	102	70 - 130	7.69	7.688333	0.0017	+/-1.0	
Toluene-d8 (Surrogate)	10.000	99.9	70 - 130	9.19	9.186666	0.0033	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	100	70 - 130	10.82	10.82167	-0.0017	+/-1.0	
Initial Cal Blank (1824508-ICB1)			Lab File ID: 18OCT26.D		Analyzed: 10/18/18 20:28			
1,2-Dichloroethane-d4 (Surrogate)	10.000	101	75 - 125	7.68	7.688333	-0.0083	+/-1.0	
Toluene-d8 (Surrogate)	10.000	101	80 - 120	9.19	9.186666	0.0033	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	103	80 - 120	10.82	10.82167	-0.0017	+/-1.0	
Calibration Check (1824508-CCV2)			Lab File ID: 11DEC05.D		Analyzed: 12/11/18 08:47			
1,2-Dichloroethane-d4 (Surrogate)	10.000	106	80 - 120	7.61	7.688333	-0.0783	+/-1.0	
Toluene-d8 (Surrogate)	10.000	95.9	80 - 120	9.13	9.186666	-0.0567	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	95.5	80 - 120	10.77	10.82167	-0.0517	+/-1.0	
Calibration Blank (1824508-CCB1)			Lab File ID: 11DEC07.D		Analyzed: 12/11/18 09:34			
1,2-Dichloroethane-d4 (Surrogate)	10.000	104	75 - 125	7.61	7.688333	-0.0783	+/-1.0	
Toluene-d8 (Surrogate)	10.000	98.4	80 - 120	9.13	9.186666	-0.0567	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	97.7	80 - 120	10.77	10.82167	-0.0517	+/-1.0	
Blank (B032380-BLK1)			Lab File ID: 11DEC08.D		Analyzed: 12/11/18 09:57			
1,2-Dichloroethane-d4 (Surrogate)	10.000	99.4	75 - 125	7.62	7.688333	-0.0683	+/-1.0	
Toluene-d8 (Surrogate)	10.000	98.6	80 - 120	9.13	9.186666	-0.0567	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	102	80 - 120	10.77	10.82167	-0.0517	+/-1.0	
LCS (B032380-BS1)			Lab File ID: 11DEC14.D		Analyzed: 12/11/18 12:16			
1,2-Dichloroethane-d4 (Surrogate)	10.000	113	75 - 125	7.61	7.688333	-0.0783	+/-1.0	
Toluene-d8 (Surrogate)	10.000	98.4	80 - 120	9.13	9.186666	-0.0567	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	97.0	80 - 120	10.78	10.82167	-0.0417	+/-1.0	
Matrix Spike (B032380-MS1)			Lab File ID: 11DEC15.D		Analyzed: 12/11/18 12:39			
1,2-Dichloroethane-d4 (Surrogate)	10.000	110	75 - 125	7.62	7.688333	-0.0683	+/-1.0	
Toluene-d8 (Surrogate)	10.000	98.4	80 - 120	9.13	9.186666	-0.0567	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	94.9	80 - 120	10.78	10.82167	-0.0417	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824508
Matrix: Water
SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V14
Calibration: 1812013

Surrogate Compound	Spike Level ug/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B032380-MSD1)			Lab File ID: 11DEC16.D		Analyzed: 12/11/18 13:02			
1,2-Dichloroethane-d4 (Surrogate)	10.000	105	75 - 125	7.61	7.688333	-0.0783	+/-1.0	
Toluene-d8 (Surrogate)	10.000	99.4	80 - 120	9.13	9.186666	-0.0567	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	96.6	80 - 120	10.77	10.82167	-0.0517	+/-1.0	
Calibration Check (1824508-CCV5)			Lab File ID: 11DEC36.D		Analyzed: 12/11/18 20:45			
1,2-Dichloroethane-d4 (Surrogate)	10.000	102	80 - 120	7.62	7.688333	-0.0683	+/-1.0	
Toluene-d8 (Surrogate)	10.000	97.0	80 - 120	9.13	9.186666	-0.0567	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	95.6	80 - 120	10.78	10.82167	-0.0417	+/-1.0	
Calibration Blank (1824508-CCB2)			Lab File ID: 11DEC39.D		Analyzed: 12/11/18 21:54			
1,2-Dichloroethane-d4 (Surrogate)	10.000	104	75 - 125	7.61	7.688333	-0.0783	+/-1.0	
Toluene-d8 (Surrogate)	10.000	99.0	80 - 120	9.13	9.186666	-0.0567	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	98.3	80 - 120	10.78	10.82167	-0.0417	+/-1.0	
TB-1 (1838293-04)			Lab File ID: 11DEC46.D		Analyzed: 12/12/18 00:36			
1,2-Dichloroethane-d4 (Surrogate)	10.000	106	75 - 125	7.62	7.688333	-0.0683	+/-1.0	
Toluene-d8 (Surrogate)	10.000	102	80 - 120	9.13	9.186666	-0.0567	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	98.4	80 - 120	10.78	10.82167	-0.0417	+/-1.0	
GW-B13-01 (1838293-03)			Lab File ID: 11DEC48.D		Analyzed: 12/12/18 01:23			
1,2-Dichloroethane-d4 (Surrogate)	10.000	111	75 - 125	7.62	7.688333	-0.0683	+/-1.0	
Toluene-d8 (Surrogate)	10.000	102	80 - 120	9.13	9.186666	-0.0567	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	99.8	80 - 120	10.78	10.82167	-0.0417	+/-1.0	

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SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824530
Matrix: Solids

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824530-ICV1)			Lab File ID: 13NOV23.D		Analyzed: 11/13/18 17:07			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 130	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	70 - 130	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.6	70 - 130	10.14	10.14	0.0000	+/-1.0	
Initial Cal Blank (1824530-ICB1)			Lab File ID: 13NOV24.D		Analyzed: 11/13/18 17:30			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	113	74 - 121	10.14	10.14	0.0000	+/-1.0	
Calibration Check (1824530-CCV4)			Lab File ID: 11DEC34.D		Analyzed: 12/11/18 21:59			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	99.7	80 - 120	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	80 - 120	10.14	10.14	0.0000	+/-1.0	
Calibration Blank (1824530-CCB2)			Lab File ID: 11DEC36.D		Analyzed: 12/11/18 22:42			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	108	70 - 121	6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.2	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	100	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW12-02 (1838293-01)			Lab File ID: 11DEC54.D		Analyzed: 12/12/18 05:11			
1,2-Dichloroethane-d4 (Surrogate)	0.036765	122	70 - 121	6.59	6.586667	0.0033	+/-1.0	*
Toluene-d8 (Surrogate)	0.036765	106	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.036765	107	74 - 121	10.14	10.14	0.0000	+/-1.0	
SO-VW12-03 (1838293-02)			Lab File ID: 11DEC55.D		Analyzed: 12/12/18 05:33			
1,2-Dichloroethane-d4 (Surrogate)	0.042301	126	70 - 121	6.59	6.586667	0.0033	+/-1.0	*
Toluene-d8 (Surrogate)	0.042301	102	81 - 117	8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.042301	106	74 - 121	10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824757
Matrix: Water
SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V14
Calibration: 1812013

Surrogate Compound	Spike Level ug/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Cal Standard (1824757-CAL1)			Lab File ID: 18OCT15.D		Analyzed: 10/18/18 16:14			
1,2-Dichloroethane-d4 (Surrogate)	10.000	122		7.69	7.688333	0.0017	+/-1.0	
Toluene-d8 (Surrogate)	10.000	106		9.19	9.186666	0.0033	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	116		10.82	10.82167	-0.0017	+/-1.0	
Cal Standard (1824757-CAL2)			Lab File ID: 18OCT17.D		Analyzed: 10/18/18 17:00			
1,2-Dichloroethane-d4 (Surrogate)	10.000	125		7.69	7.688333	0.0017	+/-1.0	
Toluene-d8 (Surrogate)	10.000	104		9.19	9.186666	0.0033	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	116		10.83	10.82167	0.0083	+/-1.0	
Cal Standard (1824757-CAL3)			Lab File ID: 18OCT18.D		Analyzed: 10/18/18 17:23			
1,2-Dichloroethane-d4 (Surrogate)	10.000	123		7.69	7.688333	0.0017	+/-1.0	
Toluene-d8 (Surrogate)	10.000	106		9.19	9.186666	0.0033	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	113		10.82	10.82167	-0.0017	+/-1.0	
Cal Standard (1824757-CAL4)			Lab File ID: 18OCT19.D		Analyzed: 10/18/18 17:46			
1,2-Dichloroethane-d4 (Surrogate)	10.000	124		7.69	7.688333	0.0017	+/-1.0	
Toluene-d8 (Surrogate)	10.000	106		9.19	9.186666	0.0033	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	113		10.82	10.82167	-0.0017	+/-1.0	
Cal Standard (1824757-CAL5)			Lab File ID: 18OCT20.D		Analyzed: 10/18/18 18:10			
1,2-Dichloroethane-d4 (Surrogate)	10.000	132		7.69	7.688333	0.0017	+/-1.0	
Toluene-d8 (Surrogate)	10.000	105		9.18	9.186666	-0.0067	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	113		10.82	10.82167	-0.0017	+/-1.0	
Cal Standard (1824757-CAL6)			Lab File ID: 18OCT21.D		Analyzed: 10/18/18 18:33			
1,2-Dichloroethane-d4 (Surrogate)	10.000	130		7.68	7.688333	-0.0083	+/-1.0	
Toluene-d8 (Surrogate)	10.000	103		9.18	9.186666	-0.0067	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	113		10.82	10.82167	-0.0017	+/-1.0	

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Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D		Analyzed: 11/13/18 13:18			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	103		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.0		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D		Analyzed: 11/13/18 13:41			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	95.2		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D		Analyzed: 11/13/18 14:04			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	95.7		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.0		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	104		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D		Analyzed: 11/13/18 14:27			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	94.3		6.58	6.586667	-0.0067	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.7		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D		Analyzed: 11/13/18 14:50			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	91.9		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102		10.14	10.14	0.0000	+/-1.0	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D		Analyzed: 11/13/18 16:22			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	105		6.59	6.586667	0.0033	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.2		8.38	8.38	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9		10.14	10.14	0.0000	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824353
Matrix: Solids

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824353-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824353-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824353-CCV4)			Lab File ID: 07DEC29.D			Analyzed: 12/07/18 21:39			
Pentafluorobenzene (IS)	105107	6.22	85192	6.21	123	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	85377	9.41	69865	9.41	122	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	346259	7.11	271811	7.1	127	50 - 200	0.0100	+/-0.50	
Calibration Check (1824353-CCV6)			Lab File ID: 07DEC30.D			Analyzed: 12/07/18 22:01			
Pentafluorobenzene (IS)	91031	6.21	85192	6.21	107	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	83102	9.41	69865	9.41	119	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	314278	7.11	271811	7.1	116	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824353-CCB2)			Lab File ID: 07DEC31.D			Analyzed: 12/07/18 22:22			
Pentafluorobenzene (IS)	104184	6.21	91031	6.21	114	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	87032	9.41	83102	9.41	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	339559	7.11	314278	7.11	108	50 - 200	0.0000	+/-0.50	
LCS (B032340-BS1)			Lab File ID: 07DEC32.D			Analyzed: 12/07/18 22:44			
Pentafluorobenzene (IS)	104245	6.22	91031	6.21	115	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	87095	9.41	83102	9.41	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	347883	7.11	314278	7.11	111	50 - 200	0.0000	+/-0.50	
Matrix Spike (B032340-MS1)			Lab File ID: 07DEC33.D			Analyzed: 12/07/18 23:06			
Pentafluorobenzene (IS)	99697	6.21	91031	6.21	110	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	86973	9.41	83102	9.41	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	342559	7.11	314278	7.11	109	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824353	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B032340-MSD1)			Lab File ID: 07DEC34.D			Analyzed: 12/07/18 23:28			
Pentafluorobenzene (IS)	93683	6.21	91031	6.21	103	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	80240	9.41	83102	9.41	97	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	324395	7.11	314278	7.11	103	50 - 200	0.0000	+/-0.50	
Blank (B032340-BLK1)			Lab File ID: 07DEC37.D			Analyzed: 12/08/18 00:34			
Pentafluorobenzene (IS)	114979	6.21	91031	6.21	126	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	100553	9.41	83102	9.41	121	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	369222	7.11	314278	7.11	117	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824508
Matrix: Water

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V14
Calibration: 1812013

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824508-ICV1)			Lab File ID: 18OCT24.D			Analyzed: 10/18/18 19:42			
Pentafluorobenzene (IS)	134123	7.39	127703	7.39	105	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	47979	10.13	45603	10.14	105	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	188716	8.08	176925	8.08	107	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824508-ICB1)			Lab File ID: 18OCT26.D			Analyzed: 10/18/18 20:28			
Pentafluorobenzene (IS)	144973	7.39	134123	7.39	108	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	49282	10.13	47979	10.13	103	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	193112	8.08	188716	8.08	102	50 - 200	0.0000	+/-0.50	
Calibration Check (1824508-CCV2)			Lab File ID: 11DEC05.D			Analyzed: 12/11/18 08:47			
Pentafluorobenzene (IS)	146252	7.31	127703	7.39	115	50 - 200	-0.0800	+/-0.50	
Chlorobenzene-d5 (IS)	52906	10.09	45603	10.14	116	50 - 200	-0.0500	+/-0.50	
1,4-Difluorobenzene (IS)	211961	8.01	176925	8.08	120	50 - 200	-0.0700	+/-0.50	
Calibration Check (1824508-CCV3)			Lab File ID: 11DEC06.D			Analyzed: 12/11/18 09:11			
Pentafluorobenzene (IS)	149941	7.32	127703	7.39	117	50 - 200	-0.0700	+/-0.50	
Chlorobenzene-d5 (IS)	52478	10.08	45603	10.14	115	50 - 200	-0.0600	+/-0.50	
1,4-Difluorobenzene (IS)	206077	8.01	176925	8.08	116	50 - 200	-0.0700	+/-0.50	
Calibration Blank (1824508-CCB1)			Lab File ID: 11DEC07.D			Analyzed: 12/11/18 09:34			
Pentafluorobenzene (IS)	158876	7.31	149941	7.32	106	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	55678	10.08	52478	10.08	106	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	212204	8.01	206077	8.01	103	50 - 200	0.0000	+/-0.50	
Blank (B032380-BLK1)			Lab File ID: 11DEC08.D			Analyzed: 12/11/18 09:57			
Pentafluorobenzene (IS)	161852	7.31	149941	7.32	108	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	53621	10.09	52478	10.08	102	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	214651	8.01	206077	8.01	104	50 - 200	0.0000	+/-0.50	
LCS (B032380-BS1)			Lab File ID: 11DEC14.D			Analyzed: 12/11/18 12:16			
Pentafluorobenzene (IS)	120081	7.32	149941	7.32	80	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	43219	10.09	52478	10.08	82	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	167970	8.01	206077	8.01	82	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824508
Matrix: Water
SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V14
Calibration: 1812013

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B032380-MS1)			Lab File ID: 11DEC15.D			Analyzed: 12/11/18 12:39			
Pentafluorobenzene (IS)	128594	7.31	149941	7.32	86	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	47737	10.09	52478	10.08	91	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	185207	8.01	206077	8.01	90	50 - 200	0.0000	+/-0.50	
Matrix Spike Dup (B032380-MSD1)			Lab File ID: 11DEC16.D			Analyzed: 12/11/18 13:02			
Pentafluorobenzene (IS)	132977	7.32	149941	7.32	89	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	47727	10.08	52478	10.08	91	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	189529	8.01	206077	8.01	92	50 - 200	0.0000	+/-0.50	
Calibration Check (1824508-CCV4)			Lab File ID: 11DEC35.D			Analyzed: 12/11/18 20:22			
Pentafluorobenzene (IS)	143025	7.31	127703	7.39	112	50 - 200	-0.0800	+/-0.50	
Calibration Check (1824508-CCV5)			Lab File ID: 11DEC36.D			Analyzed: 12/11/18 20:45			
Pentafluorobenzene (IS)	147047	7.31	127703	7.39	115	50 - 200	-0.0800	+/-0.50	
Chlorobenzene-d5 (IS)	52813	10.09	45603	10.14	116	50 - 200	-0.0500	+/-0.50	
1,4-Difluorobenzene (IS)	208985	8.01	176925	8.08	118	50 - 200	-0.0700	+/-0.50	
Calibration Check (1824508-CCV6)			Lab File ID: 11DEC37.D			Analyzed: 12/11/18 21:08			
Pentafluorobenzene (IS)	150196	7.31	127703	7.39	118	50 - 200	-0.0800	+/-0.50	
Chlorobenzene-d5 (IS)	53035	10.08	45603	10.14	116	50 - 200	-0.0600	+/-0.50	
1,4-Difluorobenzene (IS)	204745	8.01	176925	8.08	116	50 - 200	-0.0700	+/-0.50	
Calibration Blank (1824508-CCB2)			Lab File ID: 11DEC39.D			Analyzed: 12/11/18 21:54			
Pentafluorobenzene (IS)	160828	7.32	150196	7.31	107	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	55554	10.08	53035	10.08	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	219156	8.01	204745	8.01	107	50 - 200	0.0000	+/-0.50	
TB-1 (1838293-04)			Lab File ID: 11DEC46.D			Analyzed: 12/12/18 00:36			
Pentafluorobenzene (IS)	158606	7.31	150196	7.31	106	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	55791	10.09	53035	10.08	105	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	211660	8.01	204745	8.01	103	50 - 200	0.0000	+/-0.50	
GW-B13-01 (1838293-03)			Lab File ID: 11DEC48.D			Analyzed: 12/12/18 01:23			
Pentafluorobenzene (IS)	147087	7.31	150196	7.31	98	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	52172	10.09	53035	10.08	98	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	198061	8.01	204745	8.01	97	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824530
Matrix: Solids

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824530-ICV1)			Lab File ID: 13NOV23.D			Analyzed: 11/13/18 17:07			
Pentafluorobenzene (IS)	86913	6.21	85192	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	70760	9.41	69865	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280860	7.1	271811	7.1	103	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824530-ICB1)			Lab File ID: 13NOV24.D			Analyzed: 11/13/18 17:30			
Pentafluorobenzene (IS)	86304	6.21	86913	6.21	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71001	9.41	70760	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	273641	7.11	280860	7.1	97	50 - 200	0.0100	+/-0.50	
Calibration Check (1824530-CCV4)			Lab File ID: 11DEC34.D			Analyzed: 12/11/18 21:59			
Pentafluorobenzene (IS)	138117	6.21	85192	6.21	162	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	111118	9.41	69865	9.41	159	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	429238	7.11	271811	7.1	158	50 - 200	0.0100	+/-0.50	
Calibration Check (1824530-CCV6)			Lab File ID: 11DEC35.D			Analyzed: 12/11/18 22:20			
Pentafluorobenzene (IS)	142735	6.2	85192	6.21	168	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	118990	9.41	69865	9.41	170	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	459112	7.11	271811	7.1	169	50 - 200	0.0100	+/-0.50	
Calibration Blank (1824530-CCB2)			Lab File ID: 11DEC36.D			Analyzed: 12/11/18 22:42			
Pentafluorobenzene (IS)	139833	6.21	142735	6.2	98	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	117937	9.41	118990	9.41	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	453411	7.11	459112	7.11	99	50 - 200	0.0000	+/-0.50	
SO-VW12-02 (1838293-01)			Lab File ID: 11DEC54.D			Analyzed: 12/12/18 05:11			
Pentafluorobenzene (IS)	153157	6.2	142735	6.2	107	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	130535	9.41	118990	9.41	110	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	450251	7.11	459112	7.11	98	50 - 200	0.0000	+/-0.50	
SO-VW12-03 (1838293-02)			Lab File ID: 11DEC55.D			Analyzed: 12/12/18 05:33			
Pentafluorobenzene (IS)	157410	6.2	142735	6.2	110	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	123809	9.41	118990	9.41	104	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	467435	7.11	459112	7.11	102	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824757
Matrix: Water
SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V14
Calibration: 1812013

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (1824757-CAL1)			Lab File ID: 18OCT15.D			Analyzed: 10/18/18 16:14			
Pentafluorobenzene (IS)	137525	7.39	127703	7.39	108	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	45724	10.14	45603	10.14	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	180279	8.08	176925	8.08	102	50 - 200	0.0000	+/-0.50	
Cal Standard (1824757-CAL2)			Lab File ID: 18OCT17.D			Analyzed: 10/18/18 17:00			
Pentafluorobenzene (IS)	135418	7.39	127703	7.39	106	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	45588	10.13	45603	10.14	100	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	181045	8.08	176925	8.08	102	50 - 200	0.0000	+/-0.50	
Cal Standard (1824757-CAL3)			Lab File ID: 18OCT18.D			Analyzed: 10/18/18 17:23			
Pentafluorobenzene (IS)	132041	7.39	127703	7.39	103	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	46251	10.14	45603	10.14	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	179042	8.08	176925	8.08	101	50 - 200	0.0000	+/-0.50	
Cal Standard (1824757-CAL4)			Lab File ID: 18OCT19.D			Analyzed: 10/18/18 17:46			
Pentafluorobenzene (IS)	127703	7.39	127703	7.39	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	45603	10.14	45603	10.14	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	176925	8.08	176925	8.08	100	50 - 200	0.0000	+/-0.50	
Cal Standard (1824757-CAL5)			Lab File ID: 18OCT20.D			Analyzed: 10/18/18 18:10			
Pentafluorobenzene (IS)	129015	7.39	127703	7.39	101	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	47737	10.14	45603	10.14	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	188990	8.08	176925	8.08	107	50 - 200	0.0000	+/-0.50	
Cal Standard (1824757-CAL6)			Lab File ID: 18OCT21.D			Analyzed: 10/18/18 18:33			
Pentafluorobenzene (IS)	125956	7.39	127703	7.39	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	47170	10.13	45603	10.14	103	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	190026	8.08	176925	8.08	107	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Matrix: Solids

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1812002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (1824979-CAL2)			Lab File ID: 13NOV13.D			Analyzed: 11/13/18 13:18			
Pentafluorobenzene (IS)	82386	6.2	85192	6.21	97	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	70974	9.41	69865	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	277119	7.1	271811	7.1	102	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL3)			Lab File ID: 13NOV14.D			Analyzed: 11/13/18 13:41			
Pentafluorobenzene (IS)	85192	6.21	85192	6.21	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69865	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	271811	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL4)			Lab File ID: 13NOV15.D			Analyzed: 11/13/18 14:04			
Pentafluorobenzene (IS)	85251	6.2	85192	6.21	100	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	69041	9.41	69865	9.41	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	283685	7.1	271811	7.1	104	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL5)			Lab File ID: 13NOV16.D			Analyzed: 11/13/18 14:27			
Pentafluorobenzene (IS)	82966	6.21	85192	6.21	97	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	66555	9.4	69865	9.41	95	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	268813	7.1	271811	7.1	99	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL6)			Lab File ID: 13NOV17.D			Analyzed: 11/13/18 14:50			
Pentafluorobenzene (IS)	81182	6.2	85192	6.21	95	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	64689	9.4	69865	9.41	93	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	262849	7.1	271811	7.1	97	50 - 200	0.0000	+/-0.50	
Cal Standard (1824979-CAL1)			Lab File ID: 13NOV21.D			Analyzed: 11/13/18 16:22			
Pentafluorobenzene (IS)	83848	6.21	85192	6.21	98	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69643	9.41	69865	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	272090	7.1	271811	7.1	100	50 - 200	0.0000	+/-0.50	

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INITIAL CALIBRATION STANDARDS

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824979
Calibration: 1812002

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V3

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
8K09001	8260 V2 BFB WORKING STD	1824979-TUN1	13NOV03.D	11/13/18 07:18
8K27020	8260 V3 1823650 REG CAL2	1824979-CAL2	13NOV13.D	11/13/18 13:18
8K27021	8260 V3 1823650 REG CAL3	1824979-CAL3	13NOV14.D	11/13/18 13:41
8K27022	8260 V3 1823650 REG CAL4	1824979-CAL4	13NOV15.D	11/13/18 14:04
8K27023	8260 V3 1823650 REG CAL5	1824979-CAL5	13NOV16.D	11/13/18 14:27
8K27024	8260 V3 1823650 REG CAL6	1824979-CAL6	13NOV17.D	11/13/18 14:50
8K27019	8260 V3 1823650 REG CAL1	1824979-CAL1	13NOV21.D	11/13/18 16:22

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INITIAL CALIBRATION STANDARDS

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824757
Calibration: 1812013

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V14

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
8L14012	8260 V14 BFB 50ng DAILY	1824757-TUN1	18OCT13.D	10/18/18 15:28
8L14013	8260 V14 REG IC1	1824757-CAL1	18OCT15.D	10/18/18 16:14
8L14014	8260 V14 REG IC2	1824757-CAL2	18OCT17.D	10/18/18 17:00
8L14015	8260 V14 REG IC3	1824757-CAL3	18OCT18.D	10/18/18 17:23
8L14016	8260 V14 REG IC4	1824757-CAL4	18OCT19.D	10/18/18 17:46
8L14017	8260 V14 REG IC5	1824757-CAL5	18OCT20.D	10/18/18 18:10
8L14018	8260 V14 REG IC6	1824757-CAL6	18OCT21.D	10/18/18 18:33

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Sacramento, CA 95811

Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF
Chloroethane	0.005	0.9313281	0.05	1.280436	0.125	1.123669	0.25	1.047286	0.375	1.06771	0.5	1.047751
1,1-Dichloroethane	0.005	2.253363	0.05	2.54945	0.125	2.321218	0.25	2.350689	0.375	2.253137	0.5	2.250896
1,2-Dichloroethane	0.005	1.146479	0.05	1.313476	0.125	1.170007	0.25	1.180664	0.375	1.126421	0.5	1.109511
1,1-Dichloroethene	0.005	0.9562542	0.05	1.254315	0.125	1.221396	0.25	1.161347	0.375	1.193917	0.5	1.056522
cis-1,2-Dichloroethene	0.005	1.213267	0.05	1.362792	0.125	1.245521	0.25	1.256239	0.375	1.227132	0.5	1.205393
trans-1,2-Dichloroethene	0.005	1.100921	0.05	1.242881	0.125	1.15423	0.25	1.133702	0.375	1.111533	0.5	1.1164
1,1,1,2-Tetrachloroethane	0.005	1.032121	0.05	1.041565	0.125	0.9871209	0.25	1.008363	0.375	0.9530864	0.5	0.922517
1,1,2,2-Tetrachloroethane	0.005	1.309823	0.05	1.361287	0.125	1.364838	0.25	1.368691	0.375	1.264155	0.5	1.313461
Tetrachloroethene	0.005	0.2811937	0.05	0.3458767	0.125	0.3362851	0.25	0.3051829	0.375	0.2984593	0.5	0.2942975
1,1,1-Trichloroethane	0.005	1.101756	0.05	1.480106	0.125	1.384257	0.25	1.367637	0.375	1.334175	0.5	1.354528
1,1,2-Trichloroethane	0.005	0.2463523	0.05	0.247493	0.125	0.2332768	0.25	0.2215901	0.375	0.2211758	0.5	0.2160609
Trichloroethene	0.005	0.2871109	0.05	0.3531768	0.125	0.3378907	0.25	0.3156205	0.375	0.3192589	0.5	0.3220092
Vinyl chloride	0.005	1.449766	0.05	2.242881	0.125	2.185468	0.25	1.980629	0.375	1.929103	0.5	1.840463
1,2-Dichloroethane-d4 (Surrogate)	0.05	0.9335941	0.05	0.943	0.05	0.8892502	0.05	0.8737962	0.05	0.8606658	0.05	0.8391146
Toluene-d8 (Surrogate)	0.05	1.05224	0.05	1.058386	0.05	1.088999	0.05	1.040034	0.05	1.061548	0.05	1.061499
4-Bromofluorobenzene (Surrogate)	0.05	1.365191	0.05	1.329571	0.05	1.305475	0.05	1.427688	0.05	1.367305	0.05	1.4035

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Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812002
Matrix: Solids

SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 11/13/18 13:18

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Chloroethane	1.08303	10.63971	2.313333	0.352722			15	
1,1-Dichloroethane	2.329792	4.957522	4.69	2.144103E-02			SPCC (0.10)	
1,2-Dichloroethane	1.174426	6.221394	6.68	1.342167E-02			15	
1,1-Dichloroethene	1.140625	9.902162	3.181667	0.1271662			CCC (20)	
cis-1,2-Dichloroethene	1.251724	4.606693	5.411667	7.615105E-02			15	
trans-1,2-Dichloroethene	1.143278	4.571262	4.145	0.1308259			15	
1,1,1,2-Tetrachloroethane	0.9907955	4.667134	9.485	5.866972E-02			15	
1,1,2,2-Tetrachloroethane	1.330376	3.136352	10.21	1.398524E-02			SPCC (0.30)	
Tetrachloroethene	0.3102159	8.168443	8.81	2.247676E-02			15	
1,1,1-Trichloroethane	1.337076	9.419156	6.125	8.905765E-02			15	
1,1,2-Trichloroethane	0.2309915	5.875976	8.758334	4.406004E-02			15	
Trichloroethene	0.3225112	6.917194	7.325	7.247583E-02			15	
Vinyl chloride	1.938052	14.66652	1.881667	0.2169596			CCC (20)	
1,2-Dichloroethane-d4 (Surrogate)	0.8899035	4.611968	6.586667	7.620565E-02			15	
Toluene-d8 (Surrogate)	1.060451	1.523989	8.38	1.581306E-02			15	
4-Bromofluorobenzene (Surrogate)	1.366455	3.305892	10.14	2.059171E-02			15	

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INITIAL CALIBRATION DATA

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812013
Matrix: Water
SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V14
Calibration Date: 10/18/18 16:14

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Chloroethane	0.5	0.3779677	1	0.347295	10	0.3594338	25	0.3499432	50	0.35157	100	0.3574232
1,1-Dichloroethane	0.5	0.6659153	1	0.7536664	10	0.7974417	25	0.7657956	50	0.7480448	100	0.7571073
1,2-Dichloroethane	0.5	0.2789311	1	0.3183476	10	0.3391371	25	0.3280455	50	0.3327799	100	0.3327527
1,1-Dichloroethene	0.5	0.6025087	1	0.6586274	10	0.6943298	25	0.6727516	50	0.6509321	100	0.6459732
cis-1,2-Dichloroethene	0.5	0.4214506	1	0.4644877	10	0.4474671	25	0.4322968	50	0.423698	100	0.4212876
trans-1,2-Dichloroethene	0.5	0.4375932	1	0.4622724	10	0.4483759	25	0.4265334	50	0.4175592	100	0.4185486
1,1,1,2-Tetrachloroethane	0.5	1.008661	1	1.026367	10	1.035869	25	0.9717168	50	0.9432935	100	0.922932
1,1,2,2-Tetrachloroethane	0.5	0.4251597	1	0.461525	10	0.4798383	25	0.4716707	50	0.4689109	100	0.4734492
Tetrachloroethene	0.5	0.4344377	1	0.392941	10	0.368394	25	0.3440215	50	0.3132367	100	0.301353
1,1,1-Trichloroethane	0.5	0.7226322	1	0.7331374	10	0.7138313	25	0.6770115	50	0.6716382	100	0.6604282
1,1,2-Trichloroethane	0.5	0.1396724	1	0.1414013	10	0.1373588	25	0.1297182	50	0.1258342	100	0.1230716
Trichloroethene	0.5	0.3305987	1	0.3624513	10	0.3817484	25	0.3590516	50	0.3372877	100	0.3253902
Vinyl chloride	0.5	0.5345937	1	0.5791697	10	0.6231171	25	0.6107202	50	0.6101632	100	0.6029518
1,2-Dichloroethane-d4 (Surrogate)	10	0.2466679	10	0.2528394	10	0.2498012	10	0.2521867	10	0.267279	10	0.2633062
Toluene-d8 (Surrogate)	10	1.09513	10	1.080096	10	1.100328	10	1.101303	10	1.084465	10	1.072001
4-Bromofluorobenzene (Surrogate)	10	1.350188	10	1.353382	10	1.318155	10	1.321952	10	1.324696	10	1.32527

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Reported: 1/8/2019 4:23:37PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812013
Matrix: Water
SDG: 1838293
Project: SMUD 59th St.
Instrument: MS-V14
Calibration Date: 10/18/18 16:14

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Chloroethane	0.3572721	3.113744	3.313333	0.1559987			15	
1,1-Dichloroethane	0.7479952	5.862362	6.101667	6.671735E-02			SPCC (0.10)	
1,2-Dichloroethane	0.3216657	6.853019	7.755	6.936417E-02			15	
1,1-Dichloroethene	0.6541871	4.698839	4.403333	0.1172929			CCC (20)	
cis-1,2-Dichloroethene	0.4351146	4.0223	6.835	8.061834E-02			15	
trans-1,2-Dichloroethene	0.4351471	4.079702	5.451667	7.358205E-02			15	
1,1,1,2-Tetrachloroethane	0.9848066	4.681297	10.2	1.804415E-02			15	
1,1,2,2-Tetrachloroethane	0.4634256	4.245868	10.88	1.565306E-02			SPCC (0.30)	
Tetrachloroethene	0.359064	13.96562	9.58	1.043714E-02			15	
1,1,1-Trichloroethane	0.6964465	4.366847	7.375	7.396314E-02			15	
1,1,2-Trichloroethane	0.1328428	5.778682	9.515	5.628192E-02			15	
Trichloroethene	0.3494213	6.252494	8.28	5.801038E-03			15	
Vinyl chloride	0.5934526	5.44249	2.668333	0.1537028			CCC (20)	
1,2-Dichloroethane-d4 (Surrogate)	0.2553467	3.172326	7.688333	5.344026E-02			15	
Toluene-d8 (Surrogate)	1.088887	1.091184	9.186666	5.746792E-02			15	
4-Bromofluorobenzene (Surrogate)	1.332274	1.15258	10.82167	3.904934E-02			15	

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

HOLDING TIME SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838293
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
SO-VW12-02	12/07/18 08:04	12/10/18 07:20	12/11/18 16:00	5.00	14.00	12/12/18 05:11	5.00	14.00	
SO-VW12-03	12/07/18 08:06	12/10/18 07:20	12/11/18 16:00	5.00	14.00	12/12/18 05:33	5.00	14.00	
GW-B13-01	12/07/18 14:10	12/10/18 07:20	12/11/18 08:00	5.00	14.00	12/12/18 01:23	5.00	14.00	
TB-1	12/07/18 00:00	12/10/18 07:20	12/11/18 08:00	5.00	14.00	12/12/18 00:36	5.00	14.00	

* Holding time not met

Note: If Prep or Analysis are performed within the hour (if holding time is based on hours) or within the day (if holding time is based on days), then the sample is not flagged as outside holding times. Calculated number of days are based on date received or date prepared depending on the test.

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Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838293

Laboratory Documentation Requirements
For Data Validation of
Metals Analysis (using ppm units)

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838293
COC Number:
Default Cooler was received at 1.1 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-6020 (TTLC)	PE-EL4

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032567	EPA-6020 (TTLC)	1838513-02	<Not Client Sample>

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

Post Spikes

The Post Spike recoveries were within QC limits.

Interference Checks

The Interference Check recoveries were within QC limits.

BC LABORATORIES, INC.

18-38293

Chain of Custody Form

Page 1 of 1

Report To:		Project #: 60570043.05
Client: AECOM		Project Name: SMUD 59th St
Attn: Robert Kohlhardt		
Street Address: 2020 L St Ste 400		
City, State, Zip: Sacramento, CA 95811		Sampler(s): Andrew Morgan (AM)
Phone: 916 414-8[illegible]	Fax:	
Email: Robert.Kohlhardt@aecom.com		
Work Order #: 3500066		

Analysis Requested

Please refer to the back of this page for completion instructions and method legend.

Comments:

Sample #	Description	Date Sampled	Time Sampled	SW 8260B	SW 6020 (Lead)	Sample Matrix: Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Result Request **Surcharge: STD (10 Days) / 5 Day** / 2 Day** / 1 Day** — Notes
-1	SO-VW12-02	12/7/18	0804	X	X	X						4 vials
-2	SO-VW12-03	12/7/18	0806	X		X						4 vials
-3	GW-B13-01	12/7/18	1410	X					X			1 Jar
(AM)	~~GW-B13-01~~	~~12/7/18~~	~~1410~~									
-4	TB-1	12/7/18		X							Water TB	3 vials

CHK BY

DISTRIBUTION

SUB-OUT

Billing

☒ Same as above

Client:

Address:

City: State Zip

Attn:

O. #:

EDF Required? Geotracker ☐ Yes ☐ No

Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

	Relinquished By	Date	Time	Received By	Date	Time
1	AM	12/7/18	1440	Bill Benson	12-7-18	1440
2	Bill Benson	12/7/18	1516	Yasmin Lopez	12/10/18	0720
3		Date	Time		Date	Time

Chain of Custody and Cooler Receipt Form for 1838293 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: R-838293

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☑ (Specify) GSO	Ice Chest ☑ None ☐ Box ☐ Other ☐ (Specify)	YES ☐ NO ☐ W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ (Intact: Yes / No) Containers ☐ (Intact: Yes / No) None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 0.97 Container: clear glass Thermometer ID: 208 Date/Time 12/10/19 0720

Temperature: (A) 1.5 °C / (C) 1.1 °C Analyst Init JM

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PIA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK (JM)				ABC						
40ml VOA VIAL (JM)			RBC							
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
~~QT EPA 8270~~										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR	A									
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT	BCDE	RBCD								
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: JM Date/Time: 12/10/19 0754

A = Actual / C = Corrected

Rev 21 05/23/2016

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838293**
Class: **METALS-PPM**
Method: **EPA-6020**

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Sacramento, CA 95811

Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838293
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-VW12-02	1838293-01

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-08-2019
Title: QA/QC Manager

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Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-6020

Laboratory: BC Laboratories
SDG: 1838293
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: PE-EL4

Analyte	MDL	PQL	Units
Arsenic	0.17	0.5	mg/kg

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Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-VW12-02

Laboratory: BC Laboratories
SDG: 1838293
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1838293-01
File ID: PE_EL4_181212-099
Sampled: 12/07/18 08:04
Prepared: 12/11/18 17:05
Analyzed: 12/12/18 14:20
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.03 g / 250 ml
Batch: B032567
Sequence: 1824690
Calibration: UNASSIGNED
Instrument: PE-EL4

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	3.5	0.971		EPA-6020

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Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-6020

Laboratory: BC Laboratories
SDG: 1838293
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032567 Batch Matrix: Solids
Preparation: EPA 3050B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW12-02	1838293-01	PE_EL4_181212-099	12/11/18 17:05	
Blank	B032567-BLK1	PE_EL4_181212-090	12/11/18 17:05	
LCS	B032567-BS1	PE_EL4_181212-089	12/11/18 17:05	
Duplicate	B032567-DUP1	PE_EL4_181212-092	12/11/18 17:05	
Matrix Spike	B032567-MS1	PE_EL4_181212-094	12/11/18 17:05	
Matrix Spike Dup	B032567-MSD1	PE_EL4_181212-095	12/11/18 17:05	
Post Spike	B032567-PS1	PE_EL4_181212-096	12/11/18 17:05	[Spk] 1g->250ml; 2ml->10ml; Spiked 9.8ml

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Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-6020

Laboratory:	BC Laboratories			SDG:	1838293
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B032567-BLK1	File ID:	PE_EL4_181212-090
Prepared:	12/11/18 17:05	Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml
Analyzed:	12/12/18 13:46	Instrument:	PE-EL4		
Batch:	B032567	Sequence:	1824690	Calibration:	UNASSIGNED

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
7440-38-2	Arsenic	0.17	U

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Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Duplicate

DUPLICATES

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032567
Preparation: EPA 3050B
Source Sample Name: Duplicate

SDG: 1838293
Project: SMUD 59th St.
Laboratory ID: B032567-DUP1
Lab Source ID: 1838513-02
Initial/Final: 1 g / 250 ml
% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/kg)	C	DUPLICATE CONCENTRATION (mg/kg)	C	RPD %	Q	METHOD
Arsenic	20	2.8950		2.9588		2.18		EPA-6020

* Values outside of QC limits

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Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-6020

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032567
Preparation: EPA 3050B
Source Sample Number: 1838513-02

SDG: 1838293
Project: SMUD 59th St.
Laboratory ID: B032567-MS1
Initial/Final: 1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Arsenic	50.000	2.8950	51.681	97.6	75 - 125

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Arsenic	50.000	52.250	98.7	1.09	20	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Matrix:	Solids		
Batch:	B032567	Laboratory ID:	B032567-BS1
Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Arsenic	25.000	27.167	109	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-6020

Laboratory:	BC Laboratories	SDG:	1838293
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824690	Instrument:	PE-EL4
Matrix:	Solids	Calibration:	UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824690-ICV1	PE_EL4_181212-009	12/12/18 08:11
Initial Cal Blank	1824690-ICB1	PE_EL4_181212-010	12/12/18 08:15
MRL Check	1824690-CRL2	PE_EL4_181212-012	12/12/18 08:25
Calibration Check	1824690-CCV2	PE_EL4_181212-023	12/12/18 09:15
Calibration Blank	1824690-CCB2	PE_EL4_181212-024	12/12/18 09:22
Interference Check A	1824690-IFA1	PE_EL4_181212-027	12/12/18 09:36
Interference Check B	1824690-IFB1	PE_EL4_181212-029	12/12/18 09:44
Calibration Check	1824690-CCV3	PE_EL4_181212-036	12/12/18 10:12
Calibration Blank	1824690-CCB3	PE_EL4_181212-037	12/12/18 10:16
Calibration Check	1824690-CCV8	PE_EL4_181212-087	12/12/18 13:28
Calibration Blank	1824690-CCB8	PE_EL4_181212-088	12/12/18 13:32
LCS	B032567-BS1	PE_EL4_181212-089	12/12/18 13:42
Blank	B032567-BLK1	PE_EL4_181212-090	12/12/18 13:46
Duplicate	B032567-DUP1	PE_EL4_181212-092	12/12/18 13:53
Matrix Spike	B032567-MS1	PE_EL4_181212-094	12/12/18 13:59
Matrix Spike Dup	B032567-MSD1	PE_EL4_181212-095	12/12/18 14:03
Post Spike	B032567-PS1	PE_EL4_181212-096	12/12/18 14:06
Calibration Check	1824690-CCV9	PE_EL4_181212-097	12/12/18 14:10
Calibration Blank	1824690-CCB9	PE_EL4_181212-098	12/12/18 14:13
SO-VW12-02	1838293-01	PE_EL4_181212-099	12/12/18 14:20
Calibration Check	1824690-CCVA	PE_EL4_181212-106	12/12/18 14:44
Calibration Blank	1824690-CCBA	PE_EL4_181212-107	12/12/18 14:48

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BLANKS
EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL4
Sequence: 1824690

SDG: 1838293
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	Found	PQL	Units	C	Method
1824690-ICB1	Arsenic	0.14500	2.0	ug/L		EPA-6020
1824690-CCB2	Arsenic	0.53600	2.0	ug/L		EPA-6020
1824690-CCB3	Arsenic	0.60400	2.0	ug/L		EPA-6020
1824690-CCB8	Arsenic	-0.74300	2.0	ug/L		EPA-6020
1824690-CCB9	Arsenic	-1.2240	2.0	ug/L		EPA-6020
1824690-CCBA	Arsenic	-0.98400	2.0	ug/L		EPA-6020

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INITIAL AND CONTINUING CALIBRATION CHECK

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL4
Control Limt: +/- 10.00%

SDG: 1838293
Project: SMUD 59th St.
Calibration: UNASSIGNED
Sequence: 1824690

Lab Sample ID	Analyte	True	Found	%R	Units	Method
1824690-ICV1	Arsenic	125.00	124.39	99.5	ug/L	EPA-6020
1824690-CCV2	Arsenic	100.00	100.15	100	ug/L	EPA-6020
1824690-CCV3	Arsenic	100.00	100.04	100	ug/L	EPA-6020
1824690-CCV8	Arsenic	100.00	97.380	97.4	ug/L	EPA-6020
1824690-CCV9	Arsenic	100.00	99.808	99.8	ug/L	EPA-6020
1824690-CCVA	Arsenic	100.00	98.859	98.9	ug/L	EPA-6020

* Values outside of QC limits

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Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

POST DIGEST SPIKE SAMPLE RECOVERY

EPA-6020

Post Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B032567
Preparation: EPA 3050B

SDG: 1838293
Project: SMUD 59th St.
Laboratory ID: B032567-PS1
Lab Source ID: 1838513-02
Initial/Final: 0.00784 g / 10 ml

Source Sample Name: Post Spike
% Solids:

Analyte	Control Limit %R	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R
Arsenic	75 - 125	105.68	2.2697	100.00	103

* Values outside of QC limits

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Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ICP INTERFERENCE CHECK SAMPLE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL4
Sequence: 1824690

SDG: 1838293
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	True	Found	%R	Units
1824690-IFA1	Arsenic		-0.015000		ug/L
1824690-IFB1	Arsenic	20.000	20.14	101	mg/kg

* Values outside of QC limits

Raw Data From Instrument PE-EL4

Raw Data - Calibration Standards

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Wednesday, December 12, 2018 07:57:48
Sample File: C:\Elandata\Sample\PE_EL4_181212.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.403
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181212.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	3.000				ug/L
|	B	11	232.670				ug/L
|	Al	27	8314.469				ug/L
| >	Sc	45	508529.208				ug/L
|	V	51	674.874				ug/L
|	Cr	52	9109.729				ug/L
|	Cr	53	71064.461				ug/L
|	Mn	55	576.685				ug/L
|	Co	59	53.667				ug/L
⌊	Ni	60	15.000				ug/L
⌈	Cu	63	141.334				ug/L
|	Cu	65	79.667				ug/L
|	Zn	66	226.003				ug/L
|	Zn	68	370.341				ug/L
| >	Ge	72	445198.427				ug/L
|	As	75	543.557				ug/L
|	Se	77	3813.800				ug/L
|	Se	82	123.027				ug/L
⌊	Sr	88	521.682				ug/L
⌈	Mo	98	31.301				ug/L
| >	Rh	103	282741.181				ug/L
⌊	Ag	107	14.667				ug/L
⌈	Cd	111	1.940				ug/L
|	Cd	114	0.938				ug/L
| >	In	115	360059.243				ug/L
|	Sn	120	492.655				ug/L
⌊	Sb	121	188.669				ug/L
⌈	Ba	137	64.582				ug/L
|	Ba	138	418.591				ug/L
| >	Tb	159	465053.903				ug/L
|	Tl	205	58.000				ug/L
⌊	Pb	208	70.667				ug/L
⌈	Hg	200	13.295				ug/L
|	Hg	201	10.000				ug/L
| >	Bi	209	234898.676				ug/L
⌊	U	238	115.667				ug/L
	C	13	8944.411				ug/L
	W	184	5.998				ug/L
	Pd	106	4.406				ug/L
	Kr	83	16.167				ug/L
⌈	Na	23	21157.933				ug/L
|	Mg	24	823.371				ug/L

K	39	255590.954	ug/L
Ca	44	4674.544	ug/L
Ti	47	210.002	ug/L
Sc-1	45	508529.208	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000000	0.000	0.000000	Linear Thru Zero
B	11.009	0.000000	0.000	0.000000	Linear Thru Zero
Al	26.982	0.000000	0.000	0.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.000000	0.000	0.000000	Linear Thru Zero
Cr	51.941	0.000000	0.000	0.000000	Linear Thru Zero
Cr	52.941	0.000000	0.000	0.000000	Linear Thru Zero
Mn	54.938	0.000000	0.000	0.000000	Linear Thru Zero
Co	58.933	0.000000	0.000	0.000000	Linear Thru Zero
Ni	59.933	0.000000	0.000	0.000000	Linear Thru Zero
Cu	62.930	0.000000	0.000	0.000000	Linear Thru Zero
Cu	64.928	0.000000	0.000	0.000000	Linear Thru Zero
Zn	65.926	0.000000	0.000	0.000000	Linear Thru Zero
Zn	67.925	0.000000	0.000	0.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000000	0.000	0.000000	Linear Thru Zero
Se	76.920	0.000000	0.000	0.000000	Linear Thru Zero
Se	81.917	0.000000	0.000	0.000000	Linear Thru Zero
Sr	87.906	0.000000	0.000	0.000000	Linear Thru Zero
Mo	97.906	0.000000	0.000	0.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.000000	0.000	0.000000	Linear Thru Zero
Cd	110.904	0.000000	0.000	0.000000	Linear Thru Zero
Cd	113.904	0.000000	0.000	0.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.000000	0.000	0.000000	Linear Thru Zero
Sb	120.904	0.000000	0.000	0.000000	Linear Thru Zero
Ba	136.905	0.000000	0.000	0.000000	Linear Thru Zero
Ba	137.905	0.000000	0.000	0.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.000000	0.000	0.000000	Linear Thru Zero
Pb	207.977	0.000000	0.000	0.000000	Linear Thru Zero
Hg	199.968	0.000000	0.000	0.000000	Linear Thru Zero
Hg	200.970	0.000000	0.000	0.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.000000	0.000	0.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	0.000000	0.000	0.000000	Linear Thru Zero
Mg	23.985	0.000000	0.000	0.000000	Linear Thru Zero
K	38.964	0.000000	0.000	0.000000	Linear Thru Zero
Ca	43.956	0.000000	0.000	0.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Wednesday, December 12, 2018 08:01:21
Sample File: C:\Elandata\Sample\PE_EL4_181212.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.403
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181212.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	181.002	**1.000**	0.15	15.3	ug/L
|	B	11	7858.062	**20.000**	0.70	3.5	ug/L
|	Al	27	76994.749	**20.000**	0.75	3.8	ug/L
| >	Sc	45	497891.283				ug/L
|	V	51	9841.281	**3.000**	1.42	47.2	ug/L
|	Cr	52	19323.017	**3.000**	0.29	9.5	ug/L
|	Cr	53	75612.210	**3.000**	3.21	106.9	ug/L
|	Mn	55	6659.772	**1.000**	0.04	4.5	ug/L
|	Co	59	4321.027	**1.000**	0.03	3.0	ug/L
⌊	Ni	60	1721.496	**1.000**	0.04	4.3	ug/L
⌈	Cu	63	3818.469	**2.000**	0.11	5.7	ug/L
|	Cu	65	1761.504	**2.000**	0.10	5.2	ug/L
|	Zn	66	2266.616	**5.000**	0.08	1.6	ug/L
|	Zn	68	1801.845	**5.000**	0.17	3.4	ug/L
| >	Ge	72	431694.464				ug/L
|	As	75	1751.711	**2.000**	0.30	15.2	ug/L
|	Se	77	4234.820	**2.000**	0.11	5.4	ug/L
|	Se	82	243.695	**2.000**	0.36	18.1	ug/L
⌊	Sr	88	1889.197	**0.200**	0.01	5.8	ug/L
⌈	Mo	98	1614.294	**1.000**	0.08	8.1	ug/L
| >	Rh	103	276141.196				ug/L
⌊	Ag	107	2438.994	**1.000**	0.03	2.9	ug/L
⌈	Cd	111	586.926	**1.000**	0.04	4.1	ug/L
|	Cd	114	1272.768	**1.000**	0.04	4.1	ug/L
| >	In	115	351112.706				ug/L
|	Sn	120	2758.402	**1.000**	0.04	4.2	ug/L
⌊	Sb	121	3634.060	**2.000**	0.04	2.2	ug/L
⌈	Ba	137	889.968	**1.000**	0.02	1.7	ug/L
|	Ba	138	5706.382	**1.000**	0.02	2.4	ug/L
| >	Tb	159	460123.520				ug/L
|	Tl	205	4487.775	**1.000**	0.03	2.8	ug/L
⌊	Pb	208	6068.804	**1.000**	0.01	1.2	ug/L
⌈	Hg	200	67.949	**0.200**	0.04	20.6	ug/L
|	Hg	201	50.000	**0.200**	0.09	42.9	ug/L
| >	Bi	209	223900.864				ug/L
⌊	U	238	6233.470	**1.000**	0.01	1.2	ug/L
	C	13	8904.363				ug/L
	W	184	8.000				ug/L
	Pd	106	7.634				ug/L
	Kr	83	16.333				ug/L
⌈	Na	23	379987.380	**100.000**	2.02	2.0	ug/L
|	Mg	24	224717.701	**100.000**	2.23	2.2	ug/L

K	39	732769.488	**100.000**	3.28	3.3	ug/L
Ca	44	19113.405	**100.000**	0.83	0.8	ug/L
Ti	47	186.669				ug/L
Sc-1	45	497891.283				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000359	0.000	1.000000	Linear Thru Zero
B	11.009	0.000767	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006922	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.006060	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.006985	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.004172	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012259	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008581	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003432	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004267	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001952	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.000949	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000669	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001419	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000621	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000144	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.016026	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005750	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008785	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001667	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003624	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006491	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004914	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001795	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011503	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009627	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013038	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001232	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000904	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027353	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3588.294465	0.000	1.000000	Linear Thru Zero
Mg	23.985	2238.943296	0.000	1.000000	Linear Thru Zero
K	38.964	4771.785343	0.000	1.000000	Linear Thru Zero
Ca	43.956	144.388615	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Wednesday, December 12, 2018 08:04:53
Sample File: C:\Elandata\Sample\PE_EL4_181212.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.403
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181212.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	20188.058	**100.000**	3.30	3.3	ug/L
|	B	11	376314.614	**999.963**	30.02	3.0	ug/L
|	Al	27	887678.441	**249.911**	4.13	1.7	ug/L
| >	Sc	45	536521.797				ug/L
|	V	51	419167.803	**100.020**	0.42	0.4	ug/L
|	Cr	52	354348.824	**99.992**	2.67	2.7	ug/L
|	Cr	53	104928.578	**99.424**	19.05	19.2	ug/L
|	Mn	55	1467636.765	**250.000**	8.51	3.4	ug/L
|	Co	59	432868.539	**99.999**	3.07	3.1	ug/L
⌊	Ni	60	217095.754	**249.996**	6.44	2.6	ug/L
⌈	Cu	63	449249.793	**249.999**	7.40	3.0	ug/L
|	Cu	65	213276.149	**249.999**	8.52	3.4	ug/L
|	Zn	66	118388.704	**250.009**	8.96	3.6	ug/L
|	Zn	68	82079.288	**250.007**	9.33	3.7	ug/L
| >	Ge	72	453933.534				ug/L
|	As	75	114996.387	**249.993**	2.91	1.2	ug/L
|	Se	77	13479.326	**249.898**	7.87	3.1	ug/L
|	Se	82	12900.163	**249.995**	8.46	3.4	ug/L
⌊	Sr	88	6252.818	**19.951**	0.96	4.8	ug/L
⌈	Mo	98	166694.870	**100.000**	3.36	3.4	ug/L
| >	Rh	103	284227.511				ug/L
⌊	Ag	107	243418.106	**100.000**	1.43	1.4	ug/L
⌈	Cd	111	58787.415	**100.000**	0.29	0.3	ug/L
|	Cd	114	125935.099	**100.000**	0.50	0.5	ug/L
| >	In	115	361118.935				ug/L
|	Sn	120	251724.566	**100.001**	0.80	0.8	ug/L
⌊	Sb	121	178307.864	**100.000**	0.47	0.5	ug/L
⌈	Ba	137	87779.683	**100.000**	0.45	0.4	ug/L
|	Ba	138	553638.417	**100.000**	1.99	2.0	ug/L
| >	Tb	159	491528.244				ug/L
|	Tl	205	441843.752	**99.999**	0.66	0.7	ug/L
⌊	Pb	208	1506765.750	**250.000**	2.21	0.9	ug/L
⌈	Hg	200	7237.364	**20.000**	0.56	2.8	ug/L
|	Hg	201	4134.274	**20.000**	0.70	3.5	ug/L
| >	Bi	209	230150.296				ug/L
⌊	U	238	622204.243	**100.000**	1.29	1.3	ug/L
	C	13	8764.227				ug/L
	W	184	28.663				ug/L
	Pd	106	-280.573				ug/L
	Kr	83	20.833				ug/L
⌈	Na	23	40074466.745	**10000.104**	115.75	1.2	ug/L
|	Mg	24	25298645.012	**10000.115**	180.16	1.8	ug/L

K	39	58344139.651	**10000.179**	197.40	2.0	ug/L
Ca	44	1451427.495	**10000.002**	153.87	1.5	ug/L
Ti	47	236.670				ug/L
Sc-1	45	536521.797				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000376	0.000	1.000000	Linear Thru Zero
B	11.009	0.000701	0.000	0.999998	Linear Thru Zero
Al	26.982	0.006557	0.000	0.999990	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007797	0.000	0.999978	Linear Thru Zero
Cr	51.941	0.006430	0.000	0.999997	Linear Thru Zero
Cr	52.941	0.000564	0.000	0.982051	Linear Thru Zero
Mn	54.938	0.010945	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008072	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001619	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.003959	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001879	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001042	0.000	0.999998	Linear Thru Zero
Zn	67.925	0.000720	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001009	0.000	0.999995	Linear Thru Zero
Se	76.920	0.000085	0.000	0.998713	Linear Thru Zero
Se	81.917	0.000113	0.000	0.999997	Linear Thru Zero
Sr	87.906	0.000632	0.000	0.971590	Linear Thru Zero
Mo	97.906	0.005867	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008566	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001628	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003487	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006957	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004933	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001784	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011255	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.008988	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.012261	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001570	0.000	0.999998	Linear Thru Zero
Hg	200.970	0.000896	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027033	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4005.289182	0.000	0.999999	Linear Thru Zero
Mg	23.985	2529.753083	0.000	0.999999	Linear Thru Zero
K	38.964	5808.751173	0.000	0.999998	Linear Thru Zero
Ca	43.956	144.675266	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Wednesday, December 12, 2018 08:54:21
Sample File: C:\Elandata\Sample\PE_EL4_181212.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.415
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181212.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	2.000				ug/L
|	B	11	1029.392				ug/L
|	Al	27	8419.239				ug/L
| >	Sc	45	511357.638				ug/L
|	V	51	100.895				ug/L
|	Cr	52	8194.526				ug/L
|	Cr	53	67960.137				ug/L
|	Mn	55	604.020				ug/L
|	Co	59	55.667				ug/L
⌊	Ni	60	30.667				ug/L
⌈	Cu	63	167.668				ug/L
|	Cu	65	82.667				ug/L
|	Zn	66	302.672				ug/L
|	Zn	68	400.676				ug/L
| >	Ge	72	436307.700				ug/L
|	As	75	480.649				ug/L
|	Se	77	3627.057				ug/L
|	Se	82	121.205				ug/L
⌊	Sr	88	476.012				ug/L
⌈	Mo	98	18.854				ug/L
| >	Rh	103	278690.760				ug/L
⌊	Ag	107	18.667				ug/L
⌈	Cd	111	10.135				ug/L
|	Cd	114	7.775				ug/L
| >	In	115	358248.112				ug/L
|	Sn	120	502.014				ug/L
⌊	Sb	121	110.667				ug/L
⌈	Ba	137	74.256				ug/L
|	Ba	138	475.935				ug/L
| >	Tb	159	461827.090				ug/L
|	Tl	205	52.334				ug/L
⌊	Pb	208	129.667				ug/L
⌈	Hg	200	29.962				ug/L
|	Hg	201	15.333				ug/L
| >	Bi	209	232317.327				ug/L
⌊	U	238	123.668				ug/L
	C	13	8677.498				ug/L
	W	184	6.000				ug/L
	Pd	106	3.885				ug/L
	Kr	83	14.833				ug/L
⌈	Na	23	22995.720				ug/L
|	Mg	24	1230.084				ug/L

K	39	256503.214	ug/L
Ca	44	4341.044	ug/L
Ti	47	190.002	ug/L
Sc-1	45	511357.638	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000376	0.000	1.000000	Linear Thru Zero
B	11.009	0.000701	0.000	0.999998	Linear Thru Zero
Al	26.982	0.006557	0.000	0.999990	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007797	0.000	0.999978	Linear Thru Zero
Cr	51.941	0.006430	0.000	0.999997	Linear Thru Zero
Cr	52.941	0.000564	0.000	0.982051	Linear Thru Zero
Mn	54.938	0.010945	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008072	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001619	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.003959	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001879	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001042	0.000	0.999998	Linear Thru Zero
Zn	67.925	0.000720	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001009	0.000	0.999995	Linear Thru Zero
Se	76.920	0.000085	0.000	0.998713	Linear Thru Zero
Se	81.917	0.000113	0.000	0.999997	Linear Thru Zero
Sr	87.906	0.000632	0.000	0.971590	Linear Thru Zero
Mo	97.906	0.005867	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008566	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001628	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003487	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006957	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004933	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001784	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011255	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.008988	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.012261	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001570	0.000	0.999998	Linear Thru Zero
Hg	200.970	0.000896	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027033	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4005.289182	0.000	0.999999	Linear Thru Zero
Mg	23.985	2529.753083	0.000	0.999999	Linear Thru Zero
K	38.964	5808.751173	0.000	0.999998	Linear Thru Zero
Ca	43.956	144.675266	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD
Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Wednesday, December 12, 2018 08:57:53
Sample File: C:\Elandata\Sample\PE_EL4_181212.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.415
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181212.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	209.336	**1.000**	0.03	2.5	ug/L
|	B	11	8347.832	**20.000**	0.31	1.6	ug/L
|	Al	27	79484.155	**20.000**	0.28	1.4	ug/L
| >	Sc	45	515284.871				ug/L
|	V	51	13156.456	**3.000**	1.59	53.1	ug/L
|	Cr	52	19094.536	**3.000**	0.16	5.3	ug/L
|	Cr	53	73894.451	**3.000**	2.70	90.1	ug/L
|	Mn	55	6630.423	**1.000**	0.08	8.1	ug/L
|	Co	59	4426.411	**1.000**	0.05	5.0	ug/L
⌊	Ni	60	1789.843	**1.000**	0.04	4.3	ug/L
⌈	Cu	63	3855.151	**2.000**	0.05	2.6	ug/L
|	Cu	65	1838.853	**2.000**	0.15	7.5	ug/L
|	Zn	66	2379.978	**5.000**	0.29	5.7	ug/L
|	Zn	68	1846.854	**5.000**	0.35	6.9	ug/L
| >	Ge	72	445740.092				ug/L
|	As	75	1758.932	**2.000**	0.65	32.7	ug/L
|	Se	77	4042.066	**2.000**	0.57	28.6	ug/L
|	Se	82	240.524	**2.000**	0.28	13.8	ug/L
⌊	Sr	88	1840.853	**0.200**	0.01	4.0	ug/L
⌈	Mo	98	1671.679	**1.000**	0.07	6.7	ug/L
| >	Rh	103	284205.315				ug/L
⌊	Ag	107	2478.338	**1.000**	0.02	1.6	ug/L
⌈	Cd	111	627.112	**1.000**	0.03	2.7	ug/L
|	Cd	114	1308.420	**1.000**	0.02	2.2	ug/L
| >	In	115	359504.025				ug/L
|	Sn	120	2687.706	**1.000**	0.03	2.9	ug/L
⌊	Sb	121	3614.052	**2.000**	0.05	2.4	ug/L
⌈	Ba	137	917.622	**1.000**	0.05	5.1	ug/L
|	Ba	138	5918.503	**1.000**	0.03	3.4	ug/L
| >	Tb	159	471695.715				ug/L
|	Tl	205	4584.156	**1.000**	0.01	0.9	ug/L
⌊	Pb	208	6355.202	**1.000**	0.01	1.1	ug/L
⌈	Hg	200	81.274	**0.200**	0.06	32.3	ug/L
|	Hg	201	52.667	**0.200**	0.11	56.7	ug/L
| >	Bi	209	230708.821				ug/L
⌊	U	238	6380.907	**1.000**	0.04	4.4	ug/L
	C	13	9157.951				ug/L
	W	184	9.333				ug/L
	Pd	106	4.915				ug/L
	Kr	83	16.833				ug/L
⌈	Na	23	399597.157	**100.000**	2.77	2.8	ug/L
|	Mg	24	230776.886	**100.000**	2.41	2.4	ug/L

K	39	765053.456	**100.000**	4.20	4.2	ug/L
Ca	44	20138.966	**100.000**	4.34	4.3	ug/L
Ti	47	196.669				ug/L
Sc-1	45	515284.871				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000403	0.000	1.000000	Linear Thru Zero
B	11.009	0.000710	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006891	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.008356	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007018	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.003562	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.011699	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008490	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003415	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004134	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001971	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.000930	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000646	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001420	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000378	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000131	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.015203	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005825	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008657	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001716	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003617	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006073	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004873	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001785	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011515	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009605	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013191	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001123	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000811	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027140	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3766.014373	0.000	1.000000	Linear Thru Zero
Mg	23.985	2295.468022	0.000	1.000000	Linear Thru Zero
K	38.964	5085.502417	0.000	1.000000	Linear Thru Zero
Ca	43.956	157.979222	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Wednesday, December 12, 2018 09:01:26
Sample File: C:\Elandata\Sample\PE_EL4_181212.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.415
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181212.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	19925.826	**99.999**	5.16	5.2	ug/L
|	B	11	363630.131	**999.982**	72.39	7.2	ug/L
|	Al	27	883647.408	**249.919**	9.81	3.9	ug/L
| >	Sc	45	533950.903				ug/L
|	V	51	420846.415	**99.995**	1.93	1.9	ug/L
|	Cr	52	358028.078	**99.994**	0.81	0.8	ug/L
|	Cr	53	105244.354	**99.593**	6.71	6.7	ug/L
|	Mn	55	1451407.712	**250.000**	10.62	4.2	ug/L
|	Co	59	423974.509	**99.999**	3.27	3.3	ug/L
⌊	Ni	60	212028.223	**249.995**	7.97	3.2	ug/L
⌈	Cu	63	443373.103	**249.999**	9.72	3.9	ug/L
|	Cu	65	209938.314	**249.999**	6.81	2.7	ug/L
|	Zn	66	116482.590	**250.009**	3.30	1.3	ug/L
|	Zn	68	81703.675	**250.010**	1.71	0.7	ug/L
| >	Ge	72	453203.970				ug/L
|	As	75	115670.875	**249.994**	2.54	1.0	ug/L
|	Se	77	13440.930	**249.945**	13.63	5.5	ug/L
|	Se	82	12707.891	**249.997**	9.56	3.8	ug/L
⌊	Sr	88	6190.441	**19.954**	0.42	2.1	ug/L
⌈	Mo	98	166908.433	**100.000**	1.57	1.6	ug/L
| >	Rh	103	280199.654				ug/L
⌊	Ag	107	246066.821	**100.000**	1.43	1.4	ug/L
⌈	Cd	111	58533.570	**100.000**	4.04	4.0	ug/L
|	Cd	114	126505.134	**100.000**	3.90	3.9	ug/L
| >	In	115	352498.852				ug/L
|	Sn	120	245874.265	**100.001**	3.97	4.0	ug/L
⌊	Sb	121	176991.825	**100.001**	5.26	5.3	ug/L
⌈	Ba	137	85959.174	**100.000**	5.00	5.0	ug/L
|	Ba	138	545117.528	**100.000**	4.30	4.3	ug/L
| >	Tb	159	487987.742				ug/L
|	Tl	205	439078.964	**99.999**	3.24	3.2	ug/L
⌊	Pb	208	1506510.921	**250.000**	10.05	4.0	ug/L
⌈	Hg	200	7355.454	**20.001**	0.55	2.7	ug/L
|	Hg	201	4195.635	**20.000**	0.61	3.0	ug/L
| >	Bi	209	225353.079				ug/L
⌊	U	238	623539.219	**100.000**	2.75	2.8	ug/L
	C	13	8810.938				ug/L
	W	184	29.333				ug/L
	Pd	106	-125.225				ug/L
	Kr	83	21.000				ug/L
⌈	Na	23	40166164.808	**10000.062**	221.67	2.2	ug/L
|	Mg	24	25200292.811	**10000.089**	258.04	2.6	ug/L

K	39	58664576.413	**10000.129**	145.72	1.5	ug/L
Ca	44	1451218.792	**9999.908**	204.24	2.0	ug/L
Ti	47	296.672				ug/L
Sc-1	45	533950.903				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000373	0.000	1.000000	Linear Thru Zero
B	11.009	0.000680	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006560	0.000	0.999992	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007878	0.000	0.999998	Linear Thru Zero
Cr	51.941	0.006545	0.000	0.999998	Linear Thru Zero
Cr	52.941	0.000645	0.000	0.990926	Linear Thru Zero
Mn	54.938	0.010876	0.000	1.000000	Linear Thru Zero
Co	58.933	0.007943	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001589	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.003914	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001853	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001025	0.000	0.999998	Linear Thru Zero
Zn	67.925	0.000717	0.000	0.999998	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001017	0.000	0.999995	Linear Thru Zero
Se	76.920	0.000085	0.000	0.999624	Linear Thru Zero
Se	81.917	0.000111	0.000	0.999999	Linear Thru Zero
Sr	87.906	0.000630	0.000	0.974280	Linear Thru Zero
Mo	97.906	0.005956	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008781	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001663	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003594	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006972	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.005028	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001762	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011170	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009002	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.012358	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001627	0.000	0.999995	Linear Thru Zero
Hg	200.970	0.000928	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027684	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4014.292081	0.000	1.000000	Linear Thru Zero
Mg	23.985	2519.883831	0.000	1.000000	Linear Thru Zero
K	38.964	5840.731797	0.000	0.999999	Linear Thru Zero
Ca	43.956	144.689104	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Blank

Sample Date/Time: Wednesday, December 12, 2018 11:47:42
Sample File: C:\Elandata\Sample\PE_EL4_181212.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.461
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 10
Report Filename PE_EL4_181212.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	2.333				ug/L
|	B	11	2656.388				ug/L
|	Al	27	8609.410				ug/L
| >	Sc	45	504281.033				ug/L
|	V	51	5801.431				ug/L
|	Cr	52	10492.218				ug/L
|	Cr	53	76813.935				ug/L
|	Mn	55	766.702				ug/L
|	Co	59	86.334				ug/L
⌊	Ni	60	38.667				ug/L
⌈	Cu	63	223.670				ug/L
|	Cu	65	110.334				ug/L
|	Zn	66	349.340				ug/L
|	Zn	68	410.009				ug/L
| >	Ge	72	444066.135				ug/L
|	As	75	1103.040				ug/L
|	Se	77	4719.892				ug/L
|	Se	82	111.168				ug/L
⌊	Sr	88	1530.219				ug/L
⌈	Mo	98	51.338				ug/L
| >	Rh	103	278951.857				ug/L
⌊	Ag	107	33.333				ug/L
⌈	Cd	111	15.322				ug/L
|	Cd	114	24.389				ug/L
| >	In	115	336510.566				ug/L
|	Sn	120	663.957				ug/L
⌊	Sb	121	102.667				ug/L
⌈	Ba	137	89.929				ug/L
|	Ba	138	624.620				ug/L
| >	Tb	159	444411.816				ug/L
|	Tl	205	76.001				ug/L
⌊	Pb	208	227.335				ug/L
⌈	Hg	200	28.620				ug/L
|	Hg	201	15.333				ug/L
| >	Bi	209	223781.066				ug/L
⌊	U	238	140.001				ug/L
	C	13	9705.180				ug/L
	W	184	7.333				ug/L
	Pd	106	3.169				ug/L
	Kr	83	19.167				ug/L
⌈	Na	23	61241.721				ug/L
|	Mg	24	10944.345				ug/L

K	39	279851.350	ug/L
Ca	44	6742.717	ug/L
Ti	47	210.002	ug/L
Sc-1	45	504281.033	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000373	0.000	1.000000	Linear Thru Zero
B	11.009	0.000680	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006560	0.000	0.999992	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007878	0.000	0.999998	Linear Thru Zero
Cr	51.941	0.006545	0.000	0.999998	Linear Thru Zero
Cr	52.941	0.000645	0.000	0.990926	Linear Thru Zero
Mn	54.938	0.010876	0.000	1.000000	Linear Thru Zero
Co	58.933	0.007943	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001589	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.003914	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001853	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001025	0.000	0.999998	Linear Thru Zero
Zn	67.925	0.000717	0.000	0.999998	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001017	0.000	0.999995	Linear Thru Zero
Se	76.920	0.000085	0.000	0.999624	Linear Thru Zero
Se	81.917	0.000111	0.000	0.999999	Linear Thru Zero
Sr	87.906	0.000630	0.000	0.974280	Linear Thru Zero
Mo	97.906	0.005956	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008781	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001663	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003594	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006972	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.005028	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001762	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011170	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009002	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.012358	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001627	0.000	0.999995	Linear Thru Zero
Hg	200.970	0.000928	0.000	0.999999	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027684	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	4014.292081	0.000	1.000000	Linear Thru Zero
Mg	23.985	2519.883831	0.000	1.000000	Linear Thru Zero
K	38.964	5840.731797	0.000	0.999999	Linear Thru Zero
Ca	43.956	144.689104	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 1

Sample Date/Time: Wednesday, December 12, 2018 11:51:14
Sample File: C:\Elandata\Sample\PE_EL4_181212.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.461
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 2
Report Filename PE_EL4_181212.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	200.336	**1.000**	0.08	8.1	ug/L
|	B	11	9531.667	**20.000**	0.36	1.8	ug/L
|	Al	27	79663.127	**20.000**	0.45	2.2	ug/L
| >	Sc	45	501242.717				ug/L
|	V	51	16070.426	**3.000**	0.32	10.8	ug/L
|	Cr	52	21707.721	**3.000**	0.33	11.1	ug/L
|	Cr	53	86269.503	**3.000**	1.81	60.3	ug/L
|	Mn	55	6939.314	**1.000**	0.05	5.4	ug/L
|	Co	59	4459.093	**1.000**	0.04	4.4	ug/L
⌊	Ni	60	1703.160	**1.000**	0.06	5.8	ug/L
⌈	Cu	63	3744.104	**2.000**	0.01	0.4	ug/L
|	Cu	65	1823.850	**2.000**	0.05	2.7	ug/L
|	Zn	66	2486.340	**5.000**	0.14	2.8	ug/L
|	Zn	68	1895.531	**5.000**	0.05	1.1	ug/L
| >	Ge	72	451529.564				ug/L
|	As	75	2152.303	**2.000**	0.43	21.5	ug/L
|	Se	77	5240.177	**2.000**	0.34	17.2	ug/L
|	Se	82	246.868	**2.000**	0.02	0.8	ug/L
⌊	Sr	88	2207.602	**0.200**	0.02	8.6	ug/L
⌈	Mo	98	1670.935	**1.000**	0.03	3.4	ug/L
| >	Rh	103	283949.982				ug/L
⌊	Ag	107	2545.690	**1.000**	0.03	2.7	ug/L
⌈	Cd	111	582.402	**1.000**	0.05	5.2	ug/L
|	Cd	114	1321.204	**1.000**	0.09	8.5	ug/L
| >	In	115	353896.561				ug/L
|	Sn	120	2800.364	**1.000**	0.09	9.0	ug/L
⌊	Sb	121	3664.739	**2.000**	0.11	5.4	ug/L
⌈	Ba	137	899.634	**1.000**	0.04	4.2	ug/L
|	Ba	138	5901.838	**1.000**	0.02	1.5	ug/L
| >	Tb	159	449014.249				ug/L
|	Tl	205	4554.141	**1.000**	0.06	6.4	ug/L
⌊	Pb	208	6424.888	**1.000**	0.03	3.1	ug/L
⌈	Hg	200	105.958	**0.200**	0.03	17.5	ug/L
|	Hg	201	54.000	**0.200**	0.06	31.4	ug/L
| >	Bi	209	228602.709				ug/L
⌊	U	238	6377.905	**1.000**	0.04	4.1	ug/L
	C	13	9691.842				ug/L
	W	184	6.666				ug/L
	Pd	106	0.772				ug/L
	Kr	83	15.667				ug/L
⌈	Na	23	424169.083	**100.000**	3.58	3.6	ug/L
|	Mg	24	240635.185	**100.000**	5.35	5.4	ug/L

	K	39	783799.580	**100.000**	2.96	3.0	ug/L
	Ca	44	21024.307	**100.000**	5.70	5.7	ug/L
	Ti	47	233.336				ug/L
	Sc-1	45	501242.717				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000394	0.000	1.000000	Linear Thru Zero
B	11.009	0.000688	0.000	1.000000	Linear Thru Zero
Al	26.982	0.007098	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.006830	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.007530	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.006741	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.012347	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008738	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.003327	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.003894	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001895	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.000944	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000655	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001143	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000488	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000148	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.007212	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.005702	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008841	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001599	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003659	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.005948	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.005029	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001801	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011743	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009987	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013807	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001675	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000837	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027277	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3629.273614	0.000	1.000000	Linear Thru Zero
Mg	23.985	2296.908403	0.000	1.000000	Linear Thru Zero
K	38.964	5039.482307	0.000	1.000000	Linear Thru Zero
Ca	43.956	142.815906	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL4)

Sample ID: Standard 2

Sample Date/Time: Wednesday, December 12, 2018 11:54:47
Sample File: C:\Elandata\Sample\PE_EL4_181212.sam
Blank File: C:\Elandata\Dataset\2018 DEC (10-16)\Blank.461
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\EL4\200.8-6020 EL4_NEW.mth
Autosampler Position: 3
Report Filename PE_EL4_181212.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	20350.754	**100.000**	5.46	5.5	ug/L
|	B	11	361248.486	**1000.007**	35.31	3.5	ug/L
|	Al	27	869854.635	**249.914**	7.87	3.2	ug/L
| >	Sc	45	512040.741				ug/L
|	V	51	398964.523	**100.010**	3.20	3.2	ug/L
|	Cr	52	348409.659	**99.987**	5.27	5.3	ug/L
|	Cr	53	107830.152	**99.069**	31.02	31.3	ug/L
|	Mn	55	1444427.019	**250.000**	15.15	6.1	ug/L
|	Co	59	423076.702	**99.999**	4.22	4.2	ug/L
⌊	Ni	60	208494.101	**249.996**	8.79	3.5	ug/L
⌈	Cu	63	437512.497	**250.000**	4.04	1.6	ug/L
|	Cu	65	205977.848	**250.000**	6.26	2.5	ug/L
|	Zn	66	115671.001	**250.009**	6.15	2.5	ug/L
|	Zn	68	80369.453	**250.009**	3.71	1.5	ug/L
| >	Ge	72	445123.229				ug/L
|	As	75	113705.789	**249.998**	8.54	3.4	ug/L
|	Se	77	13705.834	**249.919**	19.29	7.7	ug/L
|	Se	82	12386.801	**249.995**	5.12	2.0	ug/L
⌊	Sr	88	5975.964	**19.973**	0.44	2.2	ug/L
⌈	Mo	98	161561.905	**100.000**	1.75	1.7	ug/L
| >	Rh	103	276549.135				ug/L
⌊	Ag	107	240446.836	**100.000**	0.64	0.6	ug/L
⌈	Cd	111	57204.413	**100.000**	1.82	1.8	ug/L
|	Cd	114	121728.950	**100.000**	3.56	3.6	ug/L
| >	In	115	344378.453				ug/L
|	Sn	120	239162.985	**100.001**	3.34	3.3	ug/L
⌊	Sb	121	173256.908	**100.000**	4.33	4.3	ug/L
⌈	Ba	137	82223.897	**100.000**	2.86	2.9	ug/L
|	Ba	138	517480.780	**100.000**	1.35	1.3	ug/L
| >	Tb	159	449848.972				ug/L
|	Tl	205	431305.802	**100.000**	4.20	4.2	ug/L
⌊	Pb	208	1472581.094	**250.000**	11.25	4.5	ug/L
⌈	Hg	200	7254.077	**20.000**	0.18	0.9	ug/L
|	Hg	201	4123.602	**20.000**	0.42	2.1	ug/L
| >	Bi	209	223621.505				ug/L
⌊	U	238	610688.740	**100.000**	1.99	2.0	ug/L
	C	13	10279.154				ug/L
	W	184	23.330				ug/L
	Pd	106	-143.496				ug/L
	Kr	83	18.500				ug/L
⌈	Na	23	40023791.499	**10000.092**	152.19	1.5	ug/L
|	Mg	24	25206439.823	**10000.088**	91.00	0.9	ug/L

K	39	57719698.782	**10000.123**	339.75	3.4	ug/L
Ca	44	1408928.489	**9999.981**	316.58	3.2	ug/L
Ti	47	250.004				ug/L
Sc-1	45	512040.741				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000398	0.000	1.000000	Linear Thru Zero
B	11.009	0.000700	0.000	1.000000	Linear Thru Zero
Al	26.982	0.006736	0.000	0.999991	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007683	0.000	0.999994	Linear Thru Zero
Cr	51.941	0.006609	0.000	0.999991	Linear Thru Zero
Cr	52.941	0.000594	0.000	0.955095	Linear Thru Zero
Mn	54.938	0.011300	0.000	1.000000	Linear Thru Zero
Co	58.933	0.008273	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001630	0.000	0.999991	Linear Thru Zero
Cu	62.930	0.003930	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001850	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001036	0.000	0.999998	Linear Thru Zero
Zn	67.925	0.000719	0.000	0.999998	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001012	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000081	0.000	0.999185	Linear Thru Zero
Se	81.917	0.000110	0.000	0.999996	Linear Thru Zero
Sr	87.906	0.000500	0.000	0.991100	Linear Thru Zero
Mo	97.906	0.005841	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.008694	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001661	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003537	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.006930	0.000	0.999999	Linear Thru Zero
Sb	120.904	0.005033	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001827	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011493	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.009596	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.013107	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001616	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000919	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027307	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	3996.218283	0.000	1.000000	Linear Thru Zero
Mg	23.985	2519.527286	0.000	1.000000	Linear Thru Zero
K	38.964	5743.914300	0.000	0.999999	Linear Thru Zero
Ca	43.956	140.218837	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Raw Data - Instrument Tuning

Sample Information

Sample Date/Time: Wednesday, December 12, 2018 06:39:22
Method File: C:\Elandata\Method\EL4\BCL_EL4-Tuning.mth
Dataset File: C:\Elandata\Dataset\Default\Mass Calibration and Resolution - Retry 1.936
Tuning File: C:\Elandata\Tuning\Default.tun
Number of Sweeps: 125
Number of Readings: 1
Number of Replicates: 3
Measurement Unit: cps

Instrument Tuning Report

File Name: Default.tun
File Path: C:\Elandata\Tuning\Default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
C	12.000	12.025	2763	2081	0.699	
Mg	23.985	24.025	5672	2097	0.701	
Ar2	75.930	75.875	18297	2168	0.702	
In	114.904	114.925	27796	2228	0.712	
Ce	139.905	139.875	33857	2255	0.693	
Pb	207.977	207.975	50435	2355	0.702	
U	238.050	238.025	57744	2415	0.703	

Complete Mass Scanning Results

Mass	Meas. Intens. Mean	Meas. Intens. SD	Meas. Intens. RSD
11.000	202.137	10.654	5.271
22.000	6.667	2.203	33.045
75.000	5074.998	21.893	0.431
114.000	180.557	2.723	1.508
139.000	85.470	6.602	7.724
206.000	7937.953	66.177	0.834
235.000	213.872	9.298	4.348

Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Wednesday, December 12, 2018 07:01:32
Sample Description:
Method File: C:\Elandata\Method\EL4\BCL_EL4_Daily Performance.mth
Dataset File: C:\Elandata\Dataset\Default\Daily Performance Check.939
Tuning File: C:\Elandata\Tuning\Default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Dual
Acq. Dead Time(ns): 55
Current Dead Time (ns): 55

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	40561.5	40561.492	369.782	0.9
	In	114.9	114994.5	114994.470	578.393	0.5
	U	238.1	98836.8	98836.795	689.843	0.7
⌈>	Ba	137.9	84932.9	84932.929	465.748	0.5
⌊	Ba++	69.0	2099.4	0.025	0.000	0.9
⌈>	Ce	139.9	107343.3	107343.340	925.725	0.9
⌊	CeO	155.9	2783.6	0.026	0.000	1.4
	220	220.0	0.6	0.560	0.219	39.1

Current Optimization File Data

Current Value	Description
0.95	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
15.00	Plasma Gas Flow
7.25	Lens Voltage
1050.00	ICP RF Power
-1650.00	Analog Stage Voltage
950.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset Std [QRO]
-11.00	Cell Rod Offset Std [CRO]
71.00	Discriminator Threshold
-14.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.25	RPq
0.95	DRC Mode NEB
-6.00	DRC Mode QRO
-1.00	DRC Mode CRO
-15.00	DRC Mode CPV
0.00	Cell Gas A
200.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
250.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	12	45	5.3	619235.3
Mg	24	45	5.3	40754.5
In	115	45	7.3	109067.0
Ce	140	45	7.3	101958.6
Pb	208	45	8.3	53714.9

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:25:29PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1838491

Laboratory Documentation Requirements
For Data Validation of
Volatiles Analysis

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1838491
COC Number:
Default Cooler was received at 2.1 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-8260B	MS-V5

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B032880	EPA-8260B	1838651-01	<Not Client Sample>

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

Chain of Custody and Cooler Receipt Form for 1838491 Page 1 of 2

Chain of Custody Form

BC LABORATORIES, INC.
18-38491

Report To:
Client: HELCON
Attn: Robert Kahlhardt
Street Address: 2020 L St Ste 400
City, State, Zip: Sacramento, CA 95811
Phone: 916 414 5800 Fax:
Email: Robert.Kahlhardt@aecom.com
Work Order #: 350000066

Project #: 60537043.05
Project Name: SMUD 59th St
Sampler(s): Andrew Morgan

Page 1 of 1

Comments:

Please refer to the back of this page for complete instructions and method used.

Sample #	Description	Date Sampled	Time Sampled	Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Notes
1	GW-B06-01	12/10/18	11:18				X			3 vocs
2	GW-B06-02	12/10/18	11:22				X			3 vocs
3	TB-2								4th bleak	1 voa

Analysis Requested

Sample Matrix

Result Request **Surcharge
☒ STD (10 Days) ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

CHK BY
DISTRIBUTION
SUB-OUT

Billing
☒ Same as above
Client:
Address:
City: State Zip
Attn:
P.O. #:

EDF Required? Geotracker
☐ Yes ☐ No
Send Copy to State of CA? (EDT)
☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

	Relinquished By	Date	Time	Received By
1.	AS Morgan	12/10/18	1335	
2.		12/10/18	1345	
3.				

	Received By	Date	Time
1.		12/10/18	1335
2.		12.11.18	09:15
3.			

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1838491 Page 2 of 2

BC LABORATORIES INC. **COOLER RECEIPT FORM** Page 1 Of 1

Submission #: 18-38491

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☑ (Specify) G50	Ice Chest ☑ None ☐ Box ☐ Other ☐ (Specify)_____	YES ☐ NO ☐ W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ | Containers ☐ Intact? Yes ☐ No ☐ | None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☐ No ☐

COC Received ☑ YES ☐ NO

Emissivity: .95 Container: 1001 Thermometer ID: 234 Date/Time 12.1.18

Temperature: (A) 2.3 °C / (C) 2.1 °C Analyst Init ND 09:15

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PIA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL	KBC	KBC	A							
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
~~QT EPA 8270~~										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: _____ Date/Time: 12/1/18 1109

A = Actual / C = Corrected

Rev 21 05/23/2016

[S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20]

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2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1838491**
Class: **VOA**
Method: **EPA-8260B**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1838491
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
GW-B06-01	1838491-01
GW-B06-02	1838491-02
TB-2	1838491-03

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-08-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838491
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Water
Instrument: MS-V5

Analyte	MDL	PQL	Units
Chloroethane	0.14	0.50	ug/L
1,1-Dichloroethane	0.11	0.50	ug/L
1,2-Dichloroethane	0.17	0.50	ug/L
1,1-Dichloroethene	0.18	0.50	ug/L
cis-1,2-Dichloroethene	0.085	0.50	ug/L
trans-1,2-Dichloroethene	0.15	0.50	ug/L
1,1,1,2-Tetrachloroethane	0.18	0.50	ug/L
1,1,2,2-Tetrachloroethane	0.17	0.50	ug/L
Tetrachloroethene	0.13	0.50	ug/L
1,1,1-Trichloroethane	0.11	0.50	ug/L
1,1,2-Trichloroethane	0.16	0.50	ug/L
Trichloroethene	0.085	0.50	ug/L
Vinyl chloride	0.12	0.50	ug/L

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

GW-B06-01

Laboratory:	BC Laboratories			SDG:	1838491
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Water	Laboratory ID:	1838491-01	File ID:	14DEC11.D
Sampled:	12/10/18 11:18	Prepared:	12/14/18 07:00	Analyzed:	12/14/18 12:31
Solids:		Preparation:	EPA 5030 Water MS	Initial/Final:	25 ml / 25 ml
Batch:	B032880	Sequence:	1824804	Calibration:	1812004
Instrument:	MS-V5				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-00-3	Chloroethane	1	0.14	U
75-34-3	1,1-Dichloroethane	1	0.11	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.18	U
156-59-2	cis-1,2-Dichloroethene	1	0.085	U
156-60-5	trans-1,2-Dichloroethene	1	0.15	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.18	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.33	J
71-55-6	1,1,1-Trichloroethane	1	0.11	U
79-00-5	1,1,2-Trichloroethane	1	0.16	U
79-01-6	Trichloroethene	1	0.085	U
75-01-4	Vinyl chloride	1	0.12	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.800	118	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8900	98.9	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	8.9000	89.0	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	211939	6.75	219317	6.74	
Chlorobenzene-d5 (IS)	77192	9.72	75897	9.72	
1,4-Difluorobenzene (IS)	272243	7.52	285094	7.52	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

GW-B06-02

Laboratory:	BC Laboratories			SDG:	1838491
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Water	Laboratory ID:	1838491-02	File ID:	14DEC10.D
Sampled:	12/10/18 11:22	Prepared:	12/14/18 07:00	Analyzed:	12/14/18 12:08
Solids:		Preparation:	EPA 5030 Water MS	Initial/Final:	25 ml / 25 ml
Batch:	B032880	Sequence:	1824804	Calibration:	1812004
Instrument:	MS-V5				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-00-3	Chloroethane	1	0.14	U
75-34-3	1,1-Dichloroethane	1	0.11	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.18	U
156-59-2	cis-1,2-Dichloroethene	1	0.085	U
156-60-5	trans-1,2-Dichloroethene	1	0.15	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.18	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.73	
71-55-6	1,1,1-Trichloroethane	1	0.11	U
79-00-5	1,1,2-Trichloroethane	1	0.16	U
79-01-6	Trichloroethene	1	0.085	U
75-01-4	Vinyl chloride	1	0.12	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	12.380	124	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.7700	97.7	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.2600	92.6	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	206616	6.75	219317	6.74	
Chlorobenzene-d5 (IS)	74967	9.72	75897	9.72	
1,4-Difluorobenzene (IS)	280442	7.52	285094	7.52	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

TB-2

Laboratory:	BC Laboratories			SDG:	1838491
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Water	Laboratory ID:	1838491-03	File ID:	14DEC09.D
Sampled:	12/10/18 00:00	Prepared:	12/14/18 07:00	Analyzed:	12/14/18 11:45
Solids:		Preparation:	EPA 5030 Water MS	Initial/Final:	25 ml / 25 ml
Batch:	B032880	Sequence:	1824804	Calibration:	1812004
Instrument:	MS-V5				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-00-3	Chloroethane	1	0.14	U
75-34-3	1,1-Dichloroethane	1	0.11	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.18	U
156-59-2	cis-1,2-Dichloroethene	1	0.085	U
156-60-5	trans-1,2-Dichloroethene	1	0.15	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.18	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.13	U
71-55-6	1,1,1-Trichloroethane	1	0.11	U
79-00-5	1,1,2-Trichloroethane	1	0.16	U
79-01-6	Trichloroethene	1	0.085	U
75-01-4	Vinyl chloride	1	0.12	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.790	118	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.3700	93.7	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.3500	93.5	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	217237	6.75	219317	6.74	
Chlorobenzene-d5 (IS)	75229	9.72	75897	9.72	
1,4-Difluorobenzene (IS)	289131	7.52	285094	7.52	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838491
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B032880 Batch Matrix: Water
Preparation: EPA 5030 Water MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
GW-B06-01	1838491-01	14DEC11.D	12/14/18 07:00	Custom List
GW-B06-02	1838491-02	14DEC10.D	12/14/18 07:00	Custom List
TB-2	1838491-03	14DEC09.D	12/14/18 07:00	Custom List
Blank	B032880-BLK1	14DEC01.D	12/14/18 07:00	
LCS	B032880-BS1	14DEC04.D	12/14/18 07:00	
Matrix Spike	B032880-MS1	14DEC05.D	12/14/18 07:00	
Matrix Spike Dup	B032880-MSD1	14DEC06.D	12/14/18 07:00	

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Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1838491
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Water	Laboratory ID:	B032880-BLK1	File ID:	14DEC01.D
Prepared:	12/14/18 07:00	Preparation:	EPA 5030 Water MS	Initial/Final:	25 ml / 25 ml
Analyzed:	12/14/18 08:39	Instrument:	MS-V5		
Batch:	B032880	Sequence:	1824804	Calibration:	1812004

CAS NO.	COMPOUND	CONC. (ug/L)	Q
75-00-3	Chloroethane	0.14	U
75-34-3	1,1-Dichloroethane	0.11	U
107-06-2	1,2-Dichloroethane	0.17	U
75-35-4	1,1-Dichloroethene	0.18	U
156-59-2	cis-1,2-Dichloroethene	0.085	U
156-60-5	trans-1,2-Dichloroethene	0.15	U
630-20-6	1,1,1,2-Tetrachloroethane	0.18	U
79-34-5	1,1,2,2-Tetrachloroethane	0.17	U
127-18-4	Tetrachloroethene	0.13	U
71-55-6	1,1,1-Trichloroethane	0.11	U
79-00-5	1,1,2-Trichloroethane	0.16	U
79-01-6	Trichloroethene	0.085	U
75-01-4	Vinyl chloride	0.12	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.860	119	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.1800	91.8	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.120	101	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	202877	6.75	219317	6.74	
Chlorobenzene-d5 (IS)	65517	9.72	75897	9.72	
1,4-Difluorobenzene (IS)	282746	7.52	285094	7.52	

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Water
Batch: B032880
Preparation: EPA 5030 Water MS
Source Sample Number: 1838651-01

SDG: 1838491
Project: SMUD 59th St.
Laboratory ID: B032880-MS1
Initial/Final: 25 ml / 25 ml

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC. #	QC LIMITS REC.
Chloroethane	25.000	ND	21.840	87.4	70 - 130
1,1-Dichloroethane	25.000	0.59000	25.150	98.2	70 - 130
1,1-Dichloroethene	25.000	ND	26.660	107	70 - 130
Trichloroethene	25.000	ND	26.940	108	70 - 130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	25.000	21.060	84.2	3.64	20	70 - 130
1,1-Dichloroethane	25.000	23.910	93.3	5.06	20	70 - 130
1,1-Dichloroethene	25.000	25.230	101	5.51	20	70 - 130
Trichloroethene	25.000	26.380	106	2.10	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838491
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Water
Batch: B032880
Laboratory ID: B032880-BS1
Preparation: EPA 5030 Water MS
Initial/Final: 25 ml / 25 ml

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC. #	QC LIMITS REC.
Chloroethane	25.000	20.770	83.1	70 - 130
1,1-Dichloroethane	25.000	23.060	92.2	70 - 130
1,1-Dichloroethene	25.000	25.850	103	70 - 130
Trichloroethene	25.000	24.150	96.6	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838491
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824339	Instrument:	MS-V5
Matrix:	Water	Calibration:	1812004

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1824339-TUN1	26NOV07.D	11/26/18 10:21
Cal Standard	1824339-CAL1	26NOV08.D	11/26/18 10:54
Cal Standard	1824339-CAL2	26NOV10.D	11/26/18 11:40
Cal Standard	1824339-CAL3	26NOV11.D	11/26/18 12:03
Cal Standard	1824339-CAL5	26NOV12.D	11/26/18 12:26
Cal Standard	1824339-CAL6	26NOV13.D	11/26/18 12:49
Cal Standard	1824339-CAL4	26NOV14.D	11/26/18 13:13

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Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838491
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1824804	Instrument:	MS-V5
Matrix:	Water	Calibration:	1812004

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1824804-ICV1	26NOV17.D	11/26/18 14:22
Initial Cal Blank	1824804-ICB1	26NOV19.D	11/26/18 15:10
MS Tune	1824804-TUN1	13DEC46.D	12/14/18 03:38
Calibration Check	1824804-CCV1	13DEC47.D	12/14/18 04:01
Calibration Check	1824804-CCV2	13DEC48.D	12/14/18 04:24
Calibration Blank	1824804-CCB1	13DEC49.D	12/14/18 04:47
Blank	B032880-BLK1	14DEC01.D	12/14/18 08:39
LCS	B032880-BS1	14DEC04.D	12/14/18 09:49
Matrix Spike	B032880-MS1	14DEC05.D	12/14/18 10:12
Matrix Spike Dup	B032880-MSD1	14DEC06.D	12/14/18 10:35
TB-2	1838491-03	14DEC09.D	12/14/18 11:45
GW-B06-02	1838491-02	14DEC10.D	12/14/18 12:08
GW-B06-01	1838491-01	14DEC11.D	12/14/18 12:31
MS Tune	1824804-TUN2	14DEC19.D	12/14/18 15:36
Calibration Check	1824804-CCV3	14DEC20.D	12/14/18 15:59
Calibration Blank	1824804-CCB2	14DEC22.D	12/14/18 16:46

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838491
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	26NOV07.D	Injection Date:	11/26/18
Instrument ID:	MS-V5	Injection Time:	10:21
Sequence:	1824339	Lab Sample ID:	1824339-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	24	PASS
Mass 75	30 - 60% of Mass 95	38	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	5.25	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	65.1	PASS
Mass 175	5 - 9% of Mass 174	8.9	PASS
Mass 176	95 - 101% of Mass 174	98.7	PASS
Mass 177	5 - 9% of Mass 176	6.92	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838491
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	13DEC46.D	Injection Date:	12/14/18
Instrument ID:	MS-V5	Injection Time:	03:38
Sequence:	1824804	Lab Sample ID:	1824804-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	34.5	PASS
Mass 75	30 - 60% of Mass 95	37.2	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	8.06	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	96.7	PASS
Mass 175	5 - 9% of Mass 174	8.09	PASS
Mass 176	95 - 101% of Mass 174	99.8	PASS
Mass 177	5 - 9% of Mass 176	6.3	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838491
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	14DEC19.D	Injection Date:	12/14/18
Instrument ID:	MS-V5	Injection Time:	15:36
Sequence:	1824804	Lab Sample ID:	1824804-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	21	PASS
Mass 75	30 - 60% of Mass 95	37	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	5.13	PASS
Mass 173	Less than 2% of Mass 174	1.06	PASS
Mass 174	50 - 100% of Mass 95	96	PASS
Mass 175	5 - 9% of Mass 174	5.46	PASS
Mass 176	95 - 101% of Mass 174	99.4	PASS
Mass 177	5 - 9% of Mass 176	6.69	PASS

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838491
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V5	Calibration:	1812004
Lab File ID:	26NOV17.D	Calibration Date:	11/26/18 11:40
Sequence:	1824804	Injection Date:	11/26/18
Lab Sample ID:	1824804-ICV1	Injection Time:	14:22

	(1) CAL	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	25.000	24.600	0.4586771	0.4512494		-1.6	20
1,1-Dichloroethane	A	25.000	24.720	1.029015	1.017664	0.1	-1.1	20
1,2-Dichloroethane	A	25.000	26.530	0.3450605	0.3662245		6.1	20
1,1-Dichloroethene	A	25.000	25.180	0.8245893	0.8306061		0.7	20
cis-1,2-Dichloroethene	A	25.000	23.580	0.5078675	0.4789537		-5.7	20
trans-1,2-Dichloroethene	A	25.000	25.720	0.4852296	0.4992011		2.9	20
1,1,1,2-Tetrachloroethane	A	25.000	24.090	0.8523318	0.8214641		-3.6	20
1,1,2,2-Tetrachloroethane	A	25.000	25.760	0.5318053	0.5479752	0.3	3.0	20
Tetrachloroethene	A	25.000	24.780	0.3493594	0.3462688		-0.9	20
1,1,1-Trichloroethane	A	25.000	25.040	0.5556314	0.5565522		0.2	20
1,1,2-Trichloroethane	A	25.000	23.270	0.1547529	0.144054		-6.9	20
Trichloroethene	A	25.000	24.770	0.3452507	0.3420267		-0.9	20
Vinyl chloride	A	25.000	26.090	0.7979634	0.8329032		4.4	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits for beginning CCVs. For ending CCVs, limit is 50.

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Project: SMUD 59th St.
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Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838491
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V5	Calibration:	1812004
Lab File ID:	13DEC47.D	Calibration Date:	11/26/18 11:40
Sequence:	1824804	Injection Date:	12/14/18
Lab Sample ID:	1824804-CCV1	Injection Time:	04:01

	(1) CAL	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	25.000	20.360	0.4586771	0.3735598		-18.6	20
1,1-Dichloroethane	A	25.000	22.000	1.029015	0.9055336	0.1	-12.0	20
1,2-Dichloroethane	A	25.000	29.400	0.3450605	0.4057603		17.6	20
1,1-Dichloroethene	A	25.000	23.220	0.8245893	0.7659036		-7.1	20
cis-1,2-Dichloroethene	A	25.000	20.540	0.5078675	0.4172177		-17.8	20
trans-1,2-Dichloroethene	A	25.000	21.330	0.4852296	0.4139697		-14.7	20
1,1,1,2-Tetrachloroethane	A	25.000	27.140	0.8523318	0.9253678		8.6	20
1,1,2,2-Tetrachloroethane	A	25.000	21.000	0.5318053	0.4466797	0.3	-16.0	20
Tetrachloroethene	A	25.000	25.650	0.3493594	0.3584718		2.6	20
1,1,1-Trichloroethane	A	25.000	26.480	0.5556314	0.5884542		5.9	20
1,1,2-Trichloroethane	A	25.000	21.840	0.1547529	0.1351807		-12.6	20
Trichloroethene	A	25.000	26.770	0.3452507	0.3697325		7.1	20
Vinyl chloride	A	25.000	20.880	0.7979634	0.6663873		-16.5	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1838491
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V5	Calibration:	1812004
Lab File ID:	14DEC20.D	Calibration Date:	11/26/18 11:40
Sequence:	1824804	Injection Date:	12/14/18
Lab Sample ID:	1824804-CCV3	Injection Time:	15:59

	(1) CAL	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	25.000	20.220	0.4586771	0.3710106		-19.1	50
1,1-Dichloroethane	A	25.000	22.970	1.029015	0.9456186	0.1	-8.1	50
1,2-Dichloroethane	A	25.000	32.230	0.3450605	0.4448889		28.9	50
1,1-Dichloroethene	A	25.000	24.380	0.8245893	0.8040146		-2.5	50
cis-1,2-Dichloroethene	A	25.000	21.370	0.5078675	0.4341645		-14.5	50
trans-1,2-Dichloroethene	A	25.000	22.090	0.4852296	0.428754		-11.6	50
1,1,1,2-Tetrachloroethane	A	25.000	28.320	0.8523318	0.9654432		13.3	50
1,1,2,2-Tetrachloroethane	A	25.000	25.600	0.5318053	0.5444943	0.3	2.4	50
Tetrachloroethene	A	25.000	25.530	0.3493594	0.3568318		2.1	50
1,1,1-Trichloroethane	A	25.000	27.660	0.5556314	0.6146878		10.6	50
1,1,2-Trichloroethane	A	25.000	23.040	0.1547529	0.142651		-7.8	50
Trichloroethene	A	25.000	25.570	0.3452507	0.3531098		2.3	50
Vinyl chloride	A	25.000	21.100	0.7979634	0.6736379		-15.6	50

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

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Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824339
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration: 1812004

Surrogate Compound	Spike Level ug/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Cal Standard (1824339-CAL1)			Lab File ID: 26NOV08.D		Analyzed: 11/26/18 10:54			
1,2-Dichloroethane-d4 (Surrogate)	10.000	74.2		7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	87.7		8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	91.3		10.44	10.44333	-0.0033	+/-1.0	
Cal Standard (1824339-CAL2)			Lab File ID: 26NOV10.D		Analyzed: 11/26/18 11:40			
1,2-Dichloroethane-d4 (Surrogate)	10.000	85.3		7.08	7.075	0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	91.7		8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	92.2		10.44	10.44333	-0.0033	+/-1.0	
Cal Standard (1824339-CAL3)			Lab File ID: 26NOV11.D		Analyzed: 11/26/18 12:03			
1,2-Dichloroethane-d4 (Surrogate)	10.000	81.5		7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	90.7		8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	97.9		10.44	10.44333	-0.0033	+/-1.0	
Cal Standard (1824339-CAL5)			Lab File ID: 26NOV12.D		Analyzed: 11/26/18 12:26			
1,2-Dichloroethane-d4 (Surrogate)	10.000	82.2		7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	94.2		8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	93.3		10.45	10.44333	0.0067	+/-1.0	
Cal Standard (1824339-CAL6)			Lab File ID: 26NOV13.D		Analyzed: 11/26/18 12:49			
1,2-Dichloroethane-d4 (Surrogate)	10.000	78.0		7.08	7.075	0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	90.7		8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	92.6		10.45	10.44333	0.0067	+/-1.0	
Cal Standard (1824339-CAL4)			Lab File ID: 26NOV14.D		Analyzed: 11/26/18 13:13			
1,2-Dichloroethane-d4 (Surrogate)	10.000	79.9		7.08	7.075	0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	94.5		8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	98.9		10.44	10.44333	-0.0033	+/-1.0	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824804
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration: 1812004

Surrogate Compound	Spike Level ug/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824804-ICV1)			Lab File ID: 26NOV17.D		Analyzed: 11/26/18 14:22			
1,2-Dichloroethane-d4 (Surrogate)	10.000	103	75 - 125	7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	99.9	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	96.2	80 - 120	10.45	10.44333	0.0067	+/-1.0	
Initial Cal Blank (1824804-ICB1)			Lab File ID: 26NOV19.D		Analyzed: 11/26/18 15:10			
1,2-Dichloroethane-d4 (Surrogate)	10.000	101	75 - 125	7.08	7.075	0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	101	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	97.3	80 - 120	10.44	10.44333	-0.0033	+/-1.0	
Calibration Check (1824804-CCV1)			Lab File ID: 13DEC47.D		Analyzed: 12/14/18 04:01			
1,2-Dichloroethane-d4 (Surrogate)	10.000	115	80 - 120	7.08	7.075	0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	98.0	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	99.1	80 - 120	10.44	10.44333	-0.0033	+/-1.0	
Calibration Blank (1824804-CCB1)			Lab File ID: 13DEC49.D		Analyzed: 12/14/18 04:47			
1,2-Dichloroethane-d4 (Surrogate)	10.000	111	75 - 125	7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	95.3	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	90.1	80 - 120	10.44	10.44333	-0.0033	+/-1.0	
Blank (B032880-BLK1)			Lab File ID: 14DEC01.D		Analyzed: 12/14/18 08:39			
1,2-Dichloroethane-d4 (Surrogate)	10.000	119	75 - 125	7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	91.8	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	101	80 - 120	10.44	10.44333	-0.0033	+/-1.0	
LCS (B032880-BS1)			Lab File ID: 14DEC04.D		Analyzed: 12/14/18 09:49			
1,2-Dichloroethane-d4 (Surrogate)	10.000	116	75 - 125	7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	96.1	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	95.2	80 - 120	10.44	10.44333	-0.0033	+/-1.0	
Matrix Spike (B032880-MS1)			Lab File ID: 14DEC05.D		Analyzed: 12/14/18 10:12			
1,2-Dichloroethane-d4 (Surrogate)	10.000	114	75 - 125	7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	101	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	92.0	80 - 120	10.44	10.44333	-0.0033	+/-1.0	

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Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824804
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration: 1812004

Surrogate Compound	Spike Level ug/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B032880-MSD1)			Lab File ID: 14DEC06.D		Analyzed: 12/14/18 10:35			
1,2-Dichloroethane-d4 (Surrogate)	10.000	108	75 - 125	7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	99.9	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	91.0	80 - 120	10.44	10.44333	-0.0033	+/-1.0	
TB-2 (1838491-03)			Lab File ID: 14DEC09.D		Analyzed: 12/14/18 11:45			
1,2-Dichloroethane-d4 (Surrogate)	10.000	118	75 - 125	7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	93.7	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	93.5	80 - 120	10.44	10.44333	-0.0033	+/-1.0	
GW-B06-02 (1838491-02)			Lab File ID: 14DEC10.D		Analyzed: 12/14/18 12:08			
1,2-Dichloroethane-d4 (Surrogate)	10.000	124	75 - 125	7.08	7.075	0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	97.7	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	92.6	80 - 120	10.44	10.44333	-0.0033	+/-1.0	
GW-B06-01 (1838491-01)			Lab File ID: 14DEC11.D		Analyzed: 12/14/18 12:31			
1,2-Dichloroethane-d4 (Surrogate)	10.000	118	75 - 125	7.07	7.075	-0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	98.9	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	89.0	80 - 120	10.44	10.44333	-0.0033	+/-1.0	
Calibration Check (1824804-CCV3)			Lab File ID: 14DEC20.D		Analyzed: 12/14/18 15:59			
1,2-Dichloroethane-d4 (Surrogate)	10.000	120	80 - 120	7.08	7.075	0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	93.9	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	102	80 - 120	10.44	10.44333	-0.0033	+/-1.0	
Calibration Blank (1824804-CCB2)			Lab File ID: 14DEC22.D		Analyzed: 12/14/18 16:46			
1,2-Dichloroethane-d4 (Surrogate)	10.000	115	75 - 125	7.08	7.075	0.0050	+/-1.0	
Toluene-d8 (Surrogate)	10.000	92.1	80 - 120	8.72	8.72	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	10.000	105	80 - 120	10.44	10.44333	-0.0033	+/-1.0	

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Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824339
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration: 1812004

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (1824339-CAL1)			Lab File ID: 26NOV08.D			Analyzed: 11/26/18 10:54			
Pentafluorobenzene (IS)	181502	6.75	184645	6.75	98	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	67948	9.73	68363	9.73	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	266392	7.52	264043	7.52	101	50 - 200	0.0000	+/-0.50	
Cal Standard (1824339-CAL2)			Lab File ID: 26NOV10.D			Analyzed: 11/26/18 11:40			
Pentafluorobenzene (IS)	185241	6.75	184645	6.75	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	67885	9.72	68363	9.73	99	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	262840	7.52	264043	7.52	100	50 - 200	0.0000	+/-0.50	
Cal Standard (1824339-CAL3)			Lab File ID: 26NOV11.D			Analyzed: 11/26/18 12:03			
Pentafluorobenzene (IS)	174099	6.75	184645	6.75	94	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	67664	9.72	68363	9.73	99	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	253756	7.52	264043	7.52	96	50 - 200	0.0000	+/-0.50	
Cal Standard (1824339-CAL5)			Lab File ID: 26NOV12.D			Analyzed: 11/26/18 12:26			
Pentafluorobenzene (IS)	179236	6.75	184645	6.75	97	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71343	9.72	68363	9.73	104	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	259003	7.52	264043	7.52	98	50 - 200	0.0000	+/-0.50	
Cal Standard (1824339-CAL6)			Lab File ID: 26NOV13.D			Analyzed: 11/26/18 12:49			
Pentafluorobenzene (IS)	183320	6.75	184645	6.75	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71386	9.72	68363	9.73	104	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	270585	7.52	264043	7.52	102	50 - 200	0.0000	+/-0.50	
Cal Standard (1824339-CAL4)			Lab File ID: 26NOV14.D			Analyzed: 11/26/18 13:13			
Pentafluorobenzene (IS)	184645	6.75	184645	6.75	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	68363	9.73	68363	9.73	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	264043	7.52	264043	7.52	100	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
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INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824804
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration: 1812004

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1824804-ICV1)			Lab File ID: 26NOV17.D			Analyzed: 11/26/18 14:22			
Pentafluorobenzene (IS)	183885	6.75	184645	6.75	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	71785	9.72	68363	9.73	105	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	266564	7.52	264043	7.52	101	50 - 200	0.0000	+/-0.50	
Initial Cal Blank (1824804-ICB1)			Lab File ID: 26NOV19.D			Analyzed: 11/26/18 15:10			
Pentafluorobenzene (IS)	184495	6.75	183885	6.75	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69558	9.73	71785	9.72	97	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	264951	7.52	266564	7.52	99	50 - 200	0.0000	+/-0.50	
Calibration Check (1824804-CCV1)			Lab File ID: 13DEC47.D			Analyzed: 12/14/18 04:01			
Pentafluorobenzene (IS)	214779	6.75	184645	6.75	116	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	72931	9.72	68363	9.73	107	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	281120	7.52	264043	7.52	106	50 - 200	0.0000	+/-0.50	
Calibration Check (1824804-CCV2)			Lab File ID: 13DEC48.D			Analyzed: 12/14/18 04:24			
Pentafluorobenzene (IS)	219317	6.74	184645	6.75	119	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	75897	9.72	68363	9.73	111	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	285094	7.52	264043	7.52	108	50 - 200	0.0000	+/-0.50	
Calibration Blank (1824804-CCB1)			Lab File ID: 13DEC49.D			Analyzed: 12/14/18 04:47			
Pentafluorobenzene (IS)	218460	6.74	219317	6.74	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	76712	9.72	75897	9.72	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	291622	7.52	285094	7.52	102	50 - 200	0.0000	+/-0.50	
Blank (B032880-BLK1)			Lab File ID: 14DEC01.D			Analyzed: 12/14/18 08:39			
Pentafluorobenzene (IS)	202877	6.75	219317	6.74	93	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	65517	9.72	75897	9.72	86	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	282746	7.52	285094	7.52	99	50 - 200	0.0000	+/-0.50	
LCS (B032880-BS1)			Lab File ID: 14DEC04.D			Analyzed: 12/14/18 09:49			
Pentafluorobenzene (IS)	203086	6.75	219317	6.74	93	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	73431	9.72	75897	9.72	97	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	276650	7.52	285094	7.52	97	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824804
Matrix: Water

SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration: 1812004

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B032880-MS1)			Lab File ID: 14DEC05.D			Analyzed: 12/14/18 10:12			
Pentafluorobenzene (IS)	207812	6.75	219317	6.74	95	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	75381	9.72	75897	9.72	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280060	7.52	285094	7.52	98	50 - 200	0.0000	+/-0.50	
Matrix Spike Dup (B032880-MSD1)			Lab File ID: 14DEC06.D			Analyzed: 12/14/18 10:35			
Pentafluorobenzene (IS)	211291	6.75	219317	6.74	96	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	75333	9.72	75897	9.72	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	278212	7.52	285094	7.52	98	50 - 200	0.0000	+/-0.50	
TB-2 (1838491-03)			Lab File ID: 14DEC09.D			Analyzed: 12/14/18 11:45			
Pentafluorobenzene (IS)	217237	6.75	219317	6.74	99	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	75229	9.72	75897	9.72	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	289131	7.52	285094	7.52	101	50 - 200	0.0000	+/-0.50	
GW-B06-02 (1838491-02)			Lab File ID: 14DEC10.D			Analyzed: 12/14/18 12:08			
Pentafluorobenzene (IS)	206616	6.75	219317	6.74	94	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	74967	9.72	75897	9.72	99	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	280442	7.52	285094	7.52	98	50 - 200	0.0000	+/-0.50	
GW-B06-01 (1838491-01)			Lab File ID: 14DEC11.D			Analyzed: 12/14/18 12:31			
Pentafluorobenzene (IS)	211939	6.75	219317	6.74	97	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	77192	9.72	75897	9.72	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	272243	7.52	285094	7.52	95	50 - 200	0.0000	+/-0.50	
Calibration Check (1824804-CCV3)			Lab File ID: 14DEC20.D			Analyzed: 12/14/18 15:59			
Pentafluorobenzene (IS)	198873	6.75	184645	6.75	108	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	65932	9.72	68363	9.73	96	50 - 200	-0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	270069	7.52	264043	7.52	102	50 - 200	0.0000	+/-0.50	
Calibration Blank (1824804-CCB2)			Lab File ID: 14DEC22.D			Analyzed: 12/14/18 16:46			
Pentafluorobenzene (IS)	213077	6.75	215604	6.75	99	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69993	9.72	75281	9.72	93	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	291260	7.52	290865	7.52	100	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION STANDARDS

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1824339
Calibration: 1812004

SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
8I12006	8260 V5 BFB 50NG	1824339-TUN1	26NOV07.D	11/26/18 10:21
8L05014	624 V7 1824080 IC1	1824339-CAL1	26NOV08.D	11/26/18 10:54
8L05015	624 V7 1824080 IC2	1824339-CAL2	26NOV10.D	11/26/18 11:40
8L05016	624 V7 1824080 IC3	1824339-CAL3	26NOV11.D	11/26/18 12:03
8L05018	624 V7 1824080 IC5	1824339-CAL5	26NOV12.D	11/26/18 12:26
8L05019	624 V7 1824080 IC6	1824339-CAL6	26NOV13.D	11/26/18 12:49
8L05017	624 V7 1824080 IC4	1824339-CAL4	26NOV14.D	11/26/18 13:13
8L05028	8260 V5 1824122 XIC1	1824339-CAL7	05DEC04.D	12/05/18 05:54
8L05029	8260 V5 1824122 XIC2	1824339-CAL8	05DEC05.D	12/05/18 06:17
8L05030	8260 V5 1824122 XIC3	1824339-CAL9	05DEC06.D	12/05/18 06:40
8L05031	8260 V5 1824122 XIC4	1824339-CALA	05DEC07.D	12/05/18 07:03
8L05032	8260 V5 1824122 XIC5	1824339-CALB	05DEC08.D	12/05/18 07:26
8L05033	8260 V5 1824122 XIC6	1824339-CALC	05DEC09.D	12/05/18 07:49

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812004
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration Date: 11/26/18 11:40

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Chloroethane	0.5	0.4455047	1	0.4856376	25	0.4470676	10	0.4716167	50	0.4559039	100	0.4463321
1,1-Dichloroethane	0.5	1.178499	1	0.9569156	25	1.021614	10	1.058823	50	1.003991	100	0.9542467
1,2-Dichloroethane	0.5	0.2515675	1	0.3511642	25	0.3479672	10	0.4064182	50	0.3660593	100	0.3471863
1,1-Dichloroethene	0.5	0.8118919	1	0.8259511	25	0.8275404	10	0.8689883	50	0.8363688	100	0.7767952
cis-1,2-Dichloroethene	0.5	0.5515091	1	0.5064753	25	0.4974909	10	0.5231851	50	0.4931554	100	0.4753895
trans-1,2-Dichloroethene	0.5	0.4713998	1	0.4616149	25	0.5044187	10	0.5136445	50	0.4989656	100	0.4613343
1,1,1,2-Tetrachloroethane	0.5	0.8603638	1	0.9028504	25	0.8819332	10	0.874601	50	0.8185554	100	0.7756871
1,1,2,2-Tetrachloroethane	0.5	0.4788956	1	0.4884732	25	0.5657154	10	0.5710274	50	0.5348163	100	0.5519037
Tetrachloroethene	0.5	0.3533139	1	0.3308857	25	0.3617108	10	0.3797073	50	0.3472369	100	0.3233017
1,1,1-Trichloroethane	0.5	0.565283	1	0.5104162	25	0.5564819	10	0.5857242	50	0.5637919	100	0.5520914
1,1,2-Trichloroethane	0.5	0.1545091	1	0.162228	25	0.1521358	10	0.1659705	50	0.1521272	100	0.141547
Trichloroethene	0.5	0.3463317	1	0.3146781	25	0.364933	10	0.3630298	50	0.3575758	100	0.3249556
Vinyl chloride	0.5	0.6999372	1	0.7587413	25	0.8450789	10	0.8808322	50	0.82618	100	0.7770107
t-Amyl Alcohol												
Benzyl chloride												
Chlorotrifluoroethene												
Cyclohexane												
Cyclohexanone												
1,2-Dichlorotrifluoroethane												
2,2-Dichloro-1,1,1-trifluoroethane												
Diethyl ether												
1,4-Dioxane												
Ethyl Amyl Ketone												
Hexane												
Isopropyl alcohol												

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Project: SMUD 59th St.
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Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812004
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration Date: 11/26/18 11:40

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Methyl acetate												
Methylcyclohexane												
5-Methyl-3-heptanone												
Pentachloroethane												
Tetrahydrofuran												
1,2-Dichloroethane-d4 (Surrogate)	10	0.2306531	10	0.2652275	10	0.2483252	10	0.2533444	10	0.2555402	10	0.2425431
Toluene-d8 (Surrogate)	10	1.079023	10	1.128382	10	1.163038	10	1.115997	10	1.159566	10	1.116004
4-Bromofluorobenzene (Surrogate)	10	1.288397	10	1.301024	10	1.395243	10	1.381296	10	1.316723	10	1.306545

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812004
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration Date: 11/26/18 11:40

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Chloroethane												
1,1-Dichloroethane												
1,2-Dichloroethane												
1,1-Dichloroethene												
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
1,1,1,2-Tetrachloroethane												
1,1,2,2-Tetrachloroethane												
Tetrachloroethene												
1,1,1-Trichloroethane												
1,1,2-Trichloroethane												
Trichloroethene												
Vinyl chloride												
t-Amyl Alcohol	50	8.382084E-03	800	8.045594E-03	1250	8.714482E-03	2500	8.926271E-03	5000	8.70598E-03	10000	9.190041E-03
Benzyl chloride	1.6	0.463969	6.4	0.6465436	16	0.8129513	32	0.9639975	48	0.8990381	80	0.9715667
Chlorotrifluoroethene	0.5		8		12.5		25		50		100	
Cyclohexane	0.5	1.426748	8	1.187646	12.5	1.297671	25	1.352165	50	1.25019	100	1.143702
Cyclohexanone	20	4.794714E-02	80	5.502431E-02	200	6.142441E-02	400	6.328254E-02	640	0.0564325	1000	5.807818E-02
1,2-Dichlorotrifluoroethane	0.5	0.518205	8	0.5518216	12.5	0.5659635	25	0.5839879	50	0.5425991	100	0.5180163
2,2-Dichloro-1,1,1-trifluoroethane	0.5	0.6102723	8	0.6314724	12.5	0.6742814	25	0.6884424	50	0.6334469	100	0.5902513
Diethyl ether	0.5	0.3086318	8	0.2769352	12.5	0.2788022	25	0.2755288	50	0.2697319	100	0.267512
1,4-Dioxane	100	8.508188E-04	400	8.738278E-04	1000	9.278635E-04	2000	7.642956E-04	3200	7.898755E-04	5000	7.847964E-04
Ethyl Amyl Ketone	0.5	~~0.3220032~~	8	0.4549954	12.5	0.4619613	25	0.53035	50	0.4778349	100	0.524936
Hexane	0.5	0.6135574	8	0.6028717	12.5	0.702058	25	0.7265878	50	0.6903915	100	0.6530368
Isopropyl alcohol	40	1.098827E-02	160	9.864223E-03	400	1.110107E-02	800	1.104591E-02	1280	1.003408E-02	2000	0.0107204

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812004
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration Date: 11/26/18 11:40

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Methyl acetate	5	0.1659738	80	0.1525172	125	0.1582767	250	0.1526937	500	0.1423636	1000	0.1331437
Methylcyclohexane	0.5	0.7191597	8	0.6499627	12.5	0.7765266	25	0.7043686	50	0.7008372	100	0.6059157
5-Methyl-3-heptanone	1	0.7858102	16	0.5822311	25	0.645502	50	0.621882	100	0.5633271	200	0.5691559
Pentachloroethane	0.8	0.6937083	3.2	0.7153349	8	0.8118012	16	0.7822564	24	0.7562965	40	0.7162895
Tetrahydrofuran	16	6.070609E-02	64	6.167146E-02	160	5.786486E-02	320	0.0589426	480	0.056157	800	5.635889E-02
1,2-Dichloroethane-d4 (Surrogate)												
Toluene-d8 (Surrogate)												
4-Bromofluorobenzene (Surrogate)												

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812004
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration Date: 11/26/18 11:40

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Chloroethane	0.4586771	3.599201	2.715	0.2016238			15	
1,1-Dichloroethane	1.029015	8.096198	5.246667	9.852304E-02			SPCC (0.10)	
1,2-Dichloroethane	0.3450605	14.7754	7.155	7.692462E-02			15	
1,1-Dichloroethene	0.8245893	3.66479	3.693333	0.139776			CCC (20)	
cis-1,2-Dichloroethene	0.5078675	5.224452	6.06	0.0164315			15	
trans-1,2-Dichloroethene	0.4852296	4.77502	4.68	1.915742E-02			15	
1,1,1,2-Tetrachloroethane	0.8523318	5.504048	9.791667	4.309003E-02			15	
1,1,2,2-Tetrachloroethane	0.5318053	7.416641	10.50833	4.009535E-02			SPCC (0.30)	
Tetrachloroethene	0.3493594	5.885649	9.14	1.732232E-02			15	
1,1,1-Trichloroethane	0.5556314	4.497961	6.701667	5.768975E-02			15	
1,1,2-Trichloroethane	0.1547529	5.558068	9.08	1.997184E-02			15	
Trichloroethene	0.3452507	6.079963	7.73	1.503068E-02			15	
Vinyl chloride	0.7979634	8.21194	2.19	1.666568E-02			CCC (20)	
t-Amyl Alcohol	8.660742E-03	4.652042	7.128333	0.0584745			15	
Benzyl chloride	0.793011	25.37617	11.19	1.769618E-02	0.9978677		0.99	
Chlorotrifluoroethene							15	
Cyclohexane	1.276354	8.215012	6.773333	0.0776781			15	
Cyclohexanone	5.703151E-02	9.487323	10.40167	3.428825E-02			15	
1,2-Dichlorotrifluoroethane	0.5467656	4.796738	3.478333	0.1176274			15	
2,2-Dichloro-1,1,1-trifluoroethane	0.6380278	5.853042	3.573333	0.1451343			15	
Diethyl ether	0.2795236	5.331872	3.386667	0.2405293			15	
1,4-Dioxane	8.319129E-04	7.579561	8.016667	6.073585E-02			15	
Ethyl Amyl Ketone	0.4900155	7.221008	10.86	1.487945E-02			15	
Hexane	0.6647505	7.509604	5.031667	7.955076E-02			15	
Isopropyl alcohol	1.062566E-02	5.107838	3.938333	0.1911206			15	
Methyl acetate	0.1508281	7.706827	4.151667	9.579772E-02			15	

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2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1812004
Matrix: Water
SDG: 1838491
Project: SMUD 59th St.
Instrument: MS-V5
Calibration Date: 11/26/18 11:40

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Methylcyclohexane	0.6927951	8.487375	7.93	1.884959E-02			15	
5-Methyl-3-heptanone	0.6279847	13.32062	10.54	8.602669E-03			15	
Pentachloroethane	0.7459478	6.086832	10.89	1.492901E-02			15	
Tetrahydrofuran	5.861682E-02	3.853901	6.386667	8.365824E-02			15	
1,2-Dichloroethane-d4 (Surrogate)	0.2492722	4.757824	7.075	7.747286E-02			15	
Toluene-d8 (Surrogate)	1.127002	2.779118	8.72	1.645195E-02			15	
4-Bromofluorobenzene (Surrogate)	1.331538	3.387144	10.44333	5.073604E-02			15	

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Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

HOLDING TIME SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1838491
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
GW-B06-01	12/10/18 11:18	12/11/18 09:15	12/14/18 07:00	4.00	14.00	12/14/18 12:31	4.00	14.00	
GW-B06-02	12/10/18 11:22	12/11/18 09:15	12/14/18 07:00	4.00	14.00	12/14/18 12:08	4.00	14.00	
TB-2	12/10/18 00:00	12/11/18 09:15	12/14/18 07:00	4.00	14.00	12/14/18 11:45	4.00	14.00	

* Holding time not met

Note: If Prep or Analysis are performed within the hour (if holding time is based on hours) or within the day (if holding time is based on days), then the sample is not flagged as outside holding times. Calculated number of days are based on date received or date prepared depending on the test.

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/8/2019 4:27:17PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1900019

Laboratory Documentation Requirements
For Data Validation of
Volatiles Analysis

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1900019
COC Number:
Default Cooler was received at 0.4 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-8260B	MS-V3

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B034348	EPA-8260B	1836707-82	<Not Client Sample>
B034733	EPA-8260B	1840070-61	<Not Client Sample>

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

Chain of Custody Record

Lab job no.: 19-00019
Date 12/31/18
Page 1 of 1

Laboratory BC Labs
Address ~~2020 L St. Ste 400~~
Client AECOM
Address 2020 L St. Ste 400
Sacramento, CA 95811
Project Name S.M.D 59th st
Project Number 60570043.05

Method of Shipment
Shipment No.
Airbill No.
Work order # 35000866
Cooler No:
Project Manager Robert
Telephone No. 916-414-5800
Email/Fax No. Robert.Kuhlhardt@aecom.com
Samplers: (Signature) A. Morgan (AM)

	Field Sample ID	Matrix	Sample Depth Interval	Sampling Date	Sampling Time	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	No. of Containers Filtered	No. of Containers	5W 8260B	5W 6020 (arsenic)	Remarks
-1	SO - B12 - 02	Soil	5'/5.5'	12/31/18	0915	5W					X		
-2	SO - VW13 - 01	Soil	1.5'/2'	12/31/18	0915	VOA				X			
-3	SO - VW13 - 02	Soil	5'/5.5'	12/31/18	0935	VOA				X			
-4	SO - VW13 - 03	Soil	9.5'/10'	12/31/18	0945	VOA				X			
			/										
			/										
			/										

CHK BY
DISTRIBUTION
SUB-OUT

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature A. Morgan	12/31/18	Signature	12-31	Signature	12-31-18	Signature	
Printed Andrew Morgan	Time 1116	Printed BRANDON	Time 1116	Printed OVERSON	Time 1138	Printed 1.2.19 09:50	Time
Company AECOM		Company BC LABS		Company BC LABS		Company	
Reason to courier				Reason SHIPPING			

Comments: Std TAT (10 day)

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

DISTRIBUTION: White to Project File, Canary to Laboratory, Pink to Courier, Goldenrod to Field File

AECOM

F-1000
04/11

Chain of Custody and Cooler Receipt Form for 1900019 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 19-00019

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) GSO

SHIPPING CONTAINER
Ice Chest ☑ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 95 Container: 109 Thermometer ID: 274

Temperature: (A) 0.1 °C / (C) 0.4 °C

Date/Time 1.2.19 09:50

Analyst Init

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR	A									
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT		PRES'D	PRES'D	PRES'D						
SUMMA CANISTER										

Comments:

Sample Numbering Completed By:

A = Actual / C = Corrected

Date/Time: 1/2/18 1005

Rev 21 05/23/2016
(S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20)

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1900019**
Class: **VOA**
Method: **EPA-8260B**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1900019
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-VW13-01	1900019-02
SO-VW13-02	1900019-03
SO-VW13-03	1900019-04

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-28-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-8260B

Laboratory: BC Laboratories
SDG: 1900019
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: MS-V3

Analyte	MDL	PQL	Units
Chloroethane	0.0014	0.0050	mg/kg
1,1-Dichloroethane	0.0014	0.0050	mg/kg
1,2-Dichloroethane	0.00085	0.0050	mg/kg
1,1-Dichloroethene	0.0012	0.0050	mg/kg
cis-1,2-Dichloroethene	0.0013	0.0050	mg/kg
trans-1,2-Dichloroethene	0.0014	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	0.0011	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	0.0011	0.0050	mg/kg
Tetrachloroethene	0.0013	0.0050	mg/kg
1,1,1-Trichloroethane	0.0011	0.0050	mg/kg
1,1,2-Trichloroethane	0.00077	0.0050	mg/kg
Trichloroethene	0.0011	0.0050	mg/kg
Vinyl chloride	0.0016	0.0050	mg/kg

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2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW13-01

Laboratory:	BC Laboratories			SDG:	1900019
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1900019-02	File ID:	10JAN16.D
Sampled:	12/31/18 09:15	Prepared:	01/10/19 12:26	Analyzed:	01/10/19 15:22
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	5.27 g / 5 ml
Batch:	B034733	Sequence:	1900476	Calibration:	1901009
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.949	0.0014	U
75-34-3	1,1-Dichloroethane	0.949	0.0014	U
107-06-2	1,2-Dichloroethane	0.949	0.00085	U
75-35-4	1,1-Dichloroethene	0.949	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.949	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.949	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.949	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.949	0.0011	U
127-18-4	Tetrachloroethene	0.949	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.949	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.949	0.00077	U
79-01-6	Trichloroethene	0.949	0.0011	U
75-01-4	Vinyl chloride	0.949	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.047438	0.054810	116	70 - 121	
Toluene-d8 (Surrogate)	0.047438	0.050361	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.047438	0.050797	107	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	84132	6.22	79216	6.21	
Chlorobenzene-d5 (IS)	72122	9.42	65427	9.41	
1,4-Difluorobenzene (IS)	264108	7.12	252878	7.11	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW13-02

Laboratory:	BC Laboratories			SDG:	1900019
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1900019-03	File ID:	04JAN26.D
Sampled:	12/31/18 09:35	Prepared:	01/04/19 16:03	Analyzed:	01/04/19 19:40
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	3.77 g / 5 ml
Batch:	B034348	Sequence:	1900181	Calibration:	1901009
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	1.33	0.0019	UD
75-34-3	1,1-Dichloroethane	1.33	0.0019	UD
107-06-2	1,2-Dichloroethane	1.33	0.0011	UD
75-35-4	1,1-Dichloroethene	1.33	0.0016	UD
156-59-2	cis-1,2-Dichloroethene	1.33	0.0017	UD
156-60-5	trans-1,2-Dichloroethene	1.33	0.0019	UD
630-20-6	1,1,1,2-Tetrachloroethane	1.33	0.0015	UD
79-34-5	1,1,2,2-Tetrachloroethane	1.33	0.0015	UD
127-18-4	Tetrachloroethene	1.33	0.0017	UD
71-55-6	1,1,1-Trichloroethane	1.33	0.0015	UD
79-00-5	1,1,2-Trichloroethane	1.33	0.0010	UD
79-01-6	Trichloroethene	1.33	0.0015	UD
75-01-4	Vinyl chloride	1.33	0.0021	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.066313	0.075663	114	70 - 121	
Toluene-d8 (Surrogate)	0.066313	0.070398	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.066313	0.067162	101	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	96152	6.24	94160	6.23	
Chlorobenzene-d5 (IS)	86302	9.42	75478	9.42	
1,4-Difluorobenzene (IS)	319906	7.12	307913	7.13	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-8260B

SO-VW13-03

Laboratory:	BC Laboratories			SDG:	1900019
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	1900019-04	File ID:	04JAN27.D
Sampled:	12/31/18 09:57	Prepared:	01/04/19 16:03	Analyzed:	01/04/19 20:02
Solids:		Preparation:	EPA 5035 Soil MS	Initial/Final:	6.17 g / 5 ml
Batch:	B034348	Sequence:	1900181	Calibration:	1901009
Instrument:	MS-V3				

CAS NO.	COMPOUND	DILUTION	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.81	0.0011	UD
75-34-3	1,1-Dichloroethane	0.81	0.0011	UD
107-06-2	1,2-Dichloroethane	0.81	0.00069	UD
75-35-4	1,1-Dichloroethene	0.81	0.00097	UD
156-59-2	cis-1,2-Dichloroethene	0.81	0.0011	UD
156-60-5	trans-1,2-Dichloroethene	0.81	0.0011	UD
630-20-6	1,1,1,2-Tetrachloroethane	0.81	0.00089	UD
79-34-5	1,1,2,2-Tetrachloroethane	0.81	0.00089	UD
127-18-4	Tetrachloroethene	0.81	0.0011	UD
71-55-6	1,1,1-Trichloroethane	0.81	0.00089	UD
79-00-5	1,1,2-Trichloroethane	0.81	0.00062	UD
79-01-6	Trichloroethene	0.81	0.00089	UD
75-01-4	Vinyl chloride	0.81	0.0013	UD

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.040519	0.047115	116	70 - 121	
Toluene-d8 (Surrogate)	0.040519	0.042958	106	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.040519	0.042399	105	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	92506	6.24	94160	6.23	
Chlorobenzene-d5 (IS)	82758	9.42	75478	9.42	
1,4-Difluorobenzene (IS)	304099	7.13	307913	7.13	

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1900019
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B034348 Batch Matrix: Solids
Preparation: EPA 5035 Soil MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW13-02	1900019-03	04JAN26.D	01/04/19 16:03	Custom List/ L3 CLP
SO-VW13-03	1900019-04	04JAN27.D	01/04/19 16:03	Custom List/ L3 CLP
Blank	B034348-BLK1	04JAN23.D	01/04/19 16:03	
LCS	B034348-BS1	04JAN18.D	01/04/19 16:03	
Matrix Spike	B034348-MS1	04JAN19.D	01/04/19 16:03	
Matrix Spike Dup	B034348-MSD1	04JAN20.D	01/04/19 16:03	

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Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1900019
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B034733 Batch Matrix: Solids
Preparation: EPA 5035 Soil MS

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-VW13-01	1900019-02	10JAN16.D	01/10/19 12:26	Custom List/ L3 CLP
Blank	B034733-BLK1	10JAN14.D	01/10/19 12:26	
LCS	B034733-BS1	10JAN09.D	01/10/19 12:26	
Matrix Spike	B034733-MS1	10JAN10.D	01/10/19 12:26	
Matrix Spike Dup	B034733-MSD1	10JAN11.D	01/10/19 12:26	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1900019
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B034348-BLK1	File ID:	04JAN23.D
Prepared:	01/04/19 16:03	Preparation:	EPA 5035 Soil MS	Initial/Final:	5 g / 5 ml
Analyzed:	01/04/19 18:35	Instrument:	MS-V3		
Batch:	B034348	Sequence:	1900181	Calibration:	1901009

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.0014	U
75-34-3	1,1-Dichloroethane	0.0014	U
107-06-2	1,2-Dichloroethane	0.00085	U
75-35-4	1,1-Dichloroethene	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.0011	U
127-18-4	Tetrachloroethene	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.00077	U
79-01-6	Trichloroethene	0.0011	U
75-01-4	Vinyl chloride	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.050540	101	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.050880	102	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.047690	95.4	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	101807	6.24	94160	6.23	
Chlorobenzene-d5 (IS)	88514	9.42	75478	9.42	
1,4-Difluorobenzene (IS)	335022	7.13	307913	7.13	

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METHOD BLANK DATA SHEET
EPA-8260B

Laboratory:	BC Laboratories			SDG:	1900019
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B034733-BLK1	File ID:	10JAN14.D
Prepared:	01/10/19 12:26	Preparation:	EPA 5035 Soil MS	Initial/Final:	5 g / 5 ml
Analyzed:	01/10/19 14:38	Instrument:	MS-V3		
Batch:	B034733	Sequence:	1900476	Calibration:	1901009

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
75-00-3	Chloroethane	0.0014	U
75-34-3	1,1-Dichloroethane	0.0014	U
107-06-2	1,2-Dichloroethane	0.00085	U
75-35-4	1,1-Dichloroethene	0.0012	U
156-59-2	cis-1,2-Dichloroethene	0.0013	U
156-60-5	trans-1,2-Dichloroethene	0.0014	U
630-20-6	1,1,1,2-Tetrachloroethane	0.0011	U
79-34-5	1,1,2,2-Tetrachloroethane	0.0011	U
127-18-4	Tetrachloroethene	0.0013	U
71-55-6	1,1,1-Trichloroethane	0.0011	U
79-00-5	1,1,2-Trichloroethane	0.00077	U
79-01-6	Trichloroethene	0.0011	U
75-01-4	Vinyl chloride	0.0016	U

SYSTEM MONITORING COMPOUND	ADDED (mg/kg)	CONC (mg/kg)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	0.050000	0.048840	97.7	70 - 121	
Toluene-d8 (Surrogate)	0.050000	0.051510	103	81 - 117	
4-Bromofluorobenzene (Surrogate)	0.050000	0.049100	98.2	74 - 121	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	84262	6.22	79216	6.21	
Chlorobenzene-d5 (IS)	66712	9.41	65427	9.41	
1,4-Difluorobenzene (IS)	254324	7.12	252878	7.11	

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Project: SMUD 59th St.
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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B034348
Preparation: EPA 5035 Soil MS
Source Sample Number: 1836707-82

SDG: 1900019
Project: SMUD 59th St.
Laboratory ID: B034348-MS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	ND	0.12377	99.0	70 - 130
1,1-Dichloroethane	0.12500	ND	0.12328	98.6	70 - 130
1,1-Dichloroethene	0.12500	ND	0.12877	103	70 - 130
Trichloroethene	0.12500	ND	0.12558	100	70 - 130

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	0.12500	0.12233	97.9	1.17	20	70 - 130
1,1-Dichloroethane	0.12500	0.11716	93.7	5.09	20	70 - 130
1,1-Dichloroethene	0.12500	0.12445	99.6	3.41	20	70 - 130
Trichloroethene	0.12500	0.11975	95.8	4.75	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-8260B

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B034733
Preparation: EPA 5035 Soil MS
Source Sample Number: 1840070-61

SDG: 1900019
Project: SMUD 59th St.
Laboratory ID: B034733-MS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	ND	0.10420	83.4	70 - 130
1,1-Dichloroethane	0.12500	ND	0.098610	78.9	70 - 130
1,1-Dichloroethene	0.12500	ND	0.10188	81.5	70 - 130
Trichloroethene	0.12500	ND	0.11233	89.9	70 - 130

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Chloroethane	0.12500	0.10787	86.3	3.46	20	70 - 130
1,1-Dichloroethane	0.12500	0.10145	81.2	2.84	20	70 - 130
1,1-Dichloroethene	0.12500	0.10592	84.7	3.89	20	70 - 130
Trichloroethene	0.12500	0.11030	88.2	1.82	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B034348
Preparation: EPA 5035 Soil MS

SDG: 1900019
Project: SMUD 59th St.
Laboratory ID: B034348-BS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	0.12188	97.5	70 - 130
1,1-Dichloroethane	0.12500	0.11476	91.8	70 - 130
1,1-Dichloroethene	0.12500	0.12137	97.1	70 - 130
Trichloroethene	0.12500	0.12492	99.9	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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LCS RECOVERY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B034733
Preparation: EPA 5035 Soil MS

SDG: 1900019
Project: SMUD 59th St.
Laboratory ID: B034733-BS1
Initial/Final: 5 g / 5 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Chloroethane	0.12500	0.11219	89.8	70 - 130
1,1-Dichloroethane	0.12500	0.11252	90.0	70 - 130
1,1-Dichloroethene	0.12500	0.11363	90.9	70 - 130
Trichloroethene	0.12500	0.11714	93.7	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Project: SMUD 59th St.
Project Number: 60570043.05
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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900181
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1900181-ICV1	31DEC43.D	01/01/19 01:38
Initial Cal Blank	1900181-ICB1	31DEC44.D	01/01/19 01:59
MS Tune	1900181-TUN1	04JAN02.D	01/04/19 10:23
Calibration Check	1900181-CCV1	04JAN04.D	01/04/19 11:20
Calibration Blank	1900181-CCB1	04JAN06.D	01/04/19 12:04
LCS	B034348-BS1	04JAN18.D	01/04/19 16:47
Matrix Spike	B034348-MS1	04JAN19.D	01/04/19 17:09
Matrix Spike Dup	B034348-MSD1	04JAN20.D	01/04/19 17:31
Blank	B034348-BLK1	04JAN23.D	01/04/19 18:35
SO-VW13-02	1900019-03	04JAN26.D	01/04/19 19:40
SO-VW13-03	1900019-04	04JAN27.D	01/04/19 20:02
MS Tune	1900181-TUN2	04JAN29.D	01/04/19 20:45
Calibration Check	1900181-CCV4	04JAN31.D	01/04/19 21:29
Calibration Blank	1900181-CCB2	04JAN33.D	01/04/19 22:12

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Project: SMUD 59th St.
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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1900423	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1901009

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	1900423-CAL5	31DEC39.D	01/01/19 00:11
Cal Standard	1900423-CAL6	31DEC40.D	01/01/19 00:33
MS Tune	1900423-TUN1	31DEC33.D	12/31/18 22:01
Cal Standard	1900423-CAL1	31DEC35.D	12/31/18 22:44
Cal Standard	1900423-CAL2	31DEC36.D	12/31/18 23:06
Cal Standard	1900423-CAL3	31DEC37.D	12/31/18 23:28
Cal Standard	1900423-CAL4	31DEC38.D	12/31/18 23:50

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Sequence:	1900476	Instrument:	MS-V3
Matrix:	Solids	Calibration:	1901009

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1900476-ICV1	31DEC43.D	01/01/19 01:38
Initial Cal Blank	1900476-ICB1	31DEC44.D	01/01/19 01:59
MS Tune	1900476-TUN1	10JAN02.D	01/10/19 10:13
Calibration Check	1900476-CCV1	10JAN04.D	01/10/19 11:01
Calibration Blank	1900476-CCB1	10JAN06.D	01/10/19 11:45
LCS	B034733-BS1	10JAN09.D	01/10/19 12:50
Matrix Spike	B034733-MS1	10JAN10.D	01/10/19 13:12
Matrix Spike Dup	B034733-MSD1	10JAN11.D	01/10/19 13:33
Blank	B034733-BLK1	10JAN14.D	01/10/19 14:38
SO-VW13-01	1900019-02	10JAN16.D	01/10/19 15:22
MS Tune	1900476-TUN2	10JAN20.D	01/10/19 17:00
Calibration Check	1900476-CCV4	10JAN21.D	01/10/19 18:35
Calibration Blank	1900476-CCB2	10JAN24.D	01/10/19 19:40

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	04JAN02.D	Injection Date:	01/04/19
Instrument ID:	MS-V3	Injection Time:	10:23
Sequence:	1900181	Lab Sample ID:	1900181-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	20.1	PASS
Mass 75	30 - 60% of Mass 95	43.4	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.62	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	69.3	PASS
Mass 175	5 - 9% of Mass 174	8.77	PASS
Mass 176	95 - 101% of Mass 174	96.3	PASS
Mass 177	5 - 9% of Mass 176	6.69	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	04JAN29.D	Injection Date:	01/04/19
Instrument ID:	MS-V3	Injection Time:	20:45
Sequence:	1900181	Lab Sample ID:	1900181-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	19	PASS
Mass 75	30 - 60% of Mass 95	42.9	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.51	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	65.9	PASS
Mass 175	5 - 9% of Mass 174	7.42	PASS
Mass 176	95 - 101% of Mass 174	96.2	PASS
Mass 177	5 - 9% of Mass 176	6.8	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	31DEC33.D	Injection Date:	12/31/18
Instrument ID:	MS-V3	Injection Time:	22:01
Sequence:	1900423	Lab Sample ID:	1900423-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	18.1	PASS
Mass 75	30 - 60% of Mass 95	43.1	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.17	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	83.3	PASS
Mass 175	5 - 9% of Mass 174	8.18	PASS
Mass 176	95 - 101% of Mass 174	96.2	PASS
Mass 177	5 - 9% of Mass 176	6.95	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	10JAN02.D	Injection Date:	01/10/19
Instrument ID:	MS-V3	Injection Time:	10:13
Sequence:	1900476	Lab Sample ID:	1900476-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	20	PASS
Mass 75	30 - 60% of Mass 95	46.1	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.31	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	66.9	PASS
Mass 175	5 - 9% of Mass 174	5.65	PASS
Mass 176	95 - 101% of Mass 174	99.3	PASS
Mass 177	5 - 9% of Mass 176	5.81	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Lab File ID:	10JAN20.D	Injection Date:	01/10/19
Instrument ID:	MS-V3	Injection Time:	17:00
Sequence:	1900476	Lab Sample ID:	1900476-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	15 - 40% of Mass 95	18.1	PASS
Mass 75	30 - 60% of Mass 95	48.3	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.73	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 100% of Mass 95	74	PASS
Mass 175	5 - 9% of Mass 174	6.22	PASS
Mass 176	95 - 101% of Mass 174	95.2	PASS
Mass 177	5 - 9% of Mass 176	6.86	PASS

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Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1901009
Lab File ID:	31DEC43.D	Calibration Date:	12/31/18 22:44
Sequence:	1900181	Injection Date:	01/01/19
Lab Sample ID:	1900181-ICV1	Injection Time:	01:38

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12415	0.8173384	0.8117794		-0.7	20
1,1-Dichloroethane	A	0.12500	0.12313	2.264738	2.230796	0.1	-1.5	20
1,2-Dichloroethane	A	0.12500	0.12376	1.191828	1.180035		-1.0	20
1,1-Dichloroethene	A	0.12500	0.12538	1.057078	1.060286		0.3	20
cis-1,2-Dichloroethene	A	0.12500	0.12499	1.257268	1.257175		-0.007	20
trans-1,2-Dichloroethene	A	0.12500	0.12205	1.15227	1.125071		-2.4	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.13277	1.002888	1.065196		6.2	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.13981	1.350704	1.510759	0.3	11.8	20
Tetrachloroethene	A	0.12500	0.12574	0.3052122	0.307026		0.6	20
1,1,1-Trichloroethane	A	0.12500	0.12016	1.335342	1.283603		-3.9	20
1,1,2-Trichloroethane	A	0.12500	0.12911	0.233496	0.2411758		3.3	20
Trichloroethene	A	0.12500	0.12709	0.3114132	0.3166134		1.7	20
Vinyl chloride	A	0.12500	0.12765	1.555099	1.588012		2.1	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1901009
Lab File ID:	04JAN04.D	Calibration Date:	12/31/18 22:44
Sequence:	1900181	Injection Date:	01/04/19
Lab Sample ID:	1900181-CCV1	Injection Time:	11:20

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.13057	0.8173384	0.8537468		4.5	20
1,1-Dichloroethane	A	0.12500	0.12813	2.264738	2.321444	0.1	2.5	20
1,2-Dichloroethane	A	0.12500	0.11940	1.191828	1.138462		-4.5	20
1,1-Dichloroethene	A	0.12500	0.13476	1.057078	1.139643		7.8	20
cis-1,2-Dichloroethene	A	0.12500	0.12683	1.257268	1.275722		1.5	20
trans-1,2-Dichloroethene	A	0.12500	0.13262	1.15227	1.222519		6.1	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.12836	1.002888	1.029852		2.7	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.12483	1.350704	1.348838	0.3	-0.1	20
Tetrachloroethene	A	0.12500	0.13678	0.3052122	0.3339814		9.4	20
1,1,1-Trichloroethane	A	0.12500	0.13154	1.335342	1.40517		5.2	20
1,1,2-Trichloroethane	A	0.12500	0.12108	0.233496	0.2261769		-3.1	20
Trichloroethene	A	0.12500	0.13175	0.3114132	0.328233		5.4	20
Vinyl chloride	A	0.12500	0.13572	1.555099	1.688475		8.6	20

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AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1901009
Lab File ID:	04JAN31.D	Calibration Date:	12/31/18 22:44
Sequence:	1900181	Injection Date:	01/04/19
Lab Sample ID:	1900181-CCV4	Injection Time:	21:29

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12346	0.8173384	0.8072491		-1.2	50
1,1-Dichloroethane	A	0.12500	0.11609	2.264738	2.103231	0.1	-7.1	50
1,2-Dichloroethane	A	0.12500	0.11485	1.191828	1.095029		-8.1	50
1,1-Dichloroethene	A	0.12500	0.12078	1.057078	1.021413		-3.4	50
cis-1,2-Dichloroethene	A	0.12500	0.11992	1.257268	1.206133		-4.1	50
trans-1,2-Dichloroethene	A	0.12500	0.11890	1.15227	1.096011		-4.9	50
1,1,1,2-Tetrachloroethane	A	0.12500	0.12423	1.002888	0.9967193		-0.6	50
1,1,2,2-Tetrachloroethane	A	0.12500	0.11916	1.350704	1.2876	0.3	-4.7	50
Tetrachloroethene	A	0.12500	0.11926	0.3052122	0.2911865		-4.6	50
1,1,1-Trichloroethane	A	0.12500	0.11646	1.335342	1.244091		-6.8	50
1,1,2-Trichloroethane	A	0.12500	0.11700	0.233496	0.218556		-6.4	50
Trichloroethene	A	0.12500	0.11892	0.3114132	0.2962592		-4.9	50
Vinyl chloride	A	0.12500	0.12003	1.555099	1.493218		-4.0	50

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1901009
Lab File ID:	31DEC43.D	Calibration Date:	12/31/18 22:44
Sequence:	1900476	Injection Date:	01/01/19
Lab Sample ID:	1900476-ICV1	Injection Time:	01:38

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.12415	0.8173384	0.8117794		-0.7	20
1,1-Dichloroethane	A	0.12500	0.12313	2.264738	2.230796	0.1	-1.5	20
1,2-Dichloroethane	A	0.12500	0.12376	1.191828	1.180035		-1.0	20
1,1-Dichloroethene	A	0.12500	0.12538	1.057078	1.060286		0.3	20
cis-1,2-Dichloroethene	A	0.12500	0.12499	1.257268	1.257175		-0.007	20
trans-1,2-Dichloroethene	A	0.12500	0.12205	1.15227	1.125071		-2.4	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.13277	1.002888	1.065196		6.2	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.13981	1.350704	1.510759	0.3	11.8	20
Tetrachloroethene	A	0.12500	0.12574	0.3052122	0.307026		0.6	20
1,1,1-Trichloroethane	A	0.12500	0.12016	1.335342	1.283603		-3.9	20
1,1,2-Trichloroethane	A	0.12500	0.12911	0.233496	0.2411758		3.3	20
Trichloroethene	A	0.12500	0.12709	0.3114132	0.3166134		1.7	20
Vinyl chloride	A	0.12500	0.12765	1.555099	1.588012		2.1	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1901009
Lab File ID:	10JAN04.D	Calibration Date:	12/31/18 22:44
Sequence:	1900476	Injection Date:	01/10/19
Lab Sample ID:	1900476-CCV1	Injection Time:	11:01

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.11457	0.8173384	0.7491113		-8.3	20
1,1-Dichloroethane	A	0.12500	0.10947	2.264738	1.983448	0.1	-12.4	20
1,2-Dichloroethane	A	0.12500	0.11245	1.191828	1.072132		-10.0	20
1,1-Dichloroethene	A	0.12500	0.11324	1.057078	0.95765		-9.4	20
cis-1,2-Dichloroethene	A	0.12500	0.10919	1.257268	1.098273		-12.6	20
trans-1,2-Dichloroethene	A	0.12500	0.11036	1.15227	1.01732		-11.7	20
1,1,1,2-Tetrachloroethane	A	0.12500	0.11448	1.002888	0.9184954		-8.4	20
1,1,2,2-Tetrachloroethane	A	0.12500	0.11129	1.350704	1.202525	0.3	-11.0	20
Tetrachloroethene	A	0.12500	0.12284	0.3052122	0.2999407		-1.7	20
1,1,1-Trichloroethane	A	0.12500	0.11630	1.335342	1.242441		-7.0	20
1,1,2-Trichloroethane	A	0.12500	0.10965	0.233496	0.2048134		-12.3	20
Trichloroethene	A	0.12500	0.11789	0.3114132	0.2937005		-5.7	20
Vinyl chloride	A	0.12500	0.11250	1.555099	1.399546		-10.0	20

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AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-8260B

Laboratory:	BC Laboratories	SDG:	1900019
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St.
Instrument ID:	MS-V3	Calibration:	1901009
Lab File ID:	10JAN21.D	Calibration Date:	12/31/18 22:44
Sequence:	1900476	Injection Date:	01/10/19
Lab Sample ID:	1900476-CCV4	Injection Time:	18:35

	(1) CAL	CONC. (mg/kg)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	0.12500	0.13165	0.8173384	0.8608117		5.3	50
1,1-Dichloroethane	A	0.12500	0.12659	2.264738	2.293553	0.1	1.3	50
1,2-Dichloroethane	A	0.12500	0.12251	1.191828	1.168086		-2.0	50
1,1-Dichloroethene	A	0.12500	0.13132	1.057078	1.110485		5.1	50
cis-1,2-Dichloroethene	A	0.12500	0.12364	1.257268	1.243564		-1.1	50
trans-1,2-Dichloroethene	A	0.12500	0.12581	1.15227	1.159739		0.6	50
1,1,1,2-Tetrachloroethane	A	0.12500	0.12191	1.002888	0.9780888		-2.5	50
1,1,2,2-Tetrachloroethane	A	0.12500	0.12074	1.350704	1.304642	0.3	-3.4	50
Tetrachloroethene	A	0.12500	0.13336	0.3052122	0.3256238		6.7	50
1,1,1-Trichloroethane	A	0.12500	0.13164	1.335342	1.406288		5.3	50
1,1,2-Trichloroethane	A	0.12500	0.11760	0.233496	0.2196815		-5.9	50
Trichloroethene	A	0.12500	0.13367	0.3114132	0.3330165		6.9	50
Vinyl chloride	A	0.12500	0.13070	1.555099	1.625987		4.6	50

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Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900181
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1900181-ICV1)			Lab File ID: 31DEC43.D		Analyzed: 01/01/19 01:38			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4	70 - 130	6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	93.8	70 - 130	8.4	8.39	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	103	70 - 130	10.15	10.15	0.0000	+/-1.0	
Initial Cal Blank (1900181-ICB1)			Lab File ID: 31DEC44.D		Analyzed: 01/01/19 01:59			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.4	70 - 121	6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	100	74 - 121	10.15	10.15	0.0000	+/-1.0	
Calibration Check (1900181-CCV1)			Lab File ID: 04JAN04.D		Analyzed: 01/04/19 11:20			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	102	80 - 120	6.61	6.601667	0.0083	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	98.8	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	103	80 - 120	10.15	10.15	0.0000	+/-1.0	
Calibration Blank (1900181-CCB1)			Lab File ID: 04JAN06.D		Analyzed: 01/04/19 12:04			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	99.6	70 - 121	6.62	6.601667	0.0183	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	105	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.16	10.15	0.0100	+/-1.0	
LCS (B034348-BS1)			Lab File ID: 04JAN18.D		Analyzed: 01/04/19 16:47			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	98.3	70 - 121	6.62	6.601667	0.0183	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	81 - 117	8.4	8.39	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.2	74 - 121	10.15	10.15	0.0000	+/-1.0	
Matrix Spike (B034348-MS1)			Lab File ID: 04JAN19.D		Analyzed: 01/04/19 17:09			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	99.0	70 - 121	6.62	6.601667	0.0183	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.4	8.39	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.15	10.15	0.0000	+/-1.0	
Matrix Spike Dup (B034348-MSD1)			Lab File ID: 04JAN20.D		Analyzed: 01/04/19 17:31			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.7	70 - 121	6.62	6.601667	0.0183	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.4	74 - 121	10.15	10.15	0.0000	+/-1.0	

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Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
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SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900181
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (B034348-BLK1)			Lab File ID: 04JAN23.D		Analyzed: 01/04/19 18:35			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	101	70 - 121	6.62	6.601667	0.0183	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	81 - 117	8.4	8.39	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	95.4	74 - 121	10.15	10.15	0.0000	+/-1.0	
SO-VW13-02 (1900019-03)			Lab File ID: 04JAN26.D		Analyzed: 01/04/19 19:40			
1,2-Dichloroethane-d4 (Surrogate)	0.066313	114	70 - 121	6.62	6.601667	0.0183	+/-1.0	
Toluene-d8 (Surrogate)	0.066313	106	81 - 117	8.4	8.39	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.066313	101	74 - 121	10.15	10.15	0.0000	+/-1.0	
SO-VW13-03 (1900019-04)			Lab File ID: 04JAN27.D		Analyzed: 01/04/19 20:02			
1,2-Dichloroethane-d4 (Surrogate)	0.040519	116	70 - 121	6.62	6.601667	0.0183	+/-1.0	
Toluene-d8 (Surrogate)	0.040519	106	81 - 117	8.4	8.39	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.040519	105	74 - 121	10.15	10.15	0.0000	+/-1.0	
Calibration Check (1900181-CCV4)			Lab File ID: 04JAN31.D		Analyzed: 01/04/19 21:29			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.0	80 - 120	6.62	6.601667	0.0183	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.6	81 - 117	8.4	8.39	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	80 - 120	10.15	10.15	0.0000	+/-1.0	
Calibration Blank (1900181-CCB2)			Lab File ID: 04JAN33.D		Analyzed: 01/04/19 22:12			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	103	70 - 121	6.62	6.601667	0.0183	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	100	74 - 121	10.16	10.15	0.0100	+/-1.0	

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Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900423
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Cal Standard (1900423-CAL1)			Lab File ID: 31DEC35.D		Analyzed: 12/31/18 22:44			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	105		6.61	6.601667	0.0083	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103		8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.8		10.15	10.15	0.0000	+/-1.0	
Cal Standard (1900423-CAL2)			Lab File ID: 31DEC36.D		Analyzed: 12/31/18 23:06			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	105		6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102		8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	107		10.15	10.15	0.0000	+/-1.0	
Cal Standard (1900423-CAL3)			Lab File ID: 31DEC37.D		Analyzed: 12/31/18 23:28			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	98.0		6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101		8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	103		10.15	10.15	0.0000	+/-1.0	
Cal Standard (1900423-CAL4)			Lab File ID: 31DEC38.D		Analyzed: 12/31/18 23:50			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.6		6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	94.1		8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101		10.15	10.15	0.0000	+/-1.0	
Cal Standard (1900423-CAL5)			Lab File ID: 31DEC39.D		Analyzed: 01/01/19 00:11			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.4		6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	97.4		8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	97.9		10.15	10.15	0.0000	+/-1.0	
Cal Standard (1900423-CAL6)			Lab File ID: 31DEC40.D		Analyzed: 01/01/19 00:33			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.8		6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	96.8		8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.0		10.15	10.15	0.0000	+/-1.0	

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Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900476
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1900476-ICV1)			Lab File ID: 31DEC43.D		Analyzed: 01/01/19 01:38			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.4	70 - 130	6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	93.8	70 - 130	8.4	8.39	0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	103	70 - 130	10.15	10.15	0.0000	+/-1.0	
Initial Cal Blank (1900476-ICB1)			Lab File ID: 31DEC44.D		Analyzed: 01/01/19 01:59			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.4	70 - 121	6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	100	74 - 121	10.15	10.15	0.0000	+/-1.0	
Calibration Check (1900476-CCV1)			Lab File ID: 10JAN04.D		Analyzed: 01/10/19 11:01			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	104	80 - 120	6.59	6.601667	-0.0117	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	100	81 - 117	8.38	8.39	-0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	80 - 120	10.14	10.15	-0.0100	+/-1.0	
Calibration Blank (1900476-CCB1)			Lab File ID: 10JAN06.D		Analyzed: 01/10/19 11:45			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.0	70 - 121	6.59	6.601667	-0.0117	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	107	81 - 117	8.38	8.39	-0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.14	10.15	-0.0100	+/-1.0	
LCS (B034733-BS1)			Lab File ID: 10JAN09.D		Analyzed: 01/10/19 12:50			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	111	70 - 121	6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	104	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	106	74 - 121	10.15	10.15	0.0000	+/-1.0	
Matrix Spike (B034733-MS1)			Lab File ID: 10JAN10.D		Analyzed: 01/10/19 13:12			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	102	70 - 121	6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	102	74 - 121	10.15	10.15	0.0000	+/-1.0	
Matrix Spike Dup (B034733-MSD1)			Lab File ID: 10JAN11.D		Analyzed: 01/10/19 13:33			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	106	70 - 121	6.59	6.601667	-0.0117	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	99.9	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	101	74 - 121	10.15	10.15	0.0000	+/-1.0	

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Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900476
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Surrogate Compound	Spike Level mg/kg	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Blank (B034733-BLK1)			Lab File ID: 10JAN14.D		Analyzed: 01/10/19 14:38			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	97.7	70 - 121	6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	103	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	98.2	74 - 121	10.14	10.15	-0.0100	+/-1.0	
SO-VW13-01 (1900019-02)			Lab File ID: 10JAN16.D		Analyzed: 01/10/19 15:22			
1,2-Dichloroethane-d4 (Surrogate)	0.047438	116	70 - 121	6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.047438	106	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.047438	107	74 - 121	10.15	10.15	0.0000	+/-1.0	
Calibration Check (1900476-CCV4)			Lab File ID: 10JAN21.D		Analyzed: 01/10/19 18:35			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	103	80 - 120	6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	101	81 - 117	8.38	8.39	-0.0100	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	99.9	80 - 120	10.15	10.15	0.0000	+/-1.0	
Calibration Blank (1900476-CCB2)			Lab File ID: 10JAN24.D		Analyzed: 01/10/19 19:40			
1,2-Dichloroethane-d4 (Surrogate)	0.050000	96.3	70 - 121	6.6	6.601667	-0.0017	+/-1.0	
Toluene-d8 (Surrogate)	0.050000	102	81 - 117	8.39	8.39	0.0000	+/-1.0	
4-Bromofluorobenzene (Surrogate)	0.050000	100	74 - 121	10.15	10.15	0.0000	+/-1.0	

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Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900181
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1900181-ICV1)			Lab File ID: 31DEC43.D			Analyzed: 01/01/19 01:38			
Pentafluorobenzene (IS)	101499	6.23	91981	6.22	110	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	81398	9.41	75201	9.41	108	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	328139	7.11	291185	7.12	113	50 - 200	-0.0100	+/-0.50	
Initial Cal Blank (1900181-ICB1)			Lab File ID: 31DEC44.D			Analyzed: 01/01/19 01:59			
Pentafluorobenzene (IS)	106547	6.22	101499	6.23	105	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	87178	9.42	81398	9.41	107	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	337352	7.12	328139	7.11	103	50 - 200	0.0100	+/-0.50	
Calibration Check (1900181-CCV1)			Lab File ID: 04JAN04.D			Analyzed: 01/04/19 11:20			
Pentafluorobenzene (IS)	94160	6.23	91981	6.22	102	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	75478	9.42	75201	9.41	100	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	307913	7.13	291185	7.12	106	50 - 200	0.0100	+/-0.50	
Calibration Blank (1900181-CCB1)			Lab File ID: 04JAN06.D			Analyzed: 01/04/19 12:04			
Pentafluorobenzene (IS)	96298	6.24	94160	6.23	102	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	81185	9.42	75478	9.42	108	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	309891	7.13	307913	7.13	101	50 - 200	0.0000	+/-0.50	
LCS (B034348-BS1)			Lab File ID: 04JAN18.D			Analyzed: 01/04/19 16:47			
Pentafluorobenzene (IS)	98181	6.24	94160	6.23	104	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	78005	9.42	75478	9.42	103	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	312124	7.13	307913	7.13	101	50 - 200	0.0000	+/-0.50	
Matrix Spike (B034348-MS1)			Lab File ID: 04JAN19.D			Analyzed: 01/04/19 17:09			
Pentafluorobenzene (IS)	92253	6.24	94160	6.23	98	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	79213	9.42	75478	9.42	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	305309	7.13	307913	7.13	99	50 - 200	0.0000	+/-0.50	
Matrix Spike Dup (B034348-MSD1)			Lab File ID: 04JAN20.D			Analyzed: 01/04/19 17:31			
Pentafluorobenzene (IS)	95675	6.25	94160	6.23	102	50 - 200	0.0200	+/-0.50	
Chlorobenzene-d5 (IS)	78153	9.42	75478	9.42	104	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	318916	7.13	307913	7.13	104	50 - 200	0.0000	+/-0.50	

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Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900181
Matrix: Solids
SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B034348-BLK1)			Lab File ID: 04JAN23.D			Analyzed: 01/04/19 18:35			
Pentafluorobenzene (IS)	101807	6.24	94160	6.23	108	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	88514	9.42	75478	9.42	117	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	335022	7.13	307913	7.13	109	50 - 200	0.0000	+/-0.50	
SO-VW13-02 (1900019-03)			Lab File ID: 04JAN26.D			Analyzed: 01/04/19 19:40			
Pentafluorobenzene (IS)	96152	6.24	94160	6.23	102	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	86302	9.42	75478	9.42	114	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	319906	7.12	307913	7.13	104	50 - 200	-0.0100	+/-0.50	
SO-VW13-03 (1900019-04)			Lab File ID: 04JAN27.D			Analyzed: 01/04/19 20:02			
Pentafluorobenzene (IS)	92506	6.24	94160	6.23	98	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	82758	9.42	75478	9.42	110	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	304099	7.13	307913	7.13	99	50 - 200	0.0000	+/-0.50	
Calibration Check (1900181-CCV4)			Lab File ID: 04JAN31.D			Analyzed: 01/04/19 21:29			
Pentafluorobenzene (IS)	89225	6.24	91981	6.22	97	50 - 200	0.0200	+/-0.50	
Chlorobenzene-d5 (IS)	70228	9.42	75201	9.41	93	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	293651	7.13	291185	7.12	101	50 - 200	0.0100	+/-0.50	
Calibration Blank (1900181-CCB2)			Lab File ID: 04JAN33.D			Analyzed: 01/04/19 22:12			
Pentafluorobenzene (IS)	96835	6.24	81915	6.24	118	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	79998	9.42	71090	9.42	113	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	306964	7.13	278220	7.13	110	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900423
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (1900423-CAL1)			Lab File ID: 31DEC35.D			Analyzed: 12/31/18 22:44			
Pentafluorobenzene (IS)	95829	6.23	91981	6.22	104	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	82673	9.42	75201	9.41	110	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	302584	7.12	291185	7.12	104	50 - 200	0.0000	+/-0.50	
Cal Standard (1900423-CAL2)			Lab File ID: 31DEC36.D			Analyzed: 12/31/18 23:06			
Pentafluorobenzene (IS)	96635	6.23	91981	6.22	105	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	81768	9.41	75201	9.41	109	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	318417	7.12	291185	7.12	109	50 - 200	0.0000	+/-0.50	
Cal Standard (1900423-CAL3)			Lab File ID: 31DEC37.D			Analyzed: 12/31/18 23:28			
Pentafluorobenzene (IS)	91981	6.22	91981	6.22	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	75201	9.41	75201	9.41	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	291185	7.12	291185	7.12	100	50 - 200	0.0000	+/-0.50	
Cal Standard (1900423-CAL4)			Lab File ID: 31DEC38.D			Analyzed: 12/31/18 23:50			
Pentafluorobenzene (IS)	97851	6.23	91981	6.22	106	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	79314	9.41	75201	9.41	105	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	318355	7.12	291185	7.12	109	50 - 200	0.0000	+/-0.50	
Cal Standard (1900423-CAL5)			Lab File ID: 31DEC39.D			Analyzed: 01/01/19 00:11			
Pentafluorobenzene (IS)	89679	6.22	91981	6.22	97	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	75501	9.42	75201	9.41	100	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	307432	7.12	291185	7.12	106	50 - 200	0.0000	+/-0.50	
Cal Standard (1900423-CAL6)			Lab File ID: 31DEC40.D			Analyzed: 01/01/19 00:33			
Pentafluorobenzene (IS)	90048	6.22	91981	6.22	98	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	73895	9.42	75201	9.41	98	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	307187	7.12	291185	7.12	105	50 - 200	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900476
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (1900476-ICV1)			Lab File ID: 31DEC43.D			Analyzed: 01/01/19 01:38			
Pentafluorobenzene (IS)	101499	6.23	91981	6.22	110	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	81398	9.41	75201	9.41	108	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	328139	7.11	291185	7.12	113	50 - 200	-0.0100	+/-0.50	
Initial Cal Blank (1900476-ICB1)			Lab File ID: 31DEC44.D			Analyzed: 01/01/19 01:59			
Pentafluorobenzene (IS)	106547	6.22	101499	6.23	105	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	87178	9.42	81398	9.41	107	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	337352	7.12	328139	7.11	103	50 - 200	0.0100	+/-0.50	
Calibration Check (1900476-CCV1)			Lab File ID: 10JAN04.D			Analyzed: 01/10/19 11:01			
Pentafluorobenzene (IS)	79216	6.21	91981	6.22	86	50 - 200	-0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	65427	9.41	75201	9.41	87	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	252878	7.11	291185	7.12	87	50 - 200	-0.0100	+/-0.50	
Calibration Blank (1900476-CCB1)			Lab File ID: 10JAN06.D			Analyzed: 01/10/19 11:45			
Pentafluorobenzene (IS)	80664	6.21	79216	6.21	102	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	65863	9.41	65427	9.41	101	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	241234	7.11	252878	7.11	95	50 - 200	0.0000	+/-0.50	
LCS (B034733-BS1)			Lab File ID: 10JAN09.D			Analyzed: 01/10/19 12:50			
Pentafluorobenzene (IS)	74299	6.22	79216	6.21	94	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	60527	9.41	65427	9.41	93	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	237107	7.11	252878	7.11	94	50 - 200	0.0000	+/-0.50	
Matrix Spike (B034733-MS1)			Lab File ID: 10JAN10.D			Analyzed: 01/10/19 13:12			
Pentafluorobenzene (IS)	78671	6.22	79216	6.21	99	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	61896	9.41	65427	9.41	95	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	240444	7.11	252878	7.11	95	50 - 200	0.0000	+/-0.50	
Matrix Spike Dup (B034733-MSD1)			Lab File ID: 10JAN11.D			Analyzed: 01/10/19 13:33			
Pentafluorobenzene (IS)	73587	6.22	79216	6.21	93	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	60046	9.41	65427	9.41	92	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	235812	7.11	252878	7.11	93	50 - 200	0.0000	+/-0.50	

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Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900476
Matrix: Solids
SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration: 1901009

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B034733-BLK1)			Lab File ID: 10JAN14.D			Analyzed: 01/10/19 14:38			
Pentafluorobenzene (IS)	84262	6.22	79216	6.21	106	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	66712	9.41	65427	9.41	102	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	254324	7.12	252878	7.11	101	50 - 200	0.0100	+/-0.50	
SO-VW13-01 (1900019-02)			Lab File ID: 10JAN16.D			Analyzed: 01/10/19 15:22			
Pentafluorobenzene (IS)	84132	6.22	79216	6.21	106	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	72122	9.42	65427	9.41	110	50 - 200	0.0100	+/-0.50	
1,4-Difluorobenzene (IS)	264108	7.12	252878	7.11	104	50 - 200	0.0100	+/-0.50	
Calibration Check (1900476-CCV4)			Lab File ID: 10JAN21.D			Analyzed: 01/10/19 18:35			
Pentafluorobenzene (IS)	82471	6.22	91981	6.22	90	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	67025	9.41	75201	9.41	89	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	267236	7.11	291185	7.12	92	50 - 200	-0.0100	+/-0.50	
Calibration Blank (1900476-CCB2)			Lab File ID: 10JAN24.D			Analyzed: 01/10/19 19:40			
Pentafluorobenzene (IS)	84940	6.22	77950	6.22	109	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	69468	9.41	67172	9.41	103	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	269045	7.11	253372	7.11	106	50 - 200	0.0000	+/-0.50	

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION STANDARDS

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900423
Calibration: 1901009

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
8K09001	8260 V2 BFB WORKING STD	1900423-TUN1	31DEC33.D	12/31/18 22:01
9A09006	8260 V3 1900423 REG CAL1	1900423-CAL1	31DEC35.D	12/31/18 22:44
9A09007	8260 V3 1900423 REG CAL2	1900423-CAL2	31DEC36.D	12/31/18 23:06
9A09008	8260 V3 1900423 REG CAL3	1900423-CAL3	31DEC37.D	12/31/18 23:28
9A09009	8260 V3 1900423 REG CAL4	1900423-CAL4	31DEC38.D	12/31/18 23:50
9A09010	8260 V3 1900423 REG CAL5	1900423-CAL5	31DEC39.D	01/01/19 00:11
9A09011	8260 V3 1900423 REG CAL6	1900423-CAL6	31DEC40.D	01/01/19 00:33

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1901009
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 12/31/18 22:44

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF	mg/kg	RF
Chloroethane	0.005	0.818437	0.05	0.8606199	0.125	0.8834303	0.25	0.7634689	0.375	0.7962057	0.5	0.7818686
1,1-Dichloroethane	0.005	2.035605	0.05	2.356558	0.125	2.40711	0.25	2.219783	0.375	2.297073	0.5	2.272301
1,2-Dichloroethane	0.005	1.138591	0.05	1.19912	0.125	1.268088	0.25	1.15153	0.375	1.229079	0.5	1.16456
1,1-Dichloroethene	0.005	0.9775746	0.05	1.071537	0.125	1.153643	0.25	1.017059	0.375	1.085027	0.5	1.037629
cis-1,2-Dichloroethene	0.005	1.075457	0.05	1.325938	0.125	1.33224	0.25	1.237312	0.375	1.318315	0.5	1.254349
trans-1,2-Dichloroethene	0.005	1.023907	0.05	1.194391	0.125	1.241469	0.25	1.108487	0.375	1.189766	0.5	1.155599
1,1,1,2-Tetrachloroethane	0.005	0.87961	0.05	1.039539	0.125	1.108671	0.25	1.011718	0.375	1.026738	0.5	0.9510495
1,1,2,2-Tetrachloroethane	0.005	1.257726	0.05	1.380589	0.125	1.479869	0.25	1.320107	0.375	1.365165	0.5	1.300769
Tetrachloroethene	0.005	0.3112524	0.05	0.3182148	0.125	0.3405491	0.25	0.2981872	0.375	0.2871629	0.5	0.2759069
1,1,1-Trichloroethane	0.005	1.193271	0.05	1.343074	0.125	1.41878	0.25	1.326597	0.375	1.395978	0.5	1.334353
1,1,2-Trichloroethane	0.005	0.2331584	0.05	0.2399652	0.125	0.2570229	0.25	0.2251524	0.375	0.2307342	0.5	0.2149427
Trichloroethene	0.005	0.2807154	0.05	0.3210978	0.125	0.3417154	0.25	0.3103089	0.375	0.3130015	0.5	0.30164
Vinyl chloride	0.005	1.428795	0.05	1.609189	0.125	1.660012	0.25	1.521513	0.375	1.56377	0.5	1.547315
1,2-Dichloroethane-d4 (Surrogate)	0.05	0.9314508	0.05	0.9380452	0.05	0.8717126	0.05	0.8596642	0.05	0.857514	0.05	0.8707578
Toluene-d8 (Surrogate)	0.05	1.092388	0.05	1.085448	0.05	1.073561	0.05	0.9977447	0.05	1.033217	0.05	1.026121
4-Bromofluorobenzene (Surrogate)	0.05	1.350247	0.05	1.45601	0.05	1.405753	0.05	1.377853	0.05	1.337784	0.05	1.352635

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Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-8260B

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1901009
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: MS-V3
Calibration Date: 12/31/18 22:44

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Chloroethane	0.8173384	5.699182	2.323333	0.3514267			15	
1,1-Dichloroethane	2.264738	5.734278	4.708333	8.864669E-02			SPCC (0.10)	
1,2-Dichloroethane	1.191828	4.188191	6.696667	7.428091E-02			15	
1,1-Dichloroethene	1.057078	5.772261	3.196667	0.1629959			CCC (20)	
cis-1,2-Dichloroethene	1.257268	7.754418	5.431667	7.425195E-02			15	
trans-1,2-Dichloroethene	1.15227	6.670801	4.165	0.1322993			15	
1,1,1,2-Tetrachloroethane	1.002888	7.859534	9.493333	5.527518E-02			15	
1,1,2,2-Tetrachloroethane	1.350704	5.721406	10.22	1.872938E-02			SPCC (0.30)	
Tetrachloroethene	0.3052122	7.597001	8.821666	4.790242E-02			15	
1,1,1-Trichloroethane	1.335342	5.892824	6.148333	6.900952E-02			15	
1,1,2-Trichloroethane	0.233496	6.107804	8.77	1.948028E-02			15	
Trichloroethene	0.3114132	6.507876	7.341667	5.656406E-02			15	
Vinyl chloride	1.555099	5.075496	1.89	8.565379E-03			CCC (20)	
1,2-Dichloroethane-d4 (Surrogate)	0.8881908	4.117476	6.601667	5.912809E-02			15	
Toluene-d8 (Surrogate)	1.051413	3.6039	8.39	1.059447E-02			15	
4-Bromofluorobenzene (Surrogate)	1.380047	3.218086	10.15	9.659715E-03			15	

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Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

HOLDING TIME SUMMARY

EPA-8260B

Laboratory: BC Laboratories
SDG: 1900019
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
SO-VW13-01	12/31/18 09:15	01/02/19 09:50	01/10/19 12:26	10.00	14.00	01/10/19 15:22	10.00	14.00	
SO-VW13-02	12/31/18 09:35	01/02/19 09:50	01/04/19 16:03	4.00	14.00	01/04/19 19:40	4.00	14.00	
SO-VW13-03	12/31/18 09:57	01/02/19 09:50	01/04/19 16:03	4.00	14.00	01/04/19 20:02	4.00	14.00	

* Holding time not met

Note: If Prep or Analysis are performed within the hour (if holding time is based on hours) or within the day (if holding time is based on days), then the sample is not flagged as outside holding times. Calculated number of days are based on date received or date prepared depending on the test.

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:50:55PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1900019

Laboratory Documentation Requirements
For Data Validation of
Metals Analysis (using ppm units)

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1900019
COC Number:
Default Cooler was received at 0.4 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-6020 (TTLC)	PE-EL2

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

Batch	Method	Source Lab Number	Client Sample Name
B034353	EPA-6020 (TTLC)	1900353-01	<Not Client Sample>

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.

Post Spikes

The Post Spike recoveries were within QC limits.

Interference Checks

The Interference Check recoveries were within QC limits.

Chain of Custody Record

Lab job no.: 19-00019
Date 12/31/18
Page 1 of 1

Laboratory BC Labs
Address ~~2020 L St. Ste 400~~
Client AECOM
Address 2020 L St. Ste 400
Sacramento, CA 95811
Project Name S.M.D 59th st
Project Number 60570043.05

Method of Shipment
Shipment No.
Airbill No.
Work order # 35000866
Cooler No:
Project Manager Robert
Telephone No. 916-414-5800
Email/Fax No. Robert.Kuhlhardt@aecom.com
Samplers: (Signature) A. Morgan (AM)

	Field Sample ID	Matrix	Sample Depth Interval	Sampling Date	Sampling Time	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	No. of Containers Filtered	No. of Containers	5W 8260B	5W 6020 (arsenic)	Remarks
-1	SO - B12 - 02	Soil	5'/5.5'	12/31/18	0915	5W					X		
-2	SO - VW13 - 01	Soil	1.5'/2'	12/31/18	0915	VOA				X			
-3	SO - VW13 - 02	Soil	5'/5.5'	12/31/18	0935	VOA				X			
-4	SO - VW13 - 03	Soil	9.5'/10'	12/31/18	0945	VOA				X			
			/										
			/										
			/										

CHK BY
DISTRIBUTION
SUB-OUT

Relinquished by:	Date	Time	Received by:	Date	Time
Signature A. Morgan	12/31/18	1116	Signature	12-31	1116
Printed Andrew Morgan			Printed BRANDON		
Company AECOM			Company BC LABS		
Reason to courier					

Relinquished by:	Date	Time	Received by:	Date	Time
Signature	12/31/18	1138	Signature		
Printed DERRON			Printed 1.2.19 09:50		
Company BC LABS			Company		
Reason SHIPPING					

Relinquished by:	Date	Time	Received by:	Date	Time
Signature			Signature		
Printed			Printed		
Company			Company		
Reason					

Comments: Std TAT (10 day)

DISTRIBUTION: White to Project File, Canary to Laboratory, Pink to Courier, Goldenrod to Field File

AECOM

F-1000
04/11

Chain of Custody and Cooler Receipt Form for 1900019 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 19-00019

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify) GSO

SHIPPING CONTAINER
Ice Chest ☒ None ☐ Box ☐
Other ☐ (Specify)

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 95 Container: 109 Thermometer ID: 274

Temperature: (A) 0.1 °C / (C) 0.4 °C

Date/Time 1.2.19 09:50

Analyst Init

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR	A									
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT		PRES'D	PRES'D	PRES'D						
SUMMA CANISTER										

Comments:
Sample Numbering Completed By:
A = Actual / C = Corrected

Date/Time: 1/2/18 1005

Rev 21 05/23/2016
(S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20)

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1900019**
Class: **METALS-PPM**
Method: **EPA-6020**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1900019
Project: SMUD 59th St.

Client Sample Id:	Lab Sample Id:
SO-B12-02	1900019-01

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 01-28-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-6020

Laboratory: BC Laboratories
SDG: 1900019
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Instrument: PE-EL2

Analyte	MDL	PQL	Units
Arsenic	0.17	0.5	mg/kg

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INORGANIC ANALYSIS DATA SHEET
EPA-6020

SO-B12-02

Laboratory: BC Laboratories
SDG: 1900019
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Laboratory ID: 1900019-01
File ID: PE_EL2_190107-059
Sampled: 12/31/18 08:45
Prepared: 01/04/19 17:55
Analyzed: 01/07/19 12:29
Solids: 0.00
Preparation: EPA 3050B
Initial/Final: 1.04 g / 250 ml
Batch: B034353
Sequence: 1900266
Calibration: UNASSIGNED
Instrument: PE-EL2

CAS NO.	Analyte	Concentration (mg/kg)	Dilution Factor	Q	Method
7440-38-2	Arsenic	7.3	0.962		EPA-6020

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-6020

Laboratory: BC Laboratories
SDG: 1900019
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Batch: B034353 Batch Matrix: Solids
Preparation: EPA 3050B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SO-B12-02	1900019-01	PE_EL2_190107-059	01/04/19 17:55	
Blank	B034353-BLK1	PE_EL2_190107-063	01/04/19 17:55	
LCS	B034353-BS1	PE_EL2_190107-051	01/04/19 17:55	
Duplicate	B034353-DUP1	PE_EL2_190107-054	01/04/19 17:55	
Matrix Spike	B034353-MS1	PE_EL2_190107-056	01/04/19 17:55	
Matrix Spike Dup	B034353-MSD1	PE_EL2_190107-067	01/04/19 17:55	
Post Spike	B034353-PS1	PE_EL2_190107-058	01/04/19 17:55	[Spk] 1g->250ml; 250ml->250ml; Spiked 9.8ml

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Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-6020

Laboratory:	BC Laboratories			SDG:	1900019
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St.
Matrix:	Solids	Laboratory ID:	B034353-BLK1	File ID:	PE_EL2_190107-063
Prepared:	01/04/19 17:55	Preparation:	EPA 3050B	Initial/Final:	1 g / 250 ml
Analyzed:	01/07/19 12:44	Instrument:	PE-EL2		
Batch:	B034353	Sequence:	1900266	Calibration:	UNASSIGNED

CAS NO.	COMPOUND	CONC. (mg/kg)	Q
7440-38-2	Arsenic	0.17	U

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Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Duplicate

DUPLICATES

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B034353
Preparation: EPA 3050B
Source Sample Name: Duplicate

SDG: 1900019
Project: SMUD 59th St.
Laboratory ID: B034353-DUP1
Lab Source ID: 1900353-01
Initial/Final: 1 g / 250 ml
% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/kg)	C	DUPLICATE CONCENTRATION (mg/kg)	C	RPD %	Q	METHOD
Arsenic	20	20.972		21.058		0.404		EPA-6020

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA-6020

Matrix Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B034353
Preparation: EPA 3050B
Source Sample Number: 1900353-01

SDG: 1900019
Project: SMUD 59th St.
Laboratory ID: B034353-MS1
Initial/Final: 1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONCENTRATION (mg/kg)	MS CONCENTRATION (mg/kg)	MS % REC. #	QC LIMITS REC.
Arsenic	25.000	20.972	46.026	100	75 - 125

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONCENTRATION (mg/kg)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Arsenic	25.000	48.116	109	4.44	20	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

LCS RECOVERY

EPA-6020

Laboratory: BC Laboratories
SDG: 1900019
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St.
Matrix: Solids
Batch: B034353
Laboratory ID: B034353-BS1
Preparation: EPA 3050B
Initial/Final: 1 g / 250 ml

COMPOUND	SPIKE ADDED (mg/kg)	LCS CONCENTRATION (mg/kg)	LCS % REC. #	QC LIMITS REC.
Arsenic	25.000	26.120	104	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1900266
Matrix: Solids

SDG: 1900019
Project: SMUD 59th St.
Instrument: PE-EL2
Calibration: UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1900266-ICV1	PE_EL2_190107-009	01/07/19 08:42
Initial Cal Blank	1900266-ICB1	PE_EL2_190107-010	01/07/19 08:45
Calibration Check	1900266-CCV2	PE_EL2_190107-020	01/07/19 09:35
Calibration Blank	1900266-CCB2	PE_EL2_190107-021	01/07/19 09:38
MRL Check	1900266-CRL3	PE_EL2_190107-022	01/07/19 09:47
Interference Check A	1900266-IFA1	PE_EL2_190107-024	01/07/19 10:01
Interference Check B	1900266-IFB1	PE_EL2_190107-025	01/07/19 10:07
Calibration Check	1900266-CCV5	PE_EL2_190107-049	01/07/19 11:53
Calibration Blank	1900266-CCB5	PE_EL2_190107-050	01/07/19 11:56
LCS	B034353-BS1	PE_EL2_190107-051	01/07/19 12:00
Duplicate	B034353-DUP1	PE_EL2_190107-054	01/07/19 12:11
Matrix Spike	B034353-MS1	PE_EL2_190107-056	01/07/19 12:18
Post Spike	B034353-PS1	PE_EL2_190107-058	01/07/19 12:25
SO-B12-02	1900019-01	PE_EL2_190107-059	01/07/19 12:29
Calibration Check	1900266-CCV6	PE_EL2_190107-061	01/07/19 12:36
Calibration Blank	1900266-CCB6	PE_EL2_190107-062	01/07/19 12:39
Blank	B034353-BLK1	PE_EL2_190107-063	01/07/19 12:44
Matrix Spike Dup	B034353-MSD1	PE_EL2_190107-067	01/07/19 12:59
Calibration Check	1900266-CCV7	PE_EL2_190107-068	01/07/19 13:03
Calibration Blank	1900266-CCB7	PE_EL2_190107-069	01/07/19 13:06

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BLANKS
EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Sequence: 1900266

SDG: 1900019
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	Found	PQL	Units	C	Method
1900266-ICB1	Arsenic	0.21700	2.0	ug/L		EPA-6020
1900266-CCB2	Arsenic	-0.34100	2.0	ug/L		EPA-6020
1900266-CCB5	Arsenic	0.058000	2.0	ug/L		EPA-6020
1900266-CCB6	Arsenic	0.29500	2.0	ug/L		EPA-6020
1900266-CCB7	Arsenic	-0.13900	2.0	ug/L		EPA-6020

AECOM - Sacramento
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Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL AND CONTINUING CALIBRATION CHECK

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Control Limt: +/- 10.00%

SDG: 1900019
Project: SMUD 59th St.
Calibration: UNASSIGNED
Sequence: 1900266

Lab Sample ID	Analyte	True	Found	%R	Units	Method
1900266-ICV1	Arsenic	125.00	124.93	99.9	ug/L	EPA-6020
1900266-CCV2	Arsenic	100.00	101.69	102	ug/L	EPA-6020
1900266-CCV5	Arsenic	100.00	102.57	103	ug/L	EPA-6020
1900266-CCV6	Arsenic	100.00	103.35	103	ug/L	EPA-6020
1900266-CCV7	Arsenic	100.00	101.16	101	ug/L	EPA-6020

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

POST DIGEST SPIKE SAMPLE RECOVERY

EPA-6020

Post Spike

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Solids
Batch: B034353
Preparation: EPA 3050B

SDG: 1900019
Project: SMUD 59th St.
Laboratory ID: B034353-PS1
Lab Source ID: 1900353-01
Initial/Final: 0.0392 g / 10 ml

Source Sample Name: Post Spike
% Solids:

Analyte	Control Limit %R	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R
Arsenic	75 - 125	182.59	82.212	100.00	100

* Values outside of QC limits

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ICP INTERFERENCE CHECK SAMPLE

EPA-6020

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Instrument ID: PE-EL2
Sequence: 1900266

SDG: 1900019
Project: SMUD 59th St.
Calibration: UNASSIGNED

Lab Sample ID	Analyte	True	Found	%R	Units
1900266-IFA1	Arsenic		0.21100		ug/L
1900266-IFB1	Arsenic	20.000	19.22	96.1	mg/kg

* Values outside of QC limits

Raw Data From Instrument PE-EL2

Raw Data - Calibration Standards

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Monday, January 07, 2019 08:27:45
Sample File: C:\Elandata\Sample\PE_EL2_190107.sam
Blank File: C:\Elandata\Dataset\2019 JAN (07-13)\Blank.005
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_190107.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	26.333				ug/L
|	B	11	221.337				ug/L
|	Al	27	15485.581				ug/L
| >	Sc	45	484419.737				ug/L
|	V	51	15225.299				ug/L
|	Cr	52	9596.820				ug/L
|	Cr	53	35136.066				ug/L
|	Mn	55	459.347				ug/L
|	Co	59	69.000				ug/L
⌊	Ni	60	65.667				ug/L
⌈	Cu	63	289.672				ug/L
|	Cu	65	143.335				ug/L
|	Zn	66	363.342				ug/L
|	Zn	68	356.008				ug/L
| >	Ge	72	230143.393				ug/L
|	As	75	26.517				ug/L
|	Se	77	1301.777				ug/L
|	Se	82	8.157				ug/L
⌊	Sr	88	830.045				ug/L
⌈	Mo	98	76.484				ug/L
| >	Rh	103	281859.274				ug/L
⌊	Ag	107	37.333				ug/L
⌈	Cd	111	12.326				ug/L
|	Cd	114	-3.728				ug/L
| >	In	115	459220.935				ug/L
|	Sn	120	898.516				ug/L
⌊	Sb	121	409.344				ug/L
⌈	Ba	137	204.443				ug/L
|	Ba	138	1276.546				ug/L
| >	Tb	159	794910.371				ug/L
|	Tl	205	444.680				ug/L
⌊	Pb	208	255.002				ug/L
⌈	Hg	200	38.364				ug/L
|	Hg	201	38.000				ug/L
| >	Bi	209	396242.999				ug/L
⌊	U	238	6839.373				ug/L
	C	13	1393.462				ug/L
	W	184	47.307				ug/L
	Pd	106	13.266				ug/L
	Kr	83	39.500				ug/L
⌈	Na	23	4001.047				ug/L
|	Mg	24	1110.081				ug/L

	K	39	118932.432	ug/L
	Ca	44	10941.139	ug/L
	Ti	47	123.334	ug/L
	Sc-1	45	484419.737	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000000	0.000	0.000000	Linear Thru Zero
B	11.009	0.000000	0.000	0.000000	Linear Thru Zero
Al	26.982	0.000000	0.000	0.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.000000	0.000	0.000000	Linear Thru Zero
Cr	51.941	0.000000	0.000	0.000000	Linear Thru Zero
Cr	52.941	0.000000	0.000	0.000000	Linear Thru Zero
Mn	54.938	0.000000	0.000	0.000000	Linear Thru Zero
Co	58.933	0.000000	0.000	0.000000	Linear Thru Zero
Ni	59.933	0.000000	0.000	0.000000	Linear Thru Zero
Cu	62.930	0.000000	0.000	0.000000	Linear Thru Zero
Cu	64.928	0.000000	0.000	0.000000	Linear Thru Zero
Zn	65.926	0.000000	0.000	0.000000	Linear Thru Zero
Zn	67.925	0.000000	0.000	0.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000000	0.000	0.000000	Linear Thru Zero
Se	76.920	0.000000	0.000	0.000000	Linear Thru Zero
Se	81.917	0.000000	0.000	0.000000	Linear Thru Zero
Sr	87.906	0.000000	0.000	0.000000	Linear Thru Zero
Mo	97.906	0.000000	0.000	0.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.000000	0.000	0.000000	Linear Thru Zero
Cd	110.904	0.000000	0.000	0.000000	Linear Thru Zero
Cd	113.904	0.000000	0.000	0.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.000000	0.000	0.000000	Linear Thru Zero
Sb	120.904	0.000000	0.000	0.000000	Linear Thru Zero
Ba	136.905	0.000000	0.000	0.000000	Linear Thru Zero
Ba	137.905	0.000000	0.000	0.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.000000	0.000	0.000000	Linear Thru Zero
Pb	207.977	0.000000	0.000	0.000000	Linear Thru Zero
Hg	199.968	0.000000	0.000	0.000000	Linear Thru Zero
Hg	200.970	0.000000	0.000	0.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.000000	0.000	0.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	0.000000	0.000	0.000000	Linear Thru Zero
Mg	23.985	0.000000	0.000	0.000000	Linear Thru Zero
K	38.964	0.000000	0.000	0.000000	Linear Thru Zero
Ca	43.956	0.000000	0.000	0.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Monday, January 07, 2019 08:31:18
Sample File: C:\Elandata\Sample\PE_EL2_190107.sam
Blank File: C:\Elandata\Dataset\2019 JAN (07-13)\Blank.005
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_190107.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	109.001	**1.000**	0.05	4.6	ug/L
|	B	11	3003.922	**20.000**	1.10	5.5	ug/L
|	Al	27	48309.974	**20.000**	0.35	1.8	ug/L
| >	Sc	45	479138.748				ug/L
|	V	51	26376.970	**3.000**	0.25	8.3	ug/L
|	Cr	52	19118.898	**3.000**	0.16	5.2	ug/L
|	Cr	53	37135.757	**3.000**	1.45	48.3	ug/L
|	Mn	55	4874.879	**1.000**	0.07	6.6	ug/L
|	Co	59	2913.553	**1.000**	0.07	7.1	ug/L
⌊	Ni	60	1194.760	**1.000**	0.02	2.3	ug/L
⌈	Cu	63	2711.478	**2.000**	0.06	3.0	ug/L
|	Cu	65	1138.418	**2.000**	0.14	6.8	ug/L
|	Zn	66	2142.632	**5.000**	0.01	0.3	ug/L
|	Zn	68	1516.483	**5.000**	0.13	2.6	ug/L
| >	Ge	72	229013.611				ug/L
|	As	75	616.109	**2.000**	0.57	28.4	ug/L
|	Se	77	1408.963	**2.000**	1.33	66.5	ug/L
|	Se	82	84.701	**2.000**	0.32	15.9	ug/L
⌊	Sr	88	1578.829	**0.200**	0.01	3.5	ug/L
⌈	Mo	98	1181.689	**1.000**	0.03	2.6	ug/L
| >	Rh	103	288807.905				ug/L
⌊	Ag	107	2908.550	**1.000**	0.02	1.6	ug/L
⌈	Cd	111	619.036	**1.000**	0.01	1.1	ug/L
|	Cd	114	1451.359	**1.000**	0.02	2.1	ug/L
| >	In	115	478274.444				ug/L
|	Sn	120	3715.960	**1.000**	0.01	1.1	ug/L
⌊	Sb	121	5194.420	**2.000**	0.08	3.9	ug/L
⌈	Ba	137	1548.871	**1.000**	0.06	6.4	ug/L
|	Ba	138	9916.771	**1.000**	0.06	5.6	ug/L
| >	Tb	159	804645.466				ug/L
|	Tl	205	6463.381	**1.000**	0.05	5.3	ug/L
⌊	Pb	208	8522.189	**1.000**	0.06	6.2	ug/L
⌈	Hg	200	162.430	**0.200**	0.01	3.8	ug/L
|	Hg	201	102.001	**0.200**	0.01	7.2	ug/L
| >	Bi	209	407699.036				ug/L
⌊	U	238	18605.816	**1.000**	0.00	0.0	ug/L
	C	13	1273.440				ug/L
	W	184	37.305				ug/L
	Pd	106	5.513				ug/L
	Kr	83	34.500				ug/L
⌈	Na	23	153136.557	**100.000**	2.56	2.6	ug/L
|	Mg	24	98783.705	**100.000**	1.82	1.8	ug/L

	K	39	321714.840	**100.000**	5.53	5.5	ug/L
	Ca	44	17950.941	**100.000**	9.70	9.7	ug/L
	Ti	47	166.669				ug/L
	Sc-1	45	479138.748				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000173	0.000	1.000000	Linear Thru Zero
B	11.009	0.000290	0.000	1.000000	Linear Thru Zero
Al	26.982	0.003444	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007878	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.006704	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.001675	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.009238	0.000	1.000000	Linear Thru Zero
Co	58.933	0.005945	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.002358	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005292	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002173	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001555	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.001015	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001287	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000249	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000167	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.016441	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.003821	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009939	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001267	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003044	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.005812	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004989	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001671	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.010741	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.007488	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.010295	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001507	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000772	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.028376	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	1491.355103	0.000	1.000000	Linear Thru Zero
Mg	23.985	976.736244	0.000	1.000000	Linear Thru Zero
K	38.964	2027.824074	0.000	1.000000	Linear Thru Zero
Ca	43.956	70.098024	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Monday, January 07, 2019 08:34:52
Sample File: C:\Elandata\Sample\PE_EL2_190107.sam
Blank File: C:\Elandata\Dataset\2019 JAN (07-13)\Blank.005
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_190107.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	9096.717	**100.001**	4.40	4.4	ug/L
|	B	11	124013.576	**999.947**	39.36	3.9	ug/L
|	Al	27	353432.366	**249.634**	4.50	1.8	ug/L
| >	Sc	45	483235.965				ug/L
|	V	51	345863.734	**99.986**	1.51	1.5	ug/L
|	Cr	52	291936.833	**99.987**	3.11	3.1	ug/L
|	Cr	53	72938.345	**99.898**	8.01	8.0	ug/L
|	Mn	55	946662.576	**249.999**	16.60	6.6	ug/L
|	Co	59	263997.045	**99.999**	6.27	6.3	ug/L
⌊	Ni	60	135177.397	**249.996**	10.50	4.2	ug/L
⌈	Cu	63	269636.967	**249.998**	2.61	1.0	ug/L
|	Cu	65	115747.989	**249.999**	4.89	2.0	ug/L
|	Zn	66	74983.178	**249.982**	4.15	1.7	ug/L
|	Zn	68	51720.548	**249.988**	4.55	1.8	ug/L
| >	Ge	72	226837.093				ug/L
|	As	75	60108.593	**249.997**	4.34	1.7	ug/L
|	Se	77	6444.037	**249.972**	16.96	6.8	ug/L
|	Se	82	6895.306	**249.994**	5.02	2.0	ug/L
⌊	Sr	88	2037.270	**19.880**	0.78	3.9	ug/L
⌈	Mo	98	105010.705	**100.000**	3.82	3.8	ug/L
| >	Rh	103	279163.102				ug/L
⌊	Ag	107	216392.386	**99.997**	0.20	0.2	ug/L
⌈	Cd	111	55379.076	**100.000**	3.33	3.3	ug/L
|	Cd	114	135043.731	**100.000**	2.52	2.5	ug/L
| >	In	115	457183.582				ug/L
|	Sn	120	263578.758	**100.000**	3.50	3.5	ug/L
⌊	Sb	121	214239.229	**99.997**	2.86	2.9	ug/L
⌈	Ba	137	120120.779	**99.999**	4.76	4.8	ug/L
|	Ba	138	769025.239	**99.999**	4.39	4.4	ug/L
| >	Tb	159	791480.764				ug/L
|	Tl	205	559597.049	**99.999**	5.16	5.2	ug/L
⌊	Pb	208	1892494.900	**250.000**	16.08	6.4	ug/L
⌈	Hg	200	8889.985	**19.999**	0.73	3.7	ug/L
|	Hg	201	5120.371	**20.000**	0.26	1.3	ug/L
| >	Bi	209	388541.095				ug/L
⌊	U	238	1136522.846	**100.000**	1.40	1.4	ug/L
	C	13	1273.440				ug/L
	W	184	75.977				ug/L
	Pd	106	-746.653				ug/L
	Kr	83	36.667				ug/L
⌈	Na	23	11917417.430	**9999.748**	390.71	3.9	ug/L
|	Mg	24	8283965.949	**9999.821**	646.33	6.5	ug/L

	K	39	18027916.602	**9999.868**	660.77	6.6	ug/L
	Ca	44	639352.404	**9999.885**	194.55	1.9	ug/L
	Ti	47	340.008				ug/L
	Sc-1	45	483235.965				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000188	0.000	1.000000	Linear Thru Zero
B	11.009	0.000256	0.000	0.999997	Linear Thru Zero
Al	26.982	0.002802	0.000	0.999833	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.006847	0.000	0.999990	Linear Thru Zero
Cr	51.941	0.005849	0.000	0.999990	Linear Thru Zero
Cr	52.941	0.000787	0.000	0.999427	Linear Thru Zero
Mn	54.938	0.007847	0.000	1.000000	Linear Thru Zero
Co	58.933	0.005472	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001120	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.004750	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002038	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001316	0.000	0.999993	Linear Thru Zero
Zn	67.925	0.000906	0.000	0.999997	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001059	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000091	0.000	0.999903	Linear Thru Zero
Se	81.917	0.000121	0.000	0.999996	Linear Thru Zero
Sr	87.906	0.000270	0.000	0.858106	Linear Thru Zero
Mo	97.906	0.003760	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.007751	0.000	0.999996	Linear Thru Zero
Cd	110.904	0.001211	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.002956	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.005750	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004680	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001517	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.009713	0.000	0.999999	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.007076	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.009582	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001139	0.000	0.999995	Linear Thru Zero
Hg	200.970	0.000654	0.000	0.999998	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.029079	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	1191.371637	0.000	0.999997	Linear Thru Zero
Mg	23.985	828.300430	0.000	0.999998	Linear Thru Zero
K	38.964	1790.922107	0.000	0.999999	Linear Thru Zero
Ca	43.956	62.841852	0.000	0.999999	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Monday, January 07, 2019 09:21:07
Sample File: C:\Elandata\Sample\PE_EL2_190107.sam
Blank File: C:\Elandata\Dataset\2019 JAN (07-13)\Blank.016
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_190107.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	31.333				ug/L
|	B	11	706.700				ug/L
|	Al	27	16989.472				ug/L
| >	Sc	45	499162.343				ug/L
|	V	51	18009.276				ug/L
|	Cr	52	12548.231				ug/L
|	Cr	53	40942.019				ug/L
|	Mn	55	503.350				ug/L
|	Co	59	64.000				ug/L
⌊	Ni	60	54.667				ug/L
⌈	Cu	63	286.672				ug/L
|	Cu	65	125.001				ug/L
|	Zn	66	438.679				ug/L
|	Zn	68	392.677				ug/L
| >	Ge	72	240364.266				ug/L
|	As	75	68.870				ug/L
|	Se	77	1640.842				ug/L
|	Se	82	19.180				ug/L
⌊	Sr	88	859.715				ug/L
⌈	Mo	98	65.324				ug/L
| >	Rh	103	310543.270				ug/L
⌊	Ag	107	40.667				ug/L
⌈	Cd	111	29.073				ug/L
|	Cd	114	-11.109				ug/L
| >	In	115	491741.531				ug/L
|	Sn	120	935.743				ug/L
⌊	Sb	121	289.339				ug/L
⌈	Ba	137	209.063				ug/L
|	Ba	138	1159.814				ug/L
| >	Tb	159	785040.403				ug/L
|	Tl	205	206.669				ug/L
⌊	Pb	208	282.335				ug/L
⌈	Hg	200	67.065				ug/L
|	Hg	201	55.334				ug/L
| >	Bi	209	422275.995				ug/L
⌊	U	238	7339.167				ug/L
	C	13	1346.788				ug/L
	W	184	41.972				ug/L
	Pd	106	39.867				ug/L
	Kr	83	36.833				ug/L
⌈	Na	23	4821.528				ug/L
|	Mg	24	1366.789				ug/L

	K	39	124046.626	ug/L
	Ca	44	10704.111	ug/L
	Ti	47	230.003	ug/L
	Sc-1	45	499162.343	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000188	0.000	1.000000	Linear Thru Zero
B	11.009	0.000256	0.000	0.999997	Linear Thru Zero
Al	26.982	0.002802	0.000	0.999833	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.006847	0.000	0.999990	Linear Thru Zero
Cr	51.941	0.005849	0.000	0.999990	Linear Thru Zero
Cr	52.941	0.000787	0.000	0.999427	Linear Thru Zero
Mn	54.938	0.007847	0.000	1.000000	Linear Thru Zero
Co	58.933	0.005472	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001120	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.004750	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002038	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001316	0.000	0.999993	Linear Thru Zero
Zn	67.925	0.000906	0.000	0.999997	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001059	0.000	0.999999	Linear Thru Zero
Se	76.920	0.000091	0.000	0.999903	Linear Thru Zero
Se	81.917	0.000121	0.000	0.999996	Linear Thru Zero
Sr	87.906	0.000270	0.000	0.858106	Linear Thru Zero
Mo	97.906	0.003760	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.007751	0.000	0.999996	Linear Thru Zero
Cd	110.904	0.001211	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.002956	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.005750	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004680	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001517	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.009713	0.000	0.999999	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.007076	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.009582	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001139	0.000	0.999995	Linear Thru Zero
Hg	200.970	0.000654	0.000	0.999998	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.029079	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	1191.371637	0.000	0.999997	Linear Thru Zero
Mg	23.985	828.300430	0.000	0.999998	Linear Thru Zero
K	38.964	1790.922107	0.000	0.999999	Linear Thru Zero
Ca	43.956	62.841852	0.000	0.999999	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Monday, January 07, 2019 09:24:40
Sample File: C:\Elandata\Sample\PE_EL2_190107.sam
Blank File: C:\Elandata\Dataset\2019 JAN (07-13)\Blank.016
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_190107.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	105.334	**1.000**	0.22	22.4	ug/L
|	B	11	3403.421	**20.000**	0.61	3.1	ug/L
|	Al	27	54418.446	**20.000**	1.07	5.4	ug/L
| >	Sc	45	514458.969				ug/L
|	V	51	28724.016	**3.000**	0.15	5.2	ug/L
|	Cr	52	22010.281	**3.000**	0.22	7.4	ug/L
|	Cr	53	42430.367	**3.000**	16.16	538.6	ug/L
|	Mn	55	5004.294	**1.000**	0.03	2.7	ug/L
|	Co	59	2973.909	**1.000**	0.00	0.5	ug/L
⌊	Ni	60	1259.770	**1.000**	0.01	0.7	ug/L
⌈	Cu	63	2763.164	**2.000**	0.11	5.4	ug/L
|	Cu	65	1160.421	**2.000**	0.09	4.5	ug/L
|	Zn	66	2179.642	**5.000**	0.25	4.9	ug/L
|	Zn	68	1538.821	**5.000**	0.18	3.7	ug/L
| >	Ge	72	239994.690				ug/L
|	As	75	556.615	**2.000**	0.28	13.8	ug/L
|	Se	77	1704.689	**2.000**	0.68	34.2	ug/L
|	Se	82	81.784	**2.000**	0.21	10.7	ug/L
⌊	Sr	88	1722.193	**0.200**	0.02	8.9	ug/L
⌈	Mo	98	1257.409	**1.000**	0.02	1.5	ug/L
| >	Rh	103	307907.646				ug/L
⌊	Ag	107	2927.891	**1.000**	0.01	1.2	ug/L
⌈	Cd	111	681.301	**1.000**	0.08	7.5	ug/L
|	Cd	114	1526.651	**1.000**	0.01	0.7	ug/L
| >	In	115	488859.963				ug/L
|	Sn	120	3832.539	**1.000**	0.03	2.7	ug/L
⌊	Sb	121	5026.977	**2.000**	0.05	2.4	ug/L
⌈	Ba	137	1624.858	**1.000**	0.03	2.8	ug/L
|	Ba	138	10120.344	**1.000**	0.00	0.4	ug/L
| >	Tb	159	803794.729				ug/L
|	Tl	205	6210.507	**1.000**	0.06	5.9	ug/L
⌊	Pb	208	8802.645	**1.000**	0.06	6.4	ug/L
⌈	Hg	200	174.994	**0.200**	0.02	10.8	ug/L
|	Hg	201	95.334	**0.200**	0.12	60.4	ug/L
| >	Bi	209	421696.334				ug/L
⌊	U	238	19810.816	**1.000**	0.01	1.3	ug/L
	C	13	1266.771				ug/L
	W	184	53.304				ug/L
	Pd	106	15.753				ug/L
	Kr	83	44.167				ug/L
⌈	Na	23	167838.240	**100.000**	7.91	7.9	ug/L
|	Mg	24	110956.257	**100.000**	5.87	5.9	ug/L

K	39	358595.761	**100.000**	5.90	5.9	ug/L
Ca	44	19163.842	**100.000**	1.24	1.2	ug/L
Ti	47	160.002				ug/L
Sc-1	45	514458.969				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000143	0.000	1.000000	Linear Thru Zero
B	11.009	0.000260	0.000	1.000000	Linear Thru Zero
Al	26.982	0.003583	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.006577	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.005891	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.000173	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.008724	0.000	1.000000	Linear Thru Zero
Co	58.933	0.005652	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.002340	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.005161	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002158	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001452	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000955	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001015	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000138	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000131	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.018008	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.003873	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009381	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001335	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003145	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.005937	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004847	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001756	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.011114	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.007472	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.010605	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001280	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000476	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.029597	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	1630.167123	0.000	1.000000	Linear Thru Zero
Mg	23.985	1095.894683	0.000	1.000000	Linear Thru Zero
K	38.964	2345.491342	0.000	1.000000	Linear Thru Zero
Ca	43.956	84.597316	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Monday, January 07, 2019 09:28:13
Sample File: C:\Elandata\Sample\PE_EL2_190107.sam
Blank File: C:\Elandata\Dataset\2019 JAN (07-13)\Blank.016
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_190107.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	9237.879	**100.002**	2.58	2.6	ug/L
|	B	11	121100.127	**999.969**	12.09	1.2	ug/L
|	Al	27	391798.974	**249.695**	6.09	2.4	ug/L
| >	Sc	45	498692.698				ug/L
|	V	51	347144.425	**100.000**	1.56	1.6	ug/L
|	Cr	52	296781.955	**99.997**	2.40	2.4	ug/L
|	Cr	53	76583.971	**100.068**	8.17	8.2	ug/L
|	Mn	55	968730.518	**250.000**	10.01	4.0	ug/L
|	Co	59	269843.799	**100.000**	3.11	3.1	ug/L
⌊	Ni	60	136975.574	**249.995**	3.78	1.5	ug/L
⌈	Cu	63	271899.335	**249.998**	8.97	3.6	ug/L
|	Cu	65	117019.636	**249.999**	10.88	4.4	ug/L
|	Zn	66	75867.668	**249.987**	10.45	4.2	ug/L
|	Zn	68	52338.259	**249.992**	7.54	3.0	ug/L
| >	Ge	72	234922.904				ug/L
|	As	75	63930.671	**250.001**	1.29	0.5	ug/L
|	Se	77	6969.326	**249.992**	7.59	3.0	ug/L
|	Se	82	7493.327	**250.000**	7.98	3.2	ug/L
⌊	Sr	88	2103.288	**19.869**	1.49	7.5	ug/L
⌈	Mo	98	114143.702	**100.000**	3.58	3.6	ug/L
| >	Rh	103	307494.211				ug/L
⌊	Ag	107	238158.385	**99.998**	2.45	2.4	ug/L
⌈	Cd	111	61436.914	**99.999**	2.38	2.4	ug/L
|	Cd	114	145727.932	**99.999**	0.32	0.3	ug/L
| >	In	115	488187.882				ug/L
|	Sn	120	278520.816	**100.000**	0.27	0.3	ug/L
⌊	Sb	121	223918.781	**99.998**	2.78	2.8	ug/L
⌈	Ba	137	123243.960	**99.999**	1.82	1.8	ug/L
|	Ba	138	781441.691	**99.999**	0.84	0.8	ug/L
| >	Tb	159	776917.833				ug/L
|	Tl	205	586801.715	**100.000**	4.97	5.0	ug/L
⌊	Pb	208	2012874.994	**250.000**	17.20	6.9	ug/L
⌈	Hg	200	9178.376	**20.000**	0.38	1.9	ug/L
|	Hg	201	5483.289	**20.001**	0.88	4.4	ug/L
| >	Bi	209	413696.365				ug/L
⌊	U	238	1182093.552	**100.000**	0.96	1.0	ug/L
	C	13	1353.454				ug/L
	W	184	67.311				ug/L
	Pd	106	-841.332				ug/L
	Kr	83	42.000				ug/L
⌈	Na	23	13310894.814	**9999.775**	673.52	6.7	ug/L
|	Mg	24	9621706.730	**9999.861**	460.96	4.6	ug/L

	K	39	18726177.775	**9999.739**	409.49	4.1	ug/L
	Ca	44	653204.191	**9999.683**	522.97	5.2	ug/L
	Ti	47	270.005				ug/L
	Sc-1	45	498692.698				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000185	0.000	0.999997	Linear Thru Zero
B	11.009	0.000241	0.000	0.999999	Linear Thru Zero
Al	26.982	0.003009	0.000	0.999884	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.006599	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.005701	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.000716	0.000	0.999742	Linear Thru Zero
Mn	54.938	0.007771	0.000	1.000000	Linear Thru Zero
Co	58.933	0.005412	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.001098	0.000	0.999990	Linear Thru Zero
Cu	62.930	0.004626	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001991	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001285	0.000	0.999997	Linear Thru Zero
Zn	67.925	0.000885	0.000	0.999999	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001087	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000091	0.000	0.999992	Linear Thru Zero
Se	81.917	0.000127	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000271	0.000	0.836619	Linear Thru Zero
Mo	97.906	0.003711	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.007741	0.000	0.999998	Linear Thru Zero
Cd	110.904	0.001258	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.002985	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.005686	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004583	0.000	0.999999	Linear Thru Zero
Ba	136.905	0.001584	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.010044	0.000	0.999999	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.007558	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.010377	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001102	0.000	0.999999	Linear Thru Zero
Hg	200.970	0.000656	0.000	0.999996	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.028402	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	1330.637282	0.000	0.999997	Linear Thru Zero
Mg	23.985	962.047379	0.000	0.999999	Linear Thru Zero
K	38.964	1860.261638	0.000	0.999997	Linear Thru Zero
Ca	43.956	64.252043	0.000	0.999995	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Blank

Sample Date/Time: Monday, January 07, 2019 11:38:49
Sample File: C:\Elandata\Sample\PE_EL2_190107.sam
Blank File: C:\Elandata\Dataset\2019 JAN (07-13)\Blank.045
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 1
Report Filename PE_EL2_190107.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	21.667				ug/L
|	B	11	870.049				ug/L
|	Al	27	28079.242				ug/L
| >	Sc	45	594458.032				ug/L
|	V	51	17665.634				ug/L
|	Cr	52	8144.645				ug/L
|	Cr	53	51946.011				ug/L
|	Mn	55	589.356				ug/L
|	Co	59	51.667				ug/L
⌊	Ni	60	44.667				ug/L
⌈	Cu	63	315.673				ug/L
|	Cu	65	170.335				ug/L
|	Zn	66	651.361				ug/L
|	Zn	68	538.019				ug/L
| >	Ge	72	316476.358				ug/L
|	As	75	29.377				ug/L
|	Se	77	1969.253				ug/L
|	Se	82	30.994				ug/L
⌊	Sr	88	1294.109				ug/L
⌈	Mo	98	84.826				ug/L
| >	Rh	103	407128.555				ug/L
⌊	Ag	107	29.333				ug/L
⌈	Cd	111	24.100				ug/L
|	Cd	114	-14.722				ug/L
| >	In	115	593534.512				ug/L
|	Sn	120	1097.132				ug/L
⌊	Sb	121	201.336				ug/L
⌈	Ba	137	280.661				ug/L
|	Ba	138	1723.851				ug/L
| >	Tb	159	945132.460				ug/L
|	Tl	205	186.002				ug/L
⌊	Pb	208	353.670				ug/L
⌈	Hg	200	53.339				ug/L
|	Hg	201	55.334				ug/L
| >	Bi	209	528290.870				ug/L
⌊	U	238	8980.575				ug/L
	C	13	2166.978				ug/L
	W	184	103.310				ug/L
	Pd	106	33.346				ug/L
	Kr	83	39.000				ug/L
⌈	Na	23	8591.488				ug/L
|	Mg	24	2490.404				ug/L

	K	39	158577.976	ug/L
	Ca	44	10961.144	ug/L
	Ti	47	243.337	ug/L
	Sc-1	45	594458.032	ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000000	0.000	0.000000	Linear Thru Zero
B	11.009	0.000000	0.000	0.000000	Linear Thru Zero
Al	26.982	0.000000	0.000	0.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.000000	0.000	0.000000	Linear Thru Zero
Cr	51.941	0.000000	0.000	0.000000	Linear Thru Zero
Cr	52.941	0.000000	0.000	0.000000	Linear Thru Zero
Mn	54.938	0.000000	0.000	0.000000	Linear Thru Zero
Co	58.933	0.000000	0.000	0.000000	Linear Thru Zero
Ni	59.933	0.000000	0.000	0.000000	Linear Thru Zero
Cu	62.930	0.000000	0.000	0.000000	Linear Thru Zero
Cu	64.928	0.000000	0.000	0.000000	Linear Thru Zero
Zn	65.926	0.000000	0.000	0.000000	Linear Thru Zero
Zn	67.925	0.000000	0.000	0.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.000000	0.000	0.000000	Linear Thru Zero
Se	76.920	0.000000	0.000	0.000000	Linear Thru Zero
Se	81.917	0.000000	0.000	0.000000	Linear Thru Zero
Sr	87.906	0.000000	0.000	0.000000	Linear Thru Zero
Mo	97.906	0.000000	0.000	0.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.000000	0.000	0.000000	Linear Thru Zero
Cd	110.904	0.000000	0.000	0.000000	Linear Thru Zero
Cd	113.904	0.000000	0.000	0.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.000000	0.000	0.000000	Linear Thru Zero
Sb	120.904	0.000000	0.000	0.000000	Linear Thru Zero
Ba	136.905	0.000000	0.000	0.000000	Linear Thru Zero
Ba	137.905	0.000000	0.000	0.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.000000	0.000	0.000000	Linear Thru Zero
Pb	207.977	0.000000	0.000	0.000000	Linear Thru Zero
Hg	199.968	0.000000	0.000	0.000000	Linear Thru Zero
Hg	200.970	0.000000	0.000	0.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.000000	0.000	0.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	0.000000	0.000	0.000000	Linear Thru Zero
Mg	23.985	0.000000	0.000	0.000000	Linear Thru Zero
K	38.964	0.000000	0.000	0.000000	Linear Thru Zero
Ca	43.956	0.000000	0.000	0.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 1

Sample Date/Time: Monday, January 07, 2019 11:42:23
Sample File: C:\Elandata\Sample\PE_EL2_190107.sam
Blank File: C:\Elandata\Dataset\2019 JAN (07-13)\Blank.045
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 2
Report Filename PE_EL2_190107.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	142.668	**1.000**	0.17	16.5	ug/L
|	B	11	4075.748	**20.000**	0.78	3.9	ug/L
|	Al	27	75993.629	**20.000**	0.80	4.0	ug/L
| >	Sc	45	571492.790				ug/L
|	V	51	29745.560	**3.000**	0.57	19.1	ug/L
|	Cr	52	18226.078	**3.000**	0.15	5.1	ug/L
|	Cr	53	50419.235	**3.000**	9.47	315.6	ug/L
|	Mn	55	5663.417	**1.000**	0.03	3.3	ug/L
|	Co	59	3502.798	**1.000**	0.08	7.6	ug/L
⌊	Ni	60	1448.803	**1.000**	0.05	4.7	ug/L
⌈	Cu	63	3252.688	**2.000**	0.05	2.6	ug/L
|	Cu	65	1436.134	**2.000**	0.10	4.9	ug/L
|	Zn	66	2485.069	**5.000**	0.24	4.7	ug/L
|	Zn	68	1821.216	**5.000**	0.12	2.4	ug/L
| >	Ge	72	303031.555				ug/L
|	As	75	991.929	**2.000**	0.14	6.8	ug/L
|	Se	77	1936.911	**2.000**	5.25	262.5	ug/L
|	Se	82	107.649	**2.000**	0.08	4.1	ug/L
⌊	Sr	88	2333.355	**0.200**	0.02	11.3	ug/L
⌈	Mo	98	1535.779	**1.000**	0.05	5.4	ug/L
| >	Rh	103	402008.183				ug/L
⌊	Ag	107	3890.318	**1.000**	0.03	2.7	ug/L
⌈	Cd	111	839.977	**1.000**	0.06	6.4	ug/L
|	Cd	114	1798.750	**1.000**	0.03	2.9	ug/L
| >	In	115	591976.605				ug/L
|	Sn	120	4339.588	**1.000**	0.04	3.9	ug/L
⌊	Sb	121	5425.250	**2.000**	0.06	3.2	ug/L
⌈	Ba	137	1789.207	**1.000**	0.00	0.2	ug/L
|	Ba	138	11079.660	**1.000**	0.02	2.3	ug/L
| >	Tb	159	901071.119				ug/L
|	Tl	205	7598.087	**1.000**	0.08	8.2	ug/L
⌊	Pb	208	10738.310	**1.000**	0.10	10.2	ug/L
⌈	Hg	200	161.678	**0.200**	0.02	7.7	ug/L
|	Hg	201	87.334	**0.200**	0.05	22.5	ug/L
| >	Bi	209	518185.050				ug/L
⌊	U	238	23098.965	**1.000**	0.03	3.4	ug/L
	C	13	1633.507				ug/L
	W	184	50.645				ug/L
	Pd	106	19.950				ug/L
	Kr	83	40.500				ug/L
⌈	Na	23	249711.744	**100.000**	3.73	3.7	ug/L
|	Mg	24	157144.091	**100.000**	4.30	4.3	ug/L

	K	39	416792.496	**100.000**	4.52	4.5	ug/L
	Ca	44	20340.225	**100.000**	9.65	9.7	ug/L
	Ti	47	366.676				ug/L
	Sc-1	45	571492.790				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000214	0.000	1.000000	Linear Thru Zero
B	11.009	0.000283	0.000	1.000000	Linear Thru Zero
Al	26.982	0.004284	0.000	1.000000	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.007476	0.000	1.000000	Linear Thru Zero
Cr	51.941	0.006068	0.000	1.000000	Linear Thru Zero
Cr	52.941	0.000298	0.000	1.000000	Linear Thru Zero
Mn	54.938	0.008925	0.000	1.000000	Linear Thru Zero
Co	58.933	0.006052	0.000	1.000000	Linear Thru Zero
Ni	59.933	0.002463	0.000	1.000000	Linear Thru Zero
Cu	62.930	0.004867	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.002101	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001228	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000862	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001591	0.000	1.000000	Linear Thru Zero
Se	76.920	0.000085	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000129	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.018056	0.000	1.000000	Linear Thru Zero
Mo	97.906	0.003616	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.009604	0.000	1.000000	Linear Thru Zero
Cd	110.904	0.001377	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.003066	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.005479	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004412	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001689	0.000	1.000000	Linear Thru Zero
Ba	137.905	0.010470	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.008259	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.011585	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001055	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000319	0.000	1.000000	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027593	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	2411.202560	0.000	1.000000	Linear Thru Zero
Mg	23.985	1546.536871	0.000	1.000000	Linear Thru Zero
K	38.964	2582.145200	0.000	1.000000	Linear Thru Zero
Ca	43.956	93.790810	0.000	1.000000	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Quantitative Analysis - Summary Report

Analyst: ARD

Instrument : ICPMS (PE-EL2)

Sample ID: Standard 2

Sample Date/Time: Monday, January 07, 2019 11:45:56
Sample File: C:\Elandata\Sample\PE_EL2_190107.sam
Blank File: C:\Elandata\Dataset\2019 JAN (07-13)\Blank.045
Number of Replicates: 3
Dual Detector Mode: Dual
Method File: C:\Elandata\Method\BC Methods\200.8-6020_180814_3 STD CALIB_NEW.mth
Autosampler Position: 3
Report Filename PE_EL2_190107.TXT

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	**Conc. Mean**	Conc. SD	Conc. RSD	Sample Unit
⌈	Be	9	11073.980	**99.999**	3.41	3.4	ug/L
|	B	11	155146.000	**999.975**	13.10	1.3	ug/L
|	Al	27	573258.267	**249.786**	1.69	0.7	ug/L
| >	Sc	45	578541.416				ug/L
|	V	51	405077.489	**99.990**	0.47	0.5	ug/L
|	Cr	52	341699.929	**99.995**	3.57	3.6	ug/L
|	Cr	53	92685.109	**100.053**	14.27	14.3	ug/L
|	Mn	55	1105691.502	**249.999**	17.68	7.1	ug/L
|	Co	59	312313.047	**99.999**	5.96	6.0	ug/L
⌊	Ni	60	162550.703	**249.995**	11.06	4.4	ug/L
⌈	Cu	63	333681.658	**249.998**	1.86	0.7	ug/L
|	Cu	65	147975.599	**249.999**	6.57	2.6	ug/L
|	Zn	66	94281.632	**250.001**	5.89	2.4	ug/L
|	Zn	68	65944.519	**250.001**	4.19	1.7	ug/L
| >	Ge	72	301811.705				ug/L
|	As	75	85306.960	**249.993**	6.47	2.6	ug/L
|	Se	77	8958.058	**250.001**	23.05	9.2	ug/L
|	Se	82	10474.970	**250.001**	2.98	1.2	ug/L
⌊	Sr	88	2981.580	**19.878**	1.87	9.4	ug/L
⌈	Mo	98	147728.395	**100.000**	2.87	2.9	ug/L
| >	Rh	103	392084.020				ug/L
⌊	Ag	107	292358.864	**99.997**	4.97	5.0	ug/L
⌈	Cd	111	72744.130	**99.999**	2.51	2.5	ug/L
|	Cd	114	167833.713	**100.000**	2.41	2.4	ug/L
| >	In	115	565257.047				ug/L
|	Sn	120	313204.100	**100.000**	1.82	1.8	ug/L
⌊	Sb	121	250386.233	**100.000**	2.98	3.0	ug/L
⌈	Ba	137	139090.610	**99.999**	4.93	4.9	ug/L
|	Ba	138	891534.649	**99.999**	2.98	3.0	ug/L
| >	Tb	159	933159.071				ug/L
|	Tl	205	701610.913	**99.999**	7.73	7.7	ug/L
⌊	Pb	208	2384747.810	**249.999**	31.10	12.4	ug/L
⌈	Hg	200	11122.955	**20.000**	1.26	6.3	ug/L
|	Hg	201	6446.701	**20.001**	1.01	5.0	ug/L
| >	Bi	209	501126.462				ug/L
⌊	U	238	1389175.723	**100.000**	2.46	2.5	ug/L
	C	13	1726.863				ug/L
	W	184	65.979				ug/L
	Pd	106	-577.369				ug/L
	Kr	83	44.833				ug/L
⌈	Na	23	21473636.280	**9999.877**	475.35	4.8	ug/L
|	Mg	24	14423199.836	**9999.928**	650.31	6.5	ug/L

K	39	23849506.588	**9999.910**	77.13	0.8	ug/L
Ca	44	756862.793	**9999.743**	187.69	1.9	ug/L
Ti	47	323.341				ug/L
Sc-1	45	578541.416				ug/L

QC Calculated Values

	Analyte	Mass	Duplicate Rel. % Difference	Int Std % Recovery
	Be	9		
	B	11		
	Al	27		
>	Sc	45		
	V	51		
	Cr	52		
	Cr	53		
	Mn	55		
	Co	59		
	Ni	60		
	Cu	63		
	Cu	65		
	Zn	66		
	Zn	68		
>	Ge	72		
	As	75		
	Se	77		
	Se	82		
	Sr	88		
	Mo	98		
>	Rh	103		
	Ag	107		
	Cd	111		
	Cd	114		
>	In	115		
	Sn	120		
	Sb	121		
	Ba	137		
	Ba	138		
>	Tb	159		
	Tl	205		
	Pb	208		
	Hg	200		
	Hg	201		
>	Bi	209		
	U	238		
	C	13		
	W	184		
	Pd	106		
	Kr	83		
	Na	23		
	Mg	24		
	K	39		
	Ca	44		

	Ti	47
	Sc-1	45

Calibration File Table

Analyte	Mass	Slope	Intercept	Corr Coeff	Curve Type
Be	9.012	0.000191	0.000	0.999999	Linear Thru Zero
B	11.009	0.000267	0.000	0.999999	Linear Thru Zero
Al	26.982	0.003778	0.000	0.999943	Linear Thru Zero
Sc	44.956	0.000000	0.000	0.000000	Linear Thru Zero
V	50.944	0.006705	0.000	0.999994	Linear Thru Zero
Cr	51.941	0.005777	0.000	0.999999	Linear Thru Zero
Cr	52.941	0.000731	0.000	0.999842	Linear Thru Zero
Mn	54.938	0.007659	0.000	1.000000	Linear Thru Zero
Co	58.933	0.005408	0.000	0.999999	Linear Thru Zero
Ni	59.933	0.001125	0.000	0.999989	Linear Thru Zero
Cu	62.930	0.004418	0.000	1.000000	Linear Thru Zero
Cu	64.928	0.001958	0.000	1.000000	Linear Thru Zero
Zn	65.926	0.001241	0.000	1.000000	Linear Thru Zero
Zn	67.925	0.000867	0.000	1.000000	Linear Thru Zero
Ge	71.922	0.000000	0.000	0.000000	Linear Thru Zero
As	74.922	0.001131	0.000	0.999995	Linear Thru Zero
Se	76.920	0.000094	0.000	1.000000	Linear Thru Zero
Se	81.917	0.000138	0.000	1.000000	Linear Thru Zero
Sr	87.906	0.000291	0.000	0.853559	Linear Thru Zero
Mo	97.906	0.003766	0.000	1.000000	Linear Thru Zero
Rh	102.905	0.000000	0.000	0.000000	Linear Thru Zero
Ag	106.905	0.007456	0.000	0.999996	Linear Thru Zero
Cd	110.904	0.001286	0.000	1.000000	Linear Thru Zero
Cd	113.904	0.002968	0.000	1.000000	Linear Thru Zero
In	114.904	0.000000	0.000	0.000000	Linear Thru Zero
Sn	119.902	0.005526	0.000	1.000000	Linear Thru Zero
Sb	120.904	0.004430	0.000	1.000000	Linear Thru Zero
Ba	136.905	0.001491	0.000	0.999999	Linear Thru Zero
Ba	137.905	0.009548	0.000	1.000000	Linear Thru Zero
Tb	158.925	0.000000	0.000	0.000000	Linear Thru Zero
Tl	204.975	0.007542	0.000	1.000000	Linear Thru Zero
Pb	207.977	0.010277	0.000	1.000000	Linear Thru Zero
Hg	199.968	0.001106	0.000	1.000000	Linear Thru Zero
Hg	200.970	0.000639	0.000	0.999987	Linear Thru Zero
Bi	208.980	0.000000	0.000	0.000000	Linear Thru Zero
U	238.050	0.027564	0.000	1.000000	Linear Thru Zero
C	13.003	0.000000	0.000	0.000000	Linear Thru Zero
W	183.951	0.000000	0.000	0.000000	Linear Thru Zero
Pd	105.903	0.000000	0.000	0.000000	Linear Thru Zero
Kr	82.914	0.000000	0.000	0.000000	Linear Thru Zero
Na	22.990	2146.530946	0.000	0.999999	Linear Thru Zero
Mg	23.985	1442.081389	0.000	1.000000	Linear Thru Zero
K	38.964	2369.114164	0.000	1.000000	Linear Thru Zero
Ca	43.956	74.592085	0.000	0.999997	Linear Thru Zero
Ti	46.952	0.000000	0.000	0.000000	Linear Thru Zero
Sc-1	44.956	0.000000	0.000	0.000000	Linear Thru Zero

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

Raw Data - Instrument Tuning

Sample Information

Sample Date/Time: Monday, January 07, 2019 06:11:30
Method File: C:\Elandata\Method\BC Methods\BC-Tuning.mth
Dataset File: C:\Elandata\Dataset\Default\Mass Calibration and Resolution - Retry 1.1307
Tuning File: C:\Elandata\Tuning\default.tun
Number of Sweeps: 35
Number of Readings: 1
Number of Replicates: 5
Measurement Unit: cps

Instrument Tuning Report

File Name: default.tun
File Path: C:\Elandata\Tuning\default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
Li	7.016	6.976	1568	2078	0.717	
Mg	23.985	24.028	5680	2094	0.709	
Rh	102.905	102.878	24808	2257	0.702	
Ce	139.905	139.828	33781	2342	0.699	
Pb	207.977	207.979	50315	2500	0.692	
U	238.050	238.026	57611	2558	0.707	

Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Monday, January 07, 2019 06:38:09
Sample Description:
Method File: C:\Elandata\Method\BC Methods\BC_Daily Performance.mth
Dataset File: C:\Elandata\Dataset\Default\Daily Performance Check.1311
Tuning File: C:\Elandata\Tuning\default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Dual
Acq. Dead Time(ns): 65
Current Dead Time (ns): 65

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	29403.0	29402.968	130.566	0.4
	In	114.9	154149.0	154148.964	2261.575	1.5
	U	238.1	233125.5	233125.461	3124.560	1.3
⌈>	Ba	137.9	140173.0	140173.040	1818.869	1.3
⌊	Ba++	69.0	2461.4	0.018	0.001	3.5
⌈>	Ce	139.9	175350.0	175349.965	2415.784	1.4
⌊	CeO	155.9	2427.7	0.014	0.000	2.7
	220	220.0	17.0	16.960	3.833	22.6
	8.5	8.5	21.2	21.200	4.980	23.5

Current Optimization File Data

Current Value	Description
1.00	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
15.00	Plasma Gas Flow
7.25	Lens Voltage
1500.00	ICP RF Power
-1900.00	Analog Stage Voltage
1600.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset Std [QRO]
-10.00	Cell Rod Offset Std [CRO]
60.00	Discriminator Threshold
-21.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.25	RPq
0.98	DRC Mode NEB
-8.00	DRC Mode QRO
-2.00	DRC Mode CRO
-25.00	DRC Mode CPV
0.00	Cell Gas A
0.00	Cell Gas B
210.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
450.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	12	69	6.0	166805.8
Mg	24	69	5.8	19341.0
In	115	69	7.3	71214.8
Ce	140	69	8.3	84006.2
Pb	208	69	9.3	45732.2

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 1/28/2019 1:52:47PM
Project: SMUD 59th St.
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

BC LABORATORIES, INC.

Work Order Number: 1908647

Laboratory Documentation Requirements
For Data Validation of
Volatiles Analysis

Prepared By

BC Laboratories

For AECOM - Sacramento

60570043.05

Table of Contents

Case Narrative

Sample Receipt

Work Order: 1908647
COC Number:
Default Cooler was received at 25 °C
Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

Method	Instrument
EPA-TO-15	MS-A2

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

LCS / LCSD

The LCS recoveries were within QC limits.

Discussion

Samples 19-08647-01 through 19-08647-03 were checked for canister pressure upon receipt of the samples. Each sample pressure as follows:

Canister Receipt Pressures

Lab number	Pressure	Units
1908647-01	13.1	PSIA
1908647-02	13.1	PSIA
1908647-03	13.0	PSIA

Chain of Custody and Cooler Receipt Form for 1908647 Page 1 of 2

AECOM

5 day Rush @ 3/19/19

Laboratory: BC Laboratories
4100 Atlas Ct.
Bakersfield,CA 93308

Shipment Number: _____
Cooler Number: _____
Ship Date: 3/18/2019

COC Page No.: 1 of 1

Project Number: 60570043
Project Name: SMUD 59th Street Corp. Yard
Project Contact: Robert Kohlhardt

Client:AECOM
2020 L ST STE400
Sacramento, CA 95811

19-0806 47

Sampler Signature: _____

Sample	Field Sample ID	Sampling Date	Sampling Time	Matrix Type	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	Filtered	No. of Containers	TO-15 (see Comments for Analyte List)	Remarks
1	SG-VW13A-01 (#2891)	03/18/19	9:35	Soil Gas	1.4L SUMA	N/A	NONE		1	X	Start: -29 End: -5
2	SG-VW13A-02 (#1140)	03/18/19	9:44	Soil Gas	1.4L SUMA	N/A	NONE		1	X	Start: -30 End: -5
3	SG-VW12A-01 (#1491)	03/18/19	10:30	Soil Gas	1.4L SUMA	N/A	NONE		1	X	Start: -30 End: -5
4	(NOT USED) (#2643)	N/A	N/A	N/A	1.4L SUMA	N/A	NONE		1		Return to Lab

Analyses Requested

3/18/19

3/18/19

DISTRIBUTION
CHK BY
SUB-OUT

Relinquished By	Date	Received By	Date	Relinquished By	Date	Received By	Date
Signature:	3/18/19	Signature:	3/18/19	Signature:	3/18/19	Signature:	3-19-19
Printed: CHRIS WOMACK	Time	Printed: Mark Ellis	Time	Printed: Mark Ellis	Time	Printed:	Time
Company: AECOM	1115	Company: ~~AECOM~~ BCL	1115	Company: AECOM BCL	1145	Company:	09:38
Reason: RELINQUISH				Reason: Shipping			

Relinquished By	Date	Received By	Date
Signature:		Signature:	
Printed:	Time	Printed:	Time
Company:		Company:	
Reason:			

Comments:
Email Results to: robert.kohlhardt@aecom.com

TAT=STANDARD

TO-15 Analyte List:
Chloroethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, isopropyl alcohol, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, Tetrachloroethene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethene, Vinyl Chloride

Chain of Custody and Cooler Receipt Form for 1908647 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 19-08647

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☐ None ☐ Box ☒	YES ☐ NO ☐
BC Lab Field Service ☐ Other ☐ (Specify) G30	Other ☐ (Specify)	W / S

Refrigerant: Ice ☐ Blue Ice ☐ None ☒ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: Container Canister Thermometer ID: Date/Time 3/19/19

Temperature: (A) Room °C / (C) Temp °C Analyst Init 09:38

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER (410)	A	A	A							

Comments:

Sample Numbering Completed By: JTM/NDL Date/Time: 1515 3/19/19 3/19/19

A = Actual / C = Corrected

Rev 21 05/23/2016

(S:\WPDocs\WasdPerlec\LAB_DOCS\FORMS\SAMREC rev 20)

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: **1908647**
Class: **VOA**
Method: **EPA-TO-15**

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSES DATA PACKAGE COVER PAGE

EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)

Client Sample Id:	Lab Sample Id:
SG-VW13A-01 (#2891)	1908647-01
SG-VW13A-02 (#1140)	1908647-02
SG-VW12A-01 (#1491)	1908647-03

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Sara Guron
Name: Sara Guron

Date: 04-09-2019
Title: QA/QC Manager

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD DETECTION AND REPORTING LIMITS

EPA-TO-15

Laboratory: BC Laboratories
SDG: 1908647
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St. (Bill to AECOM)
Matrix: Air
Instrument: MS-A2

Analyte	MDL	PQL	Units
Chloroethane	0.32	2.0	ug/m3
1,1-Dichloroethane	0.28	5.0	ug/m3
1,2-Dichloroethane	0.21	5.0	ug/m3
1,1-Dichloroethene	0.20	5.0	ug/m3
cis-1,2-Dichloroethene	0.23	2.0	ug/m3
trans-1,2-Dichloroethene	0.20	2.0	ug/m3
Isopropyl alcohol	0.47	2.0	ug/m3
1,1,1,2-Tetrachloroethane	0.52	5.0	ug/m3
1,1,2,2-Tetrachloroethane	1.1	5.0	ug/m3
Tetrachloroethene	0.34	5.0	ug/m3
1,1,1-Trichloroethane	0.28	5.0	ug/m3
1,1,2-Trichloroethane	0.28	5.0	ug/m3
Trichloroethene	0.38	5.0	ug/m3
Vinyl chloride	0.29	2.0	ug/m3

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Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-TO-15

SG-VW13A-01 (#2891)

Laboratory:	BC Laboratories			SDG:	1908647
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St. (Bill to AECOM)
Matrix:	Air	Laboratory ID:	1908647-01	File ID:	20MAR14.D
Sampled:	03/18/19 09:35	Prepared:	03/19/19 08:06	Analyzed:	03/20/19 21:33
Solids:		Preparation:	EPA TO-15	Initial/Final:	1 ml / 1 ml
Batch:	B040749	Sequence:	1905408	Calibration:	1903002
Instrument:	MS-A2				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/m3)	Q
75-00-3	Chloroethane	15.3	4.9	UD
75-34-3	1,1-Dichloroethane	15.3	4.3	UD
107-06-2	1,2-Dichloroethane	15.3	3.2	UD
75-35-4	1,1-Dichloroethene	15.3	3.1	UD
156-59-2	cis-1,2-Dichloroethene	15.3	3.5	UD
156-60-5	trans-1,2-Dichloroethene	15.3	3.1	UD
67-63-0	Isopropyl alcohol	15.3	7.2	UD
630-20-6	1,1,1,2-Tetrachloroethane	15.3	8.0	UD
79-34-5	1,1,2,2-Tetrachloroethane	15.3	17	UD
127-18-4	Tetrachloroethene	15.3	400	D
71-55-6	1,1,1-Trichloroethane	15.3	4.3	UD
79-00-5	1,1,2-Trichloroethane	15.3	4.3	UD
79-01-6	Trichloroethene	15.3	5.8	UD
75-01-4	Vinyl chloride	15.3	4.4	UD

SYSTEM MONITORING COMPOUND	ADDED (ppbv)	CONC (ppbv)	% REC	QC LIMITS	Q
4-Bromofluorobenzene (Surrogate)	10.000	9.06	90.6	70 - 130	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Bromochloromethane (IS)	99019	8.01	120068	8.005	
Chlorobenzene-d5 (IS)	125219	11.463	156540	11.458	
1,4-Difluorobenzene (IS)	213922	9.214	290475	9.214	

* Values outside of QC limits

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Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-TO-15

SG-VW13A-02 (#1140)

Laboratory:	BC Laboratories			SDG:	1908647
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St. (Bill to AECOM)
Matrix:	Air	Laboratory ID:	1908647-02	File ID:	20MAR15.D
Sampled:	03/18/19 09:44	Prepared:	03/19/19 08:06	Analyzed:	03/20/19 22:07
Solids:		Preparation:	EPA TO-15	Initial/Final:	1 ml / 1 ml
Batch:	B040749	Sequence:	1905408	Calibration:	1903002
Instrument:	MS-A2				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/m3)	Q
75-00-3	Chloroethane	13.6	4.4	UD
75-34-3	1,1-Dichloroethane	13.6	3.8	UD
107-06-2	1,2-Dichloroethane	13.6	2.9	UD
75-35-4	1,1-Dichloroethene	13.6	2.7	UD
156-59-2	cis-1,2-Dichloroethene	13.6	3.1	UD
156-60-5	trans-1,2-Dichloroethene	13.6	2.7	UD
67-63-0	Isopropyl alcohol	13.6	6.4	UD
630-20-6	1,1,1,2-Tetrachloroethane	13.6	7.1	UD
79-34-5	1,1,2,2-Tetrachloroethane	13.6	15	UD
127-18-4	Tetrachloroethene	13.6	360	D
71-55-6	1,1,1-Trichloroethane	13.6	3.8	UD
79-00-5	1,1,2-Trichloroethane	13.6	3.8	UD
79-01-6	Trichloroethene	13.6	5.2	UD
75-01-4	Vinyl chloride	13.6	3.9	UD

SYSTEM MONITORING COMPOUND	ADDED (ppbv)	CONC (ppbv)	% REC	QC LIMITS	Q
4-Bromofluorobenzene (Surrogate)	10.000	9.10	91.0	70 - 130	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Bromochloromethane (IS)	87573	8.015	120068	8.005	
Chlorobenzene-d5 (IS)	110970	11.463	156540	11.458	
1,4-Difluorobenzene (IS)	198517	9.219	290475	9.214	

* Values outside of QC limits

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Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ORGANIC ANALYSIS DATA SHEET
EPA-TO-15

SG-VW12A-01 (#1491)

Laboratory:	BC Laboratories			SDG:	1908647
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St. (Bill to AECOM)
Matrix:	Air	Laboratory ID:	1908647-03	File ID:	20MAR16.D
Sampled:	03/18/19 10:30	Prepared:	03/19/19 08:06	Analyzed:	03/20/19 22:43
Solids:		Preparation:	EPA TO-15	Initial/Final:	1 ml / 1 ml
Batch:	B040749	Sequence:	1905408	Calibration:	1903002
Instrument:	MS-A2				

CAS NO.	COMPOUND	DILUTION	CONC. (ug/m3)	Q
75-00-3	Chloroethane	15.3	4.9	UD
75-34-3	1,1-Dichloroethane	15.3	4.3	UD
107-06-2	1,2-Dichloroethane	15.3	3.2	UD
75-35-4	1,1-Dichloroethene	15.3	3.1	UD
156-59-2	cis-1,2-Dichloroethene	15.3	3.5	UD
156-60-5	trans-1,2-Dichloroethene	15.3	3.1	UD
67-63-0	Isopropyl alcohol	15.3	7.2	UD
630-20-6	1,1,1,2-Tetrachloroethane	15.3	8.0	UD
79-34-5	1,1,2,2-Tetrachloroethane	15.3	17	UD
127-18-4	Tetrachloroethene	15.3	97	D
71-55-6	1,1,1-Trichloroethane	15.3	4.3	UD
79-00-5	1,1,2-Trichloroethane	15.3	4.3	UD
79-01-6	Trichloroethene	15.3	5.8	UD
75-01-4	Vinyl chloride	15.3	4.4	UD

SYSTEM MONITORING COMPOUND	ADDED (ppbv)	CONC (ppbv)	% REC	QC LIMITS	Q
4-Bromofluorobenzene (Surrogate)	10.000	9.19	91.9	70 - 130	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Bromochloromethane (IS)	83205	8.015	120068	8.005	
Chlorobenzene-d5 (IS)	102628	11.463	156540	11.458	
1,4-Difluorobenzene (IS)	183623	9.219	290475	9.214	

* Values outside of QC limits

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Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

PREPARATION BATCH SUMMARY

EPA-TO-15

Laboratory: BC Laboratories
SDG: 1908647
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St. (Bill to AECOM)
Batch: B040749 Batch Matrix: Air
Preparation: EPA TO-15

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
SG-VW13A-01 (#2891)	1908647-01	20MAR14.D	03/19/19 08:06	Customized- Short List
SG-VW13A-02 (#1140)	1908647-02	20MAR15.D	03/19/19 08:06	Customized- Short List
SG-VW12A-01 (#1491)	1908647-03	20MAR16.D	03/19/19 08:06	Customized- Short List
Blank	B040749-BLK1	19MAR07.D	03/19/19 08:06	
LCS	B040749-BS1	19MAR05.D	03/19/19 08:06	
LCS Dup	B040749-BSD1	19MAR06.D	03/19/19 08:06	

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Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

METHOD BLANK DATA SHEET
EPA-TO-15

Laboratory:	BC Laboratories			SDG:	1908647
Client:	AECOM - Sacramento $AECS			Project:	SMUD 59th St. (Bill to AECOM)
Matrix:	Air	Laboratory ID:	B040749-BLK1	File ID:	19MAR07.D
Prepared:	03/19/19 08:06	Preparation:	EPA TO-15	Initial/Final:	1 ml / 1 ml
Analyzed:	03/19/19 13:37	Instrument:	MS-A2		
Batch:	B040749	Sequence:	1905211	Calibration:	1903002

CAS NO.	COMPOUND	CONC. (ug/m3)	Q
75-00-3	Chloroethane	0.32	U
75-34-3	1,1-Dichloroethane	0.28	U
107-06-2	1,2-Dichloroethane	0.21	U
75-35-4	1,1-Dichloroethene	0.20	U
156-59-2	cis-1,2-Dichloroethene	0.23	U
156-60-5	trans-1,2-Dichloroethene	0.20	U
67-63-0	Isopropyl alcohol	0.47	U
630-20-6	1,1,1,2-Tetrachloroethane	0.52	U
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U
127-18-4	Tetrachloroethene	0.34	U
71-55-6	1,1,1-Trichloroethane	0.28	U
79-00-5	1,1,2-Trichloroethane	0.28	U
79-01-6	Trichloroethene	0.38	U
75-01-4	Vinyl chloride	0.29	U

SYSTEM MONITORING COMPOUND	ADDED (ppbv)	CONC (ppbv)	% REC	QC LIMITS	Q
4-Bromofluorobenzene (Surrogate)	10.000	9.21	92.1	70 - 130	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Bromochloromethane (IS)	135708	8.005	120068	8.005	
Chlorobenzene-d5 (IS)	162990	11.458	156540	11.458	
1,4-Difluorobenzene (IS)	316933	9.214	290475	9.214	

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Project Manager: Robert Kohlhardt

LCS RECOVERY
EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Matrix: Air
Batch: B040749
Preparation: EPA TO-15

SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Laboratory ID: B040749-BS1
Initial/Final: 1 ml / 1 ml

COMPOUND	SPIKE ADDED (ug/m3)	LCS CONCENTRATION (ug/m3)	LCS % REC. #	QC LIMITS REC.
Tetrachloroethene	33.913	28.419	83.8	70 - 130
Trichloroethene	26.869	23.376	87.0	70 - 130

COMPOUND	SPIKE ADDED (ug/m3)	LCSD CONCENTRATION (ug/m3)	LCSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Tetrachloroethene	33.913	28.554	84.2	0.476	30	70 - 130
Trichloroethene	26.869	24.021	89.4	2.72	30	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Sequence:	1904158	Instrument:	MS-A2
Matrix:	Air	Calibration:	1903002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1904158-TUN1	06MAR04.D	03/06/19 12:44
Cal Standard	1904158-CAL1	06MAR05.D	03/06/19 13:18
Cal Standard	1904158-CAL3	06MAR07.D	03/06/19 14:25
Cal Standard	1904158-CAL4	06MAR08.D	03/06/19 15:06
Cal Standard	1904158-CAL5	06MAR09.D	03/06/19 15:50
Cal Standard	1904158-CAL6	06MAR10.D	03/06/19 16:38
Cal Standard	1904158-CAL2	06MAR11.D	03/06/19 17:10

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Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1905211
Matrix: Air
SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2
Calibration: 1903002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1905211-TUN1	19MAR01.D	03/19/19 10:14
Calibration Check	1905211-CCV1	19MAR02.D	03/19/19 10:47
Calibration Blank	1905211-CCB1	19MAR04.D	03/19/19 11:54
LCS	B040749-BS1	19MAR05.D	03/19/19 12:28
LCS Dup	B040749-BSD1	19MAR06.D	03/19/19 13:02
Blank	B040749-BLK1	19MAR07.D	03/19/19 13:37
MS Tune	1905211-TUN2	19MAR32.D	03/20/19 09:44
Calibration Check	1905211-CCV3	19MAR33.D	03/20/19 10:19
Calibration Blank	1905211-CCB2	19MAR35.D	03/20/19 11:25

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1905408
Matrix: Air

SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2
Calibration: 1903002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	1905408-ICV1	06MAR13.D	03/06/19 18:19
Initial Cal Blank	1905408-ICB1	06MAR15.D	03/06/19 19:29
MS Tune	1905408-TUN1	19MAR32.D	03/20/19 09:44
Calibration Check	1905408-CCV1	19MAR33.D	03/20/19 10:19
Calibration Blank	1905408-CCB1	19MAR35.D	03/20/19 11:25
SG-VW13A-01 (#2891)	1908647-01	20MAR14.D	03/20/19 21:33
SG-VW13A-02 (#1140)	1908647-02	20MAR15.D	03/20/19 22:07
SG-VW12A-01 (#1491)	1908647-03	20MAR16.D	03/20/19 22:43
MS Tune	1905408-TUN2	20MAR17.D	03/21/19 09:18
Calibration Check	1905408-CCV3	20MAR18.D	03/21/19 09:53
Calibration Blank	1905408-CCB2	20MAR20.D	03/21/19 10:59

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Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Lab File ID:	06MAR04.D	Injection Date:	03/06/19
Instrument ID:	MS-A2	Injection Time:	12:44
Sequence:	1904158	Lab Sample ID:	1904158-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	8 - 40% of Mass 95	25.6	PASS
Mass 75	30 - 66% of Mass 95	59.4	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	7.25	PASS
Mass 173	Less than 2% of Mass 174	0.782	PASS
Mass 174	50 - 120% of Mass 95	79.9	PASS
Mass 175	4 - 9% of Mass 174	8.08	PASS
Mass 176	93 - 101% of Mass 174	101	PASS
Mass 177	5 - 9% of Mass 176	6.85	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Lab File ID:	19MAR01.D	Injection Date:	03/19/19
Instrument ID:	MS-A2	Injection Time:	10:14
Sequence:	1905211	Lab Sample ID:	1905211-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	8 - 40% of Mass 95	24.7	PASS
Mass 75	30 - 66% of Mass 95	56.2	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.2	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 120% of Mass 95	74.9	PASS
Mass 175	4 - 9% of Mass 174	7.46	PASS
Mass 176	93 - 101% of Mass 174	99.4	PASS
Mass 177	5 - 9% of Mass 176	7.16	PASS

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MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Lab File ID:	19MAR32.D	Injection Date:	03/20/19
Instrument ID:	MS-A2	Injection Time:	09:44
Sequence:	1905211	Lab Sample ID:	1905211-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	8 - 40% of Mass 95	28.4	PASS
Mass 75	30 - 66% of Mass 95	60.3	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 120% of Mass 95	70.3	PASS
Mass 175	4 - 9% of Mass 174	6.75	PASS
Mass 176	93 - 101% of Mass 174	101	PASS
Mass 177	5 - 9% of Mass 176	7.15	PASS

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Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Lab File ID:	19MAR32.D	Injection Date:	03/20/19
Instrument ID:	MS-A2	Injection Time:	09:44
Sequence:	1905408	Lab Sample ID:	1905408-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	8 - 40% of Mass 95	28.4	PASS
Mass 75	30 - 66% of Mass 95	60.3	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 120% of Mass 95	70.3	PASS
Mass 175	4 - 9% of Mass 174	6.75	PASS
Mass 176	93 - 101% of Mass 174	101	PASS
Mass 177	5 - 9% of Mass 176	7.15	PASS

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Project: SMUD 59th St. (Bill to AECOM)
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Project Manager: Robert Kohlhardt

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Lab File ID:	20MAR17.D	Injection Date:	03/21/19
Instrument ID:	MS-A2	Injection Time:	09:18
Sequence:	1905408	Lab Sample ID:	1905408-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
Mass 50	8 - 40% of Mass 95	27.4	PASS
Mass 75	30 - 66% of Mass 95	64.3	PASS
Mass 95	Base peak, 100% relative abundance	100	PASS
Mass 96	5 - 9% of Mass 95	6.54	PASS
Mass 173	Less than 2% of Mass 174	0	PASS
Mass 174	50 - 120% of Mass 95	75.1	PASS
Mass 175	4 - 9% of Mass 174	7.61	PASS
Mass 176	93 - 101% of Mass 174	99.4	PASS
Mass 177	5 - 9% of Mass 176	6.5	PASS

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Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Instrument ID:	MS-A2	Calibration:	1903002
Lab File ID:	19MAR02.D	Calibration Date:	03/06/19 13:18
Sequence:	1905211	Injection Date:	03/19/19
Lab Sample ID:	1905211-CCV1	Injection Time:	10:47

	(1) CAL	CONC. (ppbv)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	5.0000	4.2700	0.2675631	0.2284401		-14.6	30
1,1-Dichloroethane	A	5.0000	4.4700	1.390001	1.2433		-10.6	30
1,2-Dichloroethane	A	5.0000	4.6600	1.369648	1.277215		-6.7	30
1,1-Dichloroethene	A	5.0000	4.6800	1.341089	1.256113		-6.3	30
cis-1,2-Dichloroethene	A	5.0000	4.5000	1.147528	1.031753		-10.1	30
trans-1,2-Dichloroethene	A	5.0000	4.3300	1.207871	1.045439		-13.4	30
Isopropyl alcohol	A	5.0000	4.4400	1.259242	1.119295		-11.1	30
1,1,1,2-Tetrachloroethane	A	5.0000	4.1900	0.2788047	0.2338501		-16.1	30
1,1,2,2-Tetrachloroethane	A	5.0000	4.3200	1.987989	1.718721		-13.5	30
Tetrachloroethene	A	5.0000	4.0700	0.5966748	0.4856795		-18.6	30
1,1,1-Trichloroethane	A	5.0000	4.6700	1.831708	1.709257		-6.7	30
1,1,2-Trichloroethane	A	5.0000	4.0800	0.4146925	0.3384954		-18.4	30
Trichloroethene	A	5.0000	4.4100	0.4162665	0.3672262		-11.8	30
Vinyl chloride	A	5.0000	4.1900	0.623335	0.5220037		-16.3	30

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Instrument ID:	MS-A2	Calibration:	1903002
Lab File ID:	19MAR33.D	Calibration Date:	03/06/19 13:18
Sequence:	1905211	Injection Date:	03/20/19
Lab Sample ID:	1905211-CCV3	Injection Time:	10:19

	(1) CAL	CONC. (ppbv)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	5.0000	4.0600	0.2675631	0.2172954		-18.8	30
1,1-Dichloroethane	A	5.0000	4.3000	1.390001	1.194625		-14.1	30
1,2-Dichloroethane	A	5.0000	4.9200	1.369648	1.346939		-1.7	30
1,1-Dichloroethene	A	5.0000	4.6300	1.341089	1.241605		-7.4	30
cis-1,2-Dichloroethene	A	5.0000	4.3300	1.147528	0.9943432		-13.3	30
trans-1,2-Dichloroethene	A	5.0000	4.2400	1.207871	1.025021		-15.1	30
Isopropyl alcohol	A	5.0000	4.2500	1.259242	1.070406		-15.0	30
1,1,1,2-Tetrachloroethane	A	5.0000	4.6800	0.2788047	0.2612032		-6.3	30
1,1,2,2-Tetrachloroethane	A	5.0000	4.3400	1.987989	1.727219		-13.1	30
Tetrachloroethene	A	5.0000	4.3500	0.5966748	0.5185727		-13.1	30
1,1,1-Trichloroethane	A	5.0000	4.7000	1.831708	1.720204		-6.1	30
1,1,2-Trichloroethane	A	5.0000	4.3300	0.4146925	0.3588079		-13.5	30
Trichloroethene	A	5.0000	4.4400	0.4162665	0.3692538		-11.3	30
Vinyl chloride	A	5.0000	4.1200	0.623335	0.5134822		-17.6	30

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

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AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Instrument ID:	MS-A2	Calibration:	1903002
Lab File ID:	06MAR13.D	Calibration Date:	03/06/19 13:18
Sequence:	1905408	Injection Date:	03/06/19
Lab Sample ID:	1905408-ICV1	Injection Time:	18:19

COMPOUND	(1) CAL TYPE	CONC. (ppbv)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	5.0000	4.8600	0.2675631	0.2600201		-2.8	30
1,1-Dichloroethane	A	5.0000	4.9900	1.390001	1.388321		-0.1	30
1,2-Dichloroethane	A	5.0000	4.8100	1.369648	1.317836		-3.8	30
1,1-Dichloroethene	A	5.0000	4.9600	1.341089	1.331115		-0.7	30
cis-1,2-Dichloroethene	A	5.0000	5.1700	1.147528	1.187399		3.5	30
trans-1,2-Dichloroethene	A	5.0000	4.9000	1.207871	1.182728		-2.1	30
Isopropyl alcohol	A	5.0000	5.0800	1.259242	1.279694		1.6	30
1,1,1,2-Tetrachloroethane	A	5.0000	4.5800	0.2788047	0.2551577		-8.5	30
1,1,2,2-Tetrachloroethane	A	5.0000	4.9700	1.987989	1.977474		-0.5	30
Tetrachloroethene	A	5.0000	4.7400	0.5966748	0.5659172		-5.2	30
1,1,1-Trichloroethane	A	5.0000	4.8100	1.831708	1.762859		-3.8	30
1,1,2-Trichloroethane	A	5.0000	4.6200	0.4146925	0.38334		-7.6	30
Trichloroethene	A	5.0000	4.8400	0.4162665	0.4029565		-3.2	30
Vinyl chloride	A	5.0000	4.7800	0.623335	0.5953173		-4.5	30

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AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Instrument ID:	MS-A2	Calibration:	1903002
Lab File ID:	19MAR33.D	Calibration Date:	03/06/19 13:18
Sequence:	1905408	Injection Date:	03/20/19
Lab Sample ID:	1905408-CCV1	Injection Time:	10:19

	(1) CAL	CONC. (ppbv)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	5.0000	4.0600	0.2675631	0.2172954		-18.8	30
1,1-Dichloroethane	A	5.0000	4.3000	1.390001	1.194625		-14.1	30
1,2-Dichloroethane	A	5.0000	4.9200	1.369648	1.346939		-1.7	30
1,1-Dichloroethene	A	5.0000	4.6300	1.341089	1.241605		-7.4	30
cis-1,2-Dichloroethene	A	5.0000	4.3300	1.147528	0.9943432		-13.3	30
trans-1,2-Dichloroethene	A	5.0000	4.2400	1.207871	1.025021		-15.1	30
Isopropyl alcohol	A	5.0000	4.2500	1.259242	1.070406		-15.0	30
1,1,1,2-Tetrachloroethane	A	5.0000	4.6800	0.2788047	0.2612032		-6.3	30
1,1,2,2-Tetrachloroethane	A	5.0000	4.3400	1.987989	1.727219		-13.1	30
Tetrachloroethene	A	5.0000	4.3500	0.5966748	0.5185727		-13.1	30
1,1,1-Trichloroethane	A	5.0000	4.7000	1.831708	1.720204		-6.1	30
1,1,2-Trichloroethane	A	5.0000	4.3300	0.4146925	0.3588079		-13.5	30
Trichloroethene	A	5.0000	4.4400	0.4162665	0.3692538		-11.3	30
Vinyl chloride	A	5.0000	4.1200	0.623335	0.5134822		-17.6	30

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AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

CONTINUING CALIBRATION CHECK

EPA-TO-15

Laboratory:	BC Laboratories	SDG:	1908647
Client:	AECOM - Sacramento $AECS	Project:	SMUD 59th St. (Bill to AECOM)
Instrument ID:	MS-A2	Calibration:	1903002
Lab File ID:	20MAR18.D	Calibration Date:	03/06/19 13:18
Sequence:	1905408	Injection Date:	03/21/19
Lab Sample ID:	1905408-CCV3	Injection Time:	09:53

COMPOUND	(1) CAL TYPE	CONC. (ppbv)		RESPONSE FACTOR			% DIFF / DRIFT (2)	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Chloroethane	A	5.0000	3.9800	0.2675631	0.2127921		-20.5	50
1,1-Dichloroethane	A	5.0000	4.2100	1.390001	1.170928		-15.8	50
1,2-Dichloroethane	A	5.0000	4.9300	1.369648	1.351021		-1.4	50
1,1-Dichloroethene	A	5.0000	4.7200	1.341089	1.265242		-5.7	50
cis-1,2-Dichloroethene	A	5.0000	4.4000	1.147528	1.009317		-12.0	50
trans-1,2-Dichloroethene	A	5.0000	4.1300	1.207871	0.9973871		-17.4	50
Isopropyl alcohol	A	5.0000	4.3200	1.259242	1.087568		-13.6	50
1,1,1,2-Tetrachloroethane	A	5.0000	4.9600	0.2788047	0.2767199		-0.7	50
1,1,2,2-Tetrachloroethane	A	5.0000	4.4400	1.987989	1.764665		-11.2	50
Tetrachloroethene	A	5.0000	4.7300	0.5966748	0.5649903		-5.3	50
1,1,1-Trichloroethane	A	5.0000	4.7200	1.831708	1.730347		-5.5	50
1,1,2-Trichloroethane	A	5.0000	4.4600	0.4146925	0.3702795		-10.7	50
Trichloroethene	A	5.0000	4.6500	0.4162665	0.3871083		-7.0	50
Vinyl chloride	A	5.0000	4.0800	0.623335	0.5091282		-18.3	50

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(1): Cal Type (Calibration Type): A = Average; L = Linear Regression; Q = Quadratic Regression

(2): % Diff (of Response Factors) reported when Cal Type = A; %Drift (of Conc) reported when Cal Type = L or Q

AECOM - Sacramento
2020 L St, Suite 400
Sacramento, CA 95811

Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY

EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1904158
Matrix: Air
SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2
Calibration: 1903002

Surrogate Compound	Spike Level ppbv	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Cal Standard (1904158-CAL1)			Lab File ID: 06MAR05.D		Analyzed: 03/06/19 13:18			
4-Bromofluorobenzene (Surrogate)	10.000	100		12.186	12.18417	0.0018	+/-1.0	
Cal Standard (1904158-CAL3)			Lab File ID: 06MAR07.D		Analyzed: 03/06/19 14:25			
4-Bromofluorobenzene (Surrogate)	10.000	105		12.181	12.18417	-0.0032	+/-1.0	
Cal Standard (1904158-CAL4)			Lab File ID: 06MAR08.D		Analyzed: 03/06/19 15:06			
4-Bromofluorobenzene (Surrogate)	10.000	101		12.186	12.18417	0.0018	+/-1.0	
Cal Standard (1904158-CAL5)			Lab File ID: 06MAR09.D		Analyzed: 03/06/19 15:50			
4-Bromofluorobenzene (Surrogate)	10.000	95.6		12.186	12.18417	0.0018	+/-1.0	
Cal Standard (1904158-CAL6)			Lab File ID: 06MAR10.D		Analyzed: 03/06/19 16:38			
4-Bromofluorobenzene (Surrogate)	10.000	91.6		12.18	12.18417	-0.0042	+/-1.0	
Cal Standard (1904158-CAL2)			Lab File ID: 06MAR11.D		Analyzed: 03/06/19 17:10			
4-Bromofluorobenzene (Surrogate)	10.000	97.2		12.186	12.18417	0.0018	+/-1.0	

AECOM - Sacramento
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Sacramento, CA 95811

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Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY
EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1905211
Matrix: Air
SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2
Calibration: 1903002

Surrogate Compound	Spike Level ppbv	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (1905211-CCV1)			Lab File ID: 19MAR02.D		Analyzed: 03/19/19 10:47			
4-Bromofluorobenzene (Surrogate)	10.000	103	70 - 130	12.186	12.18417	0.0018	+/-1.0	
Calibration Blank (1905211-CCB1)			Lab File ID: 19MAR04.D		Analyzed: 03/19/19 11:54			
4-Bromofluorobenzene (Surrogate)	10.000	96.2	70 - 130	12.18	12.18417	-0.0042	+/-1.0	
LCS (B040749-BS1)			Lab File ID: 19MAR05.D		Analyzed: 03/19/19 12:28			
4-Bromofluorobenzene (Surrogate)	10.000	103	70 - 130	12.186	12.18417	0.0018	+/-1.0	
LCS Dup (B040749-BSD1)			Lab File ID: 19MAR06.D		Analyzed: 03/19/19 13:02			
4-Bromofluorobenzene (Surrogate)	10.000	102	70 - 130	12.181	12.18417	-0.0032	+/-1.0	
Blank (B040749-BLK1)			Lab File ID: 19MAR07.D		Analyzed: 03/19/19 13:37			
4-Bromofluorobenzene (Surrogate)	10.000	92.1	70 - 130	12.155	12.18417	-0.0292	+/-1.0	
Calibration Check (1905211-CCV3)			Lab File ID: 19MAR33.D		Analyzed: 03/20/19 10:19			
4-Bromofluorobenzene (Surrogate)	10.000	109	70 - 130	12.185	12.18417	0.0008	+/-1.0	
Calibration Blank (1905211-CCB2)			Lab File ID: 19MAR35.D		Analyzed: 03/20/19 11:25			
4-Bromofluorobenzene (Surrogate)	10.000	93.8	70 - 130	12.155	12.18417	-0.0292	+/-1.0	

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Project Manager: Robert Kohlhardt

SURROGATE STANDARD RECOVERY AND RT SUMMARY
EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1905408
Matrix: Air
SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2
Calibration: 1903002

Surrogate Compound	Spike Level ppbv	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Initial Cal Check (1905408-ICV1)			Lab File ID: 06MAR13.D		Analyzed: 03/06/19 18:19			
4-Bromofluorobenzene (Surrogate)	10.000	107	70 - 130	12.186	12.18417	0.0018	+/-1.0	
Initial Cal Blank (1905408-ICB1)			Lab File ID: 06MAR15.D		Analyzed: 03/06/19 19:29			
4-Bromofluorobenzene (Surrogate)	10.000	91.9	70 - 130	12.18	12.18417	-0.0042	+/-1.0	
Calibration Check (1905408-CCV1)			Lab File ID: 19MAR33.D		Analyzed: 03/20/19 10:19			
4-Bromofluorobenzene (Surrogate)	10.000	109	70 - 130	12.185	12.18417	0.0008	+/-1.0	
Calibration Blank (1905408-CCB1)			Lab File ID: 19MAR35.D		Analyzed: 03/20/19 11:25			
4-Bromofluorobenzene (Surrogate)	10.000	93.8	70 - 130	12.155	12.18417	-0.0292	+/-1.0	
SG-VW13A-01 (#2891) (1908647-01)			Lab File ID: 20MAR14.D		Analyzed: 03/20/19 21:33			
4-Bromofluorobenzene (Surrogate)	10.000	90.6	70 - 130	12.155	12.18417	-0.0292	+/-1.0	
SG-VW13A-02 (#1140) (1908647-02)			Lab File ID: 20MAR15.D		Analyzed: 03/20/19 22:07			
4-Bromofluorobenzene (Surrogate)	10.000	91.0	70 - 130	12.155	12.18417	-0.0292	+/-1.0	
SG-VW12A-01 (#1491) (1908647-03)			Lab File ID: 20MAR16.D		Analyzed: 03/20/19 22:43			
4-Bromofluorobenzene (Surrogate)	10.000	91.9	70 - 130	12.155	12.18417	-0.0292	+/-1.0	
Calibration Blank (1905408-CCB2)			Lab File ID: 20MAR20.D		Analyzed: 03/21/19 10:59			
4-Bromofluorobenzene (Surrogate)	10.000	97.5	70 - 130	12.155	12.18417	-0.0292	+/-1.0	

AECOM - Sacramento
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Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1904158
Matrix: Air

SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2
Calibration: 1903002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Cal Standard (1904158-CAL1)			Lab File ID: 06MAR05.D			Analyzed: 03/06/19 13:18			
Bromochloromethane (IS)	113126	8.005	120068	8.005	94	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	138747	11.458	156540	11.458	89	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	269666	9.214	290475	9.214	93	50 - 200	0.0000	+/-0.50	
Cal Standard (1904158-CAL3)			Lab File ID: 06MAR07.D			Analyzed: 03/06/19 14:25			
Bromochloromethane (IS)	120068	8.005	120068	8.005	100	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	156540	11.458	156540	11.458	100	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	290475	9.214	290475	9.214	100	50 - 200	0.0000	+/-0.50	
Cal Standard (1904158-CAL4)			Lab File ID: 06MAR08.D			Analyzed: 03/06/19 15:06			
Bromochloromethane (IS)	132460	8.01	120068	8.005	110	50 - 200	0.0050	+/-0.50	
Chlorobenzene-d5 (IS)	190915	11.463	156540	11.458	122	50 - 200	0.0050	+/-0.50	
1,4-Difluorobenzene (IS)	307494	9.214	290475	9.214	106	50 - 200	0.0000	+/-0.50	
Cal Standard (1904158-CAL5)			Lab File ID: 06MAR09.D			Analyzed: 03/06/19 15:50			
Bromochloromethane (IS)	152349	8.01	120068	8.005	127	50 - 200	0.0050	+/-0.50	
Chlorobenzene-d5 (IS)	220316	11.463	156540	11.458	141	50 - 200	0.0050	+/-0.50	
1,4-Difluorobenzene (IS)	342474	9.214	290475	9.214	118	50 - 200	0.0000	+/-0.50	
Cal Standard (1904158-CAL6)			Lab File ID: 06MAR10.D			Analyzed: 03/06/19 16:38			
Bromochloromethane (IS)	178569	8.005	120068	8.005	149	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	258045	11.463	156540	11.458	165	50 - 200	0.0050	+/-0.50	
1,4-Difluorobenzene (IS)	402889	9.219	290475	9.214	139	50 - 200	0.0050	+/-0.50	
Cal Standard (1904158-CAL2)			Lab File ID: 06MAR11.D			Analyzed: 03/06/19 17:10			
Bromochloromethane (IS)	173228	8.005	120068	8.005	144	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	212334	11.458	156540	11.458	136	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	414144	9.214	290475	9.214	143	50 - 200	0.0000	+/-0.50	

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Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1905211
Matrix: Air
SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2
Calibration: 1903002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B040749-BS1)			Lab File ID: 19MAR05.D			Analyzed: 03/19/19 12:28			
Bromochloromethane (IS)	152421	8	120068	8.005	127	50 - 200	-0.0050	+/-0.50	
Chlorobenzene-d5 (IS)	203439	11.458	156540	11.458	130	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	366081	9.214	290475	9.214	126	50 - 200	0.0000	+/-0.50	
LCS Dup (B040749-BSD1)			Lab File ID: 19MAR06.D			Analyzed: 03/19/19 13:02			
Bromochloromethane (IS)	148173	8.005	120068	8.005	123	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	192561	11.458	156540	11.458	123	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	355818	9.214	290475	9.214	122	50 - 200	0.0000	+/-0.50	
Blank (B040749-BLK1)			Lab File ID: 19MAR07.D			Analyzed: 03/19/19 13:37			
Bromochloromethane (IS)	135708	8.005	120068	8.005	113	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5 (IS)	162990	11.458	156540	11.458	104	50 - 200	0.0000	+/-0.50	
1,4-Difluorobenzene (IS)	316933	9.214	290475	9.214	109	50 - 200	0.0000	+/-0.50	

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Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INTERNAL STANDARD AREA AND RT SUMMARY
EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1905408
Matrix: Air

SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2
Calibration: 1903002

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SG-VW13A-01 (#2891) (1908647-01)			Lab File ID: 20MAR14.D			Analyzed: 03/20/19 21:33			
Bromochloromethane (IS)	99019	8.01	120068	8.005	82	50 - 200	0.0050	+/-0.50	
Chlorobenzene-d5 (IS)	125219	11.463	156540	11.458	80	50 - 200	0.0050	+/-0.50	
1,4-Difluorobenzene (IS)	213922	9.214	290475	9.214	74	50 - 200	0.0000	+/-0.50	
SG-VW13A-02 (#1140) (1908647-02)			Lab File ID: 20MAR15.D			Analyzed: 03/20/19 22:07			
Bromochloromethane (IS)	87573	8.015	120068	8.005	73	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	110970	11.463	156540	11.458	71	50 - 200	0.0050	+/-0.50	
1,4-Difluorobenzene (IS)	198517	9.219	290475	9.214	68	50 - 200	0.0050	+/-0.50	
SG-VW12A-01 (#1491) (1908647-03)			Lab File ID: 20MAR16.D			Analyzed: 03/20/19 22:43			
Bromochloromethane (IS)	83205	8.015	120068	8.005	69	50 - 200	0.0100	+/-0.50	
Chlorobenzene-d5 (IS)	102628	11.463	156540	11.458	66	50 - 200	0.0050	+/-0.50	
1,4-Difluorobenzene (IS)	183623	9.219	290475	9.214	63	50 - 200	0.0050	+/-0.50	

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Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION STANDARDS

EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Sequence: 1904158
Calibration: 1903002

SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
8K14030	TO-3/TO-14A/TO-15 BFB Working Std.	1904158-TUN1	06MAR04.D	03/06/19 12:44
9C07001	TO-14A / TO-15 CAL1 (reg+extra)	1904158-CAL1	06MAR05.D	03/06/19 13:18
9C07003	TO-14A / TO-15 CAL3 (reg+extra)	1904158-CAL3	06MAR07.D	03/06/19 14:25
9C07004	TO-14A / TO-15 CAL4 (reg+extra)	1904158-CAL4	06MAR08.D	03/06/19 15:06
9C07005	TO-14A / TO-15 CAL5 (reg+extra)	1904158-CAL5	06MAR09.D	03/06/19 15:50
9C07006	TO-14A / TO-15 CAL6 (reg+extra)	1904158-CAL6	06MAR10.D	03/06/19 16:38
9C07002	TO-14A / TO-15 CAL2 (reg+extra)	1904158-CAL2	06MAR11.D	03/06/19 17:10

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Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA
EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1903002
Matrix: Air
SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2
Calibration Date: 03/06/19 13:18

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ppbv	RF	ppbv	RF	ppbv	RF	ppbv	RF	ppbv	RF	ppbv	RF
Chloroethane	0.5	0.3210579	1	0.2923315	5	0.2373488	15	0.2393276	20	0.2571694	25	0.2581434
1,1-Dichloroethane	0.5	1.668582	1	1.439779	5	1.363261	15	1.316413	20	1.279871	25	1.272098
1,2-Dichloroethane	0.5	1.617665	1	1.337082	5	1.316004	15	1.331677	20	1.322503	25	1.292955
1,1-Dichloroethene	0.5	1.491434	1	1.338409	5	1.342106	15	1.306935	20	1.280747	25	1.286906
cis-1,2-Dichloroethene	0.5	1.223768	1	1.128051	5	1.129726	15	1.151487	20	1.120391	25	1.131742
trans-1,2-Dichloroethene	0.5	1.393137	1	1.215566	5	1.151931	15	1.169958	20	1.152092	25	1.16454
Isopropyl alcohol	0.5	1.355126	1	1.216778	5	1.218859	15	1.240923	20	1.263769	25	1.259997
1,1,1,2-Tetrachloroethane	0.5	0.3295187	1	0.2433453	5	0.261124	15	0.2755913	20	0.2888307	25	0.274418
1,1,2,2-Tetrachloroethane	0.5	2.760132	1	2.074986	5	2.088655	15	1.732652	20	1.690864	25	1.580645
Tetrachloroethene	0.5	0.7270475	1	0.5560868	5	0.5664515	15	0.5670788	20	0.5904799	25	0.5729042
1,1,1-Trichloroethane	0.5	2.160953	1	1.745734	5	1.750208	15	1.778796	20	1.771909	25	1.78265
1,1,2-Trichloroethane	0.5	0.5150075	1	0.4156525	5	0.394416	15	0.3896249	20	0.392567	25	0.380887
Trichloroethene	0.5	0.521534	1	0.4361285	5	0.4111473	15	0.3682457	20	0.3869038	25	0.3736394
Vinyl chloride	0.5	0.7199052	1	0.6684832	5	0.5643302	15	0.5722835	20	0.6225738	25	0.5924343
4-Bromofluorobenzene (Surrogate)	10	1.221309	10	1.174871	10	1.279922	10	1.237231	10	1.166597	10	1.117693

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Project: SMUD 59th St. (Bill to AECOM)
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Project Manager: Robert Kohlhardt

INITIAL CALIBRATION DATA (Continued)

EPA-TO-15

Laboratory: BC Laboratories
Client: AECOM - Sacramento $AECS
Calibration: 1903002
Matrix: Air
SDG: 1908647
Project: SMUD 59th St. (Bill to AECOM)
Instrument: MS-A2
Calibration Date: 03/06/19 13:18

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear COD	Quad COD	LIMIT	Q
Chloroethane	0.2675631	12.26207	5.079	0.0192791			30	
1,1-Dichloroethane	1.390001	10.77913	7.3005	3.980208E-02			30	
1,2-Dichloroethane	1.369648	8.941855	8.580667	4.928415E-02			30	
1,1-Dichloroethene	1.341089	5.809978	6.295167	4.854743E-02			30	
cis-1,2-Dichloroethene	1.147528	3.377317	7.893667	5.187248E-02			30	
trans-1,2-Dichloroethene	1.207871	7.760963	7.144	4.247364E-02			30	
Isopropyl alcohol	1.259242	4.046844	5.797167	0.1226218			30	
1,1,1,2-Tetrachloroethane	0.2788047	10.48407	11.4715	0.0181532			30	
1,1,2,2-Tetrachloroethane	1.987989	21.73279	11.95167	1.728183E-02			30	
Tetrachloroethene	0.5966748	10.87105	11.16017	1.143487E-02			30	
1,1,1-Trichloroethane	1.831708	8.844155	8.746333	2.310983E-02			30	
1,1,2-Trichloroethane	0.4146925	12.17035	10.4565	2.250036E-02			30	
Trichloroethene	0.4162665	13.79485	9.627333	2.805819E-02			30	
Vinyl chloride	0.623335	9.733976	4.556	4.432985E-02			30	
4-Bromofluorobenzene (Surrogate)	1.199604	4.824638	12.18417	2.549523E-02			30	

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Reported: 4/9/2019 12:09:49PM
Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

HOLDING TIME SUMMARY

EPA-TO-15

Laboratory: BC Laboratories
SDG: 1908647
Client: AECOM - Sacramento $AECS
Project: SMUD 59th St. (Bill to AECOM)

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
SG-VW13A-01 (#2891)	03/18/19 09:35	03/19/19 09:38	03/19/19 08:06	2.00	30.00	03/20/19 21:33	2.00	30.00	
SG-VW13A-02 (#1140)	03/18/19 09:44	03/19/19 09:38	03/19/19 08:06	2.00	30.00	03/20/19 22:07	2.00	30.00	
SG-VW12A-01 (#1491)	03/18/19 10:30	03/19/19 09:38	03/19/19 08:06	2.00	30.00	03/20/19 22:43	2.00	30.00	

* Holding time not met

Note: If Prep or Analysis are performed within the hour (if holding time is based on hours) or within the day (if holding time is based on days), then the sample is not flagged as outside holding times. Calculated number of days are based on date received or date prepared depending on the test.

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Project: SMUD 59th St. (Bill to AECOM)
Project Number: 60570043.05
Project Manager: Robert Kohlhardt

Notes and Definitions

B	Blank contamination. The analyte is greater than 1/2 the PQL/LOQ/CRQL in the associated method blank.
D	The reported value is from a dilution.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J	The reported value is an estimated value. Results are between the MDL and PQL/LOQ/CRQL.
U	The analyte was not detected and is reported as less than the LOD/MDL or as defined by the client.

Appendix D

Arsenic Background Concentration Determination Data Tables

Table D-1: Arsenic Non-Transformed and Transformed Data Set and Cumulative Probability

Arsenic Concentration All Soil Types (mg/kg)	Log_{10}-All Soil	Cumulative Probability-All Soil	Arsenic Concentration Coarse Soil Types (mg/kg)	Log_{10}-Coarse Soil	Cumulative Probability-Coarse Soil	Arsenic Concentation Fine Soil Types (mg/kg)	Log_{10}-Fine Soil	Cumulative Probability-Fine Soil
0.65	-0.187086643	0.007407407	0.65	-0.187086643	0.02	0.97	-0.013228266	0.013513514
0.79	-0.102372909	0.014814815	0.79	-0.102372909	0.03125	1.0	0	0.027027027
0.97	-0.013228266	0.022222222	1.2	0.079181246	0.046875	1.5	0.176091259	0.040540541
1.0	0	0.02962963	1.4	0.146128036	0.0625	1.5	0.176091259	0.054054054
1.2	0.079181246	0.037037037	1.7	0.230448921	0.078125	1.7	0.230448921	0.067567568
1.4	0.146128036	0.044444444	1.7	0.230448921	0.09375	2.0	0.301029996	0.081081081
1.5	0.176091259	0.051851852	1.7	0.230448921	0.109375	2.2	0.342422681	0.094594595
1.5	0.176091259	0.059259259	1.9	0.278753601	0.125	2.5	0.397940009	0.108108108
1.7	0.230448921	0.066666667	1.9	0.278753601	0.140625	2.7	0.431363764	0.121621622
1.7	0.230448921	0.074074074	2.0	0.301029996	0.15625	3.3	0.51851394	0.135135135
1.7	0.230448921	0.081481481	2.2	0.342422681	0.171875	3.3	0.51851394	0.148648649
1.7	0.230448921	0.088888889	2.3	0.361727836	0.1875	3.4	0.531478917	0.162162162
1.9	0.278753601	0.096296296	2.3	0.361727836	0.203125	3.8	0.579783597	0.175675676
1.9	0.278753601	0.103703704	2.4	0.380211242	0.21875	3.9	0.591064607	0.189189189
2.0	0.301029996	0.111111111	2.5	0.397940009	0.234375	3.9	0.591064607	0.202702703
2.0	0.301029996	0.118518519	2.5	0.397940009	0.25	3.9	0.591064607	0.216216216
2.2	0.342422681	0.125925926	2.5	0.397940009	0.265625	4.0	0.602059991	0.22972973
2.2	0.342422681	0.133333333	2.5	0.397940009	0.28125	4.1	0.612783857	0.243243243
2.3	0.361727836	0.140740741	2.6	0.414973348	0.296875	4.3	0.633468456	0.256756757
2.3	0.361727836	0.148148148	3.0	0.477121255	0.3125	4.4	0.643452676	0.27027027
2.4	0.380211242	0.155555556	3.2	0.505149978	0.328125	4.4	0.643452676	0.283783784
2.5	0.397940009	0.162962963	3.4	0.531478917	0.34375	4.4	0.643452676	0.297297297
2.5	0.397940009	0.17037037	3.5	0.544068044	0.359375	4.9	0.69019608	0.310810811
2.5	0.397940009	0.177777778	3.5	0.544068044	0.375	5.0	0.698970004	0.324324324
2.5	0.397940009	0.185185185	3.6	0.556302501	0.390625	5.2	0.716003344	0.337837838
2.5	0.397940009	0.192592593	3.6	0.556302501	0.40625	5.3	0.72427587	0.351351351
2.6	0.414973348	0.2	3.7	0.568201724	0.421875	5.4	0.73239376	0.364864865
2.7	0.431363764	0.207407407	3.7	0.568201724	0.4375	5.5	0.740362689	0.378378378
3.0	0.477121255	0.214814815	3.7	0.568201724	0.453125	5.7	0.755874856	0.391891892
3.2	0.505149978	0.222222222	3.7	0.568201724	0.46875	5.8	0.763427994	0.405405405
3.3	0.51851394	0.22962963	3.8	0.579783597	0.484375	5.8	0.763427994	0.418918919
3.3	0.51851394	0.237037037	4.2	0.62324929	0.5	5.8	0.763427994	0.432432432
3.4	0.531478917	0.244444444	4.7	0.672097858	0.515625	5.9	0.770852012	0.445945946
3.4	0.531478917	0.251851852	4.7	0.672097858	0.53125	6.0	0.77815125	0.459459459
3.5	0.544068044	0.259259259	4.7	0.672097858	0.546875	6.2	0.792391689	0.472972973
3.5	0.544068044	0.266666667	4.8	0.681241237	0.5625	6.3	0.799340549	0.486486486
3.6	0.556302501	0.274074074	4.8	0.681241237	0.578125	6.3	0.799340549	0.5
3.6	0.556302501	0.281481481	4.9	0.69019608	0.59375	6.4	0.806179974	0.513513514
3.7	0.568201724	0.288888889	4.9	0.69019608	0.609375	6.5	0.812913357	0.527027027
3.7	0.568201724	0.296296296	5.0	0.698970004	0.625	6.5	0.812913357	0.540540541
3.7	0.568201724	0.303703704	5.0	0.698970004	0.640625	6.7	0.826074803	0.554054054
3.7	0.568201724	0.311111111	5.1	0.707570176	0.65625	6.9	0.838849091	0.567567568
3.8	0.579783597	0.318518519	5.1	0.707570176	0.671875	7.0	0.84509804	0.581081081
3.8	0.579783597	0.325925926	5.1	0.707570176	0.6875	7.0	0.84509804	0.594594595
3.9	0.591064607	0.333333333	5.2	0.716003344	0.703125	7.1	0.851258349	0.608108108
3.9	0.591064607	0.340740741	5.2	0.716003344	0.71875	7.2	0.857332496	0.621621622
3.9	0.591064607	0.348148148	5.2	0.716003344	0.734375	7.2	0.857332496	0.635135135
4.0	0.602059991	0.355555556	5.2	0.716003344	0.75	7.2	0.857332496	0.648648649
4.1	0.612783857	0.362962963	5.6	0.748188027	0.765625	7.4	0.86923172	0.662162162
4.2	0.62324929	0.37037037	6.1	0.785329835	0.78125	7.4	0.86923172	0.675675676
4.3	0.633468456	0.377777778	6.3	0.799340549	0.796875	7.5	0.875061263	0.689189189
4.4	0.643452676	0.385185185	6.9	0.838849091	0.8125	7.6	0.880813592	0.702702703
4.4	0.643452676	0.392592593	7.3	0.86332286	0.828125	7.7	0.886490725	0.716216216
4.4	0.643452676	0.4	8.2	0.913813852	0.84375	7.9	0.897627091	0.72972973
4.7	0.672097858	0.407407407	13	1.113943352	0.859375	8.3	0.919078092	0.743243243
4.7	0.672097858	0.414814815	16	1.204119983	0.875	8.6	0.934498451	0.756756757
4.7	0.672097858	0.422222222	29	1.462397998	0.890625	8.7	0.939519253	0.77027027
4.8	0.681241237	0.42962963	45	1.653212514	0.90625	9.1	0.959041392	0.783783784
4.8	0.681241237	0.437037037	60	1.77815125	0.921875	10	1	0.797297297
4.9	0.69019608	0.444444444	67	1.826074803	0.9375	10	1	0.810810811
4.9	0.69019608	0.451851852	140	2.146128036	0.953125	13	1.113943352	0.824324324
4.9	0.69019608	0.459259259	260	2.414973348	0.96875	14	1.146128036	0.837837838

Table D-1: Arsenic Non-Transformed and Transformed Data Set and Cumulative Probability

Arsenic Concentration All Soil Types (mg/kg)	Log_{10}-All Soil	Cumulative Probability-All Soil	Arsenic Concentration Coarse Soil Types (mg/kg)	Log_{10}-Coarse Soil	Cumulative Probability-Coarse Soil	Arsenic Concentation Fine Soil Types (mg/kg)	Log_{10}-Fine Soil	Cumulative Probability-Fine Soil
5.0	0.698970004	0.466666667	270	2.431363764	0.984375	15	1.176091259	0.851351351
5.0	0.698970004	0.474074074	330	2.51851394	1	16	1.204119983	0.864864865
5.0	0.698970004	0.481481481				22	1.342422681	0.878378378
5.1	0.707570176	0.488888889				23	1.361727836	0.891891892
5.1	0.707570176	0.496296296				30	1.477121255	0.905405405
5.1	0.707570176	0.503703704				67	1.826074803	0.918918919
5.2	0.716003344	0.511111111				100	2	0.932432432
5.2	0.716003344	0.518518519				110	2.041392685	0.945945946
5.2	0.716003344	0.525925926				140	2.146128036	0.959459459
5.2	0.716003344	0.533333333				190	2.278753601	0.972972973
5.2	0.716003344	0.540740741				240	2.380211242	0.986486486
5.3	0.72427587	0.548148148				280	2.447158031	1
5.4	0.73239376	0.555555556						
5.5	0.740362689	0.562962963						
5.6	0.748188027	0.57037037						
5.7	0.755874856	0.577777778						
5.8	0.763427994	0.585185185						
5.8	0.763427994	0.592592593						
5.8	0.763427994	0.6						
5.9	0.770852012	0.607407407						
6.0	0.77815125	0.614814815						
6.1	0.785329835	0.622222222						
6.2	0.792391689	0.62962963						
6.3	0.799340549	0.637037037						
6.3	0.799340549	0.644444444						
6.3	0.799340549	0.651851852						
6.4	0.806179974	0.659259259						
6.5	0.812913357	0.666666667						
6.5	0.812913357	0.674074074						
6.7	0.826074803	0.681481481						
6.9	0.838849091	0.688888889						
6.9	0.838849091	0.696296296						
7.0	0.84509804	0.703703704						
7.0	0.84509804	0.711111111						
7.1	0.851258349	0.718518519						
7.2	0.857332496	0.725925926						
7.2	0.857332496	0.733333333						
7.2	0.857332496	0.740740741						
7.3	0.86332286	0.748148148						
7.4	0.86923172	0.755555556						
7.4	0.86923172	0.762962963						
7.5	0.875061263	0.77037037						
7.6	0.880813592	0.777777778						
7.7	0.886490725	0.785185185						
7.9	0.897627091	0.792592593						
8.2	0.913813852	0.8						
8.3	0.919078092	0.807407407						
8.6	0.934498451	0.814814815						
8.7	0.939519253	0.822222222						
9.1	0.959041392	0.82962963						
10	1	0.837037037						
10	1	0.844444444						
13	1.113943352	0.851851852						
13	1.113943352	0.859259259						
14	1.146128036	0.866666667						
15	1.176091259	0.874074074						
16	1.204119983	0.881481481						
22	1.342422681	0.888888889						
23	1.361727836	0.896296296						
29	1.462397998	0.903703704						
30	1.477121255	0.911111111						
45	1.653212514	0.918518519						

Table D-1: Arsenic Non-Transformed and Transformed Data Set and Cumulative Probability

Arsenic Concentration All Soil Types (mg/kg)	Log_{10}-All Soil	Cumulative Probability-All Soil	Arsenic Concentration Coarse Soil Types (mg/kg)	Log_{10}-Coarse Soil	Cumulative Probability-Coarse Soil	Arsenic Concentation Fine Soil Types (mg/kg)	Log_{10}-Fine Soil	Cumulative Probability-Fine Soil
60	1.77815125	0.925925926						
67	1.826074803	0.933333333						
100	2	0.940740741						
110	2.041392685	0.948148148						
140	2.146128036	0.955555556						
190	2.278753601	0.962962963						
240	2.380211242	0.97037037						
260	2.414973348	0.977777778						
270	2.431363764	0.985185185						
280	2.447158031	0.992592593						
330	2.51851394	1						

Table D-2: Statistics Summary

	General Statistics on Uncensored Full Data
Date/Time of Computation	**ProUCL 5.11/16/2019 2:13:15 PM**
User Selected Options	
From File	**As-Data_a.xls**
Full Precision	**OFF**

From File: As-Data_a.xls

General Statistics for Uncensored Data Sets

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Geo-Mean	SD	SEM	MAD/0.675	Skewness	CV
As-All	135	0	0.65	330	20.73	6.182	56.12	4.83	2.965	4.035	2.707
As-Coarse	64	0	0.65	330	22.4	5.38	62.89	7.862	2.743	3.894	2.808
As-Fine	74	0	0.97	280	21.46	7.608	50.89	5.916	3.188	3.759	2.371

Percentiles for Uncensored Data Sets

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
As-All	135	0	1.94	2.68	3.45	5.1	7.35	8.22	26.6	119	276.6
As-Coarse	64	0	1.76	2.36	2.5	4.45	5.3	6.54	40.2	129.1	292.2
As-Fine	74	0	2.56	3.9	4.325	6.35	8.525	10	27.9	120.5	250.8

	General Statistics on Uncensored Full Data
Date/Time of Computation	ProUCL 5.11/16/2019 7:19:10 PM
User Selected Options	
From File	LOG10_All.xls
Full Precision	OFF

From File: LOG10_All.xls

General Statistics for Uncensored Data Sets

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Geo-Mean	SD	SEM	MAD/0.675	Skewness	CV
As-All_Log$_{10}$	135	0	-0.187	2.519	0.791	N/A	0.521	0.0448	0.242	1.596	0.658
As-Coarse_Log$_{10}$	64	0	-0.187	2.519	0.731	N/A	0.567	0.0708	0.268	1.721	0.776
As-Fine_Log$_{10}$	74	0	-0.0132	2.447	0.881	N/A	0.501	0.0583	0.236	1.448	0.569

Percentiles for Uncensored Data Sets

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
As-All_Log$_{10}$	135	0	0.288	0.428	0.538	0.708	0.866	0.915	1.422	2.073	2.442
As-Coarse_Log$_{10}$	64	0	0.245	0.373	0.398	0.648	0.724	0.815	1.596	2.098	2.464
As-Fine_Log$_{10}$	74	0	0.408	0.591	0.636	0.803	0.931	1	1.443	2.078	2.398

Table D-3: Normality Testing and 95%UCL for Full Data Sets

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.11/16/2019 2:57:31 PM
From File	As-Data_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

As-All

General Statistics

Total Number of Observations	135	Number of Distinct Observations	86
		Number of Missing Observations	0
Minimum	0.65	Mean	20.73
Maximum	330	Median	5.1
SD	56.12	Std. Error of Mean	4.83
Coefficient of Variation	2.707	Skewness	4.035

Normal GOF Test

Shapiro Wilk Test Statistic	0.361	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.42	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0766	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	28.73	95% Adjusted-CLT UCL (Chen-1995)	30.47
		95% Modified-t UCL (Johnson-1978)	29.01

Gamma GOF Test

A-D Test Statistic	20.55	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.817	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.348	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.0849	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.522	k star (bias corrected MLE)	0.515
Theta hat (MLE)	39.74	Theta star (bias corrected MLE)	40.26
nu hat (MLE)	140.8	nu star (bias corrected)	139
MLE Mean (bias corrected)	20.73	MLE Sd (bias corrected)	28.89
		Approximate Chi Square Value (0.05)	112.8
Adjusted Level of Significance	0.0482	Adjusted Chi Square Value	112.5

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	25.55	95% Adjusted Gamma UCL (use when n<50)	25.61

Table D-3: Normality Testing and 95%UCL for Full Data Sets

As-All (continued)

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.832	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.213	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0766	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.431	Mean of logged Data	1.822
Maximum of Logged Data	5.799	SD of logged Data	1.199

Assuming Lognormal Distribution

95% H-UCL	16.24	90% Chebyshev (MVUE) UCL	17.56
95% Chebyshev (MVUE) UCL	19.82	97.5% Chebyshev (MVUE) UCL	22.96
99% Chebyshev (MVUE) UCL	29.12		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	28.67	95% Jackknife UCL	28.73
95% Standard Bootstrap UCL	28.62	95% Bootstrap-t UCL	31.87
95% Hall's Bootstrap UCL	30.1	95% Percentile Bootstrap UCL	29.12
95% BCA Bootstrap UCL	30.84		
90% Chebyshev(Mean, Sd) UCL	35.22	95% Chebyshev(Mean, Sd) UCL	41.78
97.5% Chebyshev(Mean, Sd) UCL	50.9	99% Chebyshev(Mean, Sd) UCL	68.79

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	41.78

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 D-3: Normality Testing and 95%UCL for Full Data Sets

As-Coarse

General Statistics

Total Number of Observations	64	Number of Distinct Observations	42
		Number of Missing Observations	0
Minimum	0.65	Mean	22.4
Maximum	330	Median	4.45
SD	62.89	Std. Error of Mean	7.862
Coefficient of Variation	2.808	Skewness	3.894

Normal GOF Test

Shapiro Wilk Test Statistic	0.366	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.433	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.111	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	35.52	95% Adjusted-CLT UCL (Chen-1995)	39.42
		95% Modified-t UCL (Johnson-1978)	36.16

Gamma GOF Test

A-D Test Statistic	10.83	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.828	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.374	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.119	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.452	k star (bias corrected MLE)	0.442
Theta hat (MLE)	49.5	Theta star (bias corrected MLE)	50.71
nu hat (MLE)	57.91	nu star (bias corrected)	56.53
MLE Mean (bias corrected)	22.4	MLE Sd (bias corrected)	33.7
		Approximate Chi Square Value (0.05)	40.25
Adjusted Level of Significance	0.0463	Adjusted Chi Square Value	39.93

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	31.46	95% Adjusted Gamma UCL (use when n<50)	31.7

Table D-3: Normality Testing and 95%UCL for Full Data Sets

As-Coarse (continued)

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.801	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	1.51E-11	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.26	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.111	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.431	Mean of logged Data	1.683
Maximum of Logged Data	5.799	SD of logged Data	1.305

Assuming Lognormal Distribution

95% H-UCL	18.21	90% Chebyshev (MVUE) UCL	20.06
95% Chebyshev (MVUE) UCL	23.57	97.5% Chebyshev (MVUE) UCL	28.44
99% Chebyshev (MVUE) UCL	38.02		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	35.33	95% Jackknife UCL	35.52
95% Standard Bootstrap UCL	35.6	95% Bootstrap-t UCL	46.1
95% Hall's Bootstrap UCL	35.33	95% Percentile Bootstrap UCL	36.38
95% BCA Bootstrap UCL	40.27		
90% Chebyshev(Mean, Sd) UCL	45.98	95% Chebyshev(Mean, Sd) UCL	56.66
97.5% Chebyshev(Mean, Sd) UCL	71.49	99% Chebyshev(Mean, Sd) UCL	100.6

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	56.66

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 D-3: Normality Testing and 95%UCL for Full Data Sets

As-Fine

General Statistics

Total Number of Observations	74	Number of Distinct Observations	59
		Number of Missing Observations	0
Minimum	0.97	Mean	21.46
Maximum	280	Median	6.35
SD	50.89	Std. Error of Mean	5.916
Coefficient of Variation	2.371	Skewness	3.759

Normal GOF Test

Shapiro Wilk Test Statistic	0.406	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.408	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.103	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	31.32	95% Adjusted-CLT UCL (Chen-1995)	33.95
		95% Modified-t UCL (Johnson-1978)	31.75

Gamma GOF Test

A-D Test Statistic	10.57	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.808	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.339	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.109	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.596	k star (bias corrected MLE)	0.581
Theta hat (MLE)	35.99	Theta star (bias corrected MLE)	36.93
nu hat (MLE)	88.25	nu star (bias corrected)	86.01
MLE Mean (bias corrected)	21.46	MLE Sd (bias corrected)	28.15
		Approximate Chi Square Value (0.05)	65.63
Adjusted Level of Significance	0.0468	Adjusted Chi Square Value	65.28

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	28.13	95% Adjusted Gamma UCL (use when n<50)	28.28

Table D-3: Normality Testing and 95%UCL for Full Data Sets

As-Fine (continued)

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.84	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	6.54E-11	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.224	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.103	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.0305	Mean of logged Data	2.029
Maximum of Logged Data	5.635	SD of logged Data	1.155

Assuming Lognormal Distribution

95% H-UCL	20.53	90% Chebyshev (MVUE) UCL	21.91
95% Chebyshev (MVUE) UCL	25.22	97.5% Chebyshev (MVUE) UCL	29.81
99% Chebyshev (MVUE) UCL	38.84		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	31.19	95% Jackknife UCL	31.32
95% Standard Bootstrap UCL	31.24	95% Bootstrap-t UCL	36.43
95% Hall's Bootstrap UCL	33.28	95% Percentile Bootstrap UCL	31.15
95% BCA Bootstrap UCL	34.68		
90% Chebyshev(Mean, Sd) UCL	39.21	95% Chebyshev(Mean, Sd) UCL	47.25
97.5% Chebyshev(Mean, Sd) UCL	58.41	99% Chebyshev(Mean, Sd) UCL	80.32

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	47.25

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 D-4: Arsenic Non-Transformed and Transformed Data Set with Outliers Highlighted and Cumulative Probability

Arsenic Concentration As-All (mg/kg)	Log_{10}_As-All	As_All-Cumulative Probability	Arsenic Concentration As-Coarse (mg/kg)	Log_{10}_As-Coarse	As_Coarse-Cumulative Probability	Arsenic Concentration As-Fine (mg/kg)	Log_{10}_As-Fine	As_Fine-Cumulative Probability
0.65	-0.187086643	0.007407407	0.65	-0.187086643	0.02	0.97	-0.013228266	0.013513514
0.79	-0.102372909	0.014814815	0.79	-0.102372909	0.03125	1.0	0	0.027027027
0.97	-0.013228266	0.022222222	1.2	0.079181246	0.046875	1.5	0.176091259	0.040540541
1.0	0	0.02962963	1.4	0.146128036	0.0625	1.5	0.176091259	0.054054054
1.2	0.079181246	0.037037037	1.7	0.230448921	0.078125	1.7	0.230448921	0.067567568
1.4	0.146128036	0.044444444	1.7	0.230448921	0.09375	2.0	0.301029996	0.081081081
1.5	0.176091259	0.051851852	1.7	0.230448921	0.109375	2.2	0.342422681	0.094594595
1.5	0.176091259	0.059259259	1.9	0.278753601	0.125	2.5	0.397940009	0.108108108
1.7	0.230448921	0.066666667	1.9	0.278753601	0.140625	2.7	0.431363764	0.121621622
1.7	0.230448921	0.074074074	2.0	0.301029996	0.15625	3.3	0.51851394	0.135135135
1.7	0.230448921	0.081481481	2.2	0.342422681	0.171875	3.3	0.51851394	0.148648649
1.7	0.230448921	0.088888889	2.3	0.361727836	0.1875	3.4	0.531478917	0.162162162
1.9	0.278753601	0.096296296	2.3	0.361727836	0.203125	3.8	0.579783597	0.175675676
1.9	0.278753601	0.103703704	2.4	0.380211242	0.21875	3.9	0.591064607	0.189189189
2.0	0.301029996	0.111111111	2.5	0.397940009	0.234375	3.9	0.591064607	0.202702703
2.0	0.301029996	0.118518519	2.5	0.397940009	0.25	3.9	0.591064607	0.216216216
2.2	0.342422681	0.125925926	2.5	0.397940009	0.265625	4.0	0.602059991	0.22972973
2.2	0.342422681	0.133333333	2.5	0.397940009	0.28125	4.1	0.612783857	0.243243243
2.3	0.361727836	0.140740741	2.6	0.414973348	0.296875	4.3	0.633468456	0.256756757
2.3	0.361727836	0.148148148	3.0	0.477121255	0.3125	4.4	0.643452676	0.27027027
2.4	0.380211242	0.155555556	3.2	0.505149978	0.328125	4.4	0.643452676	0.283783784
2.5	0.397940009	0.162962963	3.4	0.531478917	0.34375	4.4	0.643452676	0.297297297
2.5	0.397940009	0.17037037	3.5	0.544068044	0.359375	4.9	0.69019608	0.310810811
2.5	0.397940009	0.177777778	3.5	0.544068044	0.375	5.0	0.698970004	0.324324324
2.5	0.397940009	0.185185185	3.6	0.556302501	0.390625	5.2	0.716003344	0.337837838
2.5	0.397940009	0.192592593	3.6	0.556302501	0.40625	5.3	0.72427587	0.351351351
2.6	0.414973348	0.2	3.7	0.568201724	0.421875	5.4	0.73239376	0.364864865
2.7	0.431363764	0.207407407	3.7	0.568201724	0.4375	5.5	0.740362689	0.378378378
3.0	0.477121255	0.214814815	3.7	0.568201724	0.453125	5.7	0.755874856	0.391891892
3.2	0.505149978	0.222222222	3.7	0.568201724	0.46875	5.8	0.763427994	0.405405405
3.3	0.51851394	0.22962963	3.8	0.579783597	0.484375	5.8	0.763427994	0.418918919
3.3	0.51851394	0.237037037	4.2	0.62324929	0.5	5.8	0.763427994	0.432432432
3.4	0.531478917	0.244444444	4.7	0.672097858	0.515625	5.9	0.770852012	0.445945946
3.4	0.531478917	0.251851852	4.7	0.672097858	0.53125	6.0	0.77815125	0.459459459
3.5	0.544068044	0.259259259	4.7	0.672097858	0.546875	6.2	0.792391689	0.472972973
3.5	0.544068044	0.266666667	4.8	0.681241237	0.5625	6.3	0.799340549	0.486486486
3.6	0.556302501	0.274074074	4.8	0.681241237	0.578125	6.3	0.799340549	0.5
3.6	0.556302501	0.281481481	4.9	0.69019608	0.59375	6.4	0.806179974	0.513513514
3.7	0.568201724	0.288888889	4.9	0.69019608	0.609375	6.5	0.812913357	0.527027027
3.7	0.568201724	0.296296296	5.0	0.698970004	0.625	6.5	0.812913357	0.540540541
3.7	0.568201724	0.303703704	5.0	0.698970004	0.640625	6.7	0.826074803	0.554054054
3.7	0.568201724	0.311111111	5.1	0.707570176	0.65625	6.9	0.838849091	0.567567568
3.8	0.579783597	0.318518519	5.1	0.707570176	0.671875	7.0	0.84509804	0.581081081
3.8	0.579783597	0.325925926	5.1	0.707570176	0.6875	7.0	0.84509804	0.594594595
3.9	0.591064607	0.333333333	5.2	0.716003344	0.703125	7.1	0.851258349	0.608108108
3.9	0.591064607	0.340740741	5.2	0.716003344	0.71875	7.2	0.857332496	0.621621622
3.9	0.591064607	0.348148148	5.2	0.716003344	0.734375	7.2	0.857332496	0.635135135
4.0	0.602059991	0.355555556	5.2	0.716003344	0.75	7.2	0.857332496	0.648648649
4.1	0.612783857	0.362962963	5.6	0.748188027	0.765625	7.4	0.86923172	0.662162162
4.2	0.62324929	0.37037037	6.1	0.785329835	0.78125	7.4	0.86923172	0.675675676
4.3	0.633468456	0.377777778	6.3	0.799340549	0.796875	7.5	0.875061263	0.689189189
4.4	0.643452676	0.385185185	6.9	0.838849091	0.8125	7.6	0.880813592	0.702702703
4.4	0.643452676	0.392592593	7.3	0.86332286	0.828125	7.7	0.886490725	0.716216216
4.4	0.643452676	0.4	8.2	0.913813852	0.84375	7.9	0.897627091	0.72972973
4.7	0.672097858	0.407407407	13	1.113943352	0.859375	8.3	0.919078092	0.743243243
4.7	0.672097858	0.414814815	16	1.204119983	0.875	8.6	0.934498451	0.756756757
4.7	0.672097858	0.422222222	29	1.462397998	0.890625	8.7	0.939519253	0.77027027
4.8	0.681241237	0.42962963	45	1.653212514	0.90625	9.1	0.959041392	0.783783784

Table D-4: Arsenic Non-Transformed and Transformed Data Set with Outliers Highlighted and Cumulative Probability

Arsenic Concentration As-All (mg/kg)	Log_{10}_As-All	As_All-Cumulative Probability	Arsenic Concentration As-Coarse (mg/kg)	Log_{10}_As-Coarse	As_Coarse-Cumulative Probability	Arsenic Concentration As-Fine (mg/kg)	Log_{10}_As-Fine	As_Fine-Cumulative Probability
4.8	0.681241237	0.437037037	60	1.77815125	0.921875	10	1	0.797297297
4.9	0.69019608	0.444444444	67	1.826074803	0.9375	10	1	0.810810811
4.9	0.69019608	0.451851852	140	2.146128036	0.953125	13	1.113943352	0.824324324
4.9	0.69019608	0.459259259	260	2.414973348	0.96875	14	1.146128036	0.837837838
5.0	0.698970004	0.466666667	270	2.431363764	0.984375	15	1.176091259	0.851351351
5.0	0.698970004	0.474074074	330	2.51851394	1	16	1.204119983	0.864864865
5.0	0.698970004	0.481481481				22	1.342422681	0.878378378
5.1	0.707570176	0.488888889				23	1.361727836	0.891891892
5.1	0.707570176	0.496296296				30	1.477121255	0.905405405
5.1	0.707570176	0.503703704				67	1.826074803	0.918918919
5.2	0.716003344	0.511111111				100	2	0.932432432
5.2	0.716003344	0.518518519				110	2.041392685	0.945945946
5.2	0.716003344	0.525925926				140	2.146128036	0.959459459
5.2	0.716003344	0.533333333				190	2.278753601	0.972972973
5.2	0.716003344	0.540740741				240	2.380211242	0.986486486
5.3	0.72427587	0.548148148				280	2.447158031	1
5.4	0.73239376	0.555555556						
5.5	0.740362689	0.562962963						
5.6	0.748188027	0.57037037						
5.7	0.755874856	0.577777778						
5.8	0.763427994	0.585185185						
5.8	0.763427994	0.592592593						
5.8	0.763427994	0.6						
5.9	0.770852012	0.607407407						
6.0	0.77815125	0.614814815						
6.1	0.785329835	0.622222222						
6.2	0.792391689	0.62962963						
6.3	0.799340549	0.637037037						
6.3	0.799340549	0.644444444						
6.3	0.799340549	0.651851852						
6.4	0.806179974	0.659259259						
6.5	0.812913357	0.666666667						
6.5	0.812913357	0.674074074						
6.7	0.826074803	0.681481481						
6.9	0.838849091	0.688888889						
6.9	0.838849091	0.696296296						
7.0	0.84509804	0.703703704						
7.0	0.84509804	0.711111111						
7.1	0.851258349	0.718518519						
7.2	0.857332496	0.725925926						
7.2	0.857332496	0.733333333						
7.2	0.857332496	0.740740741						
7.3	0.86332286	0.748148148						
7.4	0.86923172	0.755555556						
7.4	0.86923172	0.762962963						
7.5	0.875061263	0.77037037						
7.6	0.880813592	0.777777778						
7.7	0.886490725	0.785185185						
7.9	0.897627091	0.792592593						
8.2	0.913813852	0.8						
8.3	0.919078092	0.807407407						
8.6	0.934498451	0.814814815						
8.7	0.939519253	0.822222222						
9.1	0.959041392	0.82962963						
10	1	0.837037037						
10	1	0.844444444						
13	1.113943352	0.851851852						
13	1.113943352	0.859259259						

Table D-4: Arsenic Non-Transformed and Transformed Data Set with Outliers Highlighted and Cumulative Probability

Arsenic Concentration As-All (mg/kg)	Log_{10}_As-All	As_All-Cumulative Probability	Arsenic Concentration As-Coarse (mg/kg)	Log_{10}_As-Coarse	As_Coarse-Cumulative Probability	Arsenic Concentration As-Fine (mg/kg)	Log_{10}_As-Fine	As_Fine-Cumulative Probability
14	1.146128036	0.866666667						
15	1.176091259	0.874074074						
16	1.204119983	0.881481481						
22	1.342422681	0.888888889						
23	1.361727836	0.896296296						
29	1.462397998	0.903703704						
30	1.477121255	0.911111111						
45	1.653212514	0.918518519						
60	1.77815125	0.925925926						
67	1.826074803	0.933333333						
100	2	0.940740741						
110	2.041392685	0.948148148						
140	2.146128036	0.955555556						
190	2.278753601	0.962962963						
240	2.380211242	0.97037037						
260	2.414973348	0.977777778						
270	2.431363764	0.985185185						
280	2.447158031	0.992592593						
330	2.51851394	1						

Table D-5: Normality Tests and 95% UCL for Data Sets after Outliers Removed

UCL Statistics for Data Sets minus Outliers

User Selected Options	
Date/Time of Computation	ProUCL 5.11/22/2019 7:37:39 AM
From File	log10 no outliers.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Log_{10}_As-All

General Statistics

Total Number of Observations	116	Number of Distinct Observations	67
		Number of Missing Observations	0
Minimum	0.0792	Mean	0.663
Maximum	1.342	Median	0.695
SD	0.242	Std. Error of Mean	0.0225
Coefficient of Variation	0.365	Skewness	-0.0991

Normal GOF Test

Shapiro Wilk Test Statistic	0.976	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.279	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.0842	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0826	Data Not Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.7	95% Adjusted-CLT UCL (Chen-1995)	0.7
		95% Modified-t UCL (Johnson-1978)	0.7

Gamma GOF Test

A-D Test Statistic	2.783	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.754	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.137	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.0854	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	5.777	k star (bias corrected MLE)	5.633
Theta hat (MLE)	0.115	Theta star (bias corrected MLE)	0.118
nu hat (MLE)	1340	nu star (bias corrected)	1307
MLE Mean (bias corrected)	0.663	MLE Sd (bias corrected)	0.279
		Approximate Chi Square Value (0.05)	1224
Adjusted Level of Significance	0.0479	Adjusted Chi Square Value	1223

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.708	95% Adjusted Gamma UCL (use when n<50)	0.708

Table D-5: Normality Tests and 95% UCL for Data Sets after Outliers Removed

Log_{10}_As-All (continued)

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.881	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	1.27E-13	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.155	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0826	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.536	Mean of logged Data	-0.5
Maximum of Logged Data	0.294	SD of logged Data	0.471

Assuming Lognormal Distribution

95% H-UCL	0.734	90% Chebyshev (MVUE) UCL	0.77
95% Chebyshev (MVUE) UCL	0.812	97.5% Chebyshev (MVUE) UCL	0.871
99% Chebyshev (MVUE) UCL	0.986		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.7	95% Jackknife UCL	0.7
95% Standard Bootstrap UCL	0.7	95% Bootstrap-t UCL	0.7
95% Hall's Bootstrap UCL	0.701	95% Percentile Bootstrap UCL	0.7
95% BCA Bootstrap UCL	0.7		
90% Chebyshev(Mean, Sd) UCL	0.73	95% Chebyshev(Mean, Sd) UCL	0.761
97.5% Chebyshev(Mean, Sd) UCL	0.803	99% Chebyshev(Mean, Sd) UCL	0.886

Suggested UCL to Use

95% Student's-t UCL	0.7

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.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Table D-5: Normality Tests and 95% UCL for Data Sets after Outliers Removed

Log_{10}_As-Coarse

General Statistics

Total Number of Observations	54	Number of Distinct Observations	32
		Number of Missing Observations	0
Minimum	0.0792	Mean	0.571
Maximum	1.204	Median	0.568
SD	0.226	Std. Error of Mean	0.0308
Coefficient of Variation	0.396	Skewness	0.192

Normal GOF Test

Shapiro Wilk Test Statistic	0.968	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.289	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.117	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.12	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.622	95% Adjusted-CLT UCL (Chen-1995)	0.622
		95% Modified-t UCL (Johnson-1978)	0.623

Gamma GOF Test

A-D Test Statistic	1.258	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.753	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.145	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.121	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	5.181	k star (bias corrected MLE)	4.906
Theta hat (MLE)	0.11	Theta star (bias corrected MLE)	0.116
nu hat (MLE)	559.6	nu star (bias corrected)	529.8
MLE Mean (bias corrected)	0.571	MLE Sd (bias corrected)	0.258
		Approximate Chi Square Value (0.05)	477.4
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	476.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.634	95% Adjusted Gamma UCL (use when n<50)	0.635

Table D-5: Normality Tests and 95% UCL for Data Sets after Outliers Removed

Log_{10}_As-Coarse (continued)

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.895	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	6.59E-05	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.171	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.12	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-2.536	Mean of logged Data	-0.66
Maximum of Logged Data	0.186	SD of logged Data	0.498

Assuming Lognormal Distribution

95% H-UCL	0.665	90% Chebyshev (MVUE) UCL	0.708
95% Chebyshev (MVUE) UCL	0.764	97.5% Chebyshev (MVUE) UCL	0.843
99% Chebyshev (MVUE) UCL	0.997		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.622	95% Jackknife UCL	0.622
95% Standard Bootstrap UCL	0.62	95% Bootstrap-t UCL	0.624
95% Hall's Bootstrap UCL	0.626	95% Percentile Bootstrap UCL	0.621
95% BCA Bootstrap UCL	0.621		
90% Chebyshev(Mean, Sd) UCL	0.663	95% Chebyshev(Mean, Sd) UCL	0.705
97.5% Chebyshev(Mean, Sd) UCL	0.763	99% Chebyshev(Mean, Sd) UCL	0.877

Suggested UCL to Use

95% Student's-t UCL	0.622

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 D-5: Normality Tests and 95% UCL for Data Sets after Outliers Removed

Log_{10}_As-Fine

General Statistics

Total Number of Observations	62	Number of Distinct Observations	48
		Number of Missing Observations	0
Minimum	0.23	Mean	0.779
Maximum	1.362	Median	0.796
SD	0.223	Std. Error of Mean	0.0283
Coefficient of Variation	0.287	Skewness	0.149

Normal GOF Test

Shapiro Wilk Test Statistic	0.969	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.268	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.105	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.112	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.826	95% Adjusted-CLT UCL (Chen-1995)	0.826
		95% Modified-t UCL (Johnson-1978)	0.826

Gamma GOF Test

A-D Test Statistic	1.124	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.751	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.115	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.113	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	10.85	k star (bias corrected MLE)	10.34
Theta hat (MLE)	0.0718	Theta star (bias corrected MLE)	0.0753
nu hat (MLE)	1345	nu star (bias corrected)	1282
MLE Mean (bias corrected)	0.779	MLE Sd (bias corrected)	0.242
		Approximate Chi Square Value (0.05)	1199
Adjusted Level of Significance	0.0461	Adjusted Chi Square Value	1198

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	0.832	95% Adjusted Gamma UCL (use when n<50)	0.833

Table D-5: Normality Tests and 95% UCL for Data Sets after Outliers Removed

Log_{10}_As-Fine (continued)

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.916	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	2.71E-04	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.134	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.112	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-1.468	Mean of logged Data	-0.297
Maximum of Logged Data	0.309	SD of logged Data	0.327

Assuming Lognormal Distribution

95% H-UCL	0.844	90% Chebyshev (MVUE) UCL	0.883
95% Chebyshev (MVUE) UCL	0.928	97.5% Chebyshev (MVUE) UCL	0.99
99% Chebyshev (MVUE) UCL	1.114		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	0.825	95% Jackknife UCL	0.826
95% Standard Bootstrap UCL	0.823	95% Bootstrap-t UCL	0.825
95% Hall's Bootstrap UCL	0.827	95% Percentile Bootstrap UCL	0.824
95% BCA Bootstrap UCL	0.825		
90% Chebyshev(Mean, Sd) UCL	0.864	95% Chebyshev(Mean, Sd) UCL	0.902
97.5% Chebyshev(Mean, Sd) UCL	0.956	99% Chebyshev(Mean, Sd) UCL	1.061

Suggested UCL to Use

95% Student's-t UCL	0.826

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 E

Building H Indoor Air Sampling Summary Report

AECOM
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www.aecom.com

June 6, 2019

Mr. Keegan George
Sacramento Municipal Utility District
1708 59th Street, Mailstop H201, Sacramento, CA 95817

Reference: Indoor Air Sampling Summary Report
SMUD Building H, 1708 59th Street
Sacramento, California, 95819

Dear Mr. George:

AECOM has prepared this Indoor Air Sampling Summary Report (report) on behalf of Sacramento Municipal Utility District (SMUD) for the Building H (site) (**Figure 1**). Work at the site is performed for SMUD under Contract Number 4500095958, Task Order 18-005. The purpose of this sampling effort was to evaluate for the presence of volatile organic compounds in Building H. In particular, the air sampling effort was performed to analyze for the presence of tetrachloroethene (PCE) and PCE degradation products to evaluate the potential threat of vapor intrusion from a subsurface PCE soil gas plume at the site.

1.0 SITE DESCRIPTION

The site is a two-story building located at SMUD's former corporation yard consisting of office space and warehouse space. The current land use for the site is commercial office and commercial warehouse space. Past uses at the site have had industrial applications as a former tool issue building.

2.0 PRE-SAMPLING ACTIVITIES

AECOM and SMUD met at the project site on April 10, 2019 to perform reconnaissance to identify sample locations for the indoor air sampling event.

On April 11, AECOM met with SMUD to perform the indoor air sampling event. AECOM completed a building survey to document building characteristics, factors influencing air quality, and meteorological conditions. The completed building survey form is provided in **Attachment A**

3.0 SAMPLING AND ANALYSIS

On April 11, 2019, air sampling was conducted to characterize indoor air at Building H. Air samples were collected at 8 locations identified during the site reconnaissance performed on April 11, as depicted in **Figure 1**. The indoor air sampling locations were identified based on the current site utilization. Upwind and downwind sampling locations were determined based on wind direction. Samples were collected in 6-liter summa canisters utilizing 8-hour flow controllers to maintain a constant air flow into the canister over the sample period. Sample collection durations varied by canister. The sampling was concluded for each canister when the canister vacuum reached approximately 5 inches of mercury (in Hg). Sample durations and final canister vacuums are recorded in the indoor air sampling data sheets (**Attachment A**). A summary of sample locations is provided below:

- Upwind and downwind samples (BLDG H UPWIND and BLDG H DOWNWIND) in the parking area outside of Building H;

- Three discrete samples (BLDG H-101, BLDG H-102, and BLDG H-103) collected on the first floor of Building H;
- Three discrete samples (BLDG H-201, BLDG H-202, and BLDG H-203) collected on the second floor of Building H; and
- One quality control samples (BLDG H-101-DS) was collected as a field duplicate of sample BLDG H-101.

All samples were labeled with the time and date of collection and transported to Eurofins Air Toxics, Inc. in Folsom, California for analysis under chain-of-custody protocol of volatile organic compounds by United States Environmental Protection Agency (USEPA) Modified Method Toxic Organics (TO)-15 Selective Ion Monitoring (SIM). The analytical laboratory report and chain-of-custody form are provided in **Attachment B**.

4.0 SAMPLE RESULTS

Table 1 summarizes the detected analytical data only. All sample results were compared to the California Department of Toxic Substances Control (DTSC) Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note 3, DTSC Modified Screening Levels (DTSC-SLs) (DTSC 2019). In the absence of promulgated DTSC-SLs, DTSC HHRA Note 3 defaults to the applicable USEPA Regional Screening Levels (RSLs) (USEPA 2018). These comparisons are shown in Table 1. The laboratory analytical report and chain-of-custody form are provided in **Attachment B**. A summary of the analytical detections is provided below.

The following volatile organic compounds were detected in the air samples collected:

- Freon 12, at concentrations ranging from 1.9 to 2.2 micrograms per cubic meter (µg/m^3) in all samples (including upwind and downwind samples);
- Chloroform, at concentrations of 0.24 and 0.16 µg/m^3 in two samples (BLDG H 2-01 and BLDG H 2-03, respectively);
- Carbon tetrachloride, at concentrations ranging from 0.44 to 0.49 µg/m^3 in all samples (including upwind and downwind samples);
- Cis-1,2-dichloroethene, at a concentration of 0.18 µg/m^3 in one sample (BLDG H 2-02);
- Benzene, at concentrations ranging from 0.34 to 0.67 µg/m^3 in all samples (including upwind and downwind samples);
- Toluene, at concentrations ranging from 0.34 to 0.54 µg/m^3 in all samples (including upwind and downwind samples);
- Tetrachloroethene, at concentrations of 0.29 and 0.32 µg/m^3 in two samples (BLDG H 1-03 and BLDG H 2-03, respectively); and
- M,p-xylene, at concentrations ranging from 0.26 to 0.37 µg/m^3 in all samples (including upwind and downwind samples).

Benzene was detected in all six indoor air samples (and both the upwind and downwind samples) exceeding the 0.097-µg/m^3 residential cancer endpoint DTSC HERO HHRA Note 3 SL. Benzene was detected in two of the six indoor air samples exceeding the 0.42-µg/m^3 commercial/industrial cancer endpoint DTSC HERO HHRA Note 3 SL.

Carbon tetrachloride was detected in three of six indoor air samples (and both the upwind and downwind samples) exceeding the 0.47-µg/m^3 residential cancer endpoint DTSC HERO HHRA Note 3 SL, however none of the samples exceed the 2.0-µg/m^3 commercial/industrial cancer endpoint DTSC HERO HHRA Note 3 SL.

Chloroform was detected in two of the six indoor air samples exceeding the 0.12-µg/m^3 residential USEPA RSL which is adopted by DTSC HERO HHRA Note 3 when a DTSC-SL is not promulgated; however none of the samples exceed the 0.53-µg/m^3 commercial/industrial USEPA RSL adopted by DTSC HERO HHRA Note 3.

5.0 QUALITY CONTROL

Nine air samples were collected on April 12, 2019 at the site located at Building H in Sacramento, California. The air samples were analyzed for select volatile organic compounds by USEPA Modified Method TO-15 SIM by Eurofins Air Toxics, Inc. in Folsom, California under sample delivery group 1904303.

The quality control (QC) samples analyzed to assess contamination, precision, and accuracy for this data set includes a method blank, laboratory control samples (LCS), LCS duplicate, continuing calibration verification and three surrogate spikes for each sample.

The analytical results were validated against laboratory accuracy and precision limits and in accordance with the promulgated method. No systematic analytical problems were indicated by the validation process and no data results are qualified. The data can be used as reported.

6.0 CONCLUSIONS

Based on the results of this soil sampling effort, AECOM concludes the following:

- With the exception of benzene, carbon tetrachloride, and chloroform, all volatile organic compound detections were less than their respective DTSC screening criteria for both residential and commercial/ industrial use, if established.
    - Benzene was detected in all six indoor air samples (and both the upwind and downwind samples) exceeding the 0.097-µg/m^3 residential cancer endpoint DTSC HERO HHRA Note 3 SL. Benzene was detected in two of the six indoor air samples exceed the 0.42-µg/m^3 commercial/industrial cancer endpoint DTSC HERO HHRA Note 3 SL.
    - Carbon tetrachloride was detected in three of six indoor air samples (and both the upwind and downwind samples) exceeding the 0.47-µg/m^3 residential cancer endpoint DTSC HERO HHRA Note 3 SL, however none of the samples exceed the 2.0-µg/m^3 commercial/industrial cancer endpoint DTSC HERO HHRA Note 3 SL.
    - Chloroform was detected in two of the six indoor air samples exceeding the 0.12-µg/m^3 residential USEPA RSL which is adopted by DTSC HERO HHRA Note 3 when a DTSC-SL is not promulgated; however none of the samples exceed the 0.53-µg/m^3 commercial/industrial USEPA RSL adopted by DTSC HERO HHRA Note 3.
- PCE was detected in two of six indoor air samples (BLDG H 1-03 and BLDG H 2-03) below both the 0.46-µg/m^3 residential cancer endpoint DTSC HERO HHRA Note 3 SL and the 2.0-µg/m^3 commercial/industrial cancer endpoint DTSC HERO HHRA Note 3 SL.

- Cis-1,2-dichloroethene, a PCE-degradation product, was detected in one of six indoor air samples (BLDG H 2-02). Although DTSC has not established residential or commercial/industrial cancer endpoints under HERO HHRA Note 3 SL, the one detection did not exceed either the 8.3-µg/m^3 residential noncancer endpoint DTSC HERO HHRA Note 3 SL or the 35-µg/m^3 commercial/industrial noncancer endpoint DTSC HERO HHRA Note 3 SL. Note, the USEPA has not established residential or commercial/industrial RSLs for cis-1,2-dichloroethene.
- Benzene is a common air contaminant with sources that include automobiles and trucks (BAAQMD 2018). Based on a study on background VOCs in indoor air (USEPA 2011), benzene detections were found present in over 90% of the samples collected with detections ranging from 0.05 µg/m^3 to 4.7 µg/m^3 (50th percentile). Indoor air sample results from SMUD's Building H reported a maximum indoor air concentration of 0.67 µg/m^3 with the average concentration of all indoor air samples at 0.43 µg/m^3. The indoor air samples collected from Building H are considered equivalent to background concentrations reported outside of Building H (0.35 µg/m^3 and 0.36 µg/m^3) where the elevated concentrations of benzene are likely attributed to the proximity of the Site near Highway 50. The maximum detected indoor air concentration of 0.67 µg/m^3 results in a worker cancer risk of $2x10^{-6}$ which is nominally above the acceptable risk threshold of $1x10^{-6}$ but within the accepted USEPA risk management range of 10^{-6} to 10^{-4}. Risks in this range may be acceptable for risk management decisions, provided that Site-related measures or conditions are present to mitigate the actual risks. A cancer risk greater than 10^{-4} warrants some type of action. Cancer risk estimates are based on conservative exposure assumptions such as 25 year occupancy, and exceedances of any particular risk or hazard level does not imply that adverse health effects have already or will occur. Given that Building H currently serves as temporary office space for workers, the indoor air concentrations detected do not pose an unacceptable risk to workers.
- The data represents characterization of indoor air gas for Building H on April 11, 2019. Additional sampling may be required to provide representative characterization of indoor air gas during the winter/summer months.

7.0 QUALIFICATIONS AND LIMITATIONS

This report is intended for the sole use of SMUD. The scope of services performed during this investigation may not be appropriate for other users, and any use or re-use of this document, or the findings and conclusions presented herein is at the sole risk of said user. The conclusions and findings presented in this report are professional opinions, based solely on sample data obtained during this evaluation and historical information conveyed by SMUD staff. These conclusions are intended exclusively for the purpose stated herein, at the site indicated, and for the project indicated.

This evaluation was not intended to be a definitive investigation of possible contamination at the site. The data represents the characterization of a limited number of samples collected on April 11, 2019. The findings and conclusions apply to current conditions and may not accurately represent historical or future conditions at the site. Additional sampling may be required to provide a full representative characterization of indoor air quality particularly with respect to winter months when conditions that affect indoor air quality are likely to be present (i.e., less building air exchange when air conditioning systems are not activated).

8.0 REFERENCES

BAAQMD 2018. 2017 Air Monitoring Network Plan. Available at: http://www.baaqmd.gov/~/media/files/technical-services/2017_network_plan_20180701-pdf.pdf?la=en. July

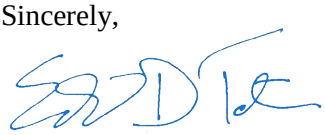
California DTSC. 2019. *HERO HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs)*. Available at: https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-2019-04.pdf April.

USEPA 2018. *Regional Screening Level (RSL) Summary Table*. Available at: https://semspub.epa.gov/work/HQ/197414.pdf. November.

USEPA 2011. Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences (1990-2005): A compilation of Statistics for Assessing Vapor Intrusion. Available at: https://www.epa.gov/sites/production/files/2015-09/documents/oswer-vapor-intrusion-background-report-062411.pdf. June.

If you have any questions or comments regarding this report, please contact me at 916.361.6429.

Sincerely,



Edmund Tarter, PE
California Professional Engineer, No. 64825

6/6/2019

Attachments:

Table 1	Analytical Results – Air Samples
Figure 1	Indoor Air Sampling Locations, Building H, First Floor
Figure 2	Indoor Air Sampling Locations, Building H, Second Floor
Attachment A	Laboratory Analytical Report and Chain-of-Custody Form

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TABLE

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Table 1. Analytical Results – Air Samples (Page 1 of 2)

Sample ID	TO-15 GC/MS SIM (µg/m^3)							
	Freon 12	Chloroform	Carbon Tetrachloride	cis-1,2-Dichloroethene	Benzene	Toluene	Tetrachloroethene	m,p-Xylene
BLDG H UPWIND	2.2	ND	0.49	ND	0.35	0.51	ND	0.31
BLDG H DOWNWIND	2.2	ND	0.49	ND	0.36	0.48	ND	0.31
BLDG H 1-01	2.2	ND	0.48	ND	0.36	0.54	ND	0.32
BLDG H 1-01-DS	2.2	ND	0.47	ND	0.34	0.51	ND	0.32
BLDG H 1-02	2.2	ND	0.46	ND	0.67	0.51	ND	0.26
BLDG H 1-03	2.2	ND	0.45	ND	0.47	0.34	0.29	0.37
BLDG H 2-01	2.2	0.24	0.48	ND	0.34	0.46	ND	0.29
BLDG H 2-02	1.9	ND	0.44	0.18	0.36	0.51	ND	0.29
BLDG H 2-03	2.0	0.16	0.47	ND	0.36	0.50	0.32	0.34
Residential HERO HHRA Note 3 SL – Cancer[1]	**NE**	**NE**	**0.47**	**NE**	**0.097**	**NE**	**0.46**	**NE**
Residential HERO HHRA Note 3 SL – Noncancer[1]	**NE**	**NE**	**42**	**8.3**	**3.1**	**310**	**42**	**NE**
Commercial/Industrial HERO HHRA Note 3 SL – Cancer[1]	**NE**	**NE**	**2.0**	**NE**	**0.42**	**NE**	**2.0**	**NE**
Commercial/Industrial HERO HHRA Note 3 SL – Noncancer[1]	**NE**	**NE**	**180**	**35**	**13**	**1,300**	**180**	**NE**
Residential USEPA RSL[2]	**100**	**0.12**	**0.47**	**NE**	**0.36**	**5,200**	**11**	**100**
Industrial USEPA RSL[2]	**440**	**0.53**	**2.0**	**NE**	**1.6**	**22,000**	**47**	**440**

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Table 1. Analytical Results – Air Samples (Page 2 of 2)

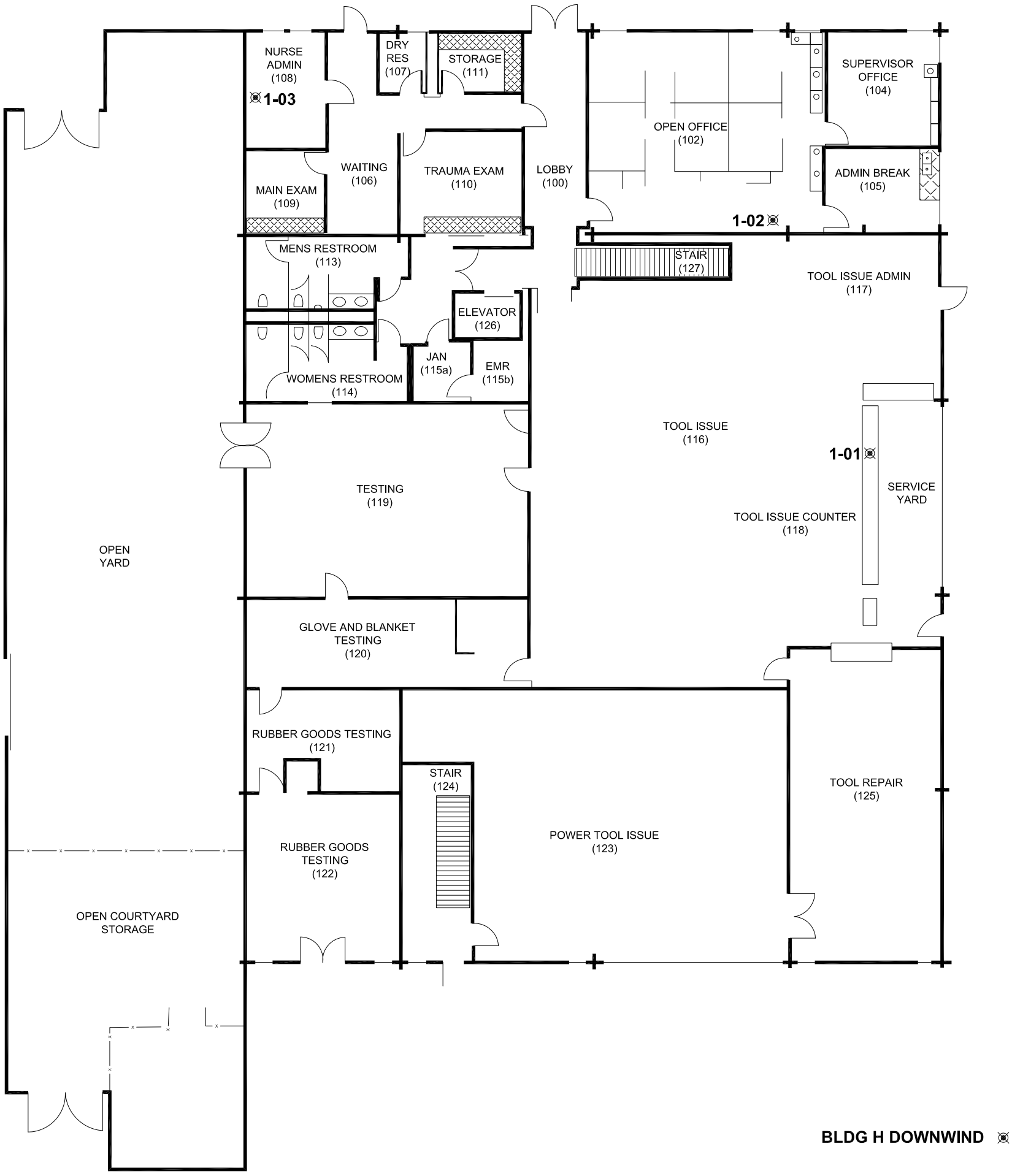
Notes:
Samples were collected on April 11, 2019.
Only the results for detected constituents are shown. Complete analytical results are provided in Appendix A.
This table does not include laboratory qualifiers. All laboratory qualifiers are provided in Appendix A.

[1] Source: California DTSC 2019
[2] Source: USEPA 2018

µg/m^3= micrograms per cubic meter
DTSC= Department of Toxic Substances Control
HERO= Human and Ecological Risk Office
HHRA= Human Health Risk Assessment
ID= identification
ND= not detected
NE= not established
RSL= Regional Screening Level
RWQCB= Regional Water Quality Control Board
SL= screening level

FIGURES

⊗ **BLDG H UPWIND**



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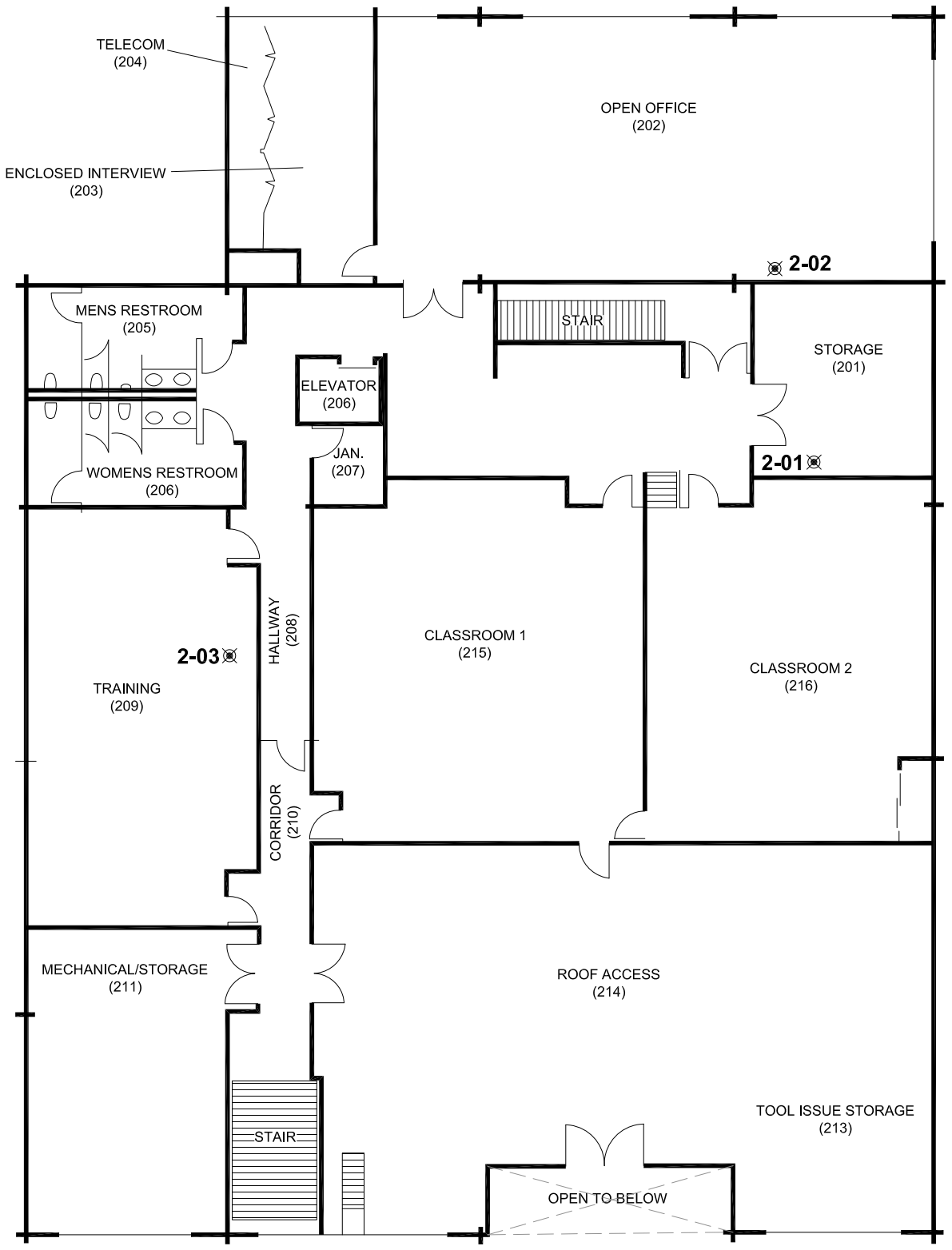
AECOM SMUD Corporation Yard
1708 59th Street Sacramento, California

Figure 1
Indoor Air Sampling Sample Locations
Building H, First Floor

BLDG H UPWIND



BLDG H DOWNWIND

Legend

Air Sampling Location

North West wind
at ~10 mph

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AECOM SMUD Corporation Yard
1708 59th Street Sacramento, California

Figure 2
Indoor Air Sampling Sample Locations
Building H, Second Floor

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ATTACHMENTS

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ATTACHMENT A

Building Survey and Field Sampling Forms

AECOM Building Survey Form

Preparer's Name: ANDREW ARCHULETA Date/Time Prepared: 4/11/19 0630

Site: SMUD BLDG H INDOOR AIR SAMPLING Project Number: 60570043

Occupant Information

Occupant Name: SMUD Interviewed: ☐ Yes ☐ No

Mailing Address: 1708 59TH ST.

City: SACRAMENTO State: CA Zip Code:

Phone: 916.732.5548 Email: KEEGAN.GEORGE@SMUD.ORG

Owner/Landlord Information *Check here if same as occupant* ☑

Occupant Name: Interviewed: ☐ Yes ☐ No

Mailing Address:

City: State: Zip Code:

Phone: Email:

Building Type *Check appropriate boxes*

☐ Residential ☐ Residential Duplex ☐ Apartment Building ☐ Mobile Home ☑ Commercial (Office)
☑ Commercial (Warehouse) ☐ Industrial ☐ Strip Mall ☐ Split Level ☐ Church ☐ School

Building Characteristics

Approximate Building Age *(Years)* : Number of Stories: 2

Approximate Building Area *(Square Feet)* : Number of Elevators: 0

Foundation Type *Check appropriate boxes*

☑ Slab-on-Grade ☐ Crawl Space ☐ Basement

Basement Characteristics *Check appropriate boxes*

☐ Dirt Floor ☐ Sealed ☐ Wet Surfaces ☐ Sump Pump ☐ Concrete Cracks ☐ Floor Drains

Factors Influencing Indoor Air Quality

Is there an attached garage?	☐ Yes	☑ No	
Is there smoking in the building?	☐ Yes	☑ No	
Is there new carpet or furniture?	☐ Yes	☑ No	Describe: > 5 YRS
Have clothes or drapes been recently dry cleaned?	☐ Yes	☑ No	Describe: TABLE CLOTHES (UNKNOWN)
Has painting or staining been done within the last six months?	☐ Yes	☑ No	Describe:
Has the building been recently remodeled?	☐ Yes	☑ No	Describe: > 5 YRS
Has the building ever had a fire?	☐ Yes	☑ No	
Is there a hobby or craft area in the building?	☐ Yes	☐ No	Describe:
Is gun cleaner stored in the building?	☐ Yes	☑ No	
Is there a fuel oil tank on the property?	☐ Yes	☑ No	
Is there a septic tank on the property?	☐ Yes	☑ No	
Has the building been fumigated or sprayed for pests recently?	☐ Yes	☑ No	Describe:
Do any building occupants use solvents at work?	☐ Yes	☑ No	Describe:

Sampling Locations

Draw the general floor plan of the building and denote locations of sample collection.
Indicate locations of doors, windows, indoor air contaminant sources and field instrument readings.

SEE BUILDING LAYOUT MAP

Primary Type of Energy Used *Check appropriate boxes*

☐ Natural Gas ☐ Fuel Oil ☐ Propane ☐ Electricity ☐ Wood ☐ Kerosene

Meterological Conditions

Describe the general weather conditions during the indoor air sampling event.

BEGINNING: 60° OUTDOORS, NW WIND @ ~ 10 MPH, HAZY
FAIRLY CONSISTENT WEATHER THROUGHOUT SAMPLING. END: 70° HAZY, NW WIND 11 MPH
30.05" Hg

General Comments

Provide any other information that may be of importance in understanding the indoor air quality of this building.

AECOM Indoor Air Sampling Data Sheet

Installation: SMUD Project: BLDG M - IAS Event: APRIL 2019

Sample Location: BLDG M UPWIND Date: 4/11/19

Location Description: OUTDOOR, 60' FROM NW CORNER OF BLDG (UPWIND)

Arrival Time: 0642

Departure Time: 1458 Sampler(s): AKA

Sample Height Above Ground: 5'

Were existing volatiles found during building survey removed and when? NO

Were any new volatiles observed in the area? NO

Weather Conditions: HAZY 57° NW WIND ~10 MPH

Rain in last 24 hours? ☐ Yes ☑ No

Sample Type: ☐ Indoor Air ☑ Outdoor Ambient Air

NORMAL SAMPLE

Sample Beginning Time: 0656 Sample End Time: 1456

Sample Number: BLDG M UPWIND

Canister Number: 6L0287

Sample Duration: ~~1458~~ AA 8 HRS

Initial Canister Vacuum: -28.0 (-) inch Hg Final Canister Vacuum: -5.00 (-) inch Hg

---

FIELD DUPLICATE

Sample Beginning Time: _____ Sample End Time: _____

Sample Number: _____

Canister Number: _____

Sample Duration: _____

Initial Canister Vacuum: _____ (-) inch Hg Final Canister Vacuum: _____ (-) inch Hg

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AECOM Indoor Air Sampling Data Sheet

Installation: SMUD Project: BLDG H - IAS Event: APRIL 2019

Sample Location: BLDG H DOWNWIND Date: 4/11/19

Location Description: OUTDOOR, 110' FROM SE CORNER OF BLDG (DOWNWIND)

Arrival Time: 0659

Departure Time: 1502 Sampler(s): AKA

Sample Height Above Ground: 6'

Were existing volatiles found during building survey removed and when? NO

Were any new volatiles observed in the area? NO

Weather Conditions: HAZY 57° NW WIND ~ 10 MPH

Rain in last 24 hours? ☐ Yes ☑ No

Sample Type: ☐ Indoor Air ☑ Outdoor Ambient Air

NORMAL SAMPLE

Sample Beginning Time: 0700 Sample End Time: 1500

Sample Number: BLDG H DOWNWIND

Canister Number: 6L0347

Sample Duration: 8 HRS

Initial Canister Vacuum: 30.0 (-) inch Hg Final Canister Vacuum: -5.5 (-) inch Hg

---

FIELD DUPLICATE

Sample Beginning Time: _____ Sample End Time: _____

Sample Number: _____

Canister Number: _____

Sample Duration: _____

Initial Canister Vacuum: _____ (-) inch Hg Final Canister Vacuum: _____ (-) inch Hg

---

AECOM Indoor Air Sampling Data Sheet

Installation: SMUD Project: BLDG H - IAS Event: APRIL 2019

Sample Location: BLDG H 1-01 Date: 4/11/19

Location Description: 1ST FLOOR TOOL ISSUE WAREHOUSE, EAST BENCH

Arrival Time: 0726

Departure Time: 1530 Sampler(s): AKA

Sample Height Above Ground: 4' 6"

Were existing volatiles found during building survey removed and when? NO

Were any new volatiles observed in the area? NO

Weather Conditions: HAZY 57° NW WIND ~10 MPH

Rain in last 24 hours? ☐ Yes ☑ No

Sample Type: ☑ Indoor Air ☐ Outdoor Ambient Air

NORMAL SAMPLE

Sample Beginning Time: 0729 Sample End Time: 1529

Sample Number: BLDG H 1-01

Canister Number: 6L 1855

Sample Duration: 8 HRS

Initial Canister Vacuum: -29.5 (-) inch Hg Final Canister Vacuum: 5.5 (-) inch Hg

---

FIELD DUPLICATE

Sample Beginning Time: 0729 Sample End Time: 1529

Sample Number: BLDG H 1-01-DS

Canister Number:

Sample Duration:

Initial Canister Vacuum: -29.0 (-) inch Hg Final Canister Vacuum: 5.6 (-) inch Hg

---

AECOM Indoor Air Sampling Data Sheet

Installation: SMUD Project: BLDG H - IAS Event: APRIL 2019

Sample Location: BLDG H 1-02 Date: 4/11/19

Location Description: 1ST FLOOR NE OFFICE # 102, SE CABINET

Arrival Time: 0731

Departure Time: 1534 Sampler(s): AKA

Sample Height Above Ground: 5'5"

Were existing volatiles found during building survey removed and when? NO

Were any new volatiles observed in the area? NO

Weather Conditions: HAZY 57° NW WIND ~10 MPH

Rain in last 24 hours? ☐ *Yes* ☑ *No*

Sample Type: ☑ *Indoor Air* ☐ *Outdoor Ambient Air*

NORMAL SAMPLE

Sample Beginning Time: 0733 Sample End Time: 1533

Sample Number: BLDG H 1-02

Canister Number: 6L1639

Sample Duration: 8 HRS

Initial Canister Vacuum: -27.0 *(-) inch Hg* Final Canister Vacuum: -5.0 *(-) inch Hg*

FIELD DUPLICATE

Sample Beginning Time: _____ Sample End Time: _____

Sample Number: _____

Canister Number: _____

Sample Duration: _____

Initial Canister Vacuum: _____ *(-) inch Hg* Final Canister Vacuum: _____ *(-) inch Hg*

AECOM Indoor Air Sampling Data Sheet

Installation: SMUD Project: BLDG H - IAS Event: APRIL 2019

Sample Location: BLDG H 1-03 Date: 4/11/19

Location Description: 1ST FLOOR NW OFFICE #108, WEST CABINET

Arrival Time: 0735

Departure Time: 1538 Sampler(s): AKA

Sample Height Above Ground: 6'

Were existing volatiles found during building survey removed and when? YES (DRY ERASE MARKERS), NO

Were any new volatiles observed in the area? NO

Weather Conditions: HAZY 57° NW WIND ~10 MPH

Rain in last 24 hours? ☐ Yes ☑ No

Sample Type: ☑ Indoor Air ☐ Outdoor Ambient Air

NORMAL SAMPLE

Sample Beginning Time: 0736 Sample End Time: 1536

Sample Number: BLDG H 1-03

Canister Number: 6L1691

Sample Duration: 8 HRS

Initial Canister Vacuum: -30.0 (-) inch Hg Final Canister Vacuum: -10.0 (-) inch Hg

---

FIELD DUPLICATE

Sample Beginning Time: _____ Sample End Time: _____

Sample Number: _____

Canister Number: _____

Sample Duration: _____

Initial Canister Vacuum: _____ (-) inch Hg Final Canister Vacuum: _____ (-) inch Hg

---

AECOM Indoor Air Sampling Data Sheet

Installation: SMUD Project: BLDG H-IAS Event: APRIL 2019

Sample Location: BLDG H 2-01 Date: 4/11/19

Location Description: 2ND FLOOR EAST OFFICE # 201, SOUTH CABINET

Arrival Time: 0709

Departure Time: 1511 Sampler(s): AKA

Sample Height Above Ground: 6'

Were existing volatiles found during building survey removed and when? NO

Were any new volatiles observed in the area? NO

Weather Conditions: HAZY 57° NW WIND ~10 MPH

Rain in last 24 hours? ☐ Yes ☑ No

Sample Type: ☑ Indoor Air ☐ Outdoor Ambient Air

NORMAL SAMPLE

Sample Beginning Time: 0710 Sample End Time: 1510

Sample Number: BLDG H 2-01

Canister Number: 6L1832

Sample Duration: 8 HRS

Initial Canister Vacuum: -29.0 (-) inch Hg Final Canister Vacuum: -5.0 (-) inch Hg

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FIELD DUPLICATE

Sample Beginning Time: _____ Sample End Time: _____

Sample Number: _____

Canister Number: _____

Sample Duration: _____

Initial Canister Vacuum: _____ (-) inch Hg Final Canister Vacuum: _____ (-) inch Hg

---

AECOM Indoor Air Sampling Data Sheet

Installation: SMUD Project: BLDG H - IAS Event: APRIL 2019

Sample Location: BLDG H 2-02 Date: 4/11/19

Location Description: 2ND FLOOR NORTH OFFICE # 202, SE CABINET

Arrival Time: 0711

Departure Time: 1514 Sampler(s): AKA

Sample Height Above Ground: 6'

Were existing volatiles found during building survey removed and when? NO

Were any new volatiles observed in the area? NO

Weather Conditions: HAZY 57° NW WIND ~10 MPH

Rain in last 24 hours? ☐ Yes ☑ No

Sample Type: ☑ Indoor Air ☐ Outdoor Ambient Air

NORMAL SAMPLE

Sample Beginning Time: 0713 Sample End Time: 1513

Sample Number: BLDG H 2-02

Canister Number: 6L1336

Sample Duration: 8 HRS

Initial Canister Vacuum: -30.0 *(-) inch Hg* Final Canister Vacuum: -4.5 *(-) inch Hg*

FIELD DUPLICATE

Sample Beginning Time: _____ Sample End Time: _____

Sample Number: _____

Canister Number: _____

Sample Duration: _____

Initial Canister Vacuum: _____ *(-) inch Hg* Final Canister Vacuum: _____ *(-) inch Hg*

AECOM Indoor Air Sampling Data Sheet

Installation: SMUD Project: BLDG H - IAS Event: APRIL 2019

Sample Location: BLDG H 2-03 Date: 4/11/19

Location Description: 2ND FLOOR WEST OFFICE #209, EAST CABINET

Arrival Time: ~~1519~~ AKA 0715

Departure Time: 1519 Sampler(s): AKA

Sample Height Above Ground: 4'

Were existing volatiles found during building survey removed and when? NO

Were any new volatiles observed in the area? NO

Weather Conditions: HAZY 57° NW WIND ~10 MPH

Rain in last 24 hours? ☐ Yes ☑ No

Sample Type: ☑ Indoor Air ☐ Outdoor Ambient Air

NORMAL SAMPLE

Sample Beginning Time: 0717 Sample End Time: 1517

Sample Number: BLDG H 2-03

Canister Number: 6L0313

Sample Duration: 8 HR

Initial Canister Vacuum: -30.0 (-) inch Hg Final Canister Vacuum: -3.0 (-) inch Hg

---

FIELD DUPLICATE

Sample Beginning Time: _____ Sample End Time: _____

Sample Number: _____

Canister Number: _____

Sample Duration: _____

Initial Canister Vacuum: _____ (-) inch Hg Final Canister Vacuum: _____ (-) inch Hg

---

AECOM

ATTACHMENT B

Laboratory Analytical Report and Chain-of-Custody Form

eurofins | Air Toxics

4/19/2019
Mr. Andy Shepard
AECOM
2020 L Street, Suite 400

Sacramento CA 95811

Project Name: SMUD-BLDG H INDOOR SAMPLING
Project #:
Workorder #: 1904303

Dear Mr. Andy Shepard

The following report includes the data for the above referenced project for sample(s) received on 4/12/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 SIM are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1904303

Work Order Summary

CLIENT:	Mr. Andy Shepard AECOM 2020 L Street, Suite 400 Sacramento, CA 95811	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	916-679-2000	**P.O. #**	60570043.07
FAX:	916-679-2900	**PROJECT #**	SMUD-BLDG H INDOOR SAMPLING
DATE RECEIVED:	04/12/2019	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/19/2019		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BLDG H UPWIND	Modified TO-15 SIM	4.1 "Hg	4.8 psi
02A	BLDG H DOWNWIND	Modified TO-15 SIM	2.6 "Hg	4.9 psi
03A	BLDG H 1-01	Modified TO-15 SIM	4.5 "Hg	4.8 psi
04A	BLDG H 1-01-DS	Modified TO-15 SIM	4.5 "Hg	5.1 psi
05A	BLDG H 1-02	Modified TO-15 SIM	3.7 "Hg	5.1 psi
06A	BLDG H 1-03	Modified TO-15 SIM	10.4 "Hg	4.8 psi
07A	BLDG H 2-01	Modified TO-15 SIM	3.7 "Hg	5 psi
08A	BLDG H 2-02	Modified TO-15 SIM	3.7 "Hg	5 psi
09A	BLDG H 2-03	Modified TO-15 SIM	2.2 "Hg	4.8 psi
10A	Lab Blank	Modified TO-15 SIM	NA	NA
11A	CCV	Modified TO-15 SIM	NA	NA
12A	LCS	Modified TO-15 SIM	NA	NA
12AA	LCSD	Modified TO-15 SIM	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 04/19/19

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.
Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15 SIM
AECOM
Workorder# 1904303

Nine 6 Liter Summa Canister (100% SIM Ambient) samples were received on April 12, 2019. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: BLDG H UPWIND

Lab ID#: 1904303-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.44	0.15	2.2
Carbon Tetrachloride	0.031	0.078	0.19	0.49
Benzene	0.077	0.11	0.24	0.35
Toluene	0.031	0.14	0.12	0.51
m,p-Xylene	0.062	0.072	0.27	0.31

Client Sample ID: BLDG H DOWNWIND

Lab ID#: 1904303-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.029	0.44	0.14	2.2
Carbon Tetrachloride	0.029	0.078	0.18	0.49
Benzene	0.073	0.11	0.23	0.36
Toluene	0.029	0.13	0.11	0.48
m,p-Xylene	0.058	0.072	0.25	0.31

Client Sample ID: BLDG H 1-01

Lab ID#: 1904303-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.44	0.15	2.2
Carbon Tetrachloride	0.031	0.077	0.20	0.48
Benzene	0.078	0.11	0.25	0.36
Toluene	0.031	0.14	0.12	0.54
m,p-Xylene	0.062	0.074	0.27	0.32

Client Sample ID: BLDG H 1-01-DS

Lab ID#: 1904303-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.44	0.16	2.2
Carbon Tetrachloride	0.032	0.075	0.20	0.47

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: BLDG H 1-01-DS

Lab ID#: 1904303-04A

Benzene	0.079	0.10	0.25	0.34
Toluene	0.032	0.14	0.12	0.51
m,p-Xylene	0.063	0.073	0.27	0.32

Client Sample ID: BLDG H 1-02

Lab ID#: 1904303-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.44	0.15	2.2
Carbon Tetrachloride	0.031	0.073	0.19	0.46
Benzene	0.076	0.21	0.24	0.67
Toluene	0.031	0.14	0.12	0.51
m,p-Xylene	0.061	0.061	0.26	0.26

Client Sample ID: BLDG H 1-03

Lab ID#: 1904303-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.041	0.44	0.20	2.2
Carbon Tetrachloride	0.041	0.072	0.26	0.45
Benzene	0.10	0.15	0.32	0.47
Toluene	0.041	0.092	0.15	0.34
Tetrachloroethene	0.041	0.043	0.28	0.29
m,p-Xylene	0.081	0.085	0.35	0.37

Client Sample ID: BLDG H 2-01

Lab ID#: 1904303-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.44	0.15	2.2
Chloroform	0.031	0.048	0.15	0.24
Carbon Tetrachloride	0.031	0.076	0.19	0.48
Benzene	0.076	0.11	0.24	0.34
Toluene	0.031	0.12	0.12	0.46

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: BLDG H 2-01

Lab ID#: 1904303-07A

m,p-Xylene	0.061	0.066	0.26	0.29

Client Sample ID: BLDG H 2-02

Lab ID#: 1904303-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.38	0.15	1.9
cis-1,2-Dichloroethene	0.031	0.045	0.12	0.18
Carbon Tetrachloride	0.031	0.070	0.19	0.44
Benzene	0.076	0.11	0.24	0.36
Toluene	0.031	0.14	0.12	0.51
m,p-Xylene	0.061	0.066	0.26	0.29

Client Sample ID: BLDG H 2-03

Lab ID#: 1904303-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.029	0.40	0.14	2.0
Chloroform	0.029	0.033	0.14	0.16
Carbon Tetrachloride	0.029	0.075	0.18	0.47
Benzene	0.072	0.11	0.23	0.36
Toluene	0.029	0.13	0.11	0.50
Tetrachloroethene	0.029	0.047	0.19	0.32
m,p-Xylene	0.057	0.079	0.25	0.34

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Client Sample ID: BLDG H UPWIND

Lab ID#: 1904303-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041612sim**	**Date of Collection:**	**4/11/19 6:56:00 AM**
Dil. Factor:	**1.54**	**Date of Analysis:**	**4/16/19 03:02 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.44	0.15	2.2
Freon 114	0.031	Not Detected	0.22	Not Detected
Chloromethane	0.77	Not Detected	1.6	Not Detected
Vinyl Chloride	0.015	Not Detected	0.039	Not Detected
Chloroethane	0.077	Not Detected	0.20	Not Detected
1,1-Dichloroethene	0.015	Not Detected	0.061	Not Detected
trans-1,2-Dichloroethene	0.15	Not Detected	0.61	Not Detected
Methyl tert-butyl ether	0.15	Not Detected	0.56	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.031	0.078	0.19	0.49
Benzene	0.077	0.11	0.24	0.35
1,2-Dichloroethane	0.031	Not Detected	0.12	Not Detected
Trichloroethene	0.031	Not Detected	0.16	Not Detected
Toluene	0.031	0.14	0.12	0.51
1,1,2-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected
1,2-Dibromoethane (EDB)	0.031	Not Detected	0.24	Not Detected
Ethyl Benzene	0.031	Not Detected	0.13	Not Detected
m,p-Xylene	0.062	0.072	0.27	0.31
o-Xylene	0.031	Not Detected	0.13	Not Detected
1,1,2,2-Tetrachloroethane	0.031	Not Detected	0.21	Not Detected
1,4-Dichlorobenzene	0.031	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: BLDG H DOWNWIND

Lab ID#: 1904303-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041613sim**	**Date of Collection:**	**4/11/19 7:00:00 AM**
Dil. Factor:	**1.46**	**Date of Analysis:**	**4/16/19 03:38 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.029	0.44	0.14	2.2
Freon 114	0.029	Not Detected	0.20	Not Detected
Chloromethane	0.73	Not Detected	1.5	Not Detected
Vinyl Chloride	0.015	Not Detected	0.037	Not Detected
Chloroethane	0.073	Not Detected	0.19	Not Detected
1,1-Dichloroethene	0.015	Not Detected	0.058	Not Detected
trans-1,2-Dichloroethene	0.15	Not Detected	0.58	Not Detected
Methyl tert-butyl ether	0.15	Not Detected	0.53	Not Detected
1,1-Dichloroethane	0.029	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.029	Not Detected	0.12	Not Detected
Chloroform	0.029	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.029	Not Detected	0.16	Not Detected
Carbon Tetrachloride	0.029	0.078	0.18	0.49
Benzene	0.073	0.11	0.23	0.36
1,2-Dichloroethane	0.029	Not Detected	0.12	Not Detected
Trichloroethene	0.029	Not Detected	0.16	Not Detected
Toluene	0.029	0.13	0.11	0.48
1,1,2-Trichloroethane	0.029	Not Detected	0.16	Not Detected
Tetrachloroethene	0.029	Not Detected	0.20	Not Detected
1,2-Dibromoethane (EDB)	0.029	Not Detected	0.22	Not Detected
Ethyl Benzene	0.029	Not Detected	0.13	Not Detected
m,p-Xylene	0.058	0.072	0.25	0.31
o-Xylene	0.029	Not Detected	0.13	Not Detected
1,1,2,2-Tetrachloroethane	0.029	Not Detected	0.20	Not Detected
1,4-Dichlorobenzene	0.029	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BLDG H 1-01

Lab ID#: 1904303-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041614sim**	**Date of Collection:**	**4/11/19 7:29:00 AM**
Dil. Factor:	**1.56**	**Date of Analysis:**	**4/16/19 04:15 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.44	0.15	2.2
Freon 114	0.031	Not Detected	0.22	Not Detected
Chloromethane	0.78	Not Detected	1.6	Not Detected
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Chloroethane	0.078	Not Detected	0.20	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.062	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.62	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.56	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.031	0.077	0.20	0.48
Benzene	0.078	0.11	0.25	0.36
1,2-Dichloroethane	0.031	Not Detected	0.13	Not Detected
Trichloroethene	0.031	Not Detected	0.17	Not Detected
Toluene	0.031	0.14	0.12	0.54
1,1,2-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected
1,2-Dibromoethane (EDB)	0.031	Not Detected	0.24	Not Detected
Ethyl Benzene	0.031	Not Detected	0.14	Not Detected
m,p-Xylene	0.062	0.074	0.27	0.32
o-Xylene	0.031	Not Detected	0.14	Not Detected
1,1,2,2-Tetrachloroethane	0.031	Not Detected	0.21	Not Detected
1,4-Dichlorobenzene	0.031	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: BLDG H 1-01-DS

Lab ID#: 1904303-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041615sim**	**Date of Collection:**	**4/11/19 7:29:00 AM**
Dil. Factor:	**1.58**	**Date of Analysis:**	**4/16/19 04:53 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.44	0.16	2.2
Freon 114	0.032	Not Detected	0.22	Not Detected
Chloromethane	0.79	Not Detected	1.6	Not Detected
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Chloroethane	0.079	Not Detected	0.21	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.57	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
Chloroform	0.032	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.032	0.075	0.20	0.47
Benzene	0.079	0.10	0.25	0.34
1,2-Dichloroethane	0.032	Not Detected	0.13	Not Detected
Trichloroethene	0.032	Not Detected	0.17	Not Detected
Toluene	0.032	0.14	0.12	0.51
1,1,2-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Tetrachloroethene	0.032	Not Detected	0.21	Not Detected
1,2-Dibromoethane (EDB)	0.032	Not Detected	0.24	Not Detected
Ethyl Benzene	0.032	Not Detected	0.14	Not Detected
m,p-Xylene	0.063	0.073	0.27	0.32
o-Xylene	0.032	Not Detected	0.14	Not Detected
1,1,2,2-Tetrachloroethane	0.032	Not Detected	0.22	Not Detected
1,4-Dichlorobenzene	0.032	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: BLDG H 1-02

Lab ID#: 1904303-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041622sim**	**Date of Collection:**	**4/11/19 7:33:00 AM**
Dil. Factor:	**1.53**	**Date of Analysis:**	**4/16/19 09:37 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.44	0.15	2.2
Freon 114	0.031	Not Detected	0.21	Not Detected
Chloromethane	0.76	Not Detected	1.6	Not Detected
Vinyl Chloride	0.015	Not Detected	0.039	Not Detected
Chloroethane	0.076	Not Detected	0.20	Not Detected
1,1-Dichloroethene	0.015	Not Detected	0.061	Not Detected
trans-1,2-Dichloroethene	0.15	Not Detected	0.61	Not Detected
Methyl tert-butyl ether	0.15	Not Detected	0.55	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.031	0.073	0.19	0.46
Benzene	0.076	0.21	0.24	0.67
1,2-Dichloroethane	0.031	Not Detected	0.12	Not Detected
Trichloroethene	0.031	Not Detected	0.16	Not Detected
Toluene	0.031	0.14	0.12	0.51
1,1,2-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected
1,2-Dibromoethane (EDB)	0.031	Not Detected	0.24	Not Detected
Ethyl Benzene	0.031	Not Detected	0.13	Not Detected
m,p-Xylene	0.061	0.061	0.26	0.26
o-Xylene	0.031	Not Detected	0.13	Not Detected
1,1,2,2-Tetrachloroethane	0.031	Not Detected	0.21	Not Detected
1,4-Dichlorobenzene	0.031	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: BLDG H 1-03

Lab ID#: 1904303-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041616sim**	**Date of Collection: 4/11/19 7:36:00 AM**	
Dil. Factor:	**2.03**	**Date of Analysis: 4/16/19 05:30 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.041	0.44	0.20	2.2
Freon 114	0.041	Not Detected	0.28	Not Detected
Chloromethane	1.0	Not Detected	2.1	Not Detected
Vinyl Chloride	0.020	Not Detected	0.052	Not Detected
Chloroethane	0.10	Not Detected	0.27	Not Detected
1,1-Dichloroethene	0.020	Not Detected	0.080	Not Detected
trans-1,2-Dichloroethene	0.20	Not Detected	0.80	Not Detected
Methyl tert-butyl ether	0.20	Not Detected	0.73	Not Detected
1,1-Dichloroethane	0.041	Not Detected	0.16	Not Detected
cis-1,2-Dichloroethene	0.041	Not Detected	0.16	Not Detected
Chloroform	0.041	Not Detected	0.20	Not Detected
1,1,1-Trichloroethane	0.041	Not Detected	0.22	Not Detected
Carbon Tetrachloride	0.041	0.072	0.26	0.45
Benzene	0.10	0.15	0.32	0.47
1,2-Dichloroethane	0.041	Not Detected	0.16	Not Detected
Trichloroethene	0.041	Not Detected	0.22	Not Detected
Toluene	0.041	0.092	0.15	0.34
1,1,2-Trichloroethane	0.041	Not Detected	0.22	Not Detected
Tetrachloroethene	0.041	0.043	0.28	0.29
1,2-Dibromoethane (EDB)	0.041	Not Detected	0.31	Not Detected
Ethyl Benzene	0.041	Not Detected	0.18	Not Detected
m,p-Xylene	0.081	0.085	0.35	0.37
o-Xylene	0.041	Not Detected	0.18	Not Detected
1,1,2,2-Tetrachloroethane	0.041	Not Detected	0.28	Not Detected
1,4-Dichlorobenzene	0.041	Not Detected	0.24	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: BLDG H 2-01

Lab ID#: 1904303-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041617sim**	**Date of Collection:**	**4/11/19 7:10:00 AM**
Dil. Factor:	**1.53**	**Date of Analysis:**	**4/16/19 06:06 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.44	0.15	2.2
Freon 114	0.031	Not Detected	0.21	Not Detected
Chloromethane	0.76	Not Detected	1.6	Not Detected
Vinyl Chloride	0.015	Not Detected	0.039	Not Detected
Chloroethane	0.076	Not Detected	0.20	Not Detected
1,1-Dichloroethene	0.015	Not Detected	0.061	Not Detected
trans-1,2-Dichloroethene	0.15	Not Detected	0.61	Not Detected
Methyl tert-butyl ether	0.15	Not Detected	0.55	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	0.048	0.15	0.24
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.031	0.076	0.19	0.48
Benzene	0.076	0.11	0.24	0.34
1,2-Dichloroethane	0.031	Not Detected	0.12	Not Detected
Trichloroethene	0.031	Not Detected	0.16	Not Detected
Toluene	0.031	0.12	0.12	0.46
1,1,2-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected
1,2-Dibromoethane (EDB)	0.031	Not Detected	0.24	Not Detected
Ethyl Benzene	0.031	Not Detected	0.13	Not Detected
m,p-Xylene	0.061	0.066	0.26	0.29
o-Xylene	0.031	Not Detected	0.13	Not Detected
1,1,2,2-Tetrachloroethane	0.031	Not Detected	0.21	Not Detected
1,4-Dichlorobenzene	0.031	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: BLDG H 2-02

Lab ID#: 1904303-08A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041619sim**	**Date of Collection:**	**4/11/19 7:13:00 AM**
Dil. Factor:	**1.53**	**Date of Analysis:**	**4/16/19 07:19 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.38	0.15	1.9
Freon 114	0.031	Not Detected	0.21	Not Detected
Chloromethane	0.76	Not Detected	1.6	Not Detected
Vinyl Chloride	0.015	Not Detected	0.039	Not Detected
Chloroethane	0.076	Not Detected	0.20	Not Detected
1,1-Dichloroethene	0.015	Not Detected	0.061	Not Detected
trans-1,2-Dichloroethene	0.15	Not Detected	0.61	Not Detected
Methyl tert-butyl ether	0.15	Not Detected	0.55	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.031	0.045	0.12	0.18
Chloroform	0.031	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.031	0.070	0.19	0.44
Benzene	0.076	0.11	0.24	0.36
1,2-Dichloroethane	0.031	Not Detected	0.12	Not Detected
Trichloroethene	0.031	Not Detected	0.16	Not Detected
Toluene	0.031	0.14	0.12	0.51
1,1,2-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected
1,2-Dibromoethane (EDB)	0.031	Not Detected	0.24	Not Detected
Ethyl Benzene	0.031	Not Detected	0.13	Not Detected
m,p-Xylene	0.061	0.066	0.26	0.29
o-Xylene	0.031	Not Detected	0.13	Not Detected
1,1,2,2-Tetrachloroethane	0.031	Not Detected	0.21	Not Detected
1,4-Dichlorobenzene	0.031	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: BLDG H 2-03

Lab ID#: 1904303-09A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041620sim**	**Date of Collection:**	**4/11/19 7:17:00 AM**
Dil. Factor:	**1.43**	**Date of Analysis:**	**4/16/19 07:55 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.029	0.40	0.14	2.0
Freon 114	0.029	Not Detected	0.20	Not Detected
Chloromethane	0.72	Not Detected	1.5	Not Detected
Vinyl Chloride	0.014	Not Detected	0.036	Not Detected
Chloroethane	0.072	Not Detected	0.19	Not Detected
1,1-Dichloroethene	0.014	Not Detected	0.057	Not Detected
trans-1,2-Dichloroethene	0.14	Not Detected	0.57	Not Detected
Methyl tert-butyl ether	0.14	Not Detected	0.52	Not Detected
1,1-Dichloroethane	0.029	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.029	Not Detected	0.11	Not Detected
Chloroform	0.029	0.033	0.14	0.16
1,1,1-Trichloroethane	0.029	Not Detected	0.16	Not Detected
Carbon Tetrachloride	0.029	0.075	0.18	0.47
Benzene	0.072	0.11	0.23	0.36
1,2-Dichloroethane	0.029	Not Detected	0.12	Not Detected
Trichloroethene	0.029	Not Detected	0.15	Not Detected
Toluene	0.029	0.13	0.11	0.50
1,1,2-Trichloroethane	0.029	Not Detected	0.16	Not Detected
Tetrachloroethene	0.029	0.047	0.19	0.32
1,2-Dibromoethane (EDB)	0.029	Not Detected	0.22	Not Detected
Ethyl Benzene	0.029	Not Detected	0.12	Not Detected
m,p-Xylene	0.057	0.079	0.25	0.34
o-Xylene	0.029	Not Detected	0.12	Not Detected
1,1,2,2-Tetrachloroethane	0.029	Not Detected	0.20	Not Detected
1,4-Dichlorobenzene	0.029	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1904303-10A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041606sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/16/19 10:46 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.020	Not Detected	0.099	Not Detected
Freon 114	0.020	Not Detected	0.14	Not Detected
Chloromethane	0.50	Not Detected	1.0	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Chloroethane	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
1,1,2-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
1,2-Dibromoethane (EDB)	0.020	Not Detected	0.15	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
1,1,2,2-Tetrachloroethane	0.020	Not Detected	0.14	Not Detected
1,4-Dichlorobenzene	0.020	Not Detected	0.12	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: CCV

Lab ID#: 1904303-11A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041602sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/16/19 08:30 AM**	

Compound	%Recovery
Freon 12	73
Freon 114	80
Chloromethane	83
Vinyl Chloride	87
Chloroethane	91
1,1-Dichloroethene	80
trans-1,2-Dichloroethene	87
Methyl tert-butyl ether	87
1,1-Dichloroethane	88
cis-1,2-Dichloroethene	88
Chloroform	99
1,1,1-Trichloroethane	95
Carbon Tetrachloride	110
Benzene	86
1,2-Dichloroethane	96
Trichloroethene	98
Toluene	87
1,1,2-Trichloroethane	94
Tetrachloroethene	92
1,2-Dibromoethane (EDB)	92
Ethyl Benzene	92
m,p-Xylene	87
o-Xylene	85
1,1,2,2-Tetrachloroethane	83
1,4-Dichlorobenzene	72

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: LCS

Lab ID#: 1904303-12A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041603sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/16/19 09:04 AM**	

Compound	%Recovery	Method Limits
Freon 12	79	70-130
Freon 114	88	70-130
Chloromethane	90	70-130
Vinyl Chloride	94	70-130
Chloroethane	99	70-130
1,1-Dichloroethene	83	70-130
trans-1,2-Dichloroethene	80	70-130
Methyl tert-butyl ether	92	70-130
1,1-Dichloroethane	94	70-130
cis-1,2-Dichloroethene	101	70-130
Chloroform	103	70-130
1,1,1-Trichloroethane	99	70-130
Carbon Tetrachloride	107	70-130
Benzene	91	70-130
1,2-Dichloroethane	101	70-130
Trichloroethene	96	70-130
Toluene	91	70-130
1,1,2-Trichloroethane	97	70-130
Tetrachloroethene	96	70-130
1,2-Dibromoethane (EDB)	96	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	90	70-130
o-Xylene	90	70-130
1,1,2,2-Tetrachloroethane	94	70-130
1,4-Dichlorobenzene	77	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: LCSD

Lab ID#: 1904303-12AA

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**22041604sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/16/19 09:37 AM**	

Compound	%Recovery	Method Limits
Freon 12	79	70-130
Freon 114	90	70-130
Chloromethane	91	70-130
Vinyl Chloride	96	70-130
Chloroethane	99	70-130
1,1-Dichloroethene	84	70-130
trans-1,2-Dichloroethene	80	70-130
Methyl tert-butyl ether	93	70-130
1,1-Dichloroethane	95	70-130
cis-1,2-Dichloroethene	102	70-130
Chloroform	104	70-130
1,1,1-Trichloroethane	99	70-130
Carbon Tetrachloride	107	70-130
Benzene	91	70-130
1,2-Dichloroethane	101	70-130
Trichloroethene	96	70-130
Toluene	90	70-130
1,1,2-Trichloroethane	99	70-130
Tetrachloroethene	97	70-130
1,2-Dibromoethane (EDB)	98	70-130
Ethyl Benzene	96	70-130
m,p-Xylene	88	70-130
o-Xylene	88	70-130
1,1,2,2-Tetrachloroethane	97	70-130
1,4-Dichlorobenzene	76	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	96	70-130

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CHAIN OF CUSTODY RECORD
041119

Task or Subtask (one per form): SMUD - BLDG H INDOOR AIR SAMPING

Laboratory Name and Location: Eurofins/Air Toxics Folsom, CA

1904303

Contract Name: SMUD

Charge Number: 60506257.0012

Sample Number	Collection Date	Collection Time	Sampler's Initials	Number of Units	Container Type	Matrix	Preservative	Field Prep	Type of Analysis	QC Requested	Location	Sample Depth Beg - End	Sample Type
01A BLDG H UPWIND	4/11/19	0656	AKA	1	1 L Canister	GS	None		TO-15 SIM		BLDG H UPWIND		NS
02A BLDG H DOWNWIND	4/11/19	0700	AKA	1	1 L Canister	GS	None		TO-15 SIM		BLDG H DOWNWIND		NS
03A BLDG H 1-01	4/11/19	0729	AKA	1	1 L Canister	GS	None		TO-15 SIM		BLDG H 1-01		NS
04A BLDG H 1-01-DS	4/11/19	0729	AKA	1	1 L Canister	GS	None		TO-15 SIM		BLDG H 1-01		DS
05A BLDG H 1-02	4/11/19	0733	AKA	1	1 L Canister	GS	None		TO-15 SIM		BLDG H 1-02		NS
06A BLDG H 1-03	4/11/19	0736	AKA	1	1 L Canister	GS	None		TO-15 SIM		BLDG H 1-03		NS
07A BLDG H 2-01	4/11/19	0710	AKA	1	1 L Canister	GS	None		TO-15 SIM		BLDG H 2-01		NS
08A BLDG H 2-02	4/11/19	0713	AKA	1	1 L Canister	GS	None		TO-15 SIM		BLDG H 2-02		NS
09A BLDG H 2-03	4/11/19	0717	AKA	1	1 L Canister	GS	None		TO-15 SIM		BLDG H 2-03		NS

Custody Seal Intact?
Y N None Temp NA

Released By:	Date	Time	Cooler ID: 041119-01			Sampling Comments:
	4/12/19	11:49	5 Day TAT			+10
Received By:	Date	Time	Relinquished By:	Date	Time	
[illegible] EAT	4/12/19	11:49				
	/ /	:				
	/ /	:				
	/ /	:				
	/ /	:				
Disposal Confirmed By:	Date	Time	Chain of Custody Returned By:	Date	Time	
	/ /	:				

Appendix F

Responses to Regulatory Agency Comments

RESPONSES TO REGULATORY AGENCY COMMENTS

SMUD 59TH STREET CORPORATION YARD SITE CHARACTERIZATION REPORT

DRAFT, MAY 2019

REVIEWER José Salcedo, P.E., Chief Northern California Schools Unit, California Department of Toxic Substances Control DATE October 23, 2019

ITEM	PAGE OR REFERENCE	COMMENT	RESPONSE OR ACTION
1	Sources of Contamination	We recommend considering obtaining additional groundwater samples at the northern property line to determine whether the source is on or off-site. Only two sample locations have been sampled in this area and that was in 2015. Both of these samples had concentrations of PCE and chloroform that were similar to that found on-site.	As shown on Figure 6-3, groundwater sampling was conducted at five locations (KA-5, KA-6, KA-7, KA-9, and KA-27) along the northern portion of the property in 2015. PCE and chloroform were detected at maximum concentrations of 2.1 and 4.7 µg/L, respectively, in the groundwater samples collected from these locations. Groundwater sampling was conducted at four additional locations in 2015 and two additional locations in 2018. The PCE and trihalomethane (including chloroform) concentrations detected in groundwater samples collected from throughout the property were less than their Maximum Contaminant Levels of 5 and 80 µg/L, respectively. SMUD does not feel that further investigation of groundwater is warranted based on the available groundwater analytical results from 2015 and 2018.
2		Please provide additional details regarding the recommendation to survey buildings within 100 feet of PCE contamination to evaluate VI potential. We recommend conducting indoor air sampling if the soil gas samples are above screening levels of buildings near soil gas sampling points but it's not clear what is meant by the statement about surveying a building.	The recommendation to survey buildings within 100 feet of PCE contamination to evaluate VI potential was meant to establish building occupancy to see whether the VI pathway is potentially complete and if so, conduct indoor air sampling. SMUD determined that the Tool Issue Building had the highest potential to be impacted by VI due to its proximity to the highest PCE concentrations in soil gas and because it was regularly occupied. SMUD then proceeded to conduct indoor air sampling within the Tool Issue Building in April 2019. PCE and its associated breakdown products were not detected in indoor air samples at concentrations above residential SLs. The indoor air sampling report is provided as Appendix E in the Final SCR.
3	Unreleased Users Guide	Attached please find the revised Users Guide for the SFBRWQCB ESLs. The report mentioned that it was unreleased at the time of the report's publication.	After the Draft SCR was submitted, SMUD reviewed the SFRWQCB ESL User's Guide, but did not find clear guidance about VI ESLs for groundwater and when they are applicable. Considering that shallow soil gas data is available for this site and is more representative of vapor intrusion potential than VOC concentrations detected in groundwater present at a depth greater than 30 feet, SMUD feels that the groundwater VI ESLs are not applicable and were intended for use in cases when representative soil gas data are not available. Therefore, comparisons to groundwater VI ESLs were removed from the Final SCR.

RESPONSES TO REGULATORY AGENCY COMMENTS

SMUD 59TH STREET CORPORATION YARD SITE CHARACTERIZATION REPORT

DRAFT, MAY 2019

REVIEWER José Salcedo, P.E., Chief Northern California Schools Unit, California Department of Toxic Substances Control DATE October 23, 2019

ITEM	PAGE OR REFERENCE	COMMENT	RESPONSE OR ACTION
4	Risk Evaluation	This section is not a risk assessment, it's basically a comparison of detected concentrations of chemicals found on site compared to screening levels. If a human health risk assessment is desired then estimated cancer risk and hazard quotients should be provided. This should include all organics, as well as those inorganic chemicals of potential concern (COPC) that are above naturally occurring background concentrations.	The SAP did not propose completing a risk assessment; therefore, one was not completed. The risk evaluation included in the SCR was intended to be a health-conservative preliminary evaluation of potential risk to help determine whether further site characterization, risk assessment, or remediation is necessary. SMUD intends to conduct a targeted removal action for arsenic in soil and PCE in soil gas. Additionally, SMUD is working with land developers to establish future re-use of the property. Therefore, it would be premature to conduct a risk assessment until the targeted removal action is complete and the final property disposition is known.
5		The source of arsenic is not mentioned but it could have come from chromated copper arsenate (CCA) which may have been used to treat poles. An evaluation of co-located chromium, copper and arsenic can be performed to determine whether this is the likely source.	SMUD previously stored utility poles in the Utility Pole Storage Area within the South Corporation Yard. Soil samples collected in 2015 as part of the Utility Pole Storage Area RCRA Facility Investigation and the site-wide Phase II ESA were analyzed for a full suite of metals. Elevated arsenic concentrations were detected, but elevated chromium and copper concentrations were not detected. Following the Utility Pole Storage Area investigation, DTSC concurred that no further investigation of this area was warranted. Following the site-wide Phase II ESA, SMUD entered into a Corrective Action Consent Agreement with DTSC to address the elevated arsenic concentrations detected in the North Corporation Yard soil. Further investigation of chromium and copper was not warranted based on the previous investigations and therefore was not included as part of the 2018 soil investigation.
6		Although the current DTSC Vapor Intrusion (VI) Guidance recommends the attenuation factors (AF) that were used in the Site Characterization Report, DTSC and the State Water Resources Control Board, along with the San Francisco Bay Regional Water Quality Control Board have draft VI guidance going through the review process that recommends the use of 0.03 as an AF. We recommend calculating indoor air concentrations/risks with this AF as well as those in the current guidance.	Table 8 of the SAP included the proposed soil gas SLs and their basis on the 0.001 AF recommended in DTSC's current VI Guidance. Based on the 0.001 AF, the residential and commercial/industrial SLs for PCE in soil gas are 460 and 2,000 µg/m^3, respectively. The soil gas data collected and the soil gas SLs used for screening meet the data quality objectives specified in the SAP. Use of the 0.03 AF recommended by U.S. EPA and proposed by DTSC, SWRCB, and SFRWQCB would result in residential and commercial/industrial SLs of 15.3 and 66.7 µg/m^3, respectively, for PCE in soil gas. As indicated in the response to Comment #2, SMUD conducted indoor air sampling within the Tool Issue Building, which is in closest proximity to the highest PCE concentrations detected in soil gas. PCE and its breakdown products were not detected above

RESPONSES TO REGULATORY AGENCY COMMENTS

SMUD 59TH STREET CORPORATION YARD SITE CHARACTERIZATION REPORT

DRAFT, MAY 2019

REVIEWER José Salcedo, P.E., Chief Northern California Schools Unit, California Department of Toxic Substances Control DATE October 23, 2019

ITEM	PAGE OR REFERENCE	COMMENT	RESPONSE OR ACTION
			their respective residential indoor air SLs; therefore, the use of the 0.03 AF to derive soil gas SLs appears to be overly conservative and unwarranted based on the site conditions. The indoor air sampling results for the Tool Issue Building suggest the soil gas SLs based on the 0.001 AF are adequate; therefore, calculation of indoor air concentrations/risks using the 0.03 AF was not incorporated into the Final SCR. Instead, the indoor air sampling results for the Tool Issue Building were incorporated into the Final SCR as Appendix E.
7		Please indicate whether soil or groundwater samples were ever obtained for pentachlorophenol or creosote. Both chemicals could have been present at the site but there is no indication that they were evaluated except for pentachlorophenol which was investigated as part of investigative-derived waste. Given that they were at the facility their potential presence should be evaluated.	In 2015, soil samples from five borehole locations (PS-1 through PS-5) within the former Utility Pole Storage Area (South Corporation Yard) and seven borehole locations (KA-1, KA-2, KA-5, KA-7, KA-29, KA-40, KA-41) within the North Corporation Yard were analyzed for SVOCs, including pentachlorophenol and PAHs. The presence of PAHs could be an indicator of creosote; however, neither pentachlorophenol nor PAHs were detected in soil. Additionally, groundwater samples collected from three borehole locations (two in the North Corporation Yard [KA-5, KA-7] and one in the South Corporation Yard [KA-41]) were analyzed for SVOCs, including pentachlorophenol and PAHs. SVOCs were not detected in the groundwater samples. SVOC analytical results for the borehole locations identified in this response are presented in the RCRA Facility Investigation Report for the Utility Pole Storage Area (Kleinfelder, 2015) and the Phase II ESA Report (Kleinfelder, 2016). Refer to Figure 2-2 of this SCR for the borehole locations.

Notes:

µg/L = micrograms per liter
µg/m^3 = micrograms per cubic meter
AF = attenuation factor
DTSC = Department of Toxic Substances Control
ESA = environmental site assessment
ESL = environmental screening level
P.E. = professional engineer
PAH = polycyclic aromatic hydrocarbon
PCE = tetrachloroethene
RCRA = Resource Conservation and Recovery Act
SAP = Sampling and Analysis Plan
SCR = Site Characterization Report
SFRWQCB = San Francisco Bay Regional Water Quality Control Board
SL = screening level
SMUD = Sacramento Municipal Utility District
SVOC = semivolatile organic compound
SWRCB = State Water Resources Control Board
U.S. EPA = United States Environmental Protection Agency
VI = vapor intrusion
VOC = volatile organic compound