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> 5090 14 April 2020

Ms. Sandra Caldwell Land Unit Supervisor Washington State Department of Ecology Toxic Cleanup Program HQ 300 Desmond Dr. SE Lacey, WA 98504

Dear Ms. Caldwell:

The U.S. Coast Guard is pleased to present this Draft Final Remedial Investigation and Focused Feasibility Study for the Burrows Island for your review. Our project team is available to address any comments or concerns you have with the attached study. Once you have had a chance to review the public comments we will finalize the document. Please reach out to James Hall at 510-637-5593 or at James.C.Hall2@USCG.mil with any questions or concerns.

Sincerely,

David W. Stalters Chief, Environmental Management Branch U.S. Coast Guard By direction of the Commanding Officer

Enclosure: (1) Draft Remedial Investigation and Focused Feasibility Study



# **United States Coast Guard**

# DRAFT FINAL REMEDIAL INVESTIGATION AND FOCUSED FEASIBILITY STUDY REPORT

Burrows Island Light Station Skagit County, Washington

Contract No. HSCG50-14-D-PSL007 Task Order No. 70Z08818FPXA01700

**DRAFT FINAL** 

**REMEDIAL INVESTIGATION AND FOCUSED FEASIBILITY** STUDY REPORT **Burrows Island Light Station** Paul McCullough, P.E. Skagit County, Washington Principal Environmental Engineer Prepared for: United States Coast Guard Prepared by: Arcadis U.S., Inc. 2300 Clayton Road Suite 400 Josh Gravenmier Concord Certified Project Manager California 94520 Tel 925 274 1100 Fax 925 726 0121 Our Ref.: Contract HSCG50-14-D-PSL007 Task Order No. 70Z08818FPXA01700 Arcadis Project Number B0003010.0006

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# **ACRONYMS AND ABBREVIATIONS**

ARAR applicable or relevant and appropriate requirement

Arcadis U.S., Inc.

AST aboveground storage tank

bgs below ground surface

BTEX benzene, toluene, ethylbenzene, and xylene

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

COC contaminant of concern

cy cubic yards

DRO diesel-range organics

DU decision unit

Ecology Washington State Department of Ecology

FFS focused feasibility study

GRA general response action

HO heavy oil

ISM incremental sampling methodology

ITRC Interstate Technology & Regulatory Counsel

mg/kg milligrams per kilogram

mg/L milligram per liter

MS matrix spike

MSD matrix spike duplicate

MTCA Model Toxics Control Act

NWSS Northwest Schooner Society

O&M operations and maintenance

OIC Officer in Charge

Onsite Onsite Environmental Inc., located in Redmond, Washington

PCB polychlorinated biphenyl
PID photo ionization detector

PPE personal protective equipment

QAPP and SAP Quality Assurance Project Plan and Sampling and Analysis Plan

RA remedial action

RAO remedial action objective
RI remedial investigation

RI/FFS Report Remedial Investigation Report and Focused Feasibility Study Report

site Burrows Island Light Station, located on Burrows Island, Skagit County, near

Anacortes, Washington

SU sampling unit

TCLP toxicity characteristic leaching procedure

TEE terrestrial ecology evaluation

TSCA Toxic Substances Control Act

USCG United States Coast Guard

USEPA United States Environmental Protection Agency

UST underground storage tank

WAC Washington Administrative Code

XRF x-ray fluorescence

#### 1 INTRODUCTION AND BACKGROUND

The United States Coast Guard (USCG), Civil Engineering Unit Oakland, contracted Arcadis U.S., Inc. (Arcadis) to conduct a remedial investigation (RI), focused feasibility study (FFS), and remedial design at the Burrows Island Light Station, located on Burrows Island, Skagit County, near Anacortes, Washington (site; Figure 1), under Contract No. HSCG50-14-D-PSL007, Task Order No. 70Z08818FPXA01700. The site is an active USCG light station. Historical operations at the site resulted in near-surface soil contamination within the upper few feet of ground surface. Contaminants of concern (COCs) include lead from lead-based paint, polychlorinated biphenyls (PCBs), and petroleum from heating oil and/or diesel fuel.

This Remedial Investigation Report and Focused Feasibility Study Report (RI/FFS Report) documents sampling and delineation of site COCs, identifies and evaluates four remedial actions (RAs), as well as a No Action Alternative, and compares the RAs to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 criteria (42 United States Code [USC] § 9621). The implementation and results of the RI field activities are presented in Section 2. An updated conceptual site model based on the new and historical site data is presented in Section 3. Applicable or relevant and appropriate requirements (ARARs) are presented in Section 4, along with remedial objectives, points of compliance, and preliminary quantities. Remedial technologies are identified and evaluated as part of the initial screening and further developed as remedial alternatives in Sections 5 and 6.

The USCG plans to transfer the light station to the Northwest Schooner Society (NWSS) pursuant to the National Historic Lighthouse Preservation Act of 2000 and CERCLA Section120(h) (42 USC § 9620) once the RA is completed and the light station is cleaned up to a level that is protective of human health and the environment. The NWSS will restore the site to reflect various periods of time and will rehabilitate the duplex structure to a condition that will allow guests to stay onsite for short periods of time.

The USCG is the lead agency for the investigation and cleanup of the site and will follow the CERCLA process because the site is located on USCG-owned property and the USCG is a federal agency. As such, the activities described in this RI/FFS Report are consistent with United States Environmental Protection Agency (USEPA) guidance for conducting RIs and feasibility studies under CERCLA. The USCG conducted the RI/FFS in collaboration with the Washington State Department of Ecology (Ecology) and in accordance with the substantive requirements of the Model Toxics Control Act (MTCA), Chapter 70.105D Revised Code of Washington, and associated implementing regulations under Chapter 173-340 Washington Administrative Code (WAC). Ecology was consulted in developing a Quality Assurance Project Plan and Sampling and Analysis Plan (QAPP and SAP; Arcadis 2018) for the RI sampling, and in developing the proposed cleanup standards and other ARARs that will inform the implementation of the selected RA.

Upon review and concurrence of this RI/FFS Report by Ecology, the USCG will initiate a public review process in accordance with CERCLA requirements and the substantive requirements of the State Environmental Policy Act.

#### 1.1 General Site Information

The site is located on the western tip of Burrows Island, approximately ¼ mile southeast of Anacortes, Washington on Rosario Strait within the western portion of Section 32, Township 35 North, Range 1 East, Willamette Meridian. The latitude and longitude for the site are 48° 28' 40" North and -122° 42' 48" West (North American Datum of 1983). Primary access to the site is by boat via the fixed concrete dock located on the north side of the site. A helicopter pad is also located onsite. A map showing the location of the Burrows Island Light Station is presented on Figure 1.

The site is located on USCG-owned property identified as Parcel Number P32494 in Skagit County records (Skagit County 2018). The USCG property is approximately 8.2 acres; 2 acres is cleared land and the remainder is heavily forested. The Skagit County designated land use for Parcel P32494 is (740) Recreational Activities. Parcels adjacent to the USCG property are owned by Washington State Parks and Recreation and have similar land use designations as the USCG property. The adjacent parcels are undeveloped and heavily forested. Several parcels of land on Burrows Island are owned by private individuals: Parcels P32502, P32500, P32503, P32452, P99308, and P99309. The privately-owned parcels are located on the opposite (eastern) side of Burrows Island from the USCG property.

Operation of the light signal is automated and there are no full-time residents or dedicated workers at the site. Historical site features included residential and operational structures used by USCG personnel before the light signal was automated in 1972. Structures remaining onsite are listed below and are identified numerically based on historical USCG drawings:

- Light and Fog Signal Building (101)
- Helicopter pad (located between former structures 102 and 104)
- Duplex (103)
- Boathouse (105)
- Pumphouse and Spring Cistern, nonoperational (106)
- Saltwater Flushing Pumphouse, nonoperational (108).

The following historical structures have been removed or demolished:

- Oil and Paint Storage Building (102)
- Officer in Charge (OIC) Quarters and associated fuel oil tank(s) (104)
- Firehouse Pump Building (107)
- Water tanks (109, 110, 111)
- 10,000-gallon fuel oil aboveground storage tank (AST [112]).

Remnants of historical structures include concrete footings and support structures. The locations of current and historical site features are shown on Figure 2.

# 1.2 Site History

The site is currently an active USCG light station and was first developed for that purpose in 1906. The light signal was automated in 1972 and no dedicated USCG personnel have occupied the site since that time. Based on historical site maps, multiple petroleum tanks were present to supply fuel for heating and site operations (USCG 1958, 1960a), which included:

- One 10,000-gallon fuel oil AST located southeast of the Duplex.
- Two 675-gallon fuel oil ASTs located east of the Duplex and connected to the furnaces and gas ranges in the building via underground piping.
- One 675-gallon fuel oil AST located on the southeast corner of the Light and Fog Signal Building.
- One 200-gallon fuel oil underground storage tank (UST) located on the east side of the OIC Quarters.
- One gasoline storage tank located west of the Oil and Paint Storage Building.

The fuel oil tanks were connected via underground piping to a ship to shore connection located east of the Boathouse. Additional underground piping connected the tanks to the buildings and the main fuel oil line. No connections between the gasoline storage tank and any underground piping or other fueling infrastructure are apparent based on historical information. Historical drawings reference repair work completed on the 10,000-gallon fuel oil AST in 1960 (USCG 1960b). The 10,000-gallon fuel oil AST was removed from the site, but the concrete support structure remains. The smaller fuel oil tanks and gasoline storage tank were also removed. The fuel oil tank associated with the OIC Quarters was a 200 or 300-gallon UST that was removed as part of an RA in 1999 (AGI Technologies 1999).

A power transformer that supported onsite electrical generation via generators and power from an undersea cable installed around 1970 was located southeast of the lighthouse and fog signal building (USCG 1980a, 1980b). Oil in the transformer is known to have contained PCBs. A spill of approximately 5 to 50 gallons of transformer oil occurred on February 22, 1980 (USCG 1980b). Approximately 140 cubic yards (cy) of soil were removed from around the transformer and transformer pad (USCG 1980b). The submerged power line is no longer active, and the transformer and electrical equipment have been removed. Two additional tanks (690 gallons and 540 gallons) are shown southeast of the Light and Fog Signal Building on drawings from 1980 (USCG 1980b) and appear to be connected to fuel oil lines. No other information is available on these tanks and they do not appear on earlier site drawings.

The site is not continuously inhabited, although it is known to be visited by kayakers and other boaters. The area to the east of the site is part of Burrows Island Marine State Park. In 2010, the NWSS assumed custodianship of the Burrows Island Light Station, which is listed on the National Register of Historic Places.

#### 1.3 Site Use

The site is currently an unmanned light station that is owned and operated by the USCG. An automated and unmanned fog signal is in the Light and Fog Signal Building and is currently operating. The USCG conducts periodic maintenance activities at the site (e.g., semiannual visits to inspect and maintain the facility). The NWSS conducts periodic restoration and maintenance work as future custodians of the light station and associated buildings. The NWSS intends to restore and maintain historical structures

associated with the site following transfer of the property from the USCG. Long-term uses after USCG divestiture will include expanded visitation and overnight accommodations for guests.

# 1.4 Previous Environmental Investigations

Multiple investigations and RAs have been conducted at the site. A timeline of these activities and associated documents is presented below:

- 1980. Removal of 140 cy of PCB-impacted soil from a transformer oil release (USCG 1980a, 1980b).
- 1999. Removal of the UST located near the OIC Quarters. Corrosion was observed on the bottom of
  the steel UST and 2 cy of petroleum-contaminated soil were removed from the excavation. One
  sidewall and one excavation bottom sample were collected and analyzed for diesel-range organics
  (DRO) and heavy oil (HO). DRO was not detected and HO concentrations were 190 and 240
  milligrams per kilogram (mg/kg) from the sidewall and bottom samples, respectively (AGI
  Technologies 1999).
- 2005. The Duplex, Light and Fog Signal Building, and Boathouse structures were encapsulated to
  prevent the continued deterioration of lead-based paint remaining on the structures. Leadcontaminated soil (75 tons) was removed from the immediate area surrounding the Duplex, placed
  into drums, and transported offsite for disposal. Additional lead impacts greater than 1,000 mg/kg
  were noted in areas surrounding the Duplex, Light and Fog Signal Building, and the Boathouse
  (Kellco Services, Inc. 2005).
- 2009. A Phase II environmental investigation was performed by ERRG, Inc. to assess lead in soil near the Duplex, Light and Fog Signal Building, and Boathouse. Elevated levels of lead were identified at all these locations (ERRG, Inc. 2009).
- 2015. A soil stabilization study was conducted by Arcadis to assess reducing the leachability of lead
  impacts in soil using phosphate-based reagents. Soil samples were collected based on x-ray
  fluorescence (XRF) screening and mixed with reagents to determine the relative impacts on lead
  leachability. The study concluded that soil amendments were not an effective method to reduce lead
  leachability for site soil (Arcadis 2015b).

# 1.5 Site Geology and Hydrogeology

Burrows Island is part of the archipelago that includes the San Juan Islands located in the northern Puget Sound between the Strait of Juan de Fuca and the Strait of Georgia. The San Juan Islands include late Cretaceous thrust faults known as the San Juan thrust system. The San Juan thrust system is divided into five terranes, with Burrows Island located on the Decatur terrane (Brandon 1988). The Decatur terrane is composed of two stratigraphically related sections: the Fidalgo Igneous Complex and the Lummi Formation. Formations at Burrows Island primarily belong to the Fidalgo Igneous Complex, which is a middle-late volcanic Jurassic formation mostly associated with minor conglomerates of sandstone and mudstone, Jurassic pillow lava, and brecciated gabro and diabase (Brandon 1988).

The site has many bedrock outcroppings that consist of oceanic crusts (terranes) and igneous rock (ERRG, Inc. 2009). Soil is present at greater thickness moving east from the shoreline. Shallow soil

samples collected in November 2018 primarily consisted of sandy soil near the buildings. Soil characteristics observed tended to be well-graded, with some organic content from surface vegetation based on visual observations.

The elevation at the tree line is approximately 78 feet above mean sea level with a decrease to 45 feet at the cliff edge prior to dropping down to the water surrounding the island. The topography of the site generally slopes to the Rosario Strait. No major surface channels or overland runoff features were identified during sampling conducted in November 2018 (which included light precipitation during the sampling). Most of the shoreline consists of rocky bluffs.

Groundwater is likely not present in a consistent aquifer due to the presence of shallow bedrock. Historically, groundwater collected from a seep located northeast of the main area of the site at the Pumphouse and Spring Cistern was used as a water source for residents of the station. The drainage area that flows into the seep is topographically separated from the main area of the site. No surface water bodies have been documented or observed near the site, other than Puget Sound. There is likely no tidal influence on groundwater at the site because the outcropped bedrock is approximately 40 feet above mean higher high water (as measured at monitoring station 9444900, Port Townsend, Washington [National Oceanic and Atmospheric Administration 2019]).

# 2 REMEDIAL INVESTIGATION FIELD ACTIVITIES

# 2.1 Preliminary X-Ray Fluorescence Screening

Arcadis conducted preliminary XRF screening in November 2018 to assess shallow soil for lead using a field XRF instrument and to obtain site information to inform the QAPP and SAP (Arcadis 2018). The XRF screening included the following activities:

- Collected and field screened 419 soil samples using the XRF.
- Collected and analyzed 32 co-located samples for lead using USEPA Method 6010 to determine the correlation between XRF data and laboratory results for lead.
- Collected and analyzed three shallow soil samples for PCBs by USEPA Method 8082.
- Analysis of three samples for toxicity characteristic leaching procedure (TCLP) metals for waste characterization purposes.
- Visual evaluation of site conditions and documentation of accessibility for planning future site work.

Activities and results of the November 2018 preliminary XRF sampling event are summarized in a Field Sampling Memorandum dated November 26, 2018, which is included as Appendix A.

# 2.2 Comprehensive Site-Wide Soil Sampling and Analysis

A comprehensive RI was performed by Arcadis in March and April 2019 using incremental sampling methodology (ISM) and discrete sampling methods. The RI sampling program was informed by the results of the preliminary XRF screening performed in November 2018 and the results of previous environmental investigations, and was conducted in accordance with the QAPP and SAP (Arcadis 2018) to characterize the lateral and vertical extents of COCs in soil associated with historical activities at the site. Based on previous RIs and RAs, the following constituents are known or suspected to be present in soil:

- Lead. Associated with lead-based paint applied to site buildings and other painted structures.
   Sampling conducted in 2005, 2009 and 2018 indicated lead concentrations in soil greater than 1,000 mg/kg near the Boathouse, Duplex, and Light and Fog Signal Building (Kellco Services, Inc. 2005; ERRG 2009; Arcadis 2019).
- PCBs. A release of transformer oil containing PCBs was documented in 1980 with limited removal.
   Soil concentrations remaining following removal activities were greater than 1 mg/kg (USCG 1980a; USCG 1980b).
- Diesel and heavy oil petroleum constituents. Various tanks and piping infrastructure throughout the site. Soil containing petroleum was excavated during the removal of a UST near the OIC Quarters (AGI Technologies 1999).
- Gasoline petroleum constituents. Associated with the gasoline storage tank adjacent to the Oil and Paint Storage Building (USCG 1958). There are no documented releases of gasoline from this tank

that are known or recorded in available reports. Based on the results of the RI, gasoline petroleum constituents were not present at the site.

Sample analytical methods that were included in the RI are shown in Table 1. Sample locations are presented on Figures 3 and 4. Field documentation is provided in Appendix B. A photo log depicting RI activities is included in Appendix C.

#### 2.2.1.1 Incremental Composite Sampling for Decision Units

Sampling and chemical analysis for lead were conducted using ISM in general accordance with guidance from the Interstate Technology & Regulatory Counsel (ITRC [2012]) and in accordance with the QAPP and SAP (Arcadis 2018). Discrete samples were collected in areas where limited access prevented ISM sampling for lead and across the site to identify other COCs, as described in Section 2.2.1.3.

As described in the QAPP and SAP (Arcadis 2018), the site was divided into 18 decision units (DUs) based on the results of the XRF screening event conducted in November 2018 (Appendix A). Each DU was selected to represent a location where soil conditions were consistent based on proximity to structures and were subdivided into 30 equally sized areas with a sample location placed at the center of each area. Where possible, soil samples were collected using a hand auger from each of the 30 locations within the DU. An equal volume of soil was taken from each increment and combined to form an incremental composite sample.

Primary incremental composite samples were collected from all 18 DUs from 0 to 0.5 and 0.5 to 1 foot below ground surface (bgs). Additional ISM composite samples were collected at depth intervals greater than 1 foot bgs where XRF screening results suggested elevated levels of lead remained at depths below 1 foot bgs. Select increments from the 0.5 to 1 foot bgs interval (minimum of 20 percent) were analyzed in the field using XRF. Increments for XRF analysis were selected to be spatially representative of the DU. When screening results indicated that average lead concentrations were greater than 200 mg/kg, soil samples were collected from additional depth intervals until XRF results indicated average lead concentrations less than 200 mg/kg or until refusal was encountered. Replicate ISM composite samples (duplicate and triplicate) were collected from discrete points separate from the primary locations from the 0 to 0.5 foot bgs depth interval in four DUs (DU-02, DU-06, DU-08, DU-13). The replicate samples were collected and processed in the same manner as the primary ISM samples.

ISM composite samples were homogenized, placed on ice following collection, and submitted to Onsite Environmental Inc., located in Redmond, Washington (Onsite) for processing and analysis. The samples were processed in accordance with the procedures outlined in the QAPP and SAP (Arcadis 2018). Primary ISM composite samples were analyzed for leachable lead by TCLP when the composite total lead result was greater than 250 mg/kg.

#### 2.2.1.2 Incremental Composite Sampling for Sampling Units

Each area was further divided into two to four sampling units (SUs), for a total of 61 SUs. SU samples were collected by compositing an equal volume of soil from each of the increments within the SU using the same procedures as the ISM composite samples. SU composite samples were collected from the same soil increments as the primary ISM samples and were submitted to the laboratory for analysis pending results of the ISM composite samples. Not all SU composite samples were analyzed in the

laboratory. As described in the QAPP and SAP (Arcadis 2018), the SU composite samples were analyzed only when the primary ISM sample results indicated lead concentrations between 200 and 400 mg/kg. Select SU samples were also analyzed for lead leaching by TCLP if the results of at least one of the SUs in a DU was greater than 250 mg/kg. The SU with the highest lead concentration within a DU was analyzed for leachable lead by TCLP, except ISM-06-4-1.5-2.0 and ISM-15-3-0.5-1.0, which could not be analyzed due to insufficient sample volume. Locations and limits of DUs and SUs are shown on Figure 3.

#### 2.2.1.3 Discrete Soil Sampling

Discrete soil samples were collected for laboratory analysis for PCBs and petroleum hydrocarbons based on the location of historical structures and the known or suspected presence of contaminants based on historical documentation. Discrete samples were collected for lead from locations where ISM sampling was infeasible based on access limitations or safety considerations. Sample locations and constituents were established based on historical documentation as outlined in the QAPP and SAP and revised based on the locations of historical utilities identified in the field prior to sampling.

Samples were collected from three locations around each of the known former ASTs and UST from the surface (0 to 0.5 foot bgs) and the deepest interval that could be collected before encountering refusal. Based on historical documentation, the UST associated with the OIC Quarters was removed and over-excavated to a depth of 5 feet bgs. One of the sample locations was collected within the backfill material, based on field observations of soil conditions. Due to the larger footprint of the 10,000-gallon AST, samples were collected from 12 locations. Samples were collected from 14 locations along the former petroleum piping in accordance with Ecology guidance (Ecology 1991). Where the pipeline was visible, samples were collected from soil immediately below the pipeline. If the pipeline was not identified, samples were collected at the maximum depth that could be obtained prior to refusal. Based on historical documentation, the primary fuels handled and stored at the site were diesel and fuel oil. Samples were analyzed for DRO and HO. Samples collected near the former gasoline storage tank associated with the Oil and Paint Storage Building were also analyzed for gasoline range organics. Samples were field screened using a photo ionization detector (PID) and submitted for analysis as outlined in the QAPP and SAP (Arcadis 2018).

Samples were collected to evaluate PCBs in soil surrounding the former transformer. Due to concrete fill encountered in the field, the quantity and location of samples were modified. Samples were collected from 13 locations at two depth intervals (0 to 0.5 foot bgs and the deepest interval that could be obtained prior to refusal). Locations were selected to encompass the perimeter of the concrete area. Samples were field screened using a PID and submitted to the laboratory for analysis as outlined in the QAPP and SAP (Arcadis 2018). Discrete soil sample locations are shown on Figure 4.

#### 2.2.2 Sediment Sampling

Two discrete sediment samples were collected from the sandy beach located to the northeast of the Boathouse to evaluate the potential contribution of leachable lead from the site to sediment. The samples were collected from the south side of the beach adjacent to the bluff leading to the site. Sample SED-01 was collected near the tide line and SED-02 was collected as far away from the tide line as possible in this location. Sediment samples were collected and placed into sealable plastic bags and held under

refrigeration prior to submittal to Onsite for analysis of total lead. The locations of the samples are shown on Figure 4.

#### 2.2.3 Lead Encapsulation Assessment

A visual survey of the current condition of encapsulation treatments on the Duplex, Boathouse, and Light and Fog Signal Building was completed during the field event. Areas of weathering or failure, including chipping, flaking, and exposure of the underlying wood and paint were noted and documented. Additional details are provided in Section 2.3.3.5.

#### 2.2.4 Waste Management

Soil remaining from discrete and ISM composite samples was containerized in 5-gallon pails and stored in the basement of the Duplex. Decontamination water was also collected and containerized in 5-gallon pails and stored in the basement of the Duplex. Fourteen 5-gallon pails of soil and two 5-gallon pails of decontamination water were generated. Six 5-gallon pails of soil were already stored onsite in the basement of the Duplex and were generated during the initial mobilization completed in November 2018. Waste characterization samples were collected from the decontamination water and submitted to Onsite for analysis in accordance with the QAPP and SAP. Waste generated during sampling activities will be transferred to an approved offsite disposal facility licensed and permitted to manage the waste in accordance with state and federal regulations.

# 2.3 Sampling and Analytical Results

#### 2.3.1 Quality Analyses

Sampling and analysis of soil was conducted using standard USEPA or state-approved methods. All quality control measures were carried out as described in the QAPP and SAP (Arcadis 2018) and validated as follows:

- Field triplicate samples. Triplicate ISM samples were collected from 0 to 0.5 foot bgs in four DUs (DU-02, DU-06, DU-08, DU-13). Sample locations for duplicate and triplicate ISM samples were collected from the same 30 equal-spaced grids, but at alternate locations from the primary ISM samples.
- Field duplicate samples. Field duplicates were collected from 11 discrete sample locations in accordance with the QAPP and SAP (Arcadis 2018) to assess variability attributable to collection, handling, shipment, storage, and laboratory handling and analysis.
- Matrix spike (MS) and matrix spike duplicate (MSD) samples. MS and MSD samples were analyzed
  to measure interference from the sample matrix on the recovery of the target analytes. MSs and
  MSDs were performed in the laboratory at a frequency of one sample per batch or one sample per 20
  samples, whichever was more frequent, and held to percent recovery standards.
- Field rinsate blanks. Equipment rinsate samples were collected daily from decontaminated reusable
  equipment (e.g., hand trowel, hand auger) to identify possible contamination from the sample
  environment or equipment. No analytes were detected at concentrations greater than the reporting
  limit or practical quantitation limit; therefore, no contamination was associated with the blank samples.

Laboratory data reports were reviewed and validated in accordance with the Superfund Contract Laboratory Program National Functional Guidelines for Data Review (USEPA 2017a, 2017b) and the quality assurance and quality control criteria specified in the QAPP and SAP (Arcadis 2018). Data quality flags were revised or added based on the validation review. The overall data quality was within acceptable ranges. The higher (most conservative) of the two values for duplicate results was used for screening and evaluation against cleanup standards. Laboratory analytical reports and data validation reports are provided in Appendix D and E, respectively.

#### 2.3.2 Deviations from Sampling and Analysis Plan

Investigation activities were substantially completed in accordance with the QAPP and SAP (Arcadis 2018). Select samples could not be collected or the sample locations were revised based on field conditions encountered during the field event. As noted below, the deviations from the SAP were primarily associated with sampling refusal, which limited sample collection or required sampling locations to be revised in the field. Deviations that were documented in the field are recorded in the field documentation provided in Appendix B and discussed below.

Shallow refusal was encountered throughout the site as a result of bedrock outcroppings generally located adjacent to the shoreline, cobbles in soil present in the eastern portion of the site away from the shoreline, and concrete materials encountered from historical structures or other site activities. As a result, refusal was encountered in at least one increment in all DUs except DU-16. When refusal was encountered, additional step-out borings were attempted within 2 feet of the original increment location and repeated up to two times. When the full depth of a sample interval could not be obtained due to refusal, the partial increment was collected and processed. When refusal prevented the collection of soil (when refusal was encountered at the beginning of a depth interval or shallower), the ISM composite sample was prepared with less than 30 increments. In total, 17 of the 49 total ISM composite samples contained fewer than 30 increments due to refusal. The number of ISM increments that were collected from each DU and depth interval are summarized in Table 2. Increment locations where refusal was encountered are shown on the Figures F-1 through F-7 and Table F-1 in Appendix F.

Only two increment locations in DU-06 could be advanced deeper than 2 feet bgs. Refusal was encountered at all other locations prior to reaching 2 feet bgs. Select XRF results indicated the average concentration of lead in soil from 1.5 to 2 feet bgs was greater than 200 mg/kg. Soil borings were attempted at 2 to 2.5 feet bgs but samples could only be obtained in two of the 30 increment locations. Because additional ISM samples could not be obtained, discrete samples were collected from the two increment sample locations at the deepest interval that could be obtained before refusal. Samples SB-06-10 and SB-06-22 were collected from 2 to 2.5 and 3 to 3.5 feet bgs, respectively, and submitted for analysis of total lead in accordance with the procedures for discrete samples outlined in the QAPP and SAP (Arcadis 2018).

Concrete was encountered near the former transformer area to the south of the Light and Fog Signal Building. Three ISM sample locations in DU-09 (DU-09-24, DU-09-25, and DU-09-26) were initially located on concrete and were relocated to the south outside of the concrete area. Discrete samples identified for evaluating the PCB area were relocated around the perimeter of the concrete area. In total, 16 discrete samples were collected from the perimeter of the concrete area as a substitute for the sample

locations outlined in the QAPP and SAP (Arcadis 2018). Updated locations for the discrete samples are shown on Figure 4.

ISM increment locations obstructed by water tank platforms present in DU-16 and DU-17 were relocated to allow for safe access and sampling. Increment locations were placed in the closest possible location outside the immediate footprint of the platforms.

The locations of three discrete samples associated with the petroleum pipelines were revised in the field to be located on or adjacent to the associated pipelines based on visual observations and results of the utility locate performed prior to sampling. The pipeline connecting the tank near the Light and Fog Signal Building to the 10,000-gallon tank was partially intact and SB-PL-09 and SB-PL-10 were relocated to the actual layout of the pipe, which was further south than indicated on historical figures based on the utility locate markings. The pipeline terminated near SB-PL-09 and no indications of the connection to the tank near the Light and Fog Signal Building were present. SB-PL-08 was relocated along the projected line between the end of the pipeline and the location of the tank. The samples were either collected underneath the pipeline if it was visible, or at the maximum depth that could be sampled in accordance with the QAPP and SAP (Arcadis 2018).

ISM sampling in DU-18 was determined based on field conditions due to sampling obstructions rather than at pre-determined locations. Increment locations were marked out over the area that could be safely accessed and were recorded using a global positioning system. The footprint of the former building was generally accessible and was sampled. The area between the west side of the former structure and the helicopter pad was sloped, heavily vegetated and could not be safely accessed for sampling. The limits of the area that was sampled in DU-18 are shown on Figure 3.

#### 2.3.3 Results

#### 2.3.3.1 Incremental Composite Sample Results

The area surrounding the Boathouse contained two DUs (DU-01 and DU-02), with replicate sampling performed at DU-02. Three ISM samples were collected from DU-01 and four were collected from DU-02 (two primary samples and two replicates), with a maximum depth of 1 to 1.5 feet bgs in DU-01. Analytical results indicated that there were no exceedances in either of the DUs in the area surrounding the Boathouse. Concentrations in DU-01, which was closest to the Boathouse, ranged from 43 to 190 mg/kg with the highest concentration present in the shallow sample (0 to 0.5 foot bgs) and decreasing with depth.

DU-02 had both primary and replicate ISM samples collected from 0 to 0.5 foot bgs, with concentrations of 61, 50, and 85 mg/kg. The lead concentration from 0.5 to 1 foot bgs in DU-02 was 35 mg/kg. Refusal was encountered in one ISM increment location at less than 0.5 foot bgs and in five locations at less than 1 foot bgs.

DU-03 covers the large grassy area to the west of the Boathouse and north of the former Oil and Paint Storage Building. No current or historical structures are present in this area. Two ISM samples were collected with lead concentrations of 68 mg/kg (0 to 0.5 foot bgs) and 30 mg/kg (0.5 to 1 foot bgs).

The area surrounding the OIC Quarters contained DU-04, DU-05, and DU-18. The ISM samples from DU-04 contained lead concentrations of 280 and 74 mg/kg at 0 to 0.5 and 0.5 to 1 foot bgs, respectively.

Analysis of the four SU composite samples from 0 to 0.5 foot bgs in DU-04 contained lead concentrations less than 250 mg/kg for all subunits except SU-4 (280 mg/kg). Lead concentrations in the two ISM composite samples collected from DU-05 were 64 and 56 mg/kg. The 0 to 0.5 foot bgs sample from DU-18 contained lead at a concentration of 220 mg/kg. Based on the results of the primary ISM sample, the SU composite samples were analyzed. Only SU-1 contained lead at a concentration greater than 250 mg/kg. The ISM sample collected from 0.5 to 1 foot bgs in SU-18 contained lead at a concentration of 180 mg/kg.

DU-06 and DU-07 surround the former Oil and Paint Storage Building. Six ISM composite samples were collected in DU-06, including replicate samples from 0 to 0.5 foot bgs. Lead concentrations in the primary, replicate B, and replicate C ISM samples were 1,300, 1,500, and 2,000 mg/kg, respectively. ISM samples from deeper sample intervals contained lead at concentrations of 630 mg/kg (0.5 to 1 foot bgs), 390 mg/kg (1 to 1.5 feet bgs), and 400 mg/kg (1.5 to 2 feet bgs). Refusal was encountered in nine locations at less than 0.5 foot bgs, eight locations at less than 1 foot bgs, and seven locations at less than 1.5 feet bgs. Only two locations could be advanced deeper than 2 feet bgs. Since an ISM composite sample could not be generated, discrete samples SB-06-10 and SB-06-22 were collected from increment locations DU-06-10 and DU-06-22 at depths of 2 to 2.5 and 3 to 3.5 feet bgs, respectively. Lead concentrations were 1,800 mg/kg in SB-06-10 and 9.7 mg/kg in SB-06-22.

SU composite samples were collected from DU-06 at 1 to 1.5 and 1.5 to 2 feet bgs and analyzed. Lead concentrations were greater than 600 mg/kg in the samples from 1 to 1.5 feet bgs in SU-3 and SU-4, and the 1.5 to 2 feet bgs sample from SU-4. Lead concentrations in the other SU samples were less than 200 mg/kg. Analytical results of the two ISM samples collected from DU-07 indicate lead concentrations of 470 mg/kg from 0 to 0.5 foot bgs and 62 mg/kg from 0.5 to 1 foot bgs. Refusal was encountered in five increment locations in DU-07 at depths less than 0.5 foot.

The area surrounding the Light and Fog Signal Building contained two DUs (DU-08 and DU-09). Primary, replicate B, and replicate C ISM samples collected from 0 to 0.5 foot bgs in DU-08 contained lead concentrations of 1,100, 1,300, and 1,300 mg/kg, respectively. Deeper samples collected in DU-08 contained lead concentrations of 160 mg/kg (0.5 to 1 foot bgs), and 540 mg/kg (1 to 1.5 foot bgs). Refusal was encountered at depths less than 0.5 foot bgs in three locations and less than 1 foot in eight locations, which reduced the total number of increments in the ISM samples from those intervals.

Lead concentrations in the two ISM samples from DU-09 were 150 mg/kg (0 to 0.5 foot bgs) and 75 mg/kg (0.5 to 1 foot bgs). As described in Section 2.3.2, concrete that was present to the south of the Light and Fog Signal Building inhibited sampling in some increment locations. Five increment locations could not be sampled and there were no viable alternative locations without substantially expanding the DU boundary. Refusal was encountered at depths less than 0.5 foot in an additional eight increment locations.

DU-10 was located between the Light and Fog Signal Building and the Duplex. No current or former structures are located within the DU. Lead concentrations in the two ISM samples collected from DU-10 were 57 mg/kg (0 to 0.5 foot bgs) and 19 mg/kg (0.5 to 1 foot bgs). Refusal was encountered in four increment locations at depths of 0.5 foot or less.

The area surrounding the Duplex contained three DUs (DU-11, DU-12, and DU-13). Eight ISM samples were collected, including two replicates from DU-13. The ISM composite samples from 0 to 0.5 foot bgs

adjacent to the Duplex in DU-11 contained a lead concentration of 450 mg/kg. The ISM sample from the 0 to 0.5 foot bgs interval in DU-12 had a lead concentration of 280 mg/kg. The remaining samples from DU-11, DU-12, and DU-13 contained lead at concentrations of 200 mg/kg or less. Analysis of the SU composite samples from the 0 to 0.5 foot bgs interval in DU-12 indicated that lead concentrations were greater than 250 mg/kg in SU-1, SU-2, and SU-3. The sample from SU-4, located west of the Duplex, contained a lead concentration of 170 mg/kg and was the only SU sample less than 250 mg/kg.

Lead concentrations in DU-14, which contained the 10,000-gallon fuel oil AST, were 350 mg/kg (0 to 0.5 foot bgs) and 130 mg/kg (0.5 to 1 foot bgs). Analytical results for the two SUs showed lead concentrations of 300 and 420 mg/kg from 0 to 0.5 foot bgs. One increment could not be sampled from the 0.5 to 1 foot bgs interval due to refusal.

Three ISM samples were collected from DU-15, which included the Firehouse Pump Building. Lead concentrations from 0 to 0.5 foot and 0.5 to 1 foot bgs were 160 and 260 mg/kg, respectively. An additional ISM sample was collected from 1 to 1.5 feet bgs based on field screening and contained 72 mg/kg of lead. The SU samples from 0.5 to 1 foot bgs were analyzed and lead concentrations in SU-1, SU-2, and SU-4 were less than 50 mg/kg. The lead concentration in SU-3 was 6,600 mg/kg. One increment location could not be sampled because of the presence of concrete. Refusal was encountered in another 14 locations at depths less than 1 foot bgs.

The former water tanks located east of the Duplex were included in DU-16 and DU-17. Lead concentrations in the ISM samples from 0 to 0.5 foot and 0.5 to 1 foot bgs were less than 100 mg/kg in both DUs. Increment locations were relocated as noted in Section 2.3.2. Analytical results for ISM and SU samples are summarized in Tables 3 and 4 and shown on Figures 5 through 8.

#### 2.3.3.2 Waste Characterization Sampling

Primary ISM and SU composite samples analyzed for waste characterization by TCLP contained leachable lead concentrations ranging from the detection limit to 0.97 milligram per liter (mg/L). Lead concentrations in all samples were less than the dangerous waste characteristic of 5 mg/L (Washington Administrative Code 173-303-090). Analytical results are summarized in Tables 3 and 4.

#### 2.3.3.3 Discrete Sample Results

Discrete samples collected for lead near the Pumphouse and Spring Cistern were collected from three locations and two depth intervals on the north and south sides of the structure in soil adjacent to the concrete building pad. The maximum detected lead concentration was 110 mg/kg in the 0 to 0.5 foot bgs sample from SB-106-2. The remaining five samples analyzed for lead near the Pumphouse and Spring Cistern had concentrations less than 50 mg/kg. Analytical results for lead samples are presented in Table 5a and sampling locations and results are shown on Figure 9.

Discrete sampling for petroleum constituents was performed at locations of existing and former tanks and pipeline. Concentrations of DRO and HO varied, but were generally less than the MTCA Method A cleanup level of 2,000 mg/kg, with the exception of SB-112-6 located near the former 10,000-gallon fuel oil AST and SB-107-3 located adjacent to the tanks located south of the Firehouse Pump Building. Near the 10,000-gallon fuel oil AST, DRO and HO concentrations ranged from the detection limit up to 2,000 and 2,700 mg/kg. The maximum concentrations for both compounds were detected in the sample from 0

to 0.5 foot bgs in SB-112-6. Concentrations were lower in the sample collected from 1 to 1.5 feet in SB-112-6, with DRO and HO concentrations of 240 and 150 mg/kg. All other sample results were at or less than 1,000 mg/kg for both DRO and HO.

DRO and HO were detected in all 13 samples from the tanks located south of the Firehouse Pump Building. Concentrations of DRO ranged from 130 to 2,700 mg/kg and HO ranged from 300 to 2,900 mg/kg. The sample collected from 0 to 0.5 foot bgs in SB-107-3 contained DRO and HO at concentrations of 2,700 and 2,900 mg/kg. The deeper sample collected in SB-107-3 from 0.5 to 1.0 foot bgs contained HO at a concentration of 2,300 mg/kg. Concentrations of DRO and HO were equal to or less than 1,300 mg/kg in all other samples from this area.

Samples with concentrations of DRO and HO exceeding the relevant MTCA Method A cleanup levels were analyzed for total petroleum hydrocarbon fractions; benzene, toluene, ethylbenzene, and xylene (BTEX); and semivolatile organic compounds. No constituents exceeded relevant MTCA Method A cleanup levels for the additional analytes. Analytical results for these constituents are presented in Table 5b and shown on Figure 10.

Samples collected along the pipelines, including the ship to shore connection to the 10,000-gallon fuel oil AST and the connections to various day tanks and buildings, contained DRO and DO at concentrations of 210 mg/kg or less. No sample locations contained either constituent at concentrations greater than the MTCA Method A cleanup levels.

Detected concentrations of DRO and HO in samples collected near the tanks located near the OIC Quarters and the Oil and Paint Storage Building were also less than the Method A cleanup levels. DRO concentrations ranged from the detection limit to 120 mg/kg in samples from the tank near the OIC Quarters and HO was between 69 and 400 mg/kg. DRO concentrations were 150 mg/kg or less in samples associated with the tank located adjacent to the Oil and Paint Storage Building. HO concentrations were between 100 and 860 mg/kg. Samples from the former tank near the Oil and Paint Storage Building were also analyzed for gasoline range organics based on historical uses, with concentrations ranging from nondetect to 18 mg/kg.

Total PCB concentrations detected in soil samples collected around the perimeter of the concrete area and the former transformer ranged from 0.11 to 45 mg/kg. Concentrations greater than the MTCA Method A cleanup level of 1 mg/kg were detected in at least one sample from nine of 13 sample locations. Concentrations greater than the MTCA Method A cleanup level ranged from 1.2 to 4.9 mg/kg, with the exception of SB-101-5 (0 to 0.5 foot bgs), which contained a total PCB concentration of 45 mg/kg. Soil concentrations greater than 1 mg/kg were present in the 0 to 0.5 foot bgs interval at sample locations SB-101-4, SB-101-5, SB-101-6, SB-101-7, SB-101-8, and SB-101-9. Samples collected from 0 to 0.5 foot bgs and deeper intervals at SB-101-12, SB-101-13, and SB-101-14 exceeded 1 mg/kg. The deeper sample collected at SB-101-16 from 2 to 2.5 feet bgs also exceeded 1 mg/kg total PCBs with a concentration of 3.8 mg/kg, although the concentration of total PCBs in the shallow sample was less than 1 mg/kg. Aroclor 1260 was the only PCB constituent that was detected in any of the soil samples. Soil samples from the former transformer area were also analyzed for mineral oil. Concentrations ranged from the detection limit to 930 mg/kg and were less than the MTCA Method A cleanup level of 4,000 mg/kg. Analytical results are presented in Tables 5a and 5c. Sample locations and results are presented on Figure 11.

#### 2.3.3.4 Sediment Sample Results

Lead was not detected in either of the sediment samples collected northeast of the boathouse. The laboratory report for sediment samples is presented in Appendix D.

#### 2.3.3.5 Lead Encapsulation Assessment

Visual assessment of the lead encapsulation on the Duplex, Light and Fog Signal Building, and Boathouse indicate that most painted surfaces are intact and show minimal signs of weathering or deterioration. The trim around doors and window frames was the primary area where signs of weathering or flaking was observed. In addition to natural weathering, damage to the encapsulation was noted in areas that have sustained physical damage, including the porches on the west side of the Duplex. A photo log showing details of areas where the encapsulation is flaking or deteriorating is included in Appendix G.

#### 3 CONCEPTUAL SITE MODEL

The results of soil sampling completed during the RI confirmed that lead, PCBs, DRO, and HO are present in soil at the site. These constituents are likely the result of historical site use related to the buildings and infrastructure developed in support of lighthouse operations. This section discusses the source areas, extents, fate and transport, and potential receptors and pathways for these constituents.

#### 3.1 Contaminants of Concern and Potential Source Areas

Lead impacts are primarily a result of weathering and flaking of lead-based paint that was historically applied to structures at the site. Previous investigations documented the presence of elevated levels of lead in shallow soil around the former and existing structures. Sample results from the 2019 RI confirmed the presence of lead in shallow soil at concentrations greater than the MTCA Method A cleanup level of 250 mg/kg around the Duplex, Light and Fog Signal Building, Oil and Paint Storage Building, Firehouse Pump Building, and 10,000-gallon fuel oil AST. The spatial distribution of lead concentrations in soil demonstrate that concentrations generally decrease with distance from the buildings and soil depth, suggesting that the physical weathering and flaking of lead-based paint from the buildings is the primary source of lead in the soil.

Gasoline, diesel, and fuel oil were historically used and stored onsite in tanks and transferred from ships to the storage tanks via underground pipelines, as detailed in Section 1.2. There is no historical documentation of gasoline, diesel, or fuel oil releases at the site. However, petroleum-contaminated soil was documented during removal of the UST near the OIC Quarters (AGI Technologies 1999). Soil sampling conducted during the 2019 RI identified two locations with concentrations of DRO and HO underneath the former 10,000-gallon fuel oil AST and adjacent to the tanks located near the Firehouse Pump Building. BTEX and carcinogenic polyaromatic hydrocarbons were not detected in locations with petroleum impacts. None of the tanks remain in place and there was no visual evidence of residual source material in soil. The extent of petroleum-contaminated soil is limited and does not indicate that substantial petroleum releases occurred near the former tanks and piping.

Previous investigations have documented the presence of PCBs in soil near the transformer previously located south of the Light and Fog Signal Building. A spill at this transformer was documented in 1980 (USCG 1980a, 1980b). Sampling conducted as part of the 2019 RI found PCB concentrations exceeding the MTCA Method A cleanup level (1 mg/kg) surrounding the concrete area where the transformer and remedial excavation were located. Because no other documented sources of PCBs are known at the site, the residual impacts are likely present from the transformer oil spill in 1980.

The roof tiles of the Duplex may be comprised of asbestos cement tiles. These potential asbestos tiles are not considered hazardous as long as they are undamaged, as intact roof tiles would not release asbestos into the environment. Damaged tiles could present an exposure risk for people accessing the site. While the material is suspected to contain asbestos, the composition is not currently known.

#### 3.2 Media Affected

The impacted media is limited to shallow soil in the upland portion of the USCG property. There is no surface water at the site except for the Puget Sound, which surrounds the island. Groundwater was not

encountered during the 2019 RI and shallow bedrock was present over much of the western portion of the site. Bedrock outcroppings are visible adjacent to the shoreline along the west and north sides of the site, and were encountered at shallow depths (i.e., less than 2 feet) in the areas near the Lighthouse and Fog Signal Building and the Oil and Paint Storage Building. The presence of groundwater in bedrock was not evaluated during the 2019 RI but is unlikely to be present as a competent aquifer that could be beneficially used. The ground surface slopes upward toward the east and bedrock was generally not observed in shallow borings, although refusal on cobbles or other material was encountered.

The coastline of the island comprises steep cliffs and a rocky coastline. Two small sandy beaches were noted during the initial investigation and are located northeast of the site. The observed beaches are not located adjacent to historical structures and are not in areas where surface water runoff from source areas is possible. Given that transport of contaminants by surface runoff is highly unlikely at these locations and that these areas are not expected to be influenced by flaking or chipping paint from historical structures, it is unlikely that elevated lead concentrations are present in sediment at these locations. Based on discussions with USCG and USEPA, two sediment samples were collected from the beach nearest to the site and did not contain detectable concentrations of lead.

# 3.3 Contaminant Fate and Transport

Lead is relatively immobile and persistent in soil. Analytical results from the 2019 RI demonstrate that lead impacts are generally present in the areas immediately surrounding current or former structures that were treated with lead-based paint and have not migrated to areas of the site where structures are not present. Transport of lead may occur from wind or by erosion of soil particles. Soil that is present in areas that are vegetated or impermeable (sidewalks, helicopter pad) is unlikely to be mobilized by wind or erosion.

Heavy-end petroleum contaminants from fuel oil, diesel, or PCB-containing transformer oil are expected to adhere to soil particles and have relatively low mobility in soil. Petroleum hydrocarbons are readily degraded by naturally occurring microorganisms in the environment and typically diminish over time through biodegradation and volatilization. PCBs are persistent in the environment and do not significantly degrade through time. Primary transport mechanisms for hydrocarbons and PCBs include erosion of shallow impacted soil by wind or water. Analytical data from the 2019 RI indicate that these constituents are present near the anticipated source areas and migration away from these areas has been limited.

Potential asbestos from the roofing material could be transferred to soil or other media if the tiles are damaged. While it is not known if the potential asbestos material is friable, there is a risk of exposure to site users if the roof continues to deteriorate.

# 3.4 Potential Receptors and Pathways

Potential human receptors to COCs at the site include site workers and visitors, which are currently limited by low occupancy due to the difficultly accessing the site. The NWSS will restore the site to a condition that will allow guests to stay onsite for short periods of time. Potential exposure pathways to humans include direct contact with contaminated soil and inhalation of contaminated dust particles. Groundwater, if any, is likely not present at a quantity that could be beneficially used due to the presence of shallow bedrock. The spring at the Pumphouse and Spring Cistern building that was historically used

as a water source is located in a drainage area that is topographically separated from the main portion of the site where contaminant migration is highly unlikely. There are no surface water bodies present at the site, other than Puget Sound, which is saline and not suitable for potable uses. Areas of sediment near the site are limited due to the rocky nature of the coastline. The sandy area located to the northeast of the Boathouse is the only observable area with sediment present along the shoreline adjacent to the site. Samples collected in this area did not contain detectable concentrations of lead. Based on these considerations, there is no significant exposure pathway from groundwater, surface water, and sediment. The terrestrial ecological evaluation conducted by Ecology in 2013 identified the following potential terrestrial ecological receptors in the upland portion of the site (Ecology 2013):

- Soil-associated invertebrates
- Vascular plants
- Ground-feeding birds (robin)
- Ground-feeding small mammal predators (shrew)
- Herbivorous small mammals (vole).

Exposure to site contaminants by these potential ecological receptors is possible given the presence of COCs in shallow soil.

# 3.5 Conceptual Site Model Conclusions

The results of the 2019 RI support that lead, PCBs, DRO, and HO are present in site soil at concentrations greater than the MTCA Method A cleanup levels. The primary receptors are site visitors and animals that may come into direct contact with contaminated soil. Groundwater is not present in quantities that could be beneficially used at the site and Puget Sound is the only nearby surface water body. Sediment deposits near the site are limited due to the presence of bedrock outcroppings. Constituents were spatially correlated with soil located near source areas, indicating that mobility to other areas and media are limited.

# 4 FEASIBILITY STUDY AND EVALUATION

# 4.1 Applicable Local, State, and Federal Laws

The primary state and federal regulations regarding hazardous materials in soil that are applicable to the site are the MTCA and the Toxic Substances Control Act (TSCA). Additional advisories, guidance documents, and training materials may be considered. Cleanup standards under the MTCA may be established using standards developed under Method A for unrestricted site land uses as outlined in WAC 173-340-900. As part of the process to establish cleanup levels, a terrestrial ecological evaluation (TEE) must be completed to evaluate the potential impact of hazardous substances on ecological receptors. A TEE was completed for the site by Ecology in September 2013 and did not identify any additional cleanup levels that are more stringent that those outlined in WAC 173-340-900. The following MTCA Method A cleanup levels for unrestricted land use are proposed for the site COCs as established under MTCA Method A, Table 740-1:

- Lead 250 mg/kg
- PCB mixtures 1 mg/kg
- DRO 2,000 mg/kg
- HO − 2,000 mg/kg.

ARARs that were considered are summarized in Appendix H.

# 4.2 Remedial Action Objectives

Remedial action objectives (RAOs) are media-specific, operable-unit specific, or site-specific goals for protecting human health and the environment. The RAOs for soil at the site are summarized below:

- Prevent exposure of humans and ecological receptors to COCs in soil at concentrations greater than the MTCA Method A cleanup levels identified in Section 4.1.
- Comply with ARARs at the site.

# 4.3 Points of Compliance

The points of compliance, or locations where the cleanup levels established in Section 4.1 must be met, will be standard points of compliance for soil under an unrestricted land use scenario in accordance with WAC 173-340-740(6)(d). MTCA points of compliance were selected as the relevant and appropriate criteria because MTCA Method A cleanup levels have been selected as the cleanup levels. The MTCA Method A cleanup levels defined in Section 4.1 will be applicable for soil from ground surface to 15 feet bgs throughout the site. As noted above, bedrock is typically encountered at or several feet bgs throughout the site.

#### 4.4 Estimated Remedial Quantities

Proposed remedial treatment areas and depths were established by comparing the analytical results from the 2019 RI to the MTCA Method A cleanup levels. For DUs where ISM lead concentrations were greater than the MTCA Method A cleanup level, the DU is expected to be remedied to the maximum depth where lead concentrations are greater than 250 mg/kg. In DUs where SU samples were evaluated, the results were incorporated into the proposed remedial extents and only SUs with lead concentrations greater than 250 mg/kg are included. Remedial limits also include locations where XRF or discrete samples collected during the November 2018 field event were above 250 mg/kg and outside of the limits of DUs or SUs identified for remediation. Locations and sample results from the November 2018 XRF screening and discrete sampling are included on Figure 12. Analytical results are provided in Appendix A.

Discrete soil sample locations with concentrations of PCBs, DRO, and HO greater than the MTCA Method A cleanup levels are included at an estimated extent where the lateral and vertical extents are not delineated based on the 2019 RI data. The total estimated volume of soil above MTCA Method A cleanup levels is conservatively estimated to be approximately 1,260 cy. This estimate assumes that removal under the helicopter pad will be required at a depth of 1 foot bgs, although sampling was not completed during the 2019 RI due to access limitations. The estimate also does not account for shallow bedrock, which may be encountered at depths shallower than the proposed removal depths. A summary of the estimated removal areas, depths, and COCs is presented in Table 7.

Approximately 410 cy of the total estimated soil volume greater than MTCA Method A cleanup levels contains PCBs based on the results of the 2019 RI sampling. Concrete present within the PCB impacted area is included in the estimated volume. The lateral extents were conservatively estimated in areas where sample results did not delineate soil impacts greater than MTCA Method A cleanup levels.

Lead-based paint present on the Duplex, Boathouse, and Light and Fog Signal Buildings were previously encapsulated, but have deteriorated and were observed to be flaking or damaged in some areas. Based on the results of the survey completed during the 2019 RI activities, approximately 5 to 10 percent of the building surface may require additional treatment or removal of lead-based paint. For the FFS, the surface area requiring treatment is estimated to be 800 square feet. Conditions of the buildings were evaluated during the 2019 RI and are documented in the photo log in Appendix G.

Potential asbestos roofing materials are assumed to be present on the Duplex. The estimated area of roofing that may require removing and replacement is 4,000 square feet. This estimate assumes that all the roofing material would need to be replaced.

# 5 IDENTIFICATION AND SCREENING OF TECHNOLOGIES

This section identifies and describes the general response actions (GRAs), or categories of remedial alternatives, that are broadly applicable to the site based on the nature and extent of contamination present. The GRAs presented below may satisfy the RAOs defined in Section 4.2, either individually or when combined. A general definition of the GRAs is presented below and the most applicable and appropriate remedial technologies that fall within each GRA are described in Section 5.3. The identification and screening of GRAs and technologies is in general accordance with USEPA guidance on the development and screening of alternatives (USEPA 1988).

# 5.1 Description of General Response Actions and Identification of Applicable Remedial Technologies

- *No action.* No active or passive remedial activities will be implemented, and no institutional controls will be enacted. Site conditions will not change from what is currently present.
- Institutional controls. An administrative action, such as a land use restriction, will be enacted to
  reduce or eliminate human exposure pathways to contaminants. An example of this GRA for the site
  is an environmental covenant that will preclude the disturbance of soil in situ or within a constructed
  repository. This action will likely be combined with one or more of the physical actions described
  below.
- Capping/Containment. The potential spread of contaminated media will be addressed through the
  installation of a physical barrier. An example of this GRA for the site is capping soil that contains
  concentrations of site COCs exceeding MTCA Method A cleanup levels (specifically lead) to mitigate
  direct exposure to contaminated media.
- Excavation. The potential spread of contaminated media will be addressed through physical removal
  combined with either containment or disposal at an offsite facility designed and licensed to contain
  the contaminated media. An example of this GRA for the site is the excavation of soil that contains
  concentrations of site COCs exceeding MTCA Method A cleanup levels and transfer to an onsite
  repository constructed to manage the contaminated soil or an approved offsite facility for disposal.
- In-Situ Stabilization/Treatment. The potential spread of contaminated media will be addressed through physical, chemical, thermal, or biological processes. An example of this GRA for the site is the in-situ chemical stabilization of soil that contains concentrations of site COCs (specifically lead) exceeding MTCA Method A cleanup levels.

# 5.2 Remedial Technologies Evaluation Criteria

Technology types for each of the GRAs identified above were evaluated considering site-specific conditions including the type, distribution, and volume of contaminated soil at the site, and with the RAOs discussed in Section 4.2. The preliminary screening criteria include effectiveness, implementability, and relative cost. The basis for applying each of these criteria in the evaluation of individual technologies is described below:

- Effectiveness. This evaluation focused on the potential effectiveness of each alternative in remediating lead, petroleum, and PCB-contaminated soil and in meeting the RAOs. Specific information considered included types and levels of contamination, the volume and areal extent of impacted soil, and the time to achieve remediation goals. Each alternative was classified as low, moderate, or highly effective.
- Implementability. This evaluation rated the relative degree of technical implementability and feasibility
  of implementing the technology or alternative. Aspects considered included any substantive
  requirements of potential permits for actions; availability of treatment, storage, and disposal services;
  and availability of necessary equipment and skilled workers to implement the technology. The
  implementability of each technology was classified as easy, moderate, or difficult to implement.
- Cost. The cost evaluation was based on engineering judgement, and each alternative was evaluated in relation to other alternatives of the same technology type. Both capital and operating costs were considered. The cost of each technology was classified as low, medium, or high.

# 5.3 Preliminary Screening of Technologies

The following remedial technologies were selected for initial screening in the FFS to evaluate potential effectiveness, implementability, and relative costs in meeting the RAOs. Technologies that would not meet the RAOs or would clearly be ineffective or non-implementable were not considered for further evaluation in the FFS.

#### 5.3.1 No Action

No action is the baseline approach to which other technologies are compared. Under this approach, no further RAs will be taken to address site soil and achieve the RAOs. No new engineering or institutional control measures will be implemented, and no additional monitoring will be conducted. This option assumes physical conditions at the site will remain unchanged. If no additional actions are completed at the site, the RAOs will not be met; however, no action provides a baseline for comparison with other options and technologies. No action is retained for more detailed evaluation and for comparison to the other technologies per CERCLA guidance. There are no anticipated costs for this option.

#### 5.3.2 Paint Encapsulation/Treatment

Source control measures are intended to remove or treat contaminants present in building materials that are present at the site, primarily lead-based paint. Measures may include application of coatings designed to encapsulate the surface material and prevent deterioration, removal and replacement of building components, or physical removal of contaminated materials. Previous remedial work at the site included encapsulation of lead-based paint present on the buildings to mitigate further deterioration or flaking of paint into soil. Source control measures should effectively mitigate further contamination of soil due to deterioration and flaking of paint but will not reduce contamination already present in soil. Source control measures are widely used to successfully mitigate lead-based paint and can be implemented at the site. Costs depend on the type of source control measures implemented but are expected to be relatively low for encapsulation. Removal and replacement of building materials will incur higher costs.

## 5.3.3 Capping

Capping includes engineered treatments intended to contain contamination and prevent migration and exposure pathways, rather than treat or remove it. Exposure to underlying soil will be mitigated by creating a physical barrier between the soil and potential receptors. Caps are implementable, effective, and the technology is widely used and fully developed. Placement of a cap may require additional site grading and/or excavation in some locations. Ongoing operations and maintenance (O&M) will be required to verify that the cap is continuing to function as designed over time. Costs associated with caps are low relative to other RAs (i.e., excavation) due to the low capital costs to install; however, ongoing O&M (inspections and vegetation maintenance) and institutional controls will be required to protect the functionality of the cap.

#### 5.3.4 Excavation

Excavation will require the use of heavy earth-moving equipment (i.e., excavators, backhoes, graders) to remove soil with concentrations of site COCs that exceed MTCA Method A cleanup levels. Exposure pathways to site receptors will be eliminated by removing impacted soil. To meet the RAOs, soil targeted for remediation will be excavated to depths ranging from approximately 1 to 3 feet bgs. Confirmation sampling will be conducted to confirm that soil exceeding MTCA Method A cleanup levels is fully excavated. Clean backfill may be placed as needed to restore excavation areas followed by revegetation or restoring the surface to its pre-excavation condition. Excavation is highly effective and widely used. Surface soil excavation is highly implementable with conventional construction equipment and the time required to meet RAOs is relatively short. Capital costs to excavate the impacted soil are higher than the no action or capping, and if the material is encapsulated on-site rather than disposed of offsite, then there are long-term O&M costs and institutional controls required to confirm the integrity of the soil repository is maintained and RAOs are being met.

Handling of the excavated soil may include construction of an onsite repository to contain and manage contaminated soil or transfer to an offsite licensed disposal facility. Soil handling methods are further described below.

#### 5.3.4.1 Onsite Encapsulation

Excavated soil may be moved from around the site and placed in a single isolated onsite disposal area or repository designed for long-term management and containment of soil and contaminants. Ongoing monitoring will be required for the repository to verify that the soil is effectively contained and that the repository is functioning as designed to isolate contaminants from potential receptors and the environment. In addition, institutional and engineering controls will be established for the area where the repository is located and may include land use controls (e.g., deed restriction) on subsurface excavation and fencing or other physical barriers. Excavation and management of contaminated soil in an onsite repository will effectively reduce potential exposure to receptors. Onsite containment is implementable at the site and the overall effectiveness when paired with institutional and engineering controls in meeting RAOs is high. Capital costs are anticipated to be higher than capping, and long-term O&M costs are less than for capping because the repository has a smaller footprint than the cap area.

## 5.3.4.2 Offsite Disposal

Excavated soil may be transported offsite for disposal in an approved offsite landfill. Impacted soil will be permanently isolated and confined in the landfill to prevent human and environmental exposure to the soil and potential leaching from soil to groundwater. Excavation and offsite disposal will effectively meet the RAOs. Relative costs are higher than capping or an onsite repository because soil will need to be transported from the site to the approved disposal facility, likely on the road or in railcars. Costs will be incurred by the disposal facility for management of the waste. Long-term monitoring will not be required because the contaminants will be removed from the site.

#### 5.3.5 In-Situ Chemical Stabilization

Chemical stabilization of lead in soil using phosphate-based reagents has been shown to reduce the leachability and bioavailability of lead in contaminated soil (Tardy, Bricka, and Larson 2003). The addition of phosphate to the soil facilitates the formation of lead phosphate compounds, such as pyromorphite, that are many orders of magnitude less soluble the other lead minerals and less bioavailable to plants and animals (Tardy, Bricka, and Larson 2003; Hettiarachchi, Pierzynski, and Ransom 2001; Laperche et al. 1996). Treatability studies of in-situ stabilization of lead with phosphate vary depending on site and soil conditions, with substantial reductions in leachability, but spatial and temporal variations in leaching and bioavailability results, and recurring exposure risks that are greater than residential and industrial use scenarios (Bricka, Marwaha, and Fabian 2008).

A treatability study was conducted in 2015 using soil collected from the site and four phosphate reagents to evaluate the effectiveness of in-situ stabilization on lead in soil (Arcadis 2015a, 2015b). Samples were collected and homogenized to be representative of lead concentrations observed at the site. Following the addition of increasing concentrations of various phosphate source reagents, samples were collected over multiple weeks to evaluate treatment effectiveness. None of the reagents were able to achieve the treatment goals. Leachable lead concentrations generally were the same or even increased as a result of the amendment additions, which likely was a result of increased soil pH due to the amendment addition that inhibited the formation of pyromorphite and the presence of fine and colloidal lead that was largely insoluble but able to pass through the filters used for the leachate testing (Arcadis 2015a).

In-situ chemical stabilization would not be effective in meeting the RAOs because the mobility of lead would likely not be reduced and the total concentration of lead in soil would remain unchanged. The potential for human or terrestrial exposure to lead would remain without additional measures to mitigate direct contact. Costs for implementation are moderate and could be completed with small power equipment. Additional monitoring and institutional controls (i.e. signage, restrictions of development) would be required.

#### 5.3.6 Preliminary Screening of Remedial Technologies

The technologies identified for screening were considered for implementation at the site and evaluated for overall effectiveness in achieving the RAOs, treating source material (i.e. lead paint), implementability, and cost. Since no individual technologies would achieve the RAOs and treat source material on their own, technologies are shown and shown in combinations and evaluated in Table 8. No action is retained for comparison with other technologies as a baseline. Capping, excavation and onsite encapsulation, and

excavation and offsite disposal would achieve the RAOs and be effective in treating source material when combined with paint encapsulation and excavation and offsite disposal of soils containing PCBs. In-situ chemical stabilization was determined to be ineffective in reducing lead leachability and will not meet RAOs because the direct contact pathway will not be mitigated (Arcadis 2015a). Based on these considerations, in-situ chemical stabilization is not considered a viable remedial technology and is not retained for further evaluation. Combinations of remedial technologies that are retained in the preliminary screening are further developed as remedial alternatives in Section 6.

# 6 DETAILED ANALYSIS OF ALTERNATIVES

Following the preliminary screening of remedial technologies, alternatives composed of multiple remedial technologies and designed to achieve RAOs were developed for further detailed analysis. Each alternative was evaluated using the criteria presented in Section 6.1. A summary of the estimated quantities for each remedial alternative is presented in Table 9. The detailed analysis for each alternative is summarized below and in Table 10. Capital and O&M costs were evaluated for each alternative based on the conceptual approach and include present value costs for 30 years. Cost estimates were prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000) and are presented in Appendix I.

#### 6.1 Sub-Criteria for Alternatives Evaluation

Alternatives were evaluated using the criteria outlined in 40 CFR § 300.430. These criteria are considered as threshold, primary balancing, or modifying criteria. Threshold criteria must be met for any alternative to be considered for implementation. Primary balancing criteria are the basis for comparison between alternatives. Modifying criteria will be considered during the evaluation. Additional details on the considerations for each criterion are provided below.

- Threshold criteria:
  - Overall protection of human health and the environment.
  - Compliance with ARARs.
- Primary balancing criteria:
  - Long-term effectiveness and permanence.
    - Risks presented by residual contaminants remaining following implementation of the remedy.
    - Reliability of technical components and controls used to manage untreated or residual wastes.
  - Reduction of toxicity, mobility, or volume through treatment:
    - Quantity of material treated, expected degree of reductions, and irreversibility of treatment processes.
    - Type, quantity, and risks associated with residual materials generated during treatment.
  - Short-term effectiveness:
    - Risks associated with implementation of the remedy to the community that may impact human health.
    - Protection of workers and the reliability of any temporary controls required to mitigate hazards associated with remedy implementation.
    - Environmental impacts associated with implementation of the remedy and the reliability of any required controls or mitigation measures.

- Duration to implement the remedial alternative and achieve remedial objectives.
- o Implementability:
  - Technical feasibility of designing and constructing the remedial alternative to meet the RAOs given site conditions and other factors.
  - Availability of equipment, services, skilled personnel, and construction materials.
  - Reliability of the technologies employed.
  - Administrative requirements for coordination or permitting with other offices and agencies.
- Cost:
  - Capital costs for implementation of the remedial alternative, including direct and indirect costs for construction, equipment, disposal, engineering, and permitting.
  - O&M costs incurred during the RA and following primary construction activities, including administrative costs, maintenance and repair costs for engineered controls, and costs for periodic site inspections and reviews.
- Modifying criteria:
  - State acceptance:
    - Issues and concerns of state or local support agencies.
  - o Community acceptance:
    - Issues and concerns of the general public.

## 6.2 Site-Wide Elements

The alternatives considered below contain common elements that will be implemented under each scenario (except Alternative 1 – No Action). These components are consistent between alternatives because they address specific risks where there are limited or no alternative options that will satisfy the criteria listed in Section 6.1.

# 6.2.1 Excavation and Offsite Disposal of Polychlorinated Biphenyl Contaminated Soil

Soil containing PCBs at concentrations greater than the MTCA Method A cleanup level will be excavated and transferred to an offsite disposal facility for management. Due to the access limitations present at the site, a barge crane or other means to transfer equipment and soil onsite and offsite will be required. Soil will be transferred from the site on a barge and to trucks or rail cars for transport to an approved facility for landfill disposal or treatment. Waste may be designated as dangerous waste in accordance with Washington Dangerous Waste Regulations (Chapter 173-303-070 WAC) or hazardous waste in accordance with the Resource Conservation and Recovery Act (40 CFR § 261) and TSCA (40 CFR § 761). Sample results from the 2019 RI indicate that PCB-impacted soil will be classified as a Washington

State dangerous waste. However, stockpile samples of excavated soils within the PCB-impacted area will need to be tested by a laboratory to confirm proper classification prior to transportation and disposition.

Excavation and offsite disposal of soil containing PCBs is highly protective of future site uses and will eliminate any future risks associated with human exposure to the waste at the site. The technology to implement the remedy is generally available, including equipment and skilled labor, but likely specialized given the access limitations and constraints present at the site. Short-term impacts to site users will include limited access during implementation. The risk of exposure for site workers and the general public to contaminated soil is present but can be mitigated with engineering and administrative controls (i.e. short-term closure to public access) and personal protective equipment (PPE) for site workers. The timeline for completion of the remedy is relatively short and no ongoing O&M will be required following implementation of the remedy. Removing and transporting the waste will require coordination with state and local agencies, including Ecology, which requires documentation and reporting for dangerous waste generators. The costs associated with excavation and offsite disposal of PCB-contaminated soil are incorporated into the costs for each alternative.

## 6.2.2 Repair of Building Encapsulation

The exterior surfaces of the Duplex, Light and Fog Signal Building, and Boathouse where encapsulation has deteriorated or been damaged will be repaired and encapsulated to prevent further flaking or migration of lead-based paint to soil. Based on the condition of each damaged area, surfaces may be scraped or sanded to remove loose paint, encapsulated with an approved coating designed to control lead-based paint, and painted to match the previous color and finish. Waste materials will be collected and transported offsite for disposal in accordance with local, state, and federal requirements at an approved disposal facility.

Encapsulation is an effective source control measure for lead-based paint and mitigates direct contact exposure when building materials are intact. The technology is widely used and the skilled labor and materials required to implement are readily available. The long-term effectiveness of the remedy can vary, depending on weathering and exposure to sun. Periodic maintenance and repair can improve the reliability and effectiveness of encapsulation. The risk for exposure to site workers can be mitigated with engineering and administrative controls and PPE. Short-term impacts may include limited access to the site during implementation. The timeline for implementation is relatively short. The costs associated with repairing the encapsulation present on buildings at the site is estimated at approximately \$30,000, which is included in the total cost for each alternative evaluated below.

#### 6.2.3 Removal and Replacement of Potential Asbestos Tile Roofing

Potential asbestos containing roof materials on the Duplex will be removed and disposed of by a certified asbestos abatement company to mitigate the possibility of future asbestos impacts. Materials will be handled and disposed in compliance with applicable regulations. Once potential asbestos removal is complete, a new roof will be installed. The replacement roofing materials will be selected by the USCG in consultation with the Washington State Department of Archaeology and Historic Preservation.

The methods and techniques used in the removal of asbestos roofing vary by material, roof structure, and other factors. Safe removal and disposal of asbestos work can be complex; therefore, the detailed

approach used for the Duplex will be determined based on discussions with the asbestos abatement contractor. Regardless of the methods chosen, roof removal is the most effective strategy to eliminate long-term risk and is a widely used approach for asbestos. Short-term impacts may include limited access to the site during implementation. The timeline for implementation is relatively short. For the purposes of this FFS, the costs associated with asbestos removal and roof replacement are assumed to be approximately \$120,000 based on input from contractors capable of performing the work. The actual costs for abatement and replacement of the roof may vary depending on the selected materials and approach. Transportation of materials, equipment, and personnel to and from Burrows Island are not incorporated into these costs.

# 6.2.4 Repair of Site Access Staircase

Damage to the staircase connecting to the dock location near the Boathouse on the north portion of the site was noted in January 2020. The damage appears to have been the result of storm surge eroding the support structure under the concrete pier near the middle of the stairs. The dock and staircase are the primary access point for the site. Since the structure is severely undermined, it could sustain further damage prior to or during construction that would limit access or potentially endanger site workers. As part of the remedial action, the staircase will be repaired to facilitate safe access to the work area. The repair will likely consist of pouring concrete around the base of the pier to stabilize the structure. If deemed necessary, additional armoring may be placed to protect against storm surge. The estimated costs for repair work are assumed to be approximately \$50,000 based on input from contractors capable of performing the work. The cost estimate assumes that the repair work will comply with the substantive requirements of applicable permits, but obtaining permits will not be required since the work will be performed as part of a CERCLA Remedial Action.

#### 6.3 Alternative 1 – No Action

## 6.3.1 Description

Alternative 1 consists of no RA to address site soil. This technology is retained as a baseline for comparison to the other alternatives in accordance with CERCLA guidance. Alternative 1 will not achieve the soil RAOs and is not protective of human health and the environment because site COCs will remain in soil and people and terrestrial receptors may be exposed to the contamination.

#### 6.3.2 Assessment

Alternative 1 is technically practicable and implementable, but it does not mitigate risks and has low longand short-term effectiveness because unacceptable levels of contamination will remain. This alternative does not incorporate soil treatment or resource recovery technologies. There is no cost for this alternative.

# 6.4 Alternative 2 – Capping

## 6.4.1 Description

Alternative 2 will consist of placement of an engineered cap over areas where soil impacts from lead and petroleum contaminants are greater than MTCA Method A cleanups levels to achieve RAOs by eliminating the direct contact exposure pathway. The cap components, design, and configuration will be evaluated further during design if this RA is selected, but for the FFS it is assumed to consist of a geotextile layer overlain with 2 feet of general fill suitable for plant growth that will be revegetated to mitigate surface erosion. Surface preparation will include removal of vegetation currently present and minor grading to ensure the stability of the capping materials. Trees will be maintained to the extent possible, with capping materials placed and cut to fit around trees as needed. Limited vegetation removal or trimming will be required to provide access to select areas. Fill materials will be lightly compacted to provide a stable surface and material will be seeded with a selection of grasses that are native and require minimal watering. Debris, such as the metal material covering the helicopter pad, will be removed and transported offsite for disposal (approximately 20 tons). Under this alternative, materials and equipment will likely be transported to the site using marine equipment, including barges and cranes. As discussed in Section 6.2, PCB-contaminated soil will be removed and disposed offsite and repairs will be implemented to the lead-based paint encapsulation on site buildings under this alternative. Based on the conceptual estimates provided in Table 2, approximately 26,000 square feet of capping will be required (approximately 2,200 cubic yards of backfill material). A conceptual layout of Alternative 2 is presented on Figure 13.

Site controls, including signage and ongoing restrictions on subsurface excavation and development, will be required to maintain the cap and mitigate contact with contaminated materials. Annual O&M will likely include inspections of the cap to ensure that it is stable and not eroding, and periodic repair of the capping materials and vegetation. For the purpose of the cost estimate, it is assumed that more robust maintenance activities will be required every five years and include mobilizing heavy equipment and materials to the site to repair and rehabilitate capping areas.

#### 6.4.2 Assessment

Alternative 2 will be protective of human health and the environment and will meet RAOs. The soil RAOs will be met when implementation is complete (i.e., cleanup time of less than 1 year); however, long-term monitoring will be required to confirm that the protectiveness is maintained. This alternative will mitigate the direct contact exposure risk for soil. The construction of this alternative will be implementable using commercially available equipment and materials but will require the placement of land use restrictions (i.e., subsurface soil disturbing activities) on the capped areas. Capping is considered effective and reliable in the long term and short term for remediating soil but this alternative will require restrictions on a larger portion of the site, with up to 26,000 square feet of area requiring controls compared to 11,000 square feet for Alternative 3 and zero for Alternative 4. This alternative will not incorporate treatment or resource recovery technology. Long-term operation, maintenance, and monitoring will be required to ensure protection of human health and compliance with RAOs. The capped areas will require periodic inspections and maintenance of institutional controls. The maintenance will include repair and replacement of capping materials and revegetation as necessary. Institutional controls, which may include

restrictive covenants, will likely include requirements to maintain the cap and to follow soil management procedures if the remaining impacted soil is disturbed.

Capital costs for Alternative 2 are estimated to be \$875,000. Costs for O&M projected over 30 years in present worth are estimated to be \$556,000. The estimated 30-year present worth cost is approximately \$1,440,000 for Alternative 2 (rounded to the next ten thousand dollars). The detailed cost estimates and assumptions are included in Appendix I.

# 6.5 Alternative 3 – Excavation with Onsite Encapsulation

## 6.5.1 Description

Alternative 3 will include excavation of soil exceeding MTCA Method A cleanup levels and placement in a consolidated onsite repository constructed to contain the contaminated materials in a manner that is protective of human health and the environment and limit land use restriction areas. Soil will be excavated to depths where either refusal is encountered (bedrock) or where confirmation sampling confirms that soil remaining in place has COC concentrations less than MTCA Method A cleanup levels.

The excavated soil will be placed into a lined and capped onsite repository, south of the Duplex. To contain the materials and isolate them from surface water, the repository liner and cap will consist of a low permeability geosynthetic clay liner with a geocomposite applied on the top and sides of the repository for drainage. Soil will be excavated and stockpiled prior to construction of the repository. The subgrade for the repository will be prepared by removing vegetation and completing minor grading as needed in the selected location. Once the bottom of the repository is installed, soil will be transferred to the repository and compacted. A geosynthetic clay liner will be placed over the compacted soil, followed by a geocomposite drainage layer, and then cover soil (clean backfill). The repository cover will be revegetated with native grasses following completion to mitigate surface erosion. The estimated soil volume that will be excavated is 1,350 cubic yards, with 940 cubic yards placed in the onsite repository. As discussed in Section 6.2, PCB-contaminated soil (approximately 410 cubic yards) will be removed and disposed offsite and repairs will be implemented to the lead-based paint encapsulation on site buildings under this alternative. A conceptual layout of Alternative 3 is shown on Figure 14.

Following confirmation sampling to verify soil excavation is complete, excavation areas will be graded, backfilled, and/or revegetated. For the cost estimates included in the FFS, backfill will be imported to restore excavated areas to within approximately 12 inches of original grade (e.g., imported backfill will be installed where excavation depths exceed 12 inches) and as cover for the repository (up to 12 inches of cover), with a total estimated volume of approximately 920 cy. Backfill materials will be screened prior to import and placement to confirm that concentrations of potential COCs are less than MTCA Method A cleanup levels. Additional institutional controls such as fencing and signage will be installed around the repository to protect the structure and prevent damage. Periodic inspections and maintenance will be required to verify that the cap is functioning as designed. For the purpose of the cost estimate, it is assumed that more robust maintenance activities will be required every ten years and include mobilizing heavy equipment and materials to the site to repair and rehabilitate the repository.

#### 6.5.2 Assessment

Alternative 3 is protective of human health and the environment and will meet RAOs. This alternative will mitigate the direct soil contact exposure risk by consolidating soil that exceeds MTCA Method A cleanup levels in an engineered repository. The RAOs will be met when implementation is complete (i.e., cleanup time of less than 1 year). Long-term O&M will be required to verify that the repository is maintained and functioning as designed, including periodic inspections and maintenance of the repository and institutional controls. This alternative can be implemented using readily available skilled labor and equipment.

Similar to Alternative 2, equipment and materials will likely be mobilized to the site using marine equipment, including barges and cranes. Excavation with onsite containment is considered highly effective and reliable in the long term for mitigating risks to human health and the environment. Short-term impacts associated with construction will include limited or restricted site use during construction and risks of site workers being exposed to contaminated media at the site. Site access restrictions will be limited to a few weeks to months during implementation. Risks to site workers can be readily mitigated using engineering controls, administrative controls, and PPE. This alternative will not incorporate treatment or resource recovery technology. Institutional controls, which may include restrictive covenants, will include requirements to restrict excavation in the repository and to maintain fencing and signage around the repository to limit potential access and exposure.

Capital costs for this alternative are higher than Alternative 2 and will include long-term O&M costs to confirm the remedy continues to be protective of human health and in compliance with RAOs. Capital costs for Alternative 3 are estimated to be \$1,020,000. Costs for O&M projected over 30 years in present worth are estimated to be \$447,000. The total estimated 30-year present worth cost is approximately \$1,470,000 for Alternative 3 (rounded to the next ten thousand dollars). The detailed cost estimate and assumptions are included in Appendix I.

# 6.6 Alternative 4 – Excavation with Offsite Disposal

# 6.6.1 Description

Alternative 4 will include excavation of soil exceeding MTCA Method A cleanup levels and transfer to an offsite approved disposal facility to meet RAOs. Soil extents and depths will be the same as Alternative 3 and will extend to a depth where refusal is encountered (bedrock) or where confirmation sampling confirmed that COC concentrations in the soil remaining in place was less than MTCA Method A cleanup levels. Excavated soil will likely be handled and transferred to an offsite loading site, repackaged for transportation via rail or road, and transported to a landfill designed and licensed to contain soil containing site COCs. Excavated soil may be stockpiled onsite or loaded directly into an appropriate container (e.g., roll-off bin) for offsite transport and disposal. Similar to Alternative 3, confirmation sampling will be conducted during implementation to verify the remedial excavation extents. A conceptual layout of soil removal areas for Alternative 4 is shown on Figure 15.

Available soil characterization data from samples collected during the RI indicate that concentrations of site COCs are primarily nonhazardous (other than PCBs as described in Section 6.2.1). As discussed in Section 6.2, PCB-contaminated soil will be removed and disposed offsite and repairs will be implemented to the lead-based paint encapsulation on site buildings under this alternative. Approximately 1,350 cy of

soil will be excavated and disposed of offsite under this alternative to meet MTCA Method A cleanup levels at the site, including approximately 410 cy of PCB-contaminated soil.

Following confirmation sampling to verify soil excavation is complete, excavation areas will be graded, backfilled, and revegetated. For the cost estimates included in the FFS, backfill will be imported to restore excavated areas to within approximately 12 inches of original grade (e.g., imported backfill will be installed where excavation depths exceed 12 inches), with a total estimated volume of approximately 510 cy. Backfill materials will be screened prior to import and placement to confirm concentrations of potential COCs are less than MTCA Method A cleanup levels. No additional ongoing O&M will be required.

#### 6.6.2 Assessment

Alternative 4 is protective of human health and the environment and will meet RAOs. This alternative is highly effective in mitigating the direct contact exposure risk for soil by removing soil that exceeds MTCA Method A cleanup levels. The RAOs will be met when implementation is complete (i.e., cleanup time of less than 1 year). This alternative is technically feasible and will be implementable using commercially available equipment and materials.

Similar to Alternatives 2 and 3, equipment, materials, and waste will likely be mobilized and demobilized to the site using marine equipment, including barges and cranes. Excavation and offsite disposal at a facility designed and licensed to manage site wastes is considered highly effective and reliable in the long term. Short-term risks to the public are higher due to the increased volume that will be transported offsite compared to Alternatives 2 and 3. Risks to site workers can be readily mitigated using engineering controls, administrative controls, and PPE. Restrictions and controls on site access will be similar to Alternative 3 and will last weeks to months during construction and restoration activities.

While capital costs for this alternative are the highest of the four alternatives evaluated, no long-term OMM costs will be associated with the remedy. Institutional controls will not be required with this alternative because all soils exceeding MTCA Method A cleanup levels will be removed. Capital costs for Alternative 4 are estimated to be \$1,300,000. There are no O&M costs associated with this alternative. The detailed cost estimate and assumptions are included in Appendix I.

# 6.7 Comparative Analysis

The alternatives described above were evaluated and compared against the sub-criteria for alternatives evaluation (Section 6.1). Protectiveness and compliance with ARARs are threshold criteria that must be met for any remedy. Balancing criteria are the basis for comparison between alternatives that meet the threshold criteria. The comparative analysis includes evaluation of the relative ratings of the remedial alternatives for each criterion. Each criterion is discussed individually in Sections 6.7.1 through 6.7.9, and the list of alternatives is provided below:

- Alternative 1 No Action
- Alternative 2 Capping
- Alternative 3 Excavation with Onsite Encapsulation
- Alternative 4 Excavation with Offsite Disposal

#### 6.7.1 Overall Protection of Human Health and the Environment

Soil exceeding MTCA Method A cleanup levels have been identified as presenting a risk to human health and the environment. Alternative 1 will not mitigate risk. Alternative 2 will mitigate risk by directly controlling the exposure pathway to soil requiring remediation; however, impacted soil that exceeds MTCA Method A cleanup levels will be left in place. Alternatives 3 and 4 will provide the greatest level of risk mitigation because they will remove and contain soil requiring remediation in an engineered onsite repository (Alternative 3) or an offsite permitted landfill (Alternative 4).

The removal and offsite management of PCB contaminated soil in Alternatives 2, 3 and 4 will be protective of human health and the environment by mitigating the potential for direct exposure at the site. Repair of building encapsulation will also be protective by reducing the potential for direct exposure to contaminated building materials and additional contamination of soil from flaking and deteriorating paint.

# 6.7.2 Compliance with Applicable or Relevant and Appropriate Requirements

Alternative 1 will not comply with ARARs because it will not address impacted soil that exceeds MTCA Method A cleanup levels. Alternative 2 will be moderately protective, because it will control the exposure pathway for soil requiring remediation and will comply with ARARs when paired with administrative controls (i.e., land use restrictions). Alternatives 3 and 4 will be more protective than the other soil alternatives because they will remove and contain contaminated soil in an engineered onsite repository or an offsite permitted landfill. Both Alternatives 3 and 4 will comply with ARARs, although Alternative 3 will also require administrative and institutional controls (i.e., fencing) to protect the repository maintained onsite.

#### 6.7.3 Long-Term Effectiveness and Permanence

Alternatives 2 and 3 will be effective in the long term when paired with administrative controls. Compared to Alternative 1, both options will reduce the risks associated with direct exposure to soil and can be maintained to be effective over a long period of time with regular maintenance. Alternative 2 will provide a less robust solution and maintain contaminants in place over a larger area. The proposed cap areas are also located adjacent to buildings and pathways with higher potential public use and access. The cap installed in areas where roots and vegetation are present may be more susceptible to damage through time, lowering the overall permanence of the solution. Alternative 3 will consolidate material in a repository with a smaller footprint and more robust construction than the cap in Alternative 2, which will increase the long-term effectiveness and permanence of the solution compared to Alternative 2. The location of the cap would also be away from the primary areas where site visitors and the public would be accessing and could be further separated with a fence. Alternative 4 will be the most effective and permanent solution, because it removes all soil exceeding MTCA Method A cleanup levels from the site.

Excavation and offsite management of PCB contaminated soil will be an effective and permanent solution, and will be implemented under Alternatives 2, 3, and 4. Building encapsulation will also be effective, but may require periodic maintenance and upkeep to ensure the lead-based paint materials are contained.

# 6.7.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

None of the alternatives considered in this evaluation will provide for treatment of contaminants present at the site. Lead is not readily transformed and is not easily separated from soil. The primary mechanism for risk reduction in Alternatives 2, 3, and 4 will be elimination or mitigation of the direct contact pathway, which is the primary exposure route for surface soil at the site. PCBs can be treated in soil, but concentrations present are less than 50 mg/kg and may be handled and disposed of at an approved landfill facility pursuant to 40 CFR 761.61.

#### 6.7.5 Short-Term Effectiveness

Short-term impacts associated with construction will include limited and restricted access to the site, exposure to contaminated media transferred offsite for disposal, and risks to site workers. Alternatives 2, 3, and 4 can be implemented in similar timeframes and will likely be complete within weeks to months. Restricted public access will be similar during implementation of all three alternatives. The potential for exposure to contaminated media from the site will exist under all three options, although Alternative 4 includes removal and transfer of a larger quantity of contaminated soil and therefore carries the largest risk to the public. Potential exposure of site workers to contaminated media will be greatest for Alternatives 3 and 4, because soil will be removed and handled multiple times. Risks can be reduced with careful implementation of engineering and administrative controls, such as the use of enclosed and covered trucks or rail containers, stormwater best management practices, and monitoring.

# 6.7.6 Implementability

Alternatives 2, 3, and 4 can be readily implemented with available technology, skilled labor, and equipment. The technologies implemented as part of all three alternatives is reliable, although Alternatives 2 and 3 will require ongoing O&M and administrative controls. The effort for coordination and planning will be similar for all three alternatives.

## 6.7.7 Cost

Cost effectiveness is determined through an analysis of incremental costs, incremental risk reduction and other benefits of alternatives considered, taking into account the total anticipated short- and long-term costs of RA alternatives, including the total anticipated cost of O&M. An evaluation of capital and O&M costs was conducted for each alternative based on the conceptual remedial approach and the estimated cleanup timeframes. The cost estimate was prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000). Cost estimates for each alternative are provided in Appendix I and summarized below.

The 30-year present worth costs were estimated for all four remedial alternatives. Alternative 1 has no costs associated with it but provides no risk reduction. The total capital costs were lowest for Alternative 2 (\$875,000) and highest for Alternative 4 (\$1,300,000). Costs for O&M were lowest for Alternative 4 (none) and highest for Alternative 2 (\$556,000). The total net present value including 30 years of O&M costs and rounded to the next ten thousand dollars were \$1,440,000 for Alternative 2, \$1,470,000 for Alternative 3, and \$1,300,000 for Alternative 4.

# 6.7.8 State Acceptance

Copies of draft documents have been provided to Ecology for review. Ecology concurs with the USCG that Alternative 4 provides the highest level of protection for the community and stakeholders and agrees with the selection of Alternative 4.

# 6.7.9 Community Acceptance

A public meeting was held at the Anacortes Public Library on January 10, 2020 for interested community members and other stakeholders to comment and discuss the RI/FFS with the USCG. Two public advertisements for the meeting were placed in the Anacortes American and Skagit Valley Herald newspapers in the December 15 and 18, 2019 issues, respectively. Revisions based on the public comments have been incorporated into the RI/FFS. A transcript of the public meeting and a table summarizing public comments and responses are included in Appendix J.

# 7 REMEDY SELECTION

Based on the detailed evaluation outlined in Section 6 and consideration for threshold, primary balancing, and modifying criteria, Alternative 4 is the most suitable solution for managing and remediating contaminated soil present at the site. Considering future site use, Alternative 4 provides the most effective and permanent option for varying uses that benefit the public, meet USCG objectives for transferring the site to NWSS, and achieve the RAOs.

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# **TABLES**



Analyte	Sample Type	Analytical Method	Number of Samples <sup>1</sup>
Total Lead	ISM Composite <sup>2</sup>	USEPA Method 6010D	75
TCLP Lead	ISM Composite <sup>2</sup>	USEPA Method 1311/6010D	20
Total Lead	Discrete	USEPA Method 6010D	9
Polychlorinated Biphenyls	Discrete	USEPA Method 8082A	30
Gasoline Range Organics	Discrete	NWTPH-Gx	6
Diesel Range Organics	Discrete	NWTPH-Dx	103
Heavy Oil	Discrete	NWTPH-Dx	103
Mineral Oil	Discrete	NWTPH-Dx	30
Total Petroleum Hydrocarbons	Discrete	NWEPH	3
BTEX	Discrete	USEPA Method 8260C	2
cPAHs	Discrete	USEPA Method 8270D/SIM	3

BTEX = benzene, toluene, ethylbenzene, and xylenes cPAHs = carcinogenic polyaromatic hydrocarbons ISM = incremental sampling methodology

TCLP = toxicity characteristic leaching procedure

USEPA = United States Environmental Protection Agency

- 1. Sample count includes field duplicates.
- 2. ISM composite samples were prepared for analysis by air drying, soil disaggregation, sieveing particles greater than 2 millimeters, and subsampling using the Japanese slab-cake method.



DII		ISM In	crements Co	llected	
DU	0-0.5 feet	0.5-1.0 feet	1.0-1.5 feet	1.5-2.0 feet	2.0-2.5 feet
DU-01	30/30	29/30	24/30		
DU-02	90/90	30/30			
DU-03	30/30	30/30			
DU-04	30/30	30/30			
DU-05	30/30	30/30			
DU-06	90/90	21/30	13/30	6/30	2/30 <sup>1</sup>
DU-07	30/30	25/30			
DU-08	90/90	27/30	19/30		
DU-09	25/30	17/30			
DU-10	30/30	26/30			
DU-11	30/30	29/30			
DU-12	30/30	30/30			
DU-13	90/90	29/30			
DU-14	30/30	29/30			
DU-15	29/30	29/30	15/30		
DU-16	30/30	30/30			
DU-17	30/30	30/30			
DU-18	30/30	30/30			

# **Acronyms and Abbreviations:**

DU = decision unit

1. Increments from the 2.0-2.5 feet interval from DU-06 were collected and analyzed as discrete samples.

Table 3
Incremental Sampling Analytical Results
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington



Sample ID	Date	Decision Unit	Area	Depth (feet bgs)	Total Lead (mg/kg)	TCLP Lead (mg/L)
MTCA Method A S	oil Cleanup L	_evel <sup>1</sup> /Dange	erous Waste Characteristic <sup>2</sup>		250	5
ISM-01-A-0-0.5	3/25/2019	1	105 - Boathouse	0-0.5	190	
ISM-01-A-0.5-1.0	3/26/2019	1	105 - Boathouse	0.5-1	110	
ISM-01-A-1.0-1.5	3/27/2019	1	105 - Boathouse	1-1.5	43	
ISM-02-A-0-0.5	3/25/2019	2	105 - Boathouse	0-0.5	61	
ISM-02-A-0.5-1.0	3/26/2019	2	105 - Boathouse	0.5-1	35	
ISM-02-B-0-0.5	3/27/2019	2	105 - Boathouse	0-0.5	50	
ISM-02-C-0-0.5	3/27/2019	2	105 - Boathouse	0-0.5	85	
ISM-03-A-0-0.5	3/25/2019	3		0-0.5	68	
ISM-03-A-0.5-1.0	3/25/2019	3		0.5-1	30	
ISM-04-A-0-0.5	3/27/2019	4	104 - OIC Quarters	0-0.5	280	< 0.20
ISM-04-A-0.5-1.0	3/27/2019	4	104 - OIC Quarters	0.5-1	74	
ISM-05-A-0-0.5	3/28/2019	5	104 - OIC Quarters	0-0.5	64	
ISM-05-A-0.5-1.0	3/28/2019	5	104 - OIC Quarters	0.5-1	56	
ISM-06-A-0-0.5	3/25/2019	6	102 - Oil and Paint Storage Building	0-0.5	1,300	0.33
ISM-06-B-0-0.5	3/27/2019	6	102 - Oil and Paint Storage Building	0-0.5	2,000	0.97
ISM-06-C-0-0.5	3/27/2019	6	102 - Oil and Paint Storage Building	0-0.5	1,500	0.7
ISM-06-A-0.5-1.0	3/26/2019	6	102 - Oil and Paint Storage Building	0.5-1	630	0.26
SM-06-A-1.0-1.5	3/27/2019	6	102 - Oil and Paint Storage Building	1-1.5	390	0.21
SM-06-A-1.5-2.0	3/27/2019	6	102 - Oil and Paint Storage Building	1.5-2	400	0.34
SM-07-A-0-0.5	3/26/2019	7	102 - Oil and Paint Storage Building	0-0.5	470	< 0.20
SM-07-A-0.5-1.0	3/26/2019	7	102 - Oil and Paint Storage Building	0.5-1	62	
ISM-08-A-0-0.5	3/26/2019	8	101 - Light and Fog Signal Building	0-0.5	1,300	0.33
SM-08-B-0-0.5	3/27/2019	8	101 - Light and Fog Signal Building	0-0.5	1,100	< 0.20
SM-08-C-0-0.5	3/27/2019	8	101 - Light and Fog Signal Building	0-0.5	1,300	< 0.20
SM-08-A-0.5-1.0	3/26/2019	8	101 - Light and Fog Signal Building	0.5-1	160	
ISM-08-A-1.0-1.5	3/27/2019	8	101 - Light and Fog Signal Building	1-1.5	540	< 0.20
ISM-09-A-0-0.5	3/28/2019	9	101 - Light and Fog Signal Building	0-0.5	150	
ISM-09-A-0.5-1.0	3/28/2019	9	101 - Light and Fog Signal Building	0.5-1	75	
ISM-10-A-0-0.5	3/27/2019	10		0-0.5	57	
ISM-10-A-0.5-1.0	3/27/2019	10		0.5-1	19	
SM-11-A-0-0.5	3/27/2019	11	103 - Duplex	0-0.5	450	0.24
SM-11-A-0.5-1.0	3/26/2019	11	103 - Duplex	0.5-1	120	
ISM-12-A-0-0.5	3/28/2019	12	103 - Duplex	0-0.5	280	< 0.20
SM-12-A-0.5-1.0	3/28/2019	12	103 - Duplex	0.5-1	68	
ISM-13-A-0-0.5	3/28/2019	13	103 - Duplex	0-0.5	170	
SM-13-B-0-0.5	3/29/2019	13	103 - Duplex	0-0.5	130	
SM-13-C-0-0.5			103 - Duplex	0-0.5	200	
SM-13-A-0.5-1.0	3/29/2019	13	103 - Duplex	0.5-1.0	62	
ISM-14-A-0-0.5	3/29/2019	14	10,000-gallon AST	0-0.5	350	< 0.20
ISM-14-A-0.5-1.0	3/29/2019	14	10,000-gallon AST	0.5-1.0	130	
ISM-15-A-0-0.5	3/29/2019	15	107 - Firehouse Pump Building	0-0.5	160	
ISM-15-A-0.5-1.0	3/29/2019	15	107 - Firehouse Pump Building	0.5-1.0	260	< 0.20
ISM-15-A-1.0-1.5	3/30/2019	15	107 - Firehouse Pump Building	1.0-1.5	72	
ISM-16-A-0-0.5	3/30/2019	16	Water Tanks	0-0.5	18	



Sample ID	Date	Decision Unit	Area	Depth (feet bgs)	Total Lead (mg/kg)	TCLP Lead (mg/L)
MTCA Method A So	il Cleanup L	evel <sup>1</sup> /Dange	erous Waste Characteristic <sup>2</sup>		250	5
ISM-16-A-0.5-1.0	3/30/2019	16	Water Tanks	0.5-1.0	9	
ISM-17-A-0-0.5	3/30/2019	17	Water Tanks	0-0.5	91	
ISM-17-A-0.5-1.0	3/30/2019	17	Water Tanks	0.5-1.0	41	
ISM-18-A-0-0.5	3/30/2019	18	104 - OIC Quarters	0-0.5	220	
ISM-18-A-0.5-1.0	3/30/2019	18	104 - OIC Quarters	0.5-1.0	180	

- 1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.
- 2. Dangerous waste characteristic for lead is based on Toxicity Characteristic Leaching Procedure (TCLP) test by EPA Method 1311, as outlined in WAC 173-303-090.

Bold and highlighted values are greater than their respective MTCA Method A cleanup level

MTCA = Model Toxics Control Act

Lead by EPA Method 6020A

- -- = not analyzed
- < = analyte was not detected. The associated value is the analyte reporting limit.

DUP = Duplicate sample

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Table 4
Sampling Unit Analytical Results
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington



Sample ID	Date	Decision Unit	Area	Depth (feet bgs)	Total Lead (mg/kg)	TCLP Lead (mg/L)
MTCA Method A So	oil Cleanup L	_evel <sup>1</sup> /Dange	erous Waste Characteristic <sup>2</sup>		250	5
ISM-04-1-0-0.5	3/27/2019	4	104 - OIC Quarters	0 - 0.5	130	
ISM-04-2-0-0.5	3/27/2019	4	104 - OIC Quarters	0 - 0.5	160	
ISM-04-3-0-0.5	3/27/2019	4	104 - OIC Quarters	0 - 0.5	160	
ISM-04-4-0-0.5	3/27/2019	4	104 - OIC Quarters	0 - 0.5	280	
ISM-06-1-1.0-1.5	3/27/2019	6	102 - Oil and Paint Storage Building	1.0 - 1.5	150	
ISM-06-2-1.0-1.5	3/27/2019	6	102 - Oil and Paint Storage Building	1.0 - 1.5	100	
ISM-06-3-1.0-1.5	3/27/2019	6	102 - Oil and Paint Storage Building	1.0 - 1.5	690	
ISM-06-4-1.0-1.5	3/27/2019	6	102 - Oil and Paint Storage Building	1.0 - 1.5	1,000	0.71
ISM-06-1-1.5-2.0	3/27/2019	6	102 - Oil and Paint Storage Building	1.5 - 2.0	11	
ISM-06-2-1.5-2.0	3/27/2019	6	102 - Oil and Paint Storage Building	1.5 - 2.0	11	
ISM-06-3-1.5-2.0	3/27/2019	6	102 - Oil and Paint Storage Building	1.5 - 2.0	180	
ISM-06-4-1.5-2.0	3/27/2019	6	102 - Oil and Paint Storage Building	1.5 - 2.0	630	
ISM-12-1-0-0.5	3/28/2019	12	103 - Duplex	0 - 0.5	280	
ISM-12-2-0-0.5	3/28/2019	12	103 - Duplex	0 - 0.5	330	
ISM-12-3-0-0.5	3/28/2019	12	103 - Duplex	0 - 0.5	640	<0.20
ISM-12-4-0-0.5	3/28/2019	12	103 - Duplex	0 - 0.5	170	
ISM-14-1-0-0.5	3/29/2019	14	10,000-gallon AST	0 - 0.5	300	
ISM-14-2-0-0.5	3/29/2019	14	10,000-gallon AST	0 - 0.5	420	<0.20
ISM-15-1-0.5-1.0	3/29/2019	15	107 - Firehouse Pump Building	0.5 - 1.0	24	
ISM-15-2-0.5-1.0	3/29/2019	15	107 - Firehouse Pump Building	0.5 - 1.0	55	
ISM-15-3-0.5-1.0	3/29/2019	15	107 - Firehouse Pump Building	0.5 - 1.0	6,600	
ISM-15-4-0.5-1.0	3/29/2019	15	107 - Firehouse Pump Building	0.5 - 1.0	47	
ISM-18-1-0-0.5	3/30/2019	18	104 - OIC Quarters	0 - 0.5	460	<0.20
ISM-18-2-0-0.5	3/30/2019	18	104 - OIC Quarters	0 - 0.5	83	
ISM-18-3-0-0.5	3/30/2019	18	104 - OIC Quarters	0 - 0.5	34	
ISM-18-4-0-0.5	3/30/2019	18	104 - OIC Quarters	0 - 0.5	220	

- 1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.
- 2. Dangerous waste characteristic for lead is based on Toxicity Characteristic Leaching Procedure (TCLP) test by EPA Method 1311, as outlined in WAC 173-303-090.

Bold and highlighted values are greater than their respective MTCA Method A cleanup level

MTCA = Model Toxics Control Act

Lead by EPA Method 6020A

- -- = not analyzed
- < = analyte was not detected. The associated value is the analyte reporting limit.

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Table 5a
Discrete Sampling Analytical Results - Total Lead and TPH
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington



Location	Depth (feet bgs)	Sample ID	Date	Area	Total Lead	GRO	DRO	но	Mineral Oils
MTCA Meth	nod A Soil Cle	eanup Level <sup>1</sup>			250	30/100 <sup>2</sup>	2,000	2,000	
SB-112-1	0-0.5	SB-112-1-0-0.5	3/31/2019	112 (10,000-Gal AST)			100 J	910	
SB-112-1	0.5-0.7	SB-112-1-0.5-0.7	3/31/2019	112 (10,000-Gal AST)			150	1,000	
SB-112-2	0-0.5	SB-112-2-0-0.5	3/31/2019	112 (10,000-Gal AST)			36	280	
SB-112-2	1.0-1.5	SB-112-2-1-1.5	3/31/2019	112 (10,000-Gal AST)			230	150	
SB-112-3	0-0.5	SB-112-3-0-0.5	3/31/2019	112 (10,000-Gal AST)			40	340	
SB-112-3-1	1.0-1.3	SB-112-3-1-1.3	3/31/2019	112 (10,000-Gal AST)			<30	79	
SB-112-4	0-0.5	SB-112-4-0-0.5	3/31/2019	112 (10,000-Gal AST)			110	340	
SB-112-4	0.5-1.0	SB-DUP-2	3/31/2019	112 (10,000-Gal AST)			<30	<60	
SB-112-4	0.5-1.0	SB-112-4-0.5-1	3/31/2019	112 (10,000-Gal AST)			<31	67	
SB-112-5	0-0.5	SB-112-5-0-0.5	3/31/2019	112 (10,000-Gal AST)			350	850	
SB-112-5	0.5-0.9	SB-112-5-0.5-0.9	3/31/2019	112 (10,000-Gal AST)			270	260	
SB-112-6	0-0.5	SB-112-6-0-0.5	3/31/2019	112 (10,000-Gal AST)			2,000	2,700	
SB-112-6	1.0-1.5	SB-112-6-1-1.5	3/31/2019	112 (10,000-Gal AST)			240	150	
SB-112-7	0-0.5	SB-112-7-0-0.5	3/31/2019	112 (10,000-Gal AST)			120	520	
SB-112-7	0.5-0.8	Sb-112-7-0.5-0.8	3/31/2019	112 (10,000-Gal AST)			130	130	
SB-112-8	0-0.5	SB-112-8-0-0.5	3/31/2019	112 (10,000-Gal AST)			280	380	
SB-112-8	0-0.5	SB-DUP-3	3/31/2019	112 (10,000-Gal AST)			310	460	
SB-112-8	1.0-1.5	SB-112-8-1-1.5	3/31/2019	112 (10,000-Gal AST)			64	<61	
SB-112-9	0-0.5	SB-112-9-0-0.5	3/31/2019	112 (10,000-Gal AST)			52	340	
SB-112-9	0.5-1.0	SB-112-9-0.5-1	3/31/2019	112 (10,000-Gal AST)			89	190	
SB-112-10	0-0.5	SB-112-10-0-0.5	3/31/2019	112 (10,000-Gal AST)			81	120	
SB-112-10	0.5-1.0	SB-112-10-0.5-1	3/31/2019	112 (10,000-Gal AST)			93	390	
SB-112-11	0-0.5	SB-112-11-0-0.5	3/31/2019	112 (10,000-Gal AST)			390	240	
SB-112-11	1.5-2.0	SB-112-11-1.5-2	3/31/2019	112 (10,000-Gal AST)			100	180	
SB-112-12	0-0.5	SB-112-12-0-0.5	3/31/2019	112 (10,000-Gal AST)			170	520	
SB-112-12	1.0-1.5	SB-112-12-1-1.5	3/31/2019	112 (10,000-Gal AST)			48	83	
SB-PL-1	0-0.5	SB-PL-1-0-0.5	3/31/2019	Pipeline			38	87	
SB-PL-2	1.0-1.5	SB-PL-2-1-1.5	3/31/2019	Pipeline			46	120	





Location	Depth (feet bgs)	Sample ID	Date	Area	Total Lead	GRO	DRO	НО	Mineral Oils
MTCA Meti	hod A Soil Cle	eanup Level <sup>1</sup>			250	30/100 <sup>2</sup>	2,000	2,000	
SB-PL-3	0-0.5	SB-PL-3-0-0.5	3/31/2019	Pipeline			32	170	
SB-PL-4	1.0-1.5	SB-PL-4-1-1.5	3/31/2019	Pipeline			<32	210	
SB-PL-5	0-0.5	SB-PL-5-0-0.5	3/31/2019	Pipeline			56	210	
SB-PL-6	1.0-1.5	SB-PL-6-1-1.5	3/31/2019	Pipeline			33	120	
SB-PL-6	1.0-1.5	SB-DUP-4	3/31/2019	Pipeline			<33	120	
SB-PL-7	0-0.5	SB-PL-7-0-0.5	3/31/2019	Pipeline			71	360	
SB-PL-8	1.0-1.5	SB-PL-8-1-1.5	3/31/2019	Pipeline			30	<57	
SB-PL-9	0-0.5	SB-PL-9-0-0.5	3/31/2019	Pipeline			<34	290	
SB-PL-10	2.0-2.5	SB-PL-10-2-2.5	3/31/2019	Pipeline			<28	70	
SB-PL-11	0.5-1.0	SB-PL-11-0.5-1	3/31/2019	Pipeline			<30	<60	
SB-PL-12	1.0-1.5	SB-PL-12-1-1.5	3/31/2019	Pipeline			<30	<59	
SB-PL-13	1.0-1.5	SB-PL-13-1-1.5	3/31/2019	Pipeline			<29	<58	
SB-PL-14	1.0-1.5	SB-PL-14-1-1.5	3/31/2019	Pipeline			46	<55	
SB-101-1	0-0.5	SB-101-1-0-0.5	3/31/2019	101 (Lighthouse)			160	620	
SB-101-1	2.0-2.5	SB-101-1-2-2.5	3/31/2019	101 (Lighthouse)			650	220	
SB-101-2	0-0.5	SB-101-2-0-0.5	3/31/2019	101 (Lighthouse)			79	220	
SB-101-2	0-0.5	SB-DUP-5	3/31/2019	101 (Lighthouse)			87	210	
SB-101-2	2.0-2.5	SB-101-2-2-2.5	3/31/2019	101 (Lighthouse)			260	110	
SB-101-3	0-0.5	SB-101-3-0-0.5	3/31/2019	101 (Lighthouse)			57	360	
SB-101-3	2.0-2.5	SB-101-3-2-2.5	3/31/2019	101 (Lighthouse)			73	91	
SB-101-4	0-0.5	SB-101-4-0-0.5	4/1/2019	101 (Lighthouse)			<100	330	110
SB-101-4	2.0-2.5	SB-101-4-2.0-2.5	4/1/2019	101 (Lighthouse)			<440	270	460
SB-101-4	2.0-2.5	SB-DUP-8	4/1/2019	101 (Lighthouse)			<370	240	380
SB-101-5	0-0.5	SB-101-5-0-0.5	4/1/2019	101 (Lighthouse)			<94	360	110
SB-101-5	0.5-1.0	SB-101-5-0.5-1.0	4/1/2019	101 (Lighthouse)			<68	140	77
SB-101-6	0-0.5	SB-101-6-0-0.5	4/1/2019	101 (Lighthouse)			<32	190	<32
SB-101-6	0.5-1.0	SB-101-6-0.5-1.0	4/1/2019	101 (Lighthouse)			<83	<60	78
SB-101-7	0.5-1.0	SB-101-7-0.5-1.0	4/1/2019	101 (Lighthouse)			48	290	<47

Table 5a
Discrete Sampling Analytical Results - Total Lead and TPH
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington



Location	Depth (feet bgs)	Sample ID	Date	Area	Total Lead	GRO	DRO	НО	Mineral Oils
MTCA Meth	nod A Soil Cle	eanup Level <sup>1</sup>			250	30/100 <sup>2</sup>	2,000	2,000	
SB-101-7	1.5-2.0	SB-101-7-1.5-2.0	4/1/2019	101 (Lighthouse)			<34	<65	44
SB-101-8	0-0.5	SB-101-8-0-0.5	4/1/2019	101 (Lighthouse)			<860	900	930
SB-101-8	1.0-1.5	SB-101-8-1.0-1.5	4/1/2019	101 (Lighthouse)			<140	150	140
SB-101-9	0-0.5	SB-101-9-0-0.5	4/1/2019	101 (Lighthouse)			<200	180	190 J
SB-101-9	0-0.5	SB-DUP-9	4/1/2019	101 (Lighthouse)			<62	240	65 J
SB-101-9	1.5-2.0	SB-101-9-1.5-2.0	4/1/2019	101 (Lighthouse)			<160	66	170
SB-101-10	0-0.5	SB-101-10-0-0.5	4/1/2019	101 (Lighthouse)			<88	240	94
SB-101-10	0.5-1.0	SB-101-10-0.5-1.0	4/1/2019	101 (Lighthouse)			<48	<57	56
SB-101-11	0-0.5	SB-101-11-0-0.5	4/1/2019	101 (Lighthouse)			<35	210	<35
SB-101-11	0.5-1.0	SB-101-11-0.5-1.0	4/1/2019	101 (Lighthouse)			<31	150	<31
SB-101-12	0-0.5	SB-101-12-0-0.5	4/1/2019	101 (Lighthouse)			<39	220	47
SB-101-12	1.0-1.5	SB-101-12-1.0-1.5	4/1/2019	101 (Lighthouse)			<29	120	<29
SB-101-13	0-0.5	SB-101-13-0-0.5	4/1/2019	101 (Lighthouse)			37	290	<39
SB-101-13	1.0-1.5	SB-101-13-1.0-1.5	4/1/2019	101 (Lighthouse)			<30	160	<30
SB-DUP-10		SB-DUP-10	4/1/2019	101 (Lighthouse)			37	120	<33
SB-101-14	0-0.5	SB-101-14-0-0.5	4/1/2019	101 (Lighthouse)			<35	130	<35
SB-101-14	1.0-1.5	SB-101-14-1.0-1.5	4/1/2019	101 (Lighthouse)			<31	<61	<31
SB-101-15	0-0.5	SB-101-15-0-0.5	4/1/2019	101 (Lighthouse)			<36	140	<36
SB-101-15	0.5-1.0	SB-101-15-0.5-1.0	4/1/2019	101 (Lighthouse)			<35	140	<35
SB-101-16	0-0.5	SB-101-16-0-0.5	4/1/2019	101 (Lighthouse)			<34	87	<34
SB-101-16	0-0.5	SB-DUP-11	4/1/2019	101 (Lighthouse)			<33	73	<33
SB-101-16	2.0-2.5	SB-101-16-2.0-2.5	4/1/2019	101 (Lighthouse)			<28	<56	<28
SB-107-1	0-0.5	SB-107-1-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)			530	760	
SB-107-1	1.0-1.5	SB-107-1-1-1.5	3/31/2019	107 (Firehouse Pump Bldg.)			710	720	
SB-107-2	0-0.5	SB-107-2-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)			420	890	
SB-107-2	0.5-1.0	SB-107-2-0.5-1	3/31/2019	107 (Firehouse Pump Bldg.)			270	500	
SB-107-3	0-0.5	SB-107-3-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)			2,700	2,900	
SB-107-3	0.5-1.0	SB-107-3-0.5-1	3/31/2019	107 (Firehouse Pump Bldg.)			1,600	2,300	





Location	Depth (feet bgs)	Sample ID	Date	Area	Total Lead	GRO	DRO	но	Mineral Oils
MTCA Meti	hod A Soil Cle	eanup Level <sup>1</sup>			250	30/100 <sup>2</sup>	2,000	2,000	
SB-107-4	0-0.5	SB-107-4-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)			1,300	1,300	
SB-107-4	0-0.5	SB-DUP-6	3/31/2019	107 (Firehouse Pump Bldg.)			1,000	1,100	
SB-107-4	0.5-1.0	SB-107-4-0.5-1	3/31/2019	107 (Firehouse Pump Bldg.)			370	350	
SB-107-5	0-0.5	SB-107-5-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)			140	400	
SB-107-5	0.5-1.0	SB-107-5-0.5-1	3/31/2019	107 (Firehouse Pump Bldg.)			130	300	
SB-107-6	0-0.5	SB-107-6-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)			920	1,200	
SB-107-6	0.5-1.0	SB-107-6-0.5-1	3/31/2019	107 (Firehouse Pump Bldg.)			580	810	
SB-104-1	0-0.5	SB-104-1-0-0.5	3/31/2019	104 (OIC Quarters)			56	400	
SB-104-1	2.5-3.0	SB-104-1-2.5-3	3/31/2019	104 (OIC Quarters)			<30	100	
SB-104-2	0-0.5	SB-104-2-0-0.5	3/31/2019	104 (OIC Quarters)			120	290	
SB-104-2	4.0-4.5	SB-104-2-4-4.5	3/31/2019	104 (OIC Quarters)			74	96	
SB-104-3	0-0.5	SB-104-3-0-0.5	3/31/2019	104 (OIC Quarters)			36	190	
SB-104-3	2.5-3.0	SB-104-3-2.5-3	3/31/2019	104 (OIC Quarters)			<29	69	
SB-102-1	0-0.5	SB-102-1-0-0.5	4/1/2019	102 (Oil and Paint Storage Bldg.)		<11	36	330	
SB-102-1	0-0.5	SB-DUP-7	4/1/2019	102 (Oil and Paint Storage Bldg.)		<10	88	440	
SB-102-1	1.5-2.0	SB-102-1-1.5-2.0	4/1/2019	102 (Oil and Paint Storage Bldg.)		10	<35	100	
SB-102-2	0-0.5	SB-102-2-0-0.5	4/1/2019	102 (Oil and Paint Storage Bldg.)		18	140	690	
SB-102-3	0-0.5	SB-102-3-0-0.5	4/1/2019	102 (Oil and Paint Storage Bldg.)		<14	150	860	
SB-102-3	0.5-1.0	SB-102-3-0.5-1.0	4/1/2019	102 (Oil and Paint Storage Bldg.)		<13	<35	220	
SB-06-10	2.0-2.5	SB-06-10-2.0-2.5	3/27/2019	DU 6 (Oil and Paint Storage Bldg.)	1,800				
SB-06-22	3.0-3.5	SB-06-22-3.0-3.5	3/27/2019	DU 6 (Oil and Paint Storage Bldg.)	10				
SB-106-1	0-0.5	SB-106-1-0-0.5	3/31/2019	106 (Pumphouse and spring cistern)	44				
SB-106-1	2.0-2.3	SB-106-1-2-2.3	3/31/2019	106 (Pumphouse and spring cistern)	<6.2				
SB-106-2	0-0.5	SB-106-2-0-0.5	3/31/2019	106 (Pumphouse and spring cistern)	110				
SB-106-2	2.0-2.5	SB-106-2-2.0-2.5	3/31/2019	106 (Pumphouse and spring cistern)	13				
SB-106-2	2.0-2.5	SB-DUP-1	3/31/2019	106 (Pumphouse and spring cistern)	9				
SB-106-3	0-0.5	SB-106-3-0-0.5	3/31/2019	106 (Pumphouse and spring cistern)	7				
SB-106-3	2.0-2.5	SB-106-3-2-2.5	3/31/2019	106 (Pumphouse and spring cistern)	<6.0				

# **Discrete Sampling Analytical Results - Total Lead and TPH United States Coast Guard**

Burrows Island Light Station Anacortes, Washington



Location	Depth (feet bgs)	Sample ID	Date	Area	Total Lead	GRO	DRO	НО	Mineral Oils
<b>MTCA Meth</b>	250	30/100 <sup>2</sup>	2,000	2,000					
SED-1 <sup>3</sup>	0-0.5	<5.3							
SED-2 <sup>3</sup>	0-0.5	SED-2	4/1/2019	Shoreline	<5.9				

#### Notes:

- 1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.
- 2. Screening level for GRO is 100 mg/kg if benzene is not detected and 30 mg/kg if it is present.
- 3. Samples SED-1 and SED-2 were collected from exposed sand in intertidal area to the northeast of the Boathouse.

Bold and highlighted values are greater than their respective MTCA Method A cleanup level

bgs = below ground surface

DRO = Total petroleum hydrocarbons, diesel range organics by NWTPH-Dx Method

DUP = Duplicate sample

GRO = Total petroleum hydrocarbons, gasoline range organics by NWTPH-Gx Method

HO = Total petroleum hydrocarbons, heavy oil range by NWTPH-Dx Method

Lead by EPA Method 6020A

Mineral Oil by NWTPH-Dx Method

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilogram

- J = The compound was positively identified; however, the associated numerical value is an established concentration only.
- < = analyte was not detected. The associated value is the analyte reporting limit.
- -- = not analyzed

**Anacortes, Washington** 



Location		SB-112-6	SB-107-3	SB-107-3
Depth (feet bgs)	MTCA Method A	0-0.5	0-0.5	0.5-1.0
Sample ID	Soil Cleanup	SB-112-6-0-0.5	SB-107-3-0-0.5	SB-107-3-0.5-1
Date	Level <sup>1</sup>	3/31/2019	3/31/2019	3/31/2019
Area		112 (10,000-Gal AST)	107 (Firehouse Pump Bldg.)	107 (Firehouse Pump Bldg.)
C8-C10 Aliphatic		<5.0	280	51
C10-C12 Aliphatic		<5.0	8.0	6.6
C12-C16 Aliphatic		14	89	100
C16-C21 Aliphatic		190	740	500
C21-C34 Aliphatic		79	310	200
C8-C10 Aromatic		<5.0	33	6.1
C10-C12 Aromatic		<5.0	9.2	<5.0
C12-C16 Aromatic		<5.0	<5.0	<5.0
C16-C21 Aromatic		20	93	52
C21-C34 Aromatic		20	93	59
Benzene	0.03	<0.0018 UJ	<0.0015 UJ	
Toluene	7	<0.0091 UJ	<0.0074 UJ	
Ethylbenzene	6	<0.0018 UJ	<0.0015 UJ	
Total Xylenes	9	<0.0054 UJ	<0.0045 UJ	
Benzo(a)anthracene		<0.014	<0.0089	<0.0087
Chrysene		<0.023	<0.012	<0.0087
Benzo(b)fluoranthene		<0.011	<0.0089	<0.0087
enzo(j,k)fluoranthene		<0.011	<0.0089	<0.0087
enzo(a)pyrene 0.1		<0.011	<0.0089	<0.0087
deno(1,2,3-cd)pyrene		<0.011	<0.0089	<0.0087
Dibenz(a,h)anthracene		<0.011	<0.0089	<0.0087

#### Notes:

1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.

**Bold** and highlighted values are greater than their respective MTCA Method A cleanup level

bgs = below ground surface

DUP = Duplicate sample

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilogram

UJ = The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

- < = analyte was not detected. The associated value is the analyte reporting limit.
- -- = not analyzed



1/1

Location	Depth (feet bgs)	Sample ID	Date	Area	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs <sup>2</sup>
MTCA Metho	d A Soil Clean	up Level <sup>1</sup>										1
SB-101-4	0-0.5	SB-101-4-0-0.5	4/1/2019	101 (Lighthouse)	<0.61 UJ	2.9 J	2.9					
SB-101-4	2.0-2.5	SB-101-4-2.0-2.5	4/1/2019	101 (Lighthouse)	<0.063	<0.063	<0.063	<0.063	<0.063	<0.063	0.37	0.37
SB-101-4	2.0-2.5	SB-DUP-8	4/1/2019	101 (Lighthouse)	<0.063	<0.063	<0.063	<0.063	<0.063	<0.063	0.52	0.52
SB-101-5	0-0.5	SB-101-5-0-0.5	4/1/2019	101 (Lighthouse)	<6.4 UJ	45 J	45					
SB-101-5	0.5-1.0	SB-101-5-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.059	<0.059	<0.059	<0.059	<0.059	<0.059	0.95	0.95
SB-101-6	0-0.5	SB-101-6-0-0.5	4/1/2019	101 (Lighthouse)	<0.065	<0.065	<0.065	<0.065	<0.065	<0.065	0.58	0.58
SB-101-6	0.5-1.0	SB-101-6-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
SB-101-7	0-0.5	SB-101-7-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	1.2	1.2
SB-101-7	1.5-2.0	SB-101-7-1.5-2.0	4/1/2019	101 (Lighthouse)	<0.065	<0.065	<0.065	<0.065	<0.065	<0.065	0.11	0.11
SB-101-8	0-0.5	SB-101-8-0-0.5	4/1/2019	101 (Lighthouse)	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	0.28	0.28
SB-101-8	1.0-1.5	SB-101-8-1.0-1.5	4/1/2019	101 (Lighthouse)	<0.063	<0.063	<0.063	<0.063	< 0.063	<0.063	0.26	0.26
SB-101-9	0-0.5	SB-101-9-0-0.5	4/1/2019	101 (Lighthouse)	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.64 J	0.64
SB-101-9	0-0.5	SB-DUP-9	4/1/2019	101 (Lighthouse)	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	1.3 J	1.3
SB-101-9	1.5-2.0	SB-101-9-1.5-2.0	4/1/2019	101 (Lighthouse)	<0.059	<0.059	<0.059	<0.059	<0.059	<0.059	<0.059	<0.059
SB-101-10	0-0.5	SB-101-10-0-0.5	4/1/2019	101 (Lighthouse)	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	1.4	1.4
SB-101-10	0.5-1.0	SB-101-10-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.057	<0.057	<0.057	<0.057	<0.057	<0.057	0.32	0.32
SB-101-11	0-0.5	SB-101-11-0-0.5	4/1/2019	101 (Lighthouse)	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.68	0.68
SB-101-11	0.5-1.0	SB-101-11-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.063	<0.063	<0.063	<0.063	< 0.063	< 0.063	0.28	0.28
SB-101-12	0-0.5	SB-101-12-0-0.5	4/1/2019	101 (Lighthouse)	<1.2 UJ	4.3 J	4.3					
SB-101-12	1.0-1.5	SB-101-12-1.0-1.5	4/1/2019	101 (Lighthouse)	<0.057	<0.057	<0.057	<0.057	<0.057	<0.057	1.2	1.2
SB-101-13	0-0.5	SB-101-13-0-0.5	4/1/2019	101 (Lighthouse)	<1.3 UJ	6.4 J	6.4					
SB-101-13	1.0-1.5	SB-101-13-1.0-1.5	4/1/2019	101 (Lighthouse)	<1.2 UJ	4.9 J	4.9					
SB-101-14	0-0.5	SB-DUP-10	4/1/2019	101 (Lighthouse)	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	1.2	1.2
SB-101-14	0-0.5	SB-101-14-0-0.5	4/1/2019	101 (Lighthouse)	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	1.7	1.7
SB-101-14	1.0-1.5	SB-101-14-1.0-1.5	4/1/2019	101 (Lighthouse)	<0.061	<0.061	<0.061	<0.061	<0.061	<0.061	1.2	1.2
SB-101-15	0-0.5	SB-101-15-0-0.5	4/1/2019	101 (Lighthouse)	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	0.32	0.32
SB-101-15	0.5-1.0	SB-101-15-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.28	0.28
SB-101-16	0-0.5	SB-101-16-0-0.5	4/1/2019	101 (Lighthouse)	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	0.40	0.40
SB-101-16	0-0.5	SB-DUP-11	4/1/2019	101 (Lighthouse)	<0.067	<0.067	<0.067	<0.067	<0.067	<0.067	0.51	0.51
SB-101-16	2.0-2.5	SB-101-16-2.0-2.5	4/1/2019	101 (Lighthouse)	<1.1 UJ	3.8 J	3.8					

#### Notes

1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.

2. Total PCBs are the sum of detected concentrations of Arochlor constituents. Where no concentrations were detected for any individual Arochlor compounds, the Total PCB concentration is assumed to be non-detect at the reporting limit. **Bold** and highlighted values are greater than their respective MTCA Method A cleanup level

bgs = below ground surface

DUP = Duplicate sample

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilogram

PCB = Polychlorinated biphenyls

J = The compound was positively identified; however, the associated numerical value is an established concentration only.

UJ = The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

-- = Not analyzed

< = analyte was not detected. The associated value is the analyte reporting limit.





Sample ID	Date	Decision Unit	Area	Depth (feet bgs)	Total Lead (mg/kg)	Mean	SD	CV	Student's t 95% UCL	
MTCA Method A Soil Cleanup Level				250						
ISM-02-A-0.5-1.0	3/26/2019	2	105 - Boathouse	0.5-1	35					
ISM-02-B-0-0.5	3/27/2019	2	105 - Boathouse	0-0.5	50	57	26	0.45		
ISM-02-C-0-0.5	3/27/2019	2	105 - Boathouse	0-0.5	85					
ISM-06-A-0-0.5	3/25/2019	6	102 - Oil and Paint Storage Building	0-0.5	1,300					
ISM-06-B-0-0.5	3/27/2019	6	102 - Oil and Paint Storage Building	0-0.5	2,000	1,600	361	0.23		
ISM-06-C-0-0.5	3/27/2019	6	102 - Oil and Paint Storage Building	0-0.5	1,500					
ISM-08-A-0-0.5	3/26/2019	8	101 - Light and Fog Signal Building	0-0.5	1,300					
ISM-08-B-0-0.5	3/27/2019	8	101 - Light and Fog Signal Building	0-0.5	1,100	1,233	115	0.094	1,428	
ISM-08-C-0-0.5	3/27/2019	8	101 - Light and Fog Signal Building	0-0.5	1,300					
ISM-13-A-0-0.5	3/28/2019	13	103 - Duplex	0-0.5	170					
ISM-13-B-0-0.5	3/29/2019	13	103 - Duplex	0-0.5	130	167	35	0.21	226	
ISM-13-C-0-0.5	3/29/2019	13	103 - Duplex	0-0.5	200					

- 1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.
- 2. Student's t test was used to calculate UCLs in accordance with ITRC Technical and Regulatory Guidance, Incremental Sampling Methodology, February 2012.

**Bold** and highlighted values are greater than their respective MTCA Method A cleanup level

bgs = below ground surface

CV = coefficient of variance

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilogram

SD = standard deviation

UCL = upper confidence limit



Remedial Area	Estimated Removal Depth (feet bgs)	Contaminants above MTCA Method A CULs	DU Surface Area (SF)	Estimated Removal Volume (CY)	
Α	0.5	Lead	2,070	38	
В	1.5	Lead	1,100	61	
С	2	Lead	650	48	
D	3	Lead	600	67	
Е	1	Lead	3,690	137	
F	0.5	Lead	1,210	22	
G	0.5	Lead	790	15	
Н	0.5	Lead	8,290	154	
1	2	Lead, GRO, HO	4,400	326	
J	2	Lead, PCB	1,910	141	
K	3	Lead, PCB	2,460	273	
L	1	Lead	680	25	
M	0.5	Lead, HO	1,150	21	
N	0.5	Lead	90	2	
0	0.5	Lead	400	7	
Р	0.5	Lead	320	6	
Total			29,810	1,350	

CULs = cleanup levels

CY = cubic yard

bgs = below ground surface

GRO = gasoline range organics

HO = heavy oil

MTCA = Model Toxics Control Act

PCBs = polychlorinated biphenyl

SF = square feet





Remedial Technology	Effectiveness in Achieving RAOs	Effectiveness in Treating Source	Implementability	ity Preliminary Costs <sup>1</sup>		Retained for Detailed Analysis	
No Action	No	No	High	\$	-	Yes	
Paint Encapsulation	No	Yes	High	\$	16,000	No	
Capping	No	No	Medium	\$	880,000	No	
Capping + Paint Encapsulation	No	Yes	Medium	\$	890,000	No	
Capping + Paint Encapsulation + PCB Area Excavation (offsite disposal)	Yes	Yes	Medium	\$	1,300,000	Yes	
Excavation (onsite encapsulation)	No	No	Medium	\$	1,060,000	No	
Excavation (onsite encapsulation) + Paint Encapsulation + PCB Area Excavation (offsite disposal)	Yes	Yes	Medium	\$	1,300,000	Yes	
Excavation (offsite disposal) + Paint Encapsulation	Yes	Yes	Medium	\$	1,080,000	Yes	
In-situ Chemical Stabilization	No	No	Medium	\$	360,000	No	
In-situ Chemical Stabilization + Paint Encapsulation + PCB Area Excavation (offsite disposal)	No	Yes	Medium	\$	610,000	No	

RAOs = remedial action objectives

1. Estimated costs include present value of 30 years of operations and maintenace (for capping and onsite encapsulation). Contingencies are not included.





Alternative	Description	Unit	Quantity	
	Cap Area	SF	26,000	
Alternative 2 - Capping	Soil Excavation and Disposal	CY	410	
	Area Requiring Institutional Controls <sup>1</sup>	SF	26,000	
	Soil Excavation	CY	1,350	
	Onsite Encapsulation	CY	940	
Alternative 3 - Excavation and Onsite Encapsulation	Offsite Disposal	CY	410	
	Imported Backfill <sup>2</sup>	CY	510	
	Area Requiring Institutional Controls <sup>1</sup>	SF	11,000	
	Soil Excavation	CY	1,350	
Alternative 4 - Excavation and Offsite Disposal	Offsite Disposal	CY	1,350	
	Imported Backfill <sup>2</sup>	CY	510	

- 1. Institutional controls would be implemented in areas where contaminated soil is designed to remain in place onsite and may include restrictions on future development, fencing, or other barriers and demarcation.
- 2. Imported backfill is assumed for areas with removal greater than 1.0 feet bgs. Areas would be backfilled to 1.0 feet bgs and the remaining surface would be graded or backfilled using borrowed material from the site.

CY = cubic yard

SF = square feet

# Table 10 Detailed Evaluation of Remedial Alternatives United States Coast Guard Burrows Island Light Station Anacortes, Washington



Alternative	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-term Effectiveness and Permanence	Reductions in Toxicity, Mobility, and Volume Through Treatment	Short-term Effectiveness	Implementability	Estimated Cost <sup>1</sup>	State Acceptance of Remedy	Community Acceptance of Remedy
Alternative 1 - No Action	Low - no change to current conditions.	Not compliant. Uncontrolled risks would remain in place.	Not effective.	No treatment included in alternative.	Potential exposure of to site visitors to uncontrolled contaminated materials.	Readily implemented.	\$0	Low - not acceptable to Ecology	Low - no change would not allow transfer of property and not allow increased public access.
Alternative 2 - Capping <sup>2</sup>	Moderate - cap would mitigate direct contact pathway, but not reduce the size or area of contaimination. Direct contact for organisms in the soil still possible.	Complies with ARARs, but requires institutional controls and ongoing monitoring to comply with MTCA.	Effective when paired with institutional controls and monitoring.	No treatment included in alternative.	Potential exposure to site workers during implementation and to site visitors.	Readily implemented using available commercial products, equipment, and skilled labor. May substantially change grading and potentially be incompatible with maintenance of hisotorical structures.	1	Low - Ecology preference for alternative that would eliminate risk and not maintain contaminants at the site.	Low - continued restrictions of site based on impacts remaining
Alternative 3 - Excavation and Onsite Encapsulation <sup>2</sup>	High - direct contact pathway would be mitigated by consolidating materials in engineered repostitory.	Complies with ARARs, but requires institutional controls and ongoing monitoring to comply with MTCA.	Effective when paired with institutional controls and monitoring. More robust than Alternative 2.	No treatment included in alternative.	Potential exposure to site workers during implementation and to site visitors.	Readily implemented using available commercial products, equipment, and skilled labor. May substantially change site use and characteristics in the vicinity of hisotrical structures (i.e. fencing around repository).		Low - Ecology preference for alternative that would eliminate risk and not maintain contaminants at the site.	Low - continued restrictions of site based on impacts remaining
Alternative 4 - Excavation and Offsite Disposal <sup>2</sup>	High - direct contact pathway would be mitigated by offsite removal of materials.	Complies with ARARs and meets the definition of a permenent solution under MTCA.	Effective and permanent solution.	No treatment included in alternative.	Potential exposure to site workers during implementation and to the public during transportation of materials to disposal facility.	Readily implemented using available commercial products, equipment, and skilled labor.	\$1,300,000	High - Ecology stated preference for Alternative 4 as protective of the communicty and stakeholders.	High - allows for transfer of property with no remaining restrictions and highest level of access. Stated preference of multiple stakeholder groups based on public comments.
Alternative 2/3/4 - PCB Soil Removal and Offsite Disposal	High - direct contact pathway would be mitigated by offsite removal of materials.	Complies with ARARs and meets the definition of a permenent solution under MTCA.	Effective and permanent solution.	None required, but may be implemented based on the requirements of disposal facility.	Potential exposure to site workers during implementation and to the public during transportation of materials to disposal facility.	Readily implemented using available commercial products, equipment, and skilled labor.	Costs included in Alternatives 2, 3 and 4.	High - Ecology stated preference for Alternative 4 as protective of the communicty and stakeholders.	High - allows for transfer of property with no remaining restrictions and highest level of access. Stated preference of multiple stakeholder groups based on public comments.
Alternative 2/3/4 - Building Encapsulation Repair and Removal of Asbestos Roofing Materials	High - direct contact pathway would be mititgated for exposure to building materials and reduction in risk of recontamination of soil from source material.	Complies with ARARs and may require intermittent maintenance.	Effective at mitigating direct contact and controlling source material.	Reduced mobility of source material due to encapsulation of paint and removal of roofing materials.	Potential exposure to site workers during implementation and to site visitors.	Readily implemented using available commercial products, equipment, and skilled labor.	Costs included in Alternatives 2, 3 and 4.	High - Ecology stated preference for Alternative 4 as protective of the communicty and stakeholders.	High - allows for transfer of property with no remaining restrictions and highest level of access. Stated preference of multiple stakeholder groups based on public comments.

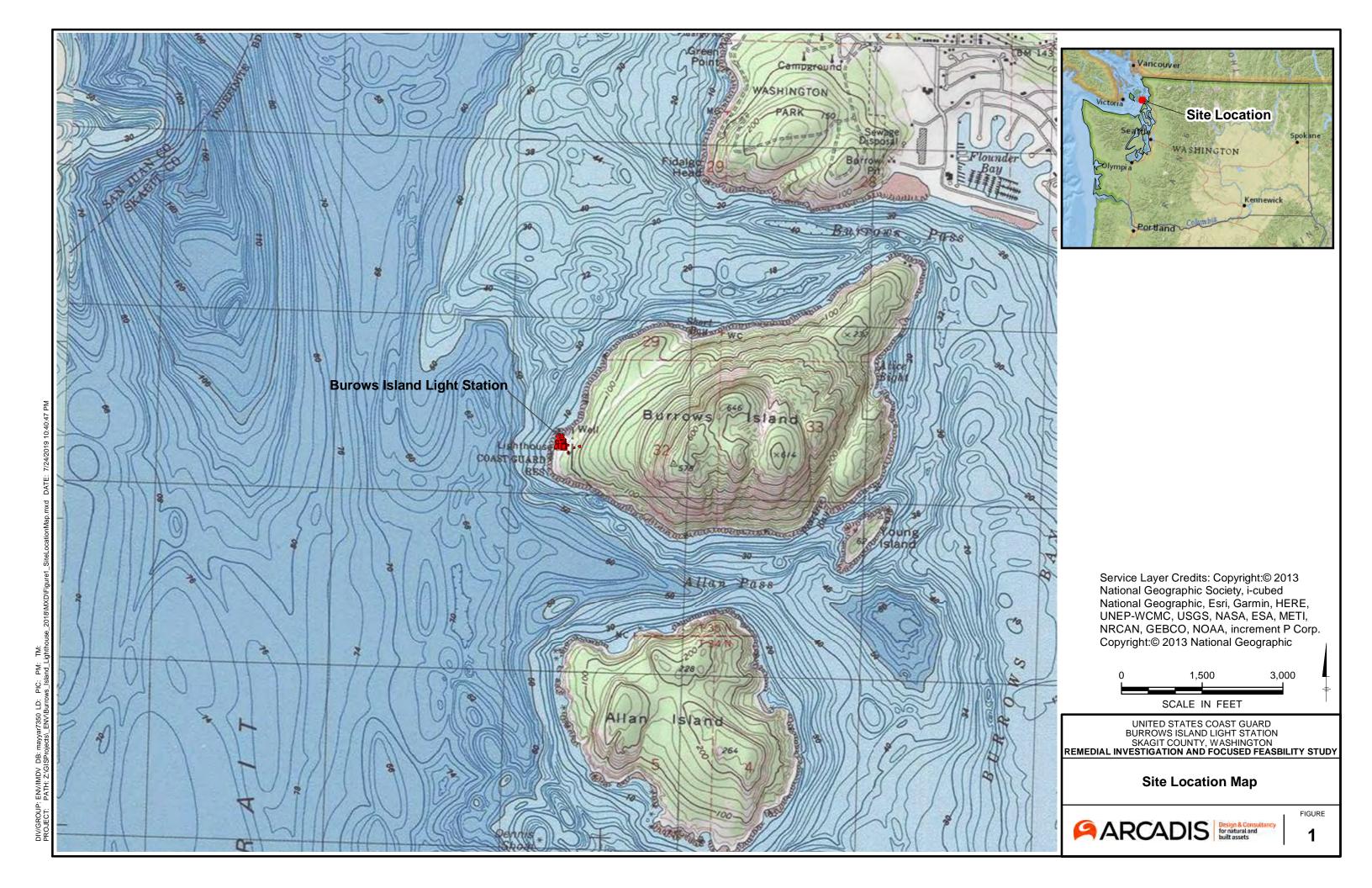
#### Notes:

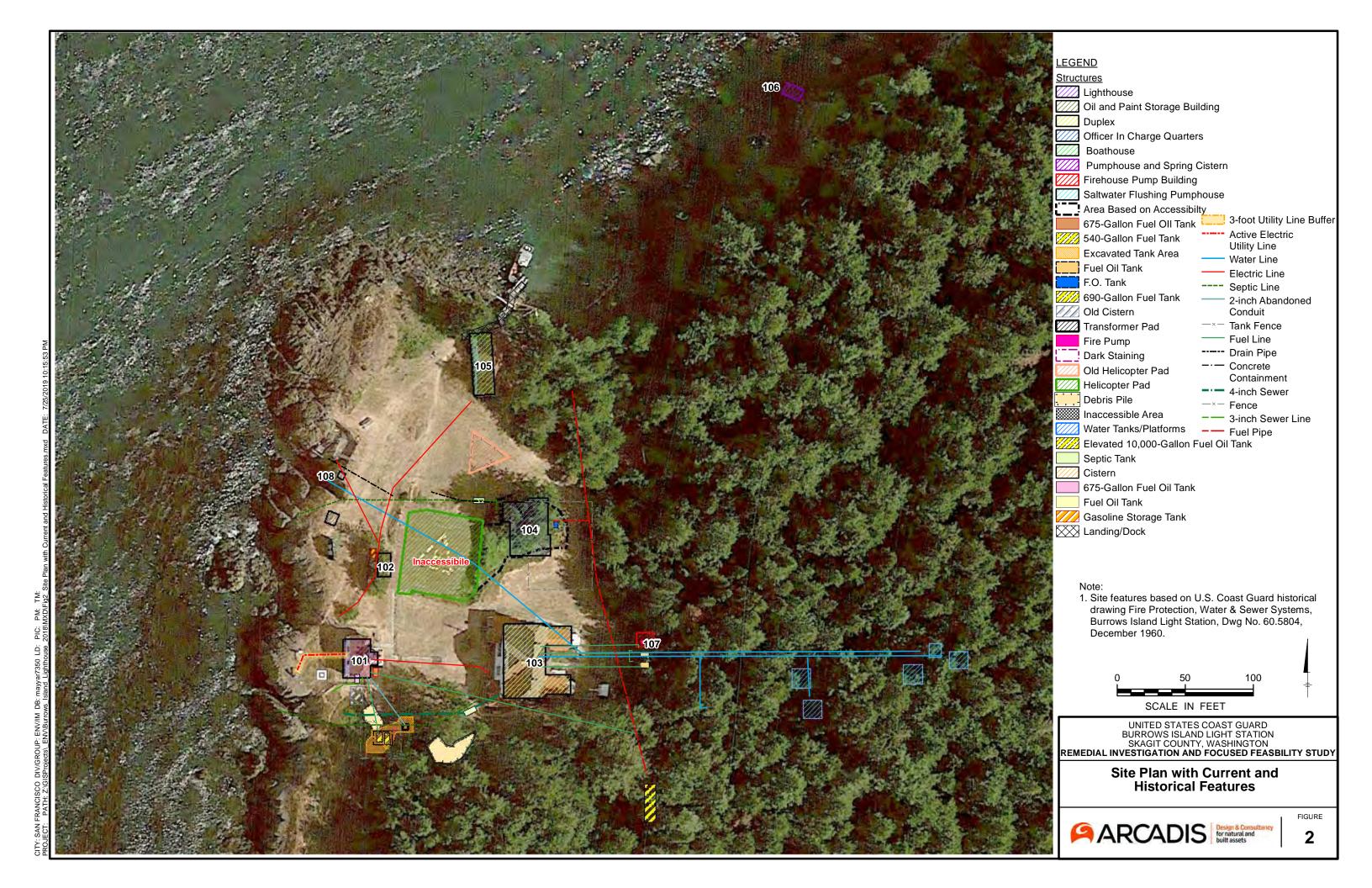
ARAR = appropriate and relevant requirement MTCA = Model Toxics Control Act PCB = polychlorinated bipenyls

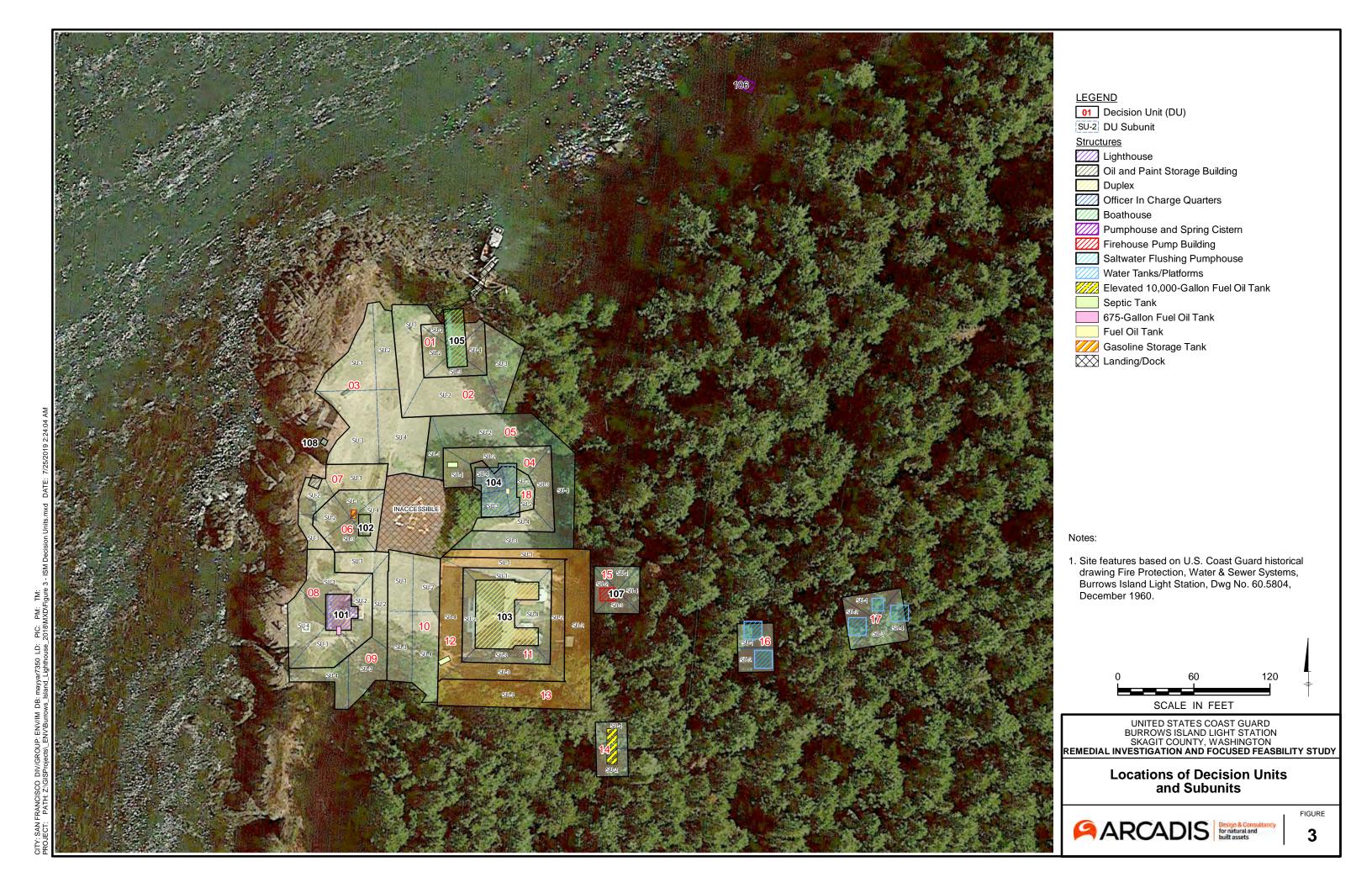
<sup>1.</sup> Estimated costs include present value of 30 years of operations and maintenace costs (assuming a 3% discount factor) and a 20 percent contingency on capital costs and details are provided in Appendix I.1. The level of accuracy of these estimated costs is "Order of Magnitude," as defined by the American Association of Cost Engineers. The accuracy of an Order of Magnitude estimate is plus 50 percent and minus 30 percent. Cost estimates at this level may be used to compare alternatives, but should not be used to plan, finance, or develop projects. Changes in the cost elements are likely to occur during the engineering design of the remedial alternative. The cost estimate was prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000). Unit costs were selected based on previous remediation and project experience and based on budgetary quotes for some materials and services.

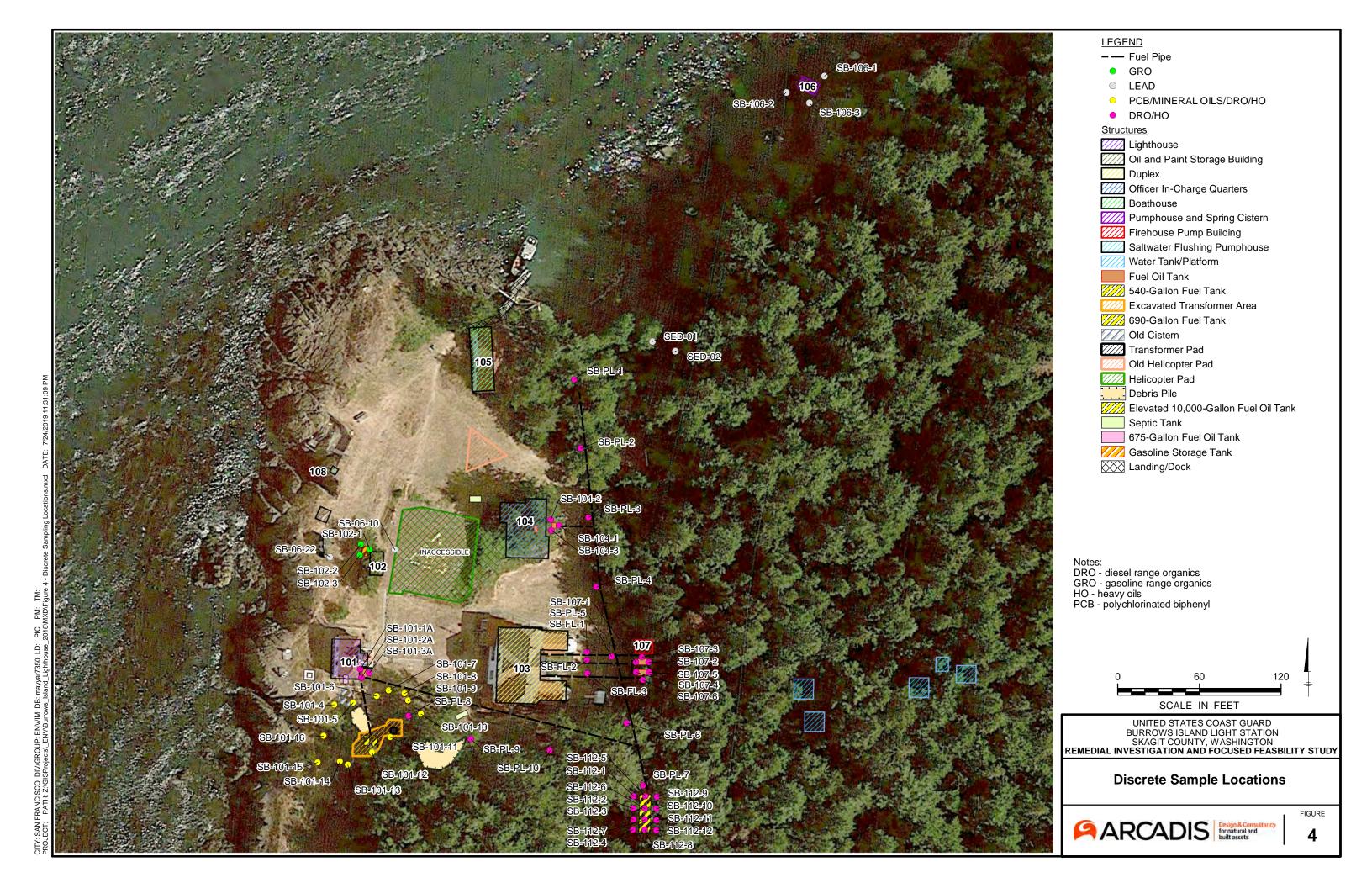
<sup>2.</sup> Repair work to the stair case connecting the dock and the site will be completed to facilitate safe access to the work area as part of the remedial alternative.

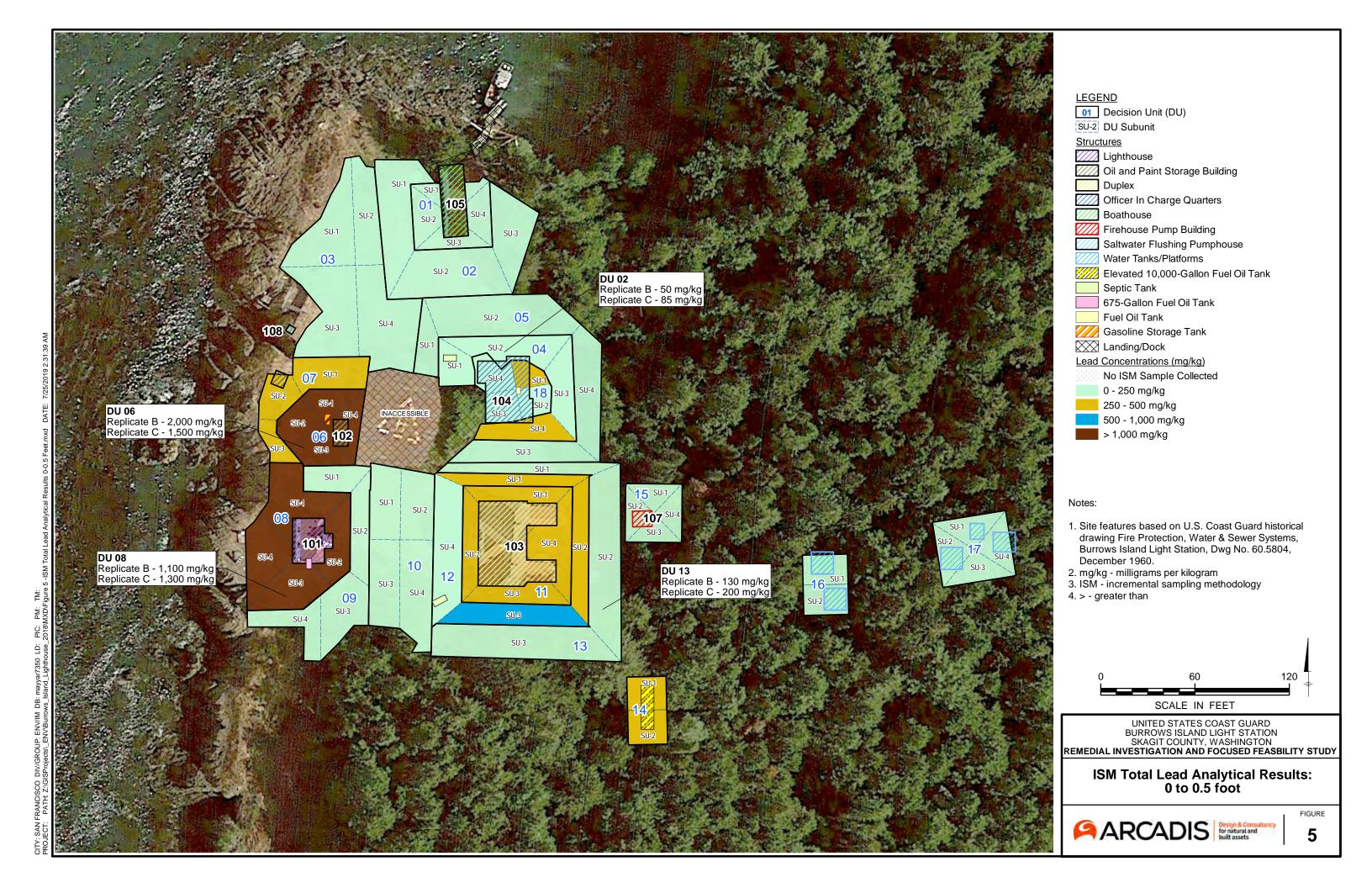
# **FIGURES**

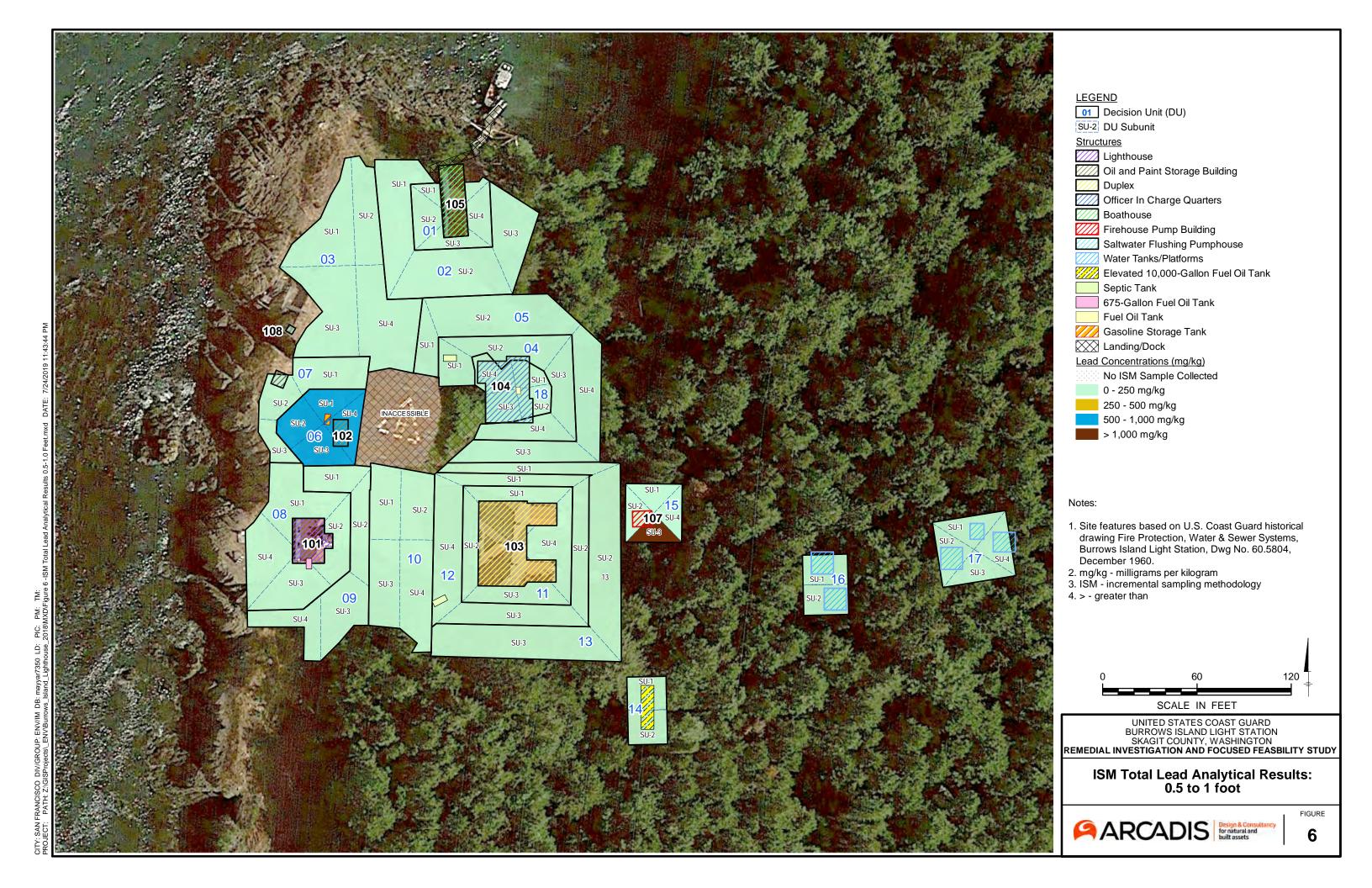


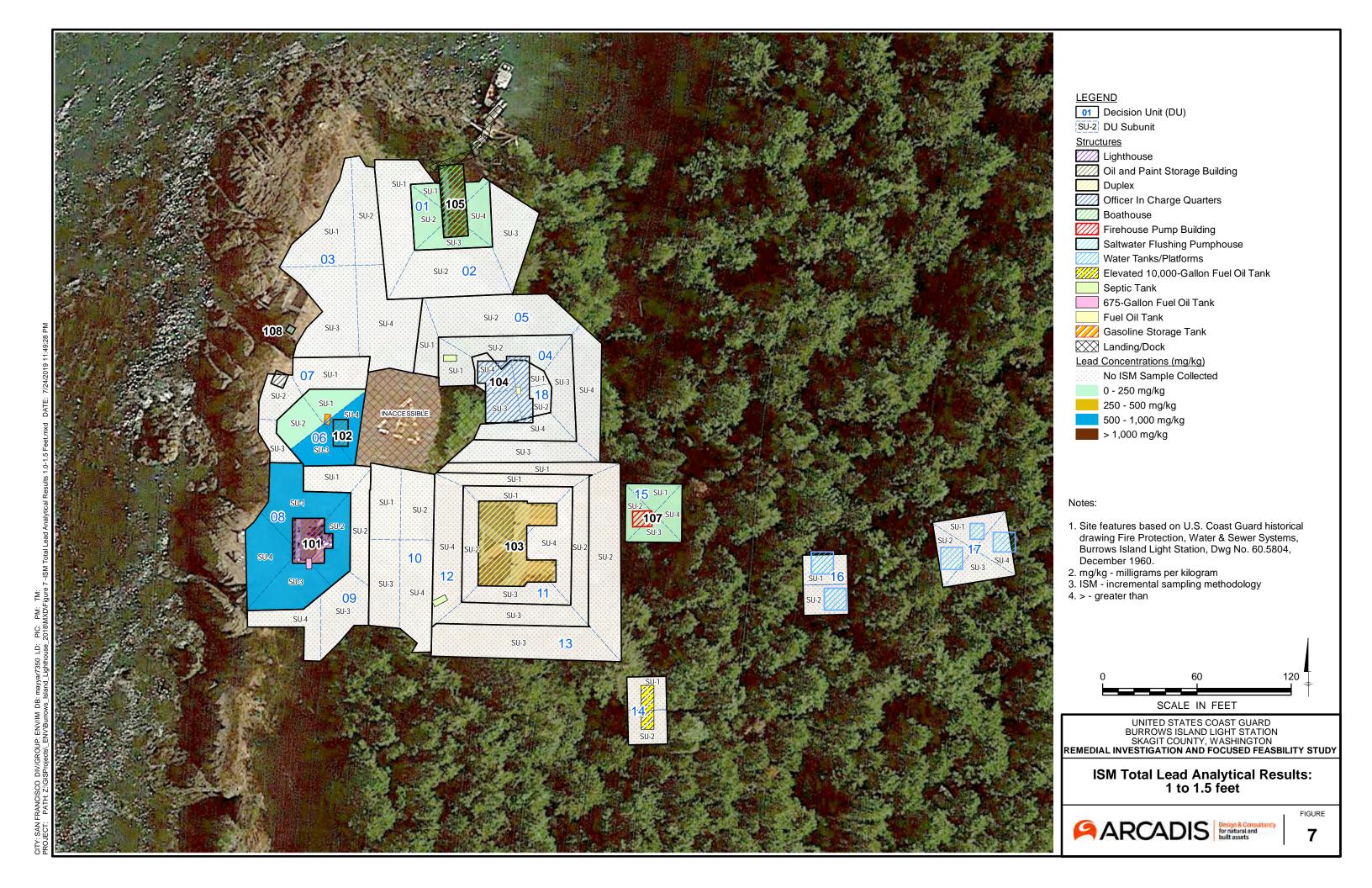


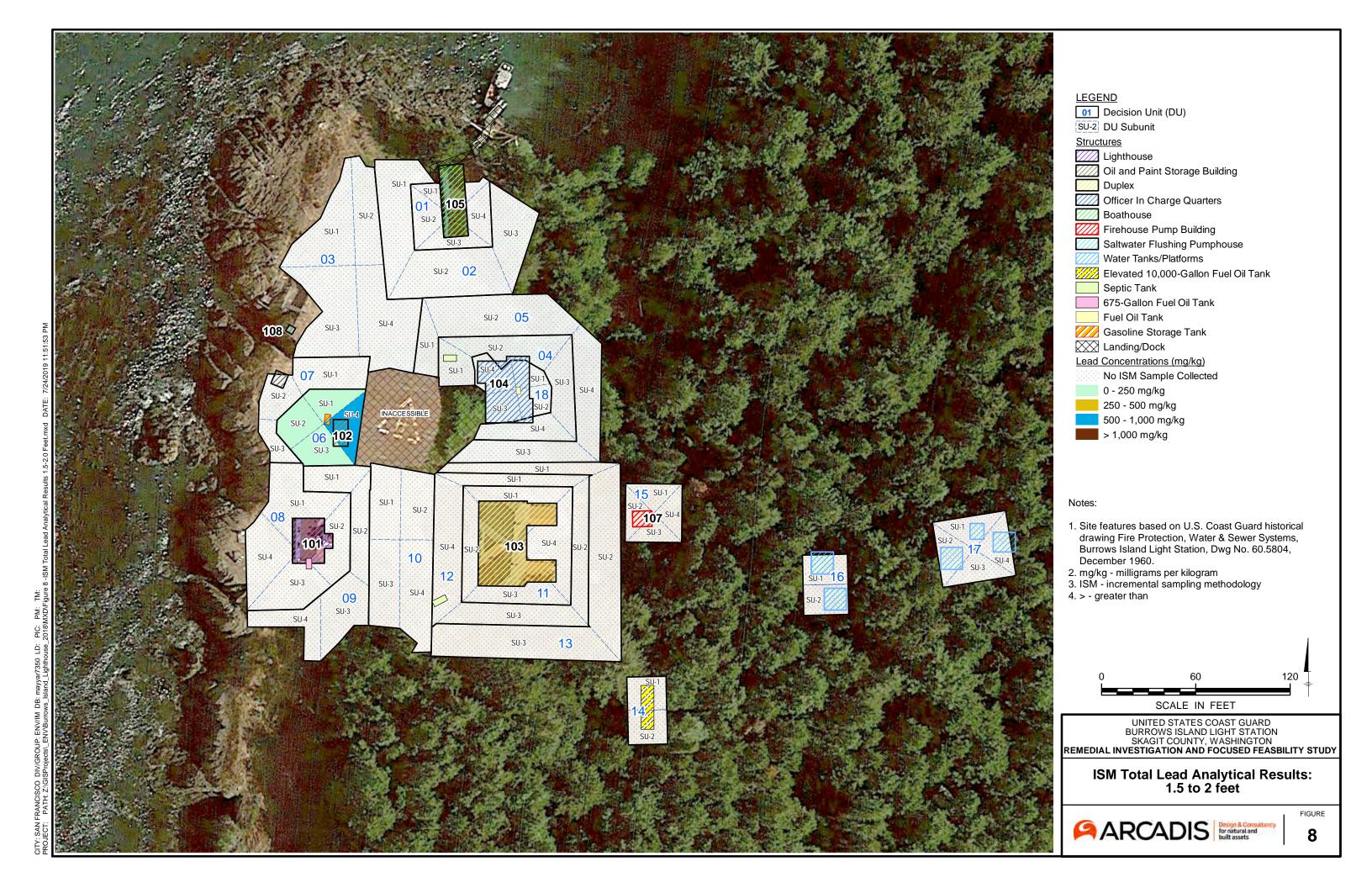




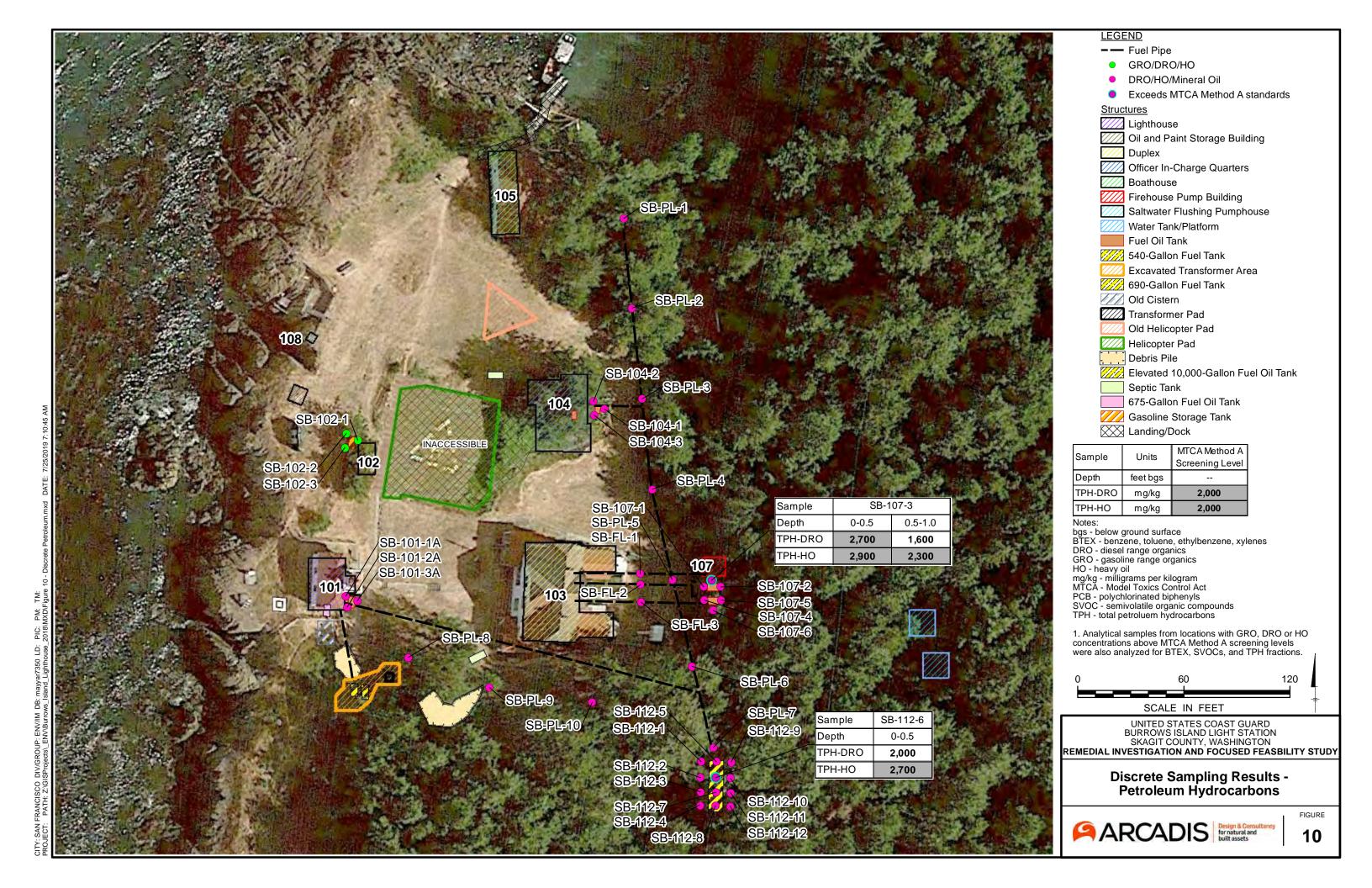


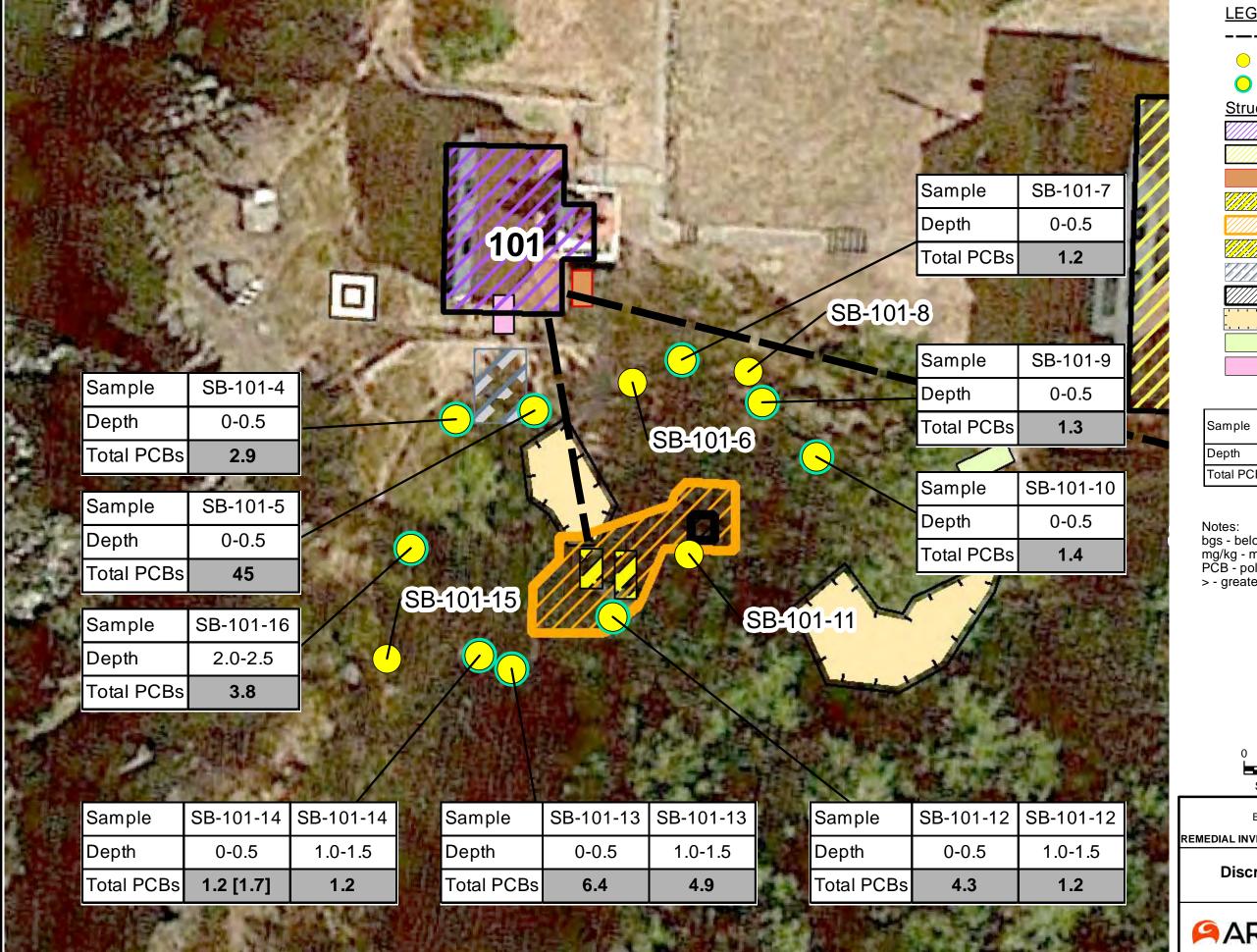














--- Fuel Pipe

PCB

Total PCBs > 1 mg/kg

## Structures

Lighthouse

Duplex

Fuel Oil Tank

540-Gallon Fuel Tank

**Excavated Transformer Area** 

690-Gallon Fuel Tank

Old Cistern

Transformer Pad

Debris Pile

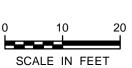
Septic Tank

675-Gallon Fuel Oil Tank

Sample	Units	MTCA Method A Screening Level
Depth	feet bgs	
Total PCBs	mg/kg	1.0

bgs - below ground surface mg/kg - milligrams per kilogram PCB - polychlorinated biphenyls

> - greater than



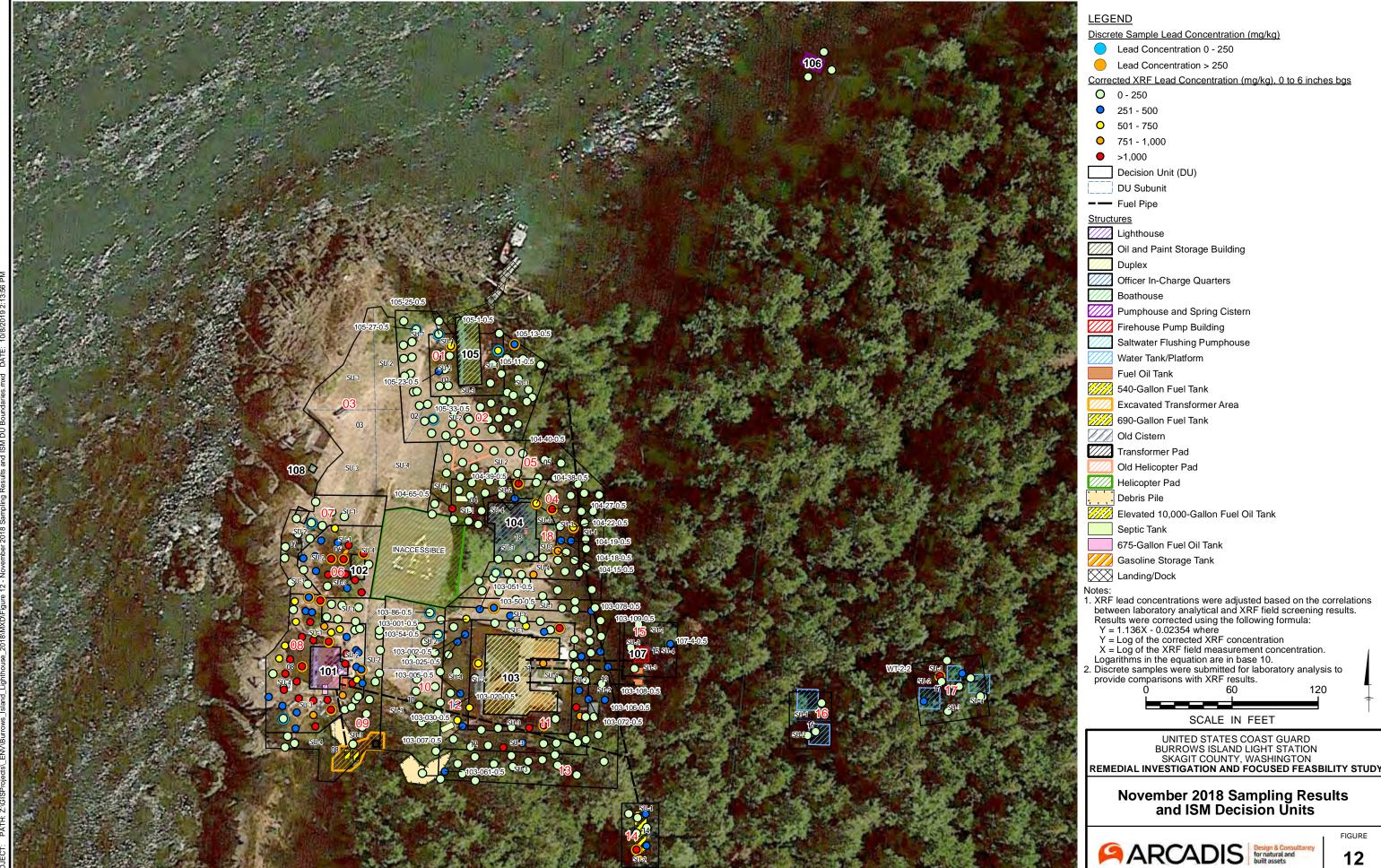
UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

**Discrete Sample Results - PCBs** 

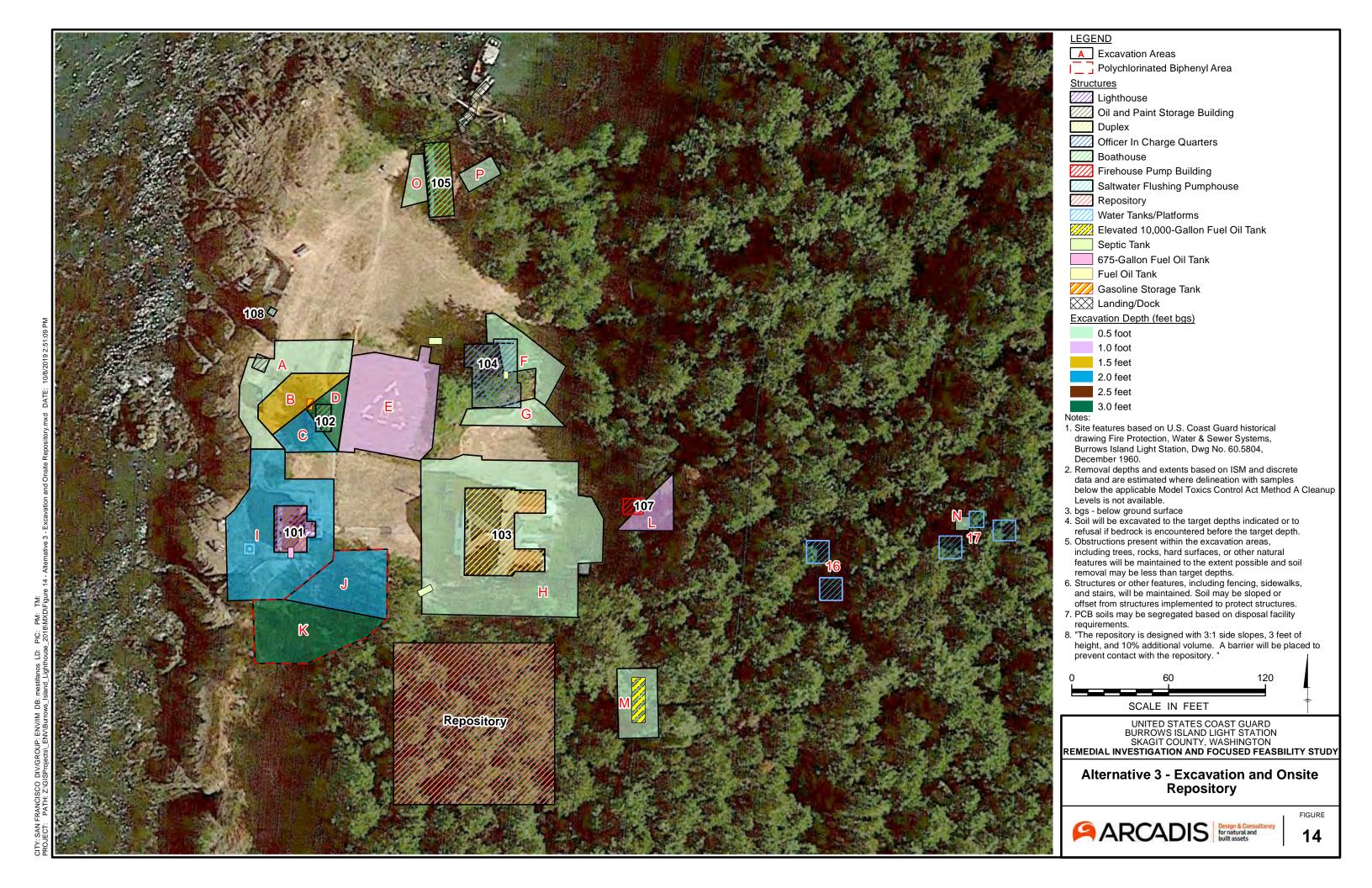


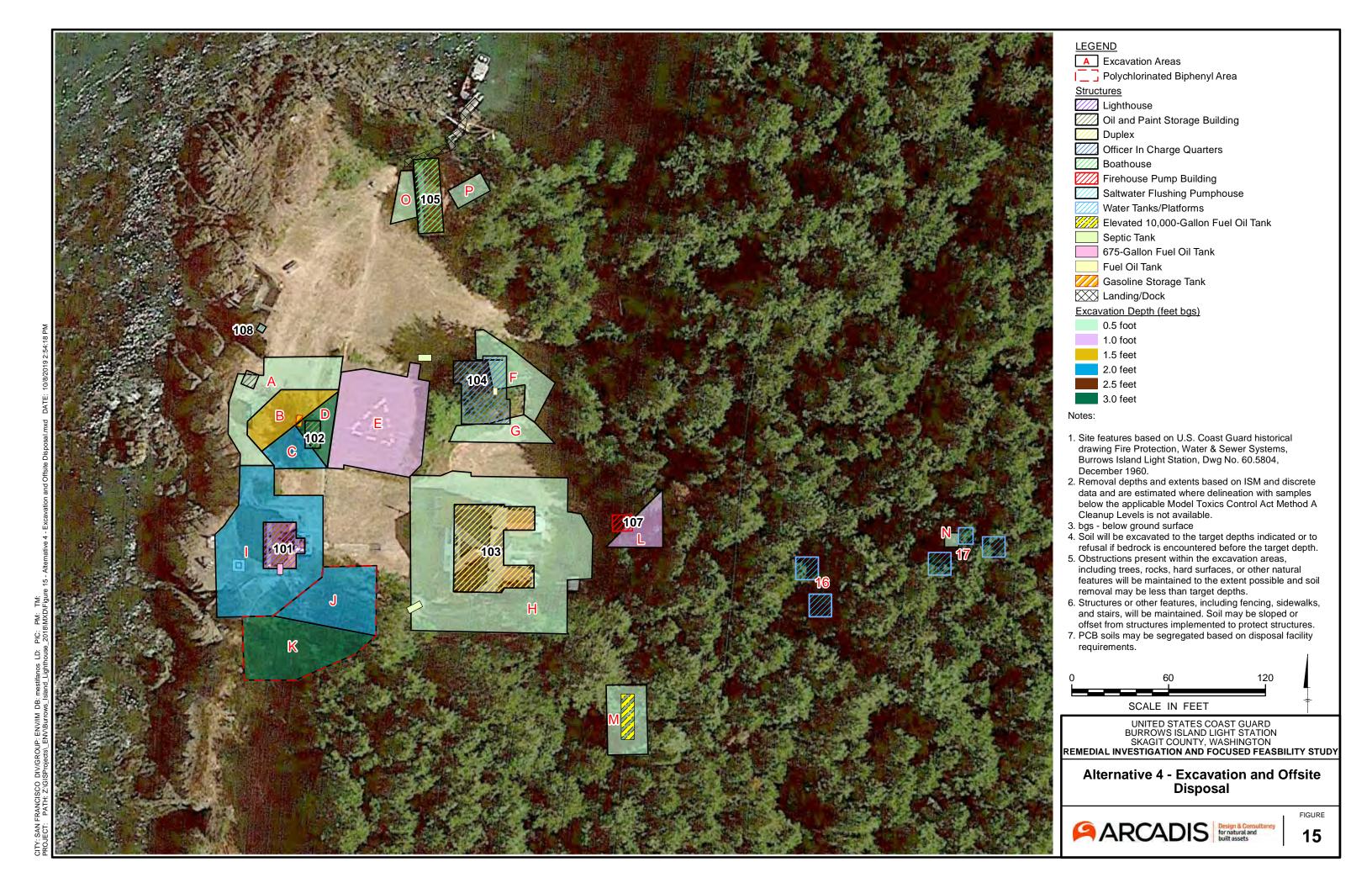
FIGURE

11









# **APPENDIX A** Field Sampling Memorandum, November 2019

# **MEMO**



Arcadis U.S., Inc.

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2300 Clayton Road

Fax 925 726 0121

To: Copies:

James Hall, USCG

From:

Arcadis

Date: Arcadis Project No.:

November 26, 2018 B0003010.0006

Subject:

Mobilization 1 Summary Memorandum USCG Burrows Island Light Station

Burrows Island, Skagit County, Washington

Arcadis U.S., Inc. (Arcadis) has prepared this memorandum on behalf of the United States Coast Guard (USCG) to summarize Mobilization 1 field activities that were conducted at the Burrows Island Light Station, located in Skagit County, Washington (the site) and to identify key site conditions. The activities described in this memorandum were conducted as part of the Remedial Investigation, Focused Feasibility Study, and Remedial Design for the Burrows Island Light Station under task order number 70Z088-18-F-PXA01700. Field activities were completed between November 13<sup>th</sup> and 16<sup>th</sup>, 2018 in accordance with the Field Sampling Memorandum for Mobilization 1 document dated November 11, 2018. The memo was modified to include laboratory analytical reports on July 26, 2019.

The Burrows Island Light Station (site) encompasses approximately 2 acres on the west side of Burrows Island, near Anacortes, Washington. The site is primarily open and grassy and is surrounded by wooded areas, which have overgrown some of the former structures. Access to the site is from a fixed concrete dock, located on the north side of the site. The area is on a bluff with steep, rocky slopes to the west and north extending down to the water. Many of the structures at the site have been removed or demolished, including:

- Officer in Charge Quarters and associated fuel oil tank(s)
- Water treatment system
- Generators
- 10,000-gallon above ground fuel oil tank

Mobilization 1 Summary Memorandum Burrows Island Light Station, Skagit County, WA

- Oil/Paint building
- Transformer and fuel storage tanks adjacent to light building
- Water tanks

Remaining infrastructure at the site includes the following:

- Light and fog signal building
- Boathouse
- Duplex
- Fixed dock and stairs
- Pumphouse and spring cistern
- Saltwater flushing pumphouse
- Helicopter landing pad

Additional remaining infrastructure includes various sidewalks, fencing, pipelines and other minor structures. At least some of the structures are known to have been painted with lead-based paint, which has deteriorated and spread to soil in the areas surrounding the buildings. In addition, petroleum products, including gasoline and fuel oil have been stored on site. In 1980, there was a documented spill of polychlorinated biphenyl (PCB) containing transformer oil located south of the light and fog signal building. The approximate locations of current and former structures are shown on **Figure 1**.

The objectives of Mobilization 1 were as follows:

- Identify locations of all existing and historic site features to the extent that these locations can be visually identified in the field.
- Photo document study area (existing and former infrastructure).
- Identify areas for visual evidence of contamination (e.g., stained soils, paint chips, impaired vegetation, etc.).
- Identify approximate depth to bedrock at each sampling area (e.g., select hand auger locations).
- Visually assess conditions of existing painted structures for evidence of deterioration of painted surfaces (chipping, flaking, etc.).
- Identify areas where soil sampling is not practicable or is unsafe due to steep slopes, dense
  vegetation (that cannot be readily cleared), bedrock outcroppings, or other adverse conditions.
   Determinations of unsafe or inaccessible areas will be made by the field team leader in consultationwith the field staff. Inaccessible areas will be documented in the field notes and photo documentation.
- Perform initial XRF screening of surficial soils (ground surface to 6 inches below ground surface [bgs]) at various locations within 40 feet of existing or historical painted structures to inform the final selection of decision units and future sampling locations for lead. Sample locations will be determined in the field with the goal of collecting one surface soil reading for every 100 to 150 square feet of accessible area within 40 linear feet of current and historical structures (see Attachment A). The

number of readings collected is approximate and will dependent on field conditions (weather, obstructions, etc.).

- Evaluate subsurface soils (> 6 inches bgs) using XRF in select areas where indications of elevated surface lead concentrations are observed. Approximately one-third of the soil screening locations will be evaluated further. These locations will be selected based on elevated screening results as determined in the field.
- Collect and analyze soil samples for lead using EPA Method 6010 at select locations that are colocated with XRF sample locations to establish correlation between analytical data and XRF data.

## SITE RECONNISANCE

All the buildings identified as part of the investigation were accessed during the field event. The locations shown on Figure 1 were generally consistent with observations in the field, with exceptions noted below. The overall condition of each structure or former structure were assessed and clear visual markers of paint chips or other potentially contaminated materials were noted. In addition, obstructions or areas that could not be sampled were observed. A photo log is provided in **Attachment 1**. A summary of the observations for each structure is provided below:

## **Light and Fog Signal Building (101)**

- Structure is intact and generally appears to be in good condition.
- Paint chipping was visible on some window sills and trim. Green trim paint was previously encapsulated based on historical documentation but is significantly weathered and the encapsulation is no longer viable. White paint generally appears to be intact.
- A brush pile and debris were observed south of the light and fog signal building in the general vicinity of the 1980 transformer oil release. Recent tree and vegetation removal was conducted in 2017 to make the signal light visible and extends south from building with materials stacked in various piles.
- A concrete pad and cistern identified south of the light and fog signal building. These appear to be consistent with historical drawings.
- Soil staining or dark coloration was apparent in the area near the former transformer. Three soil samples
  were collected in the area of discolored soil for PCB analysis (TP-1, TP-2, and TP-3).
- Bedrock outcroppings were visible on the west side of building towards the water.

## Former Oil & Paint Storage Building (102)

- The only remaining part of the structure is a concrete footing, retaining wall and a concrete anchor.
   These areas could not be sampled due to the lack of surface soil and presence of obstructions.
- Shallow bedrock was present west of the former Oil and Paint Storage Building.
- The helicopter pad is adjacent to the concrete footing to the east.

## **Duplex (103)**

- This structure is generally intact. There has been repair work completed on the roof (as evidenced by the pile of roofing material located southeast of the building) and porch.
- Visible paint chipping and sloughing was observed in areas on trim and from porches. Paint is also very
  weathered in drip lines and where it is exposed to water running off the roof. Paint chips are visible in
  grass and soil in some areas surrounding the building.
- Fencing around the east side of the building is in poor condition. Paint is very weathered and flaking.
- Two tanks on east side of building are in poor condition with rust and some paint flaking.
- Building materials that appear to be painted are present to the south of the building and on porches. The team was unable to ascertain if these materials are historical or more recent.
- Debris piles were observed southeast of the building, including roofing material and brush. Additional
  debris piles were located west of the building. These areas could not be accessed for sampling.
- Daylighted pipelines were present along the west and south sides of the building.

## Former Officer In Charge Quarters (104)

- The foundation and other remnants of the former building are overgrown by trees and ivy. Limited soil or sampling was possible within the apparent building footprint. Concrete debris and voids were apparent within the former building footprint.
- The area to the west of the former building footprint is not accessible due to steep slope and the helicopter pad.

## Boathouse (105)

- This structure is intact and appears to be in good condition. The dock, stairs, and deck on north side of building appear to be in good shape and have been replaced since original construction with metal and treated lumber.
- Apparent soil excavation and replacement of siding was observed along the east, south and west sides
  of the building.
- Some building materials with paint were encountered east of the building.
- The north side of the boathouse is inaccessible for sampling due to steep slope and rocks.

## **Pumphouse & Spring Cistern (106)**

- This structure is intact and appears to be in good condition. The building is constructed of concrete with a concrete cistern. Paint cans were found inside the building and garden hoses were in the cistern and just outside the building.
- Access to this area is limited due to a steep slope to get down to the building. There is area surrounding the building that could be sampled.

## Former Firehouse Pump Building (107)

 No structure is present, although the concrete pad remains. The area surrounding the pad is very overgrown with trees and brush. Sampling access is limited due to brush and trees.

## **Salt Water Flushing Pumphouse (108)**

- The structure is intact and appears to be in poor condition with flaking and weathered paint. Stairs leading to the structure are exposed with no railing to protect from fall.
- Some woody debris and sediment were present within the structure, but it appears to be contained on the concrete footing. No soil present is present in the area surrounding the building. The concrete footing and foundation appear to have been poured directly onto bedrock.

## Former Water Tanks (109, 110, 111)

- Five tank platforms were identified. These platforms were located generally east of the locations shown on historical drawings. The wooden platforms and remaining infrastructure were in poor condition. No tanks are currently present.
- Painted materials were visible. The piping that was observed appears to lead towards the Duplex, which
  is consistent with historical drawings.

## Former Above Ground Fuel Oil Tank (112)

- The concrete saddle for the 10,000-gallon tank remains, but the tank is no longer present. The area is heavily overgrown with ivy and brush.
- Pipeline connections are visible at the former loading area east of the boathouse and adjacent to the former tank.

## **Other Structures and Obstructions**

- The helicopter pad consists of interlocking metal plates and is located in the central portion of the site. The plates remain intact with some vegetation growing through the connections.
- A former helicopter landing area is located to the north of the current helicopter pad.

## **CURRENT SITE CONDITIONS**

The site encompasses approximately 2 acres on the west side of Burrows Island, near Anacortes, Washington. The site is primarily open and grassy and is surrounded by wooded areas, which have overgrown some of the former structures. Access to the site is from a fixed concrete dock, located on the north side of the site. The area is on a bluff with steep, rocky slopes to the west and north extending down to the water. The soils at the site consist of a shallow sandy soil lens with no evidence of significant groundwater existing within the current site footprint, beyond potentially minor perched areas or saturated pore space during the wet season. The site generally slopes towards the bluff, with the northeastern portion of the site containing a steep heavily forested slope leading to a beach that is submerged at high tide. The beach consists primarily of cobbles based on visual inspections. Future Site use

The USCG plans to transfer the light station to the Northwest Schooner Society (NWSS) pursuant to the National Historic Lighthouse Preservation Act of 2000 (NHLPA) and CERCLA §120(h) once the site is cleaned up to a level that is protective of human health and environment. The NWSS intends to restore the site to reflect various periods of time, and to rehabilitate the duplex to a condition that would allow guests to stay on site for short periods of time. They envision having a rotating caretaker to remain on site for extended periods not to exceed 6 months.

## SOIL SAMPLING AND XRF ANALYSIS

Soil samples were collected adjacent to former and current structures and screened using an XRF analyzer. Samples were collected within 40 feet of the limits or former boundaries of Buildings 101, 102, 103, 104 and 105 at a frequency of 1 sample per 100 to 150 square feet. Areas that were obstructed or unsafe to access were not sampled. Initial samples were collected from approximately 0 to 0.5 feet using hand tools and placed in plastic bags for on-site XRF analysis. Analytical samples were collected from select locations representing the range of lead concentrations measured using the XRF analyzer and sent to Onsite Environmental Inc. located in Redmond, Washington (Onsite) for analysis of lead by United States Environmental Protection Agency (USEPA) Method 6010. Samples from locations deeper than 6 inches were collected in select locations where concentrations measured using the XRF analyzer exceeded 250 parts per million (ppm). A summary of sampling results is provided in **Table 1.** A summary of the XRF sampling data is provided in **Table 2**. Field documentation is provided in **Attachment 2**.

Lead concentrations measured with the XRF analyzers ranged from non-detect to approximately 9,000 ppm. The highest lead concentrations observed during the sampling event were generally in the vicinity of the Light and Fog Signal Building (101) and the Former Oil & Paint Storage Building (102). Lead concentrations above 1,000 ppm were observed in the soil surrounding the Duplex (103), Former Officer In Charge Quarters (104), Former Water Tanks (109, 110, 111), and the Former Above Ground Fuel Tank (112). Lead concentrations in soil generally decreased further from the structures, but there were areas of spatial variability that could be associated with historical infrastructure or debris that has been relocated. Minimal concentrations of lead were observed in samples from the Pumphouse & Spring Cistern (106) and the Former Firehouse Pump Building (107). Additional observations made during soil sampling are summarized below:

- The 0 to 0.5-foot sample from location WT-2-2 adjacent on the water tanks contained elevated lead (>2,000 ppm). Additional samples were collected from the 0.5 to 1.0 foot and 1.0 to 1.5-foot interval to provide further vertical delineation at this location. Soil samples were collected from the apparent outlet of the tank and were in the vicinity of a visible pipeline going west towards the Duplex.
- Soil sampling location 104-27 on the northeast side of the former officer in charge quarters building contained charcoal and other woody debris with elevated XRF readings (>1,000 ppm) from surface to 2 feet bgs.
- Soil sampling locations within 10 feet of the Duplex structure were spatial varied and included samples
  from the areas that were previously excavated as well as samples outside of the sidewalk surrounding
  the building. The locations collected within the sidewalk surrounding the structure are noted on Table 1.

## **INVESTIGATION DERIVED WASTE**

Soil generated from sampling activities was collected and composited in closed-top 5-gallon containers and stored onsite in the basement of the duplex building. Additional general waste (i.e. PPE, plastic bags,

and other materials that contacted soil) were collected and sealed in a plastic garbage bag and stored onsite with soil waste. Waste characterization samples were collected from the composited soil and the general waste and were submitted to Onsite for analysis of lead by USEPA Method 1311.

## **SUMMARY**

Structures associated with the Light Station were located and visually assessed to determine the condition of the materials and observe if signs of paint or other potentially contaminated materials are present in the surrounding areas. All locations were identified and documented. Soil samples were collected for XRF analysis to evaluate the presence of lead in soils surrounding current and former structures. Based on preliminary XRF results, lead appears to be present at levels greater than 500 ppm in areas surrounding 7 of the structures. Generally it appears that the concentrations of lead decrease as the distance from the buildings increase. Step out samples collected by ERRG in 2009 demonstrated an average of a 66% reduction in concentration after a 5-foot step out. XRF results from the Mobilization 1 were generally consistent with high concentrations observed close to buildings or former structures and decreasing concentrations moving away from the structures. There does not appear to be evidence of surface water distributing lead along concentrated flow paths, primarily due to the lack of source material near any visible surface channels. In general, sheet flow does not appear be a significant transport mechanism for lead at this site based on the preliminary data.

## **ATTACHMENTS**

Table 1 – XRF Sample Log

Table 2 – XRF Results Summary

Table 3 - Initial Mobilization Summary Table

Figure 1 – Site Location Map

Figure 2 – Decision Unit Boundaries with XRF Sample Results November 2018 Sampling Event

Attachment 1 - Photo Log

Attachment 2 - Field Forms

# **TABLES**



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
101-01-0.5	11/14/2018	1537	Light and Fog Signal	0 - 0.5	0 - 10	986 ± 18
101-02-0.5	11/14/2018	1541	Light and Fog Signal	0 - 0.5	0 - 10	1920 ± 29
101-02-1.0	11/15/2018	1206	Light and Fog Signal	0.5 - 1.0	0 - 10	50 ± 4
101-03-0.5	11/14/2018	1544	Light and Fog Signal	0 - 0.5	0 - 10	1515 ± 25
101-04-0.5	11/14/2018	1546	Light and Fog Signal	0 - 0.5	0 - 10	591 ± 14
101-05-0.5	11/14/2018	1547	Light and Fog Signal	0 - 0.5	0 - 10	3592 ± 48
101-06-0.5	11/14/2018	1549	Light and Fog Signal	0 - 0.5	0 - 10	1455 ± 24
101-07-0.5	11/14/2018	1548	Light and Fog Signal	0 - 0.5	0 - 10	931 ± 13
101-08-0.5	11/15/2018	1549	Light and Fog Signal	0 - 0.5	0 - 10	8975 ± 67
101-08-1.0	11/15/2018	1208	Light and Fog Signal	0.5 - 1.0	0 - 10	404 ± 9
101-09-0.5	11/15/2018	1551	Light and Fog Signal	0 - 0.5	0 - 10	2529 ± 28
101-10-0.5	11/15/2018	1553	Light and Fog Signal	0 - 0.5	0 - 10	2367 ± 27
101-11-0.5	11/15/2018	1555	Light and Fog Signal	0 - 0.5	0 - 10	838 ± 15
101-12-0.5	11/15/2018	1556	Light and Fog Signal	0 - 0.5	0 - 10	5885 ± 51
101-12-1.0	11/15/2018	1210	Light and Fog Signal	0.5 - 1.0	0 - 10	1206 ± 17
101-12-1.5	11/15/2018	1540	Light and Fog Signal	1.0 - 1.5	0 - 10	279 ± 10
101-13-0.5	11/14/2018	1555	Light and Fog Signal	0 - 0.5	10 - 20	404 ± 11
101-14-0.5	11/14/2018	1557	Light and Fog Signal	0 - 0.5	10 - 20	761 ± 15
101-15-0.5	11/14/2018	1559	Light and Fog Signal	0 - 0.5	10 - 20	921 ± 15
101-15-1.0	11/15/2018	1224	Light and Fog Signal	0.5 - 1.0	10 - 20	45 ± 5
101-16-0.5	11/14/2018	1601	Light and Fog Signal	0 - 0.5	10 - 20	775 ± 14
101-17-0.5	11/14/2018	1602	Light and Fog Signal	0 - 0.5	10 - 20	1126 ± 19
101-17-1.0	11/15/2018	1212	Light and Fog Signal	0.5 - 1.0	10 - 20	208 ± 7
101-18-0.5	11/15/2018	1602	Light and Fog Signal	0 - 0.5	10 - 20	510 ± 10
101-19-0.5	11/15/2018	1558	Light and Fog Signal	0 - 0.5	10 - 20	388 ± 8
101-20-0.5	11/15/2018	1600	Light and Fog Signal	0 - 0.5	10 - 20	366 ± 9
101-21-0.5	11/15/2018	1559	Light and Fog Signal	0 - 0.5	10 - 20	271 ± 7



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
101-22-0.5	11/15/2018	937	Light and Fog Signal	0 - 0.5	10 - 20	276 ± 7
101-23-0.5	11/15/2018	941	Light and Fog Signal	0 - 0.5	10 - 20	446 ± 9
101-23-1.0	11/15/2018	1215	Light and Fog Signal	0.5 - 1.0	10 - 20	161 ± 6
101-24-0.5	11/15/2018	948	Light and Fog Signal	0 - 0.5	10 - 20	90 ± 4
101-25-0.5	11/15/2018	951	Light and Fog Signal	0 - 0.5	10 - 20	148 ± 5
101-26-0.5	11/15/2018	952	Light and Fog Signal	0 - 0.5	10 - 20	824 ± 12
101-27-0.5	11/15/2018	953	Light and Fog Signal	0 - 0.5	10 - 20	702 ± 12
101-27-1.0	11/15/2018	1318	Light and Fog Signal	0.5 - 1.0	10 - 20	808 ± 15
101-28-0.5	11/15/2018	955	Light and Fog Signal	0 - 0.5	10 - 20	219 ± 7
101-29-0.5	11/15/2018	957	Light and Fog Signal	0 - 0.5	10 - 20	62 ± 4
101-30-0.5	11/15/2018	938	Light and Fog Signal	0 - 0.5	10 - 20	307 ± 9
101-31-0.5	11/15/2018	940	Light and Fog Signal	0 - 0.5	10 - 20	884 ± 15
101-32-0.5	11/15/2018	948	Light and Fog Signal	0 - 0.5	20 - 30	78 ± 5
101-33-0.5	11/15/2018	950	Light and Fog Signal	0 - 0.5	20 - 30	360 ± 10
101-34-0.5	11/15/2018	952	Light and Fog Signal	0 - 0.5	20 - 30	386 ± 10
101-35-0.5	11/15/2018	954	Light and Fog Signal	0 - 0.5	20 - 30	388 ± 10
101-36-0.5	11/15/2018	956	Light and Fog Signal	0 - 0.5	20 - 30	509 ± 12
101-37-0.5	11/15/2018	958	Light and Fog Signal	0 - 0.5	20 - 30	1367 ± 19
101-38-0.5	11/15/2018	1000	Light and Fog Signal	0 - 0.5	20 - 30	678 ± 13
101-39-0.5	11/15/2018	1000	Light and Fog Signal	0 - 0.5	20 - 30	397 ± 9
101-40-0.5	11/15/2018	958	Light and Fog Signal	0 - 0.5	20 - 30	160 ± 6
101-41-0.5	11/15/2018	1029	Light and Fog Signal	0 - 0.5	20 - 30	147 ± 5
101-42-0.5	11/15/2018	1031	Light and Fog Signal	0 - 0.5	20 - 30	273 ± 6
101-43-0.5	11/15/2018	1033	Light and Fog Signal	0 - 0.5	20 - 30	313 ± 8
101-44-0.5	11/15/2018	1035	Light and Fog Signal	0 - 0.5	20 - 30	237 ± 6
101-45-0.5	11/15/2018	1036	Light and Fog Signal	0 - 0.5	20 - 30	78 ± 4
101-46-0.5	11/15/2018	1039	Light and Fog Signal	0 - 0.5	20 - 30	44 ± 3



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
101-47-0.5	11/15/2018	1040	Light and Fog Signal	0 - 0.5	30 - 40	19 ± 3
101-48-0.5	11/15/2018	1042	Light and Fog Signal	0 - 0.5	30 - 40	103 ± 5
101-49-0.5	11/15/2018	1028	Light and Fog Signal	0 - 0.5	30 - 40	62 ± 5
101-50-0.5	11/15/2018	1033	Light and Fog Signal	0 - 0.5	20 - 30	328 ± 9
101-51-0.5	11/15/2018	1035	Light and Fog Signal	0 - 0.5	20 - 30	3239 ± 44
101-52-0.5	11/15/2018	1037	Light and Fog Signal	0 - 0.5	30 - 40	60 ± 5
101-53-0.5	11/15/2018	1039	Light and Fog Signal	0 - 0.5	30 - 40	38 ± 4
101-54-0.5	11/15/2018	1042	Light and Fog Signal	0 - 0.5	30 - 40	61 ± 4
101-55-0.5	11/15/2018	1043	Light and Fog Signal	0 - 0.5	30 - 40	86 ± 6
101-56-0.5	11/15/2018	1045	Light and Fog Signal	0 - 0.5	30 - 40	132 ± 6
101-57-0.5	11/15/2018	1047	Light and Fog Signal	0 - 0.5	30 - 40	99 ± 5
101-58-0.5	11/15/2018	1048	Light and Fog Signal	0 - 0.5	30 - 40	104 ± 5
101-59-0.5	11/15/2018	1043	Light and Fog Signal	0 - 0.5	30 - 40	45 ± 4
101-60-0.5	11/15/2018	1046	Light and Fog Signal	0 - 0.5	30 - 40	34 ± 3
102-01-0.5	11/14/2018	1221	Oil & Paint Storage	0 - 0.5	30 - 40	133 ± 5
102-02-0.5	11/14/2018	1224	Oil & Paint Storage	0 - 0.5	30 - 40	82 ± 4
102-03-0.5	11/14/2018	1226	Oil & Paint Storage	0 - 0.5	30 - 40	120 ± 5
102-04-0.5	11/14/2018	1228	Oil & Paint Storage	0 - 0.5	20 - 30	420 ± 9
102-04-1.0	11/14/2018	1354	Oil & Paint Storage	0.5 - 1.0	20 - 30	123 ± 5
102-05-0.5	11/14/2018	1230	Oil & Paint Storage	0 - 0.5	20 - 30	91 ± 4
102-06-0.5	11/14/2018	1223	Oil & Paint Storage	0 - 0.5	20 - 30	52 ± 5
102-07-0.5	11/14/2018	1232	Oil & Paint Storage	0 - 0.5	20 - 30	67 ± 4
102-08-0.5	11/14/2018	1233	Oil & Paint Storage	0 - 0.5	20 - 30	82 ± 4
102-09-0.5	11/14/2018	1235	Oil & Paint Storage	0 - 0.5	10 - 20	88 ± 5
102-10-0.5	11/14/2018	1236	Oil & Paint Storage	0 - 0.5	10 - 20	248 ± 7
102-11-0.5	11/14/2018	1240	Oil & Paint Storage	0 - 0.5	10 - 20	334 ± 9
102-12-0.5	11/14/2018	1242	Oil & Paint Storage	0 - 0.5	10 - 20	1006 ± 18



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
102-12-1.0	11/14/2018	1356	Oil & Paint Storage	0.5 - 1.0	10 - 20	51 ± 4
102-13-0.5	11/14/2018	1244	Oil & Paint Storage	0 - 0.5	20 - 30	1119 ± 18
102-13-1.0	11/14/2018	1358	Oil & Paint Storage	0.5 - 1.0	20 - 30	421 ± 10
102-14-0.5	11/14/2018	1247	Oil & Paint Storage	0 - 0.5	20 - 30	91 ± 5
102-15-0.5	11/14/2018	1250	Oil & Paint Storage	0 - 0.5	10 - 20	879 ± 16
102-15-1.5	11/14/2018	1457	Oil & Paint Storage	1.0 - 1.5	10 - 20	572 ± 10
102-15-1.0	11/14/2018	1415	Oil & Paint Storage	0.5 - 1.0	10 - 20	627 ± 13
102-16-0.5	11/14/2018	1253	Oil & Paint Storage	0 - 0.5	0 - 10	918 ± 17
102-16-1.0	11/14/2018	1420	Oil & Paint Storage	0.5 - 1.0	0 - 10	252 ± 9
102-17-0.5	11/14/2018	1240	Oil & Paint Storage	0 - 0.5	0 - 10	233 ± 6
102-18-0.5	11/14/2018	1242	Oil & Paint Storage	0 - 0.5	10 - 20	278 ± 7
102-19-0.5	11/14/2018	1244	Oil & Paint Storage	0 - 0.5	20 - 30	157 ± 6
102-20-0.5	11/14/2018	1245	Oil & Paint Storage	0 - 0.5	20 - 30	131 ± 5
102-21-0.5	11/14/2018	1249	Oil & Paint Storage	0 - 0.5	10 - 20	48 ± 4
102-22-0.5	11/14/2018	1333	Oil & Paint Storage	0 - 0.5	0 - 10	245 ± 6
102-23-0.5	11/14/2018	1335	Oil & Paint Storage	0 - 0.5	0 - 10	1001 ± 14
102-24-0.5	11/14/2018	1337	Oil & Paint Storage	0 - 0.5	10 - 20	4720 ± 42
102-24-1.0	11/14/2018	1422	Oil & Paint Storage	0.5 - 1.0	10 - 20	3718 ± 44
102-25-0.5	11/14/2018	1300	Oil & Paint Storage	0 - 0.5	20 - 30	4073 ± 40
102-25-1.0	11/14/2018	1425	Oil & Paint Storage	0.5 - 1.0	20 - 30	1191 ± 20
102-26-0.5	11/14/2018	1340	Oil & Paint Storage	0 - 0.5	20 - 30	1299 ± 17
102-26-1.0	11/14/2018	1427	Oil & Paint Storage	0.5 - 1.0	20 - 30	302 ± 9
102-27-0.5	11/14/2018	1333	Oil & Paint Storage	0 - 0.5	10 - 20	367 ± 10
102-28-0.5	11/14/2018	1339	Oil & Paint Storage	0 - 0.5	10 - 20	198 ± 7
102-29-0.5	11/14/2018	1342	Oil & Paint Storage	0 - 0.5	10 - 20	15 ± 4
102-30-0.5	11/14/2018	1345	Oil & Paint Storage	0 - 0.5	10 - 20	100 ± 6
102-31-0.5	11/14/2018	1400	Oil & Paint Storage	0 - 0.5	20 - 30	407 ± 9



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
102-31-1.0	11/14/2018	1452	Oil & Paint Storage	0.5 - 1.0	20 - 30	217 ± 6
102-32-0.5	11/14/2018	1402	Oil & Paint Storage	0 - 0.5	20 - 30	252 ± 7
102-33-0.5	11/14/2018	1403	Oil & Paint Storage	0 - 0.5	20 - 30	5643 ± 48
102-33-1.0	11/14/2018	1450	Oil & Paint Storage	0.5 - 1.0	20 - 30	588 ± 11
102-34.0.5	11/14/2018	1410	Oil & Paint Storage	0 - 0.5	20 - 30	97 ± 4
102-35-0.5	11/14/2018	1415	Oil & Paint Storage	0 - 0.5	20 - 30	203 ± 7
102-36-0.5	11/14/2018	1417	Oil & Paint Storage	0 - 0.5	30 - 40	130 ± 6
102-37-0.5	11/14/2018	1418	Oil & Paint Storage	0 - 0.5	30 - 40	128 ± 5
102-38-0.5	11/14/2018	1422	Oil & Paint Storage	0 - 0.5	30 - 40	167 ± 6
102-39-0.5	11/14/2018	1424	Oil & Paint Storage	0 - 0.5	30 - 40	143 ± 6
102-40-0.5	11/14/2018	1425	Oil & Paint Storage	0 - 0.5	30 - 40	362 ± 8
102-41-0.5	11/14/2018	1427	Oil & Paint Storage	0 - 0.5	30 - 40	215 ± 6
102-42-0.5	11/14/2018	1428	Oil & Paint Storage	0 - 0.5	30 - 40	42 ± 4
103-001-0.5	11/15/2018	1343	Duplex	0 - 0.5	0 - 10	419 ± 11
103-002-0.5	11/15/2018	1345	Duplex	0 - 0.5	0 - 10	317 ± 9
103-003-0.5	11/15/2018	1346	Duplex	0 - 0.5	0 - 10	546 ± 13
103-004-0.5	11/15/2018	1347	Duplex	0 - 0.5	0 - 10	17 ± 4
103-005-0.5	11/15/2018	1349	Duplex	0 - 0.5	0 - 10	321 ± 9
103-006-0.5	11/15/2018	1351	Duplex	0 - 0.5	0 - 10	433 ± 11
103-007-0.5	11/15/2018	1352	Duplex	0 - 0.5	0 - 10	378 ± 40
103-008-0.5	11/15/2018	1353	Duplex	0 - 0.5	0 - 10	43 ± 5
103-009-0.5	11/15/2018	1356	Duplex	0 - 0.5	0 - 10	149 ± 7
103-010-0.5	11/15/2018	1357	Duplex	0 - 0.5	0 - 10	135 ± 7
103-011-0.5	11/15/2018	1358	Duplex	0 - 0.5	0 - 10	1352 ± 23
103-011-1.0	11/16/2018	1017	Duplex	0.5 - 1.0	0 - 10	130 ± 7
103-012-0.5	11/15/2018	1339	Duplex	0 - 0.5	0 - 10	1057 ± 19
103-012-1.0	11/16/2018	1018	Duplex	0.5 - 1.0	0 - 10	< 11



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
103-013-0.5	11/15/2018	1340	Duplex	0 - 0.5	0 - 10	13 ± 4
103-014-0.5	11/15/2018	1340	Duplex	0 - 0.5	0 - 10	212 ± 8
103-015-0.5	11/15/2018	1326	Duplex	0 - 0.5	0 - 10	56 ± 6
103-016-0.5	11/15/2018	1327	Duplex	0 - 0.5	0 - 10	653 ± 14
103-017-0.5	11/15/2018	1329	Duplex	0 - 0.5	0 - 10	25 ± 5
103-018-0.5	11/15/2018	1331	Duplex	0 - 0.5	0 - 10	183 ± 8
103-019-0.5	11/15/2018	1333	Duplex	0 - 0.5	0 - 10	917 ± 17
103-019-1.0	11/16/2018	1016	Duplex	0.5 - 1.0	0 - 10	17 ± 4
103-020-0.5	11/15/2018	1334	Duplex	0 - 0.5	0 - 10	367 ± 10
103-021-0.5	11/15/2018	1310	Duplex	0 - 0.5	0 - 10	504 ± 10
103-022-0.5	11/15/2018	1336	Duplex	0 - 0.5	0 - 10	90 ± 5
103-023-0.5	11/15/2018	1337	Duplex	0 - 0.5	0 - 10	16 ± 4
103-024-0.5	11/15/2018	1416	Duplex	0 - 0.5	10 - 20	98 ± 6
103-025-0.5	11/15/2018	1420	Duplex	0 - 0.5	10 - 20	256 ± 8
103-026-0.5	11/15/2018	1421	Duplex	0 - 0.5	10 - 20	110 ± 6
103-027-0.5	11/15/2018	1423	Duplex	0 - 0.5	10 - 20	131 ± 6
103-028-0.5	11/15/2018	1424	Duplex	0 - 0.5	10 - 20	194 ± 7
103-029-0.5	11/15/2018	1426	Duplex	0 - 0.5	10 - 20	112 ± 6
103-030-0.5	11/15/2018	1427	Duplex	0 - 0.5	10 - 20	430 ± 11
103-031-0.5	11/15/2018	1428	Duplex	0 - 0.5	10 - 20	60 ± 4
103-032-0.5	11/15/2018	1430	Duplex	0 - 0.5	10 - 20	133 ± 6
103-033-0.5	11/15/2018	1431	Duplex	0 - 0.5	10 - 20	154 ± 6
103-034-0.5	11/15/2018	1417	Duplex	0 - 0.5	10 - 20	806 ± 15
103-035-0.5	11/15/2018	1419	Duplex	0 - 0.5	10 - 20	368 ± 9
103-036-0.5	11/15/2018	1421	Duplex	0 - 0.5	10 - 20	55 ± 5
103-037-0.5	11/15/2018	1423	Duplex	0 - 0.5	10 - 20	155 ± 7
103-038-0.5	11/15/2018	1425	Duplex	0 - 0.5	10 - 20	80 ± 6



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
103-039-0.5	11/15/2018	1426	Duplex	0 - 0.5	10 - 20	699 ± 15
103-039-1.0	11/16/2018	1014	Duplex	0.5 - 1.0	10 - 20	< 11
103-040-0.5	11/15/2018	1428	Duplex	0 - 0.5	10 - 20	844 ± 16
103-041-0.5	11/15/2018	1430	Duplex	0 - 0.5	10 - 20	259 ± 8
103-042-0.5	11/15/2018	1431	Duplex	0 - 0.5	10 - 20	199 ± 7
103-043-0.5	11/15/2018	1433	Duplex	0 - 0.5	10 - 20	279 ± 8
103-044-0.5	11/15/2018	1434	Duplex	0 - 0.5	10 - 20	180 ± 7
103-045-0.5	11/15/2018	1436	Duplex	0 - 0.5	10 - 20	119 ± 6
103-046-0.5	11/15/2018	1437	Duplex	0 - 0.5	10 - 20	157 ± 6
103-047-0.5	11/15/2018	1439	Duplex	0 - 0.5	10 - 20	104 ± 6
103-048-0.5	11/15/2018	1440	Duplex	0 - 0.5	10 - 20	145 ± 6
103-049-0.5	11/15/2018	1441	Duplex	0 - 0.5	10 - 20	278 ± 8
103-050-0.5	11/15/2018	1443	Duplex	0 - 0.5	10 - 20	254 ± 8
103-051-0.5	11/15/2018	1435	Duplex	0 - 0.5	10 - 20	237 ± 8
103-052-0.5	11/15/2018	1503	Duplex	0 - 0.5	20 - 30	< 14
103-053-0.5	11/15/2018	1505	Duplex	0 - 0.5	20 - 30	37 ± 5
103-054-0.5	11/15/2018	1506	Duplex	0 - 0.5	20 - 30	124 ± 6
103-055-0.5	11/15/2018	1508	Duplex	0 - 0.5	20 - 30	88 ± 6
103-056-0.5	11/15/2018	1510	Duplex	0 - 0.5	20 - 30	65 ± 5
103-057-0.5	11/15/2018	1512	Duplex	0 - 0.5	20 - 30	57 ± 5
103-058-0.5	11/15/2018	1514	Duplex	0 - 0.5	20 - 30	52 ± 5
103-059-0.5	11/15/2018	1515	Duplex	0 - 0.5	20 - 30	12 ± 3
103-060-0.5	11/15/2018	1517	Duplex	0 - 0.5	20 - 30	92 ± 5
103-061-0.5	11/15/2018	1518	Duplex	0 - 0.5	20 - 30	231 ± 8
103-062-0.5	11/15/2018	1507	Duplex	0 - 0.5	20 - 30	29 ± 4
103-063-0.5	11/15/2018	1510	Duplex	0 - 0.5	20 - 30	39 ± 4
103-064-0.5	11/15/2018	1512	Duplex	0 - 0.5	20 - 30	55 ± 5



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
103-065-0.5	11/15/2018	1514	Duplex	0 - 0.5	20 - 30	35 ± 4
103-066-0.5	11/15/2018	1517	Duplex	0 - 0.5	20 - 30	43 ± 4
103-067-0.5	11/15/2018	1520	Duplex	0 - 0.5	20 - 30	32 ± 4
103-068-0.5	11/15/2018	1520	Duplex	0 - 0.5	20 - 30	94 ± 6
103-069-0.5	11/15/2018	1521	Duplex	0 - 0.5	20 - 30	31 ± 4
103-070-0.5	11/15/2018	1522	Duplex	0 - 0.5	20 - 30	73 ± 5
103-071-0.5	11/15/2018	1524	Duplex	0 - 0.5	20 - 30	143 ± 6
103-072-0.5	11/15/2018	1526	Duplex	0 - 0.5	20 - 30	367 ± 10
103-073-0.5	11/15/2018	1526	Duplex	0 - 0.5	20 - 30	164 ± 6
103-074-0.5	11/15/2018	1523	Duplex	0 - 0.5	20 - 30	83 ± 6
103-075-0.5	11/15/2018	1525	Duplex	0 - 0.5	20 - 30	134 ± 6
103-076-0.5	11/15/2018	1529	Duplex	0 - 0.5	20 - 30	116 ± 5
103-077-0.5	11/15/2018	1532	Duplex	0 - 0.5	20 - 30	68 ± 5
103-078-0.5	11/15/2018	1533	Duplex	0 - 0.5	20 - 30	308 ± 9
103-079-0.5	11/15/2018	1535	Duplex	0 - 0.5	20 - 30	31 ± 4
103-080-0.5	11/15/2018	1536	Duplex	0 - 0.5	20 - 30	109 ± 5
103-081-0.5	11/15/2018	1530	Duplex	0 - 0.5	20 - 30	186 ± 7
103-082-0.5	11/15/2018	1531	Duplex	0 - 0.5	20 - 30	78 ± 5
103-083-0.5	11/15/2018	1533	Duplex	0 - 0.5	20 - 30	147 ± 7
103-084-0.5	11/15/2018	1534	Duplex	0 - 0.5	20 - 30	54 ± 5
103-085-0.5	11/15/2018	1536	Duplex	0 - 0.5	20 - 30	128 ± 6
103-086-0.5	11/15/2018	1547	Duplex	0 - 0.5	30 - 40	32 ± 4
103-087-0.5	11/15/2018	1548	Duplex	0 - 0.5	30 - 40	75 ± 5
103-088-0.5	11/15/2018	1550	Duplex	0 - 0.5	30 - 40	58 ± 5
103-089-0.5	11/15/2018	1552	Duplex	0 - 0.5	30 - 40	60 ± 5
103-090-0.5	11/15/2018	1553	Duplex	0 - 0.5	30 - 40	62 ± 5
103-091-0.5	11/15/2018	1555	Duplex	0 - 0.5	30 - 40	32 ± 4



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
103-092-0.5	11/15/2018	1557	Duplex	0 - 0.5	30 - 40	32 ± 4
103-093-0.5	11/15/2018	1558	Duplex	0 - 0.5	30 - 40	19 ± 4
103-094-0.5	11/15/2018	1603	Duplex	0 - 0.5	30 - 40	< 11
103-095-0.5	11/15/2018	1604	Duplex	0 - 0.5	30 - 40	203 ± 6
103-096-0.5	11/15/2018	1606	Duplex	0 - 0.5	30 - 40	98 ± 5
103-097-0.5	11/15/2018	1613	Duplex	0 - 0.5	30 - 40	70 ± 6
103-098-0.5	11/15/2018	1615	Duplex	0 - 0.5	30 - 40	133 ± 6
103-099-0.5	11/15/2018	1616	Duplex	0 - 0.5	30 - 40	94 ± 6
103-100-0.5	11/15/2018	1618	Duplex	0 - 0.5	30 - 40	43 ± 5
103-101-0.5	11/15/2018	1619	Duplex	0 - 0.5	30 - 40	44 ± 5
103-102-0.5	11/15/2018	1620	Duplex	0 - 0.5	30 - 40	33 ± 4
103-103-0.5	11/15/2018	1622	Duplex	0 - 0.5	30 - 40	33 ± 4
103-104-0.5	11/15/2018	1623	Duplex	0 - 0.5	30 - 40	32 ± 4
103-105-0.5	11/16/2018	902	Duplex	0 - 0.5	30 - 40	47 ± 5
103-106-0.5	11/16/2018	904	Duplex	0 - 0.5	30 - 40	382 ± 10
103-107-0.5	11/16/2018	906	Duplex	0 - 0.5	30 - 40	115 ± 6
103-108-0.5	11/16/2018	907	Duplex	0 - 0.5	30 - 40	284 ± 8
103-109-0.5	11/16/2018	910	Duplex	0 - 0.5	30 - 40	326 ± 10
103-110-0.5	11/16/2018	611	Duplex	0 - 0.5	30 - 40	177 ± 7
103-111-0.5	11/16/2018	908	Duplex	0 - 0.5	30 - 40	34 ± 4
103-112-0.5	11/16/2018	910	Duplex	0 - 0.5	30 - 40	35 ± 4
103-113-0.5	11/16/2018	911	Duplex	0 - 0.5	30 - 40	147 ± 4
103-114-0.5	11/16/2018	913	Duplex	0 - 0.5	30 - 40	89 ± 5
103-115-0.5	11/16/2018	613	Duplex	0 - 0.5	30 - 40	87 ± 5
103-116-0.5	11/16/2018	615	Duplex	0 - 0.5	30 - 40	87 ± 5
103-117-0.5	11/16/2018	617	Duplex	0 - 0.5	30 - 40	118 ± 6
103-118-0.5	11/16/2018	915	Duplex	0 - 0.5	30 - 40	152 ± 6



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
103-119-0.5	11/16/2018	917	Duplex	0 - 0.5	30 - 40	189 ± 6
103-120-0.5	11/16/2018	919	Duplex	0 - 0.5	30 - 40	159 ± 7
103-121-0.5	11/16/2018	919	Duplex	0 - 0.5	30 - 40	157 ± 6
104-01-0.5	11/16/2018	1035	OIC Quarters	0 - 0.5	10 - 20	182 ± 7
104-02-0.5	11/16/2018	1038	OIC Quarters	0 - 0.5	10 - 20	148 ± 7
104-03-0.5	11/16/2018	1039	OIC Quarters	0 - 0.5	10 - 20	134 ± 6
104-04-0.5	11/16/2018	1041	OIC Quarters	0 - 0.5	10 - 20	196 ± 7
104-05-0.5	11/16/2018	1041	OIC Quarters	0 - 0.5	10 - 20	193 ± 7
104-06-0.5	11/16/2018	1047	OIC Quarters	0 - 0.5	10 - 20	87 ± 5
104-07-0.5	11/16/2018	1048	OIC Quarters	0 - 0.5	20 - 30	72 ± 5
104-08-0.5	11/16/2018	1050	OIC Quarters	0 - 0.5	20 - 30	38 ± 5
104-09-0.5	11/16/2018	1051	OIC Quarters	0 - 0.5	10 - 20	88 ± 5
104-10-0.5	11/16/2018	1053	OIC Quarters	0 - 0.5	0 - 10	48 ± 5
104-11-0.5	11/16/2018	1107	OIC Quarters	0 - 0.5	0 - 10	146 ± 7
104-12-0.5	11/16/2018	1118	OIC Quarters	0 - 0.5	0 - 10	16 ± 3
104-13-0.5	11/16/2018	1119	OIC Quarters	0 - 0.5	0 - 10	75 ± 5
104-14-0.5	11/16/2018	1120	OIC Quarters	0 - 0.5	0 - 10	68 ± 5
104-15-0.5	11/16/2018	1044	OIC Quarters	0 - 0.5	0 - 10	590 ± 13
104-15-1.0	11/16/2018	1256	OIC Quarters	0.5 - 1.0	0 - 10	162 ± 7
104-16-0.5	11/16/2018	1045	OIC Quarters	0 - 0.5	10 - 20	197 ± 7
104-17-0.5	11/16/2018	1047	OIC Quarters	0 - 0.5	20 - 30	78 ± 5
104-18-0.5	11/16/2018	1049	OIC Quarters	0 - 0.5	0 - 10	289 ± 9
104-19-0.5	11/16/2018	1052	OIC Quarters	0 - 0.5	10 - 20	287 ± 9
104-20-0.5	11/16/2018	1053	OIC Quarters	0 - 0.5	20 - 30	73 ± 5
104-21-0.5	11/16/2018	1108	OIC Quarters	0 - 0.5	20 - 30	150 ± 6
104-22-0.5	11/16/2018	1109	OIC Quarters	0 - 0.5	10 - 20	427 ± 10
104-22-1.0	11/16/2018	1254	OIC Quarters	0.5 - 1.0	10 - 20	130 ± 5



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
104-23-0.5	11/16/2018	1110	OIC Quarters	0 - 0.5	0 - 10	75 ± 5
104-24-0.5	11/16/2018	1111	OIC Quarters	0 - 0.5	30 - 40	196 ± 8
104-25-0.5	11/16/2018	1115	OIC Quarters	0 - 0.5	20 - 30	110 ± 7
104-26-0.5	11/16/2018	1116	OIC Quarters	0 - 0.5	10 - 20	148 ± 6
104-27-0.5	11/16/2018	1117	OIC Quarters	0 - 0.5	0 - 10	1241 ± 22
104-27-1.0	11/16/2018	1253	OIC Quarters	0.5 - 1.0	0 - 10	1890 ± 30
104-27-1.5	11/16/2018	1304	OIC Quarters	1.0 - 1.5	0 - 10	2095 ± 32
104-27-2.0	11/16/2018	1312	OIC Quarters	1.5 - 2.0	0 - 10	3345 ± 47
104-28-0.5	11/16/2018	1113	OIC Quarters	0 - 0.5	30 - 40	23 ± 4
104-29-0.5	11/16/2018	1112	OIC Quarters	0 - 0.5	20 - 30	98 ± 5
104-30-0.5	11/16/2018	1116	OIC Quarters	0 - 0.5	10 - 20	74 ± 5
104-31-0.5	11/16/2018	1135	OIC Quarters	0 - 0.5	20 - 30	15 ± 3
104-32-0.5	11/16/2018	1214	OIC Quarters	0 - 0.5	10 - 20	44 ± 5
104-33-0.5	11/16/2018	1212	OIC Quarters	0 - 0.5	20 - 30	< 12
104-34-0.5	11/16/2018	1208	OIC Quarters	0 - 0.5	30 - 40	22 ± 4
104-35-0.5	11/16/2018	1207	OIC Quarters	0 - 0.5	30 - 40	42 ± 5
104-36-0.5	11/16/2018	1214	OIC Quarters	0 - 0.5	20 - 30	80 ± 5
104-37-0.5	11/16/2018	1213	OIC Quarters	0 - 0.5	10 - 20	118 ± 5
104-38-0.5	11/16/2018	1150	OIC Quarters	0 - 0.5	0 - 10	444 ± 10
104-38-1.0	11/16/2018	1258	OIC Quarters	0.5 - 1.0	0 - 10	11 ± 3
104-39-0.5	11/16/2018	1152	OIC Quarters	0 - 0.5	0 - 10	307 ± 9
104-40-0.5	11/16/2018	1210	OIC Quarters	0 - 0.5	10 - 20	3447 ± 45
104-40-1.0	11/16/2018	1259	OIC Quarters	0.5 - 1.0	10 - 20	197 ± 8
104-41-0.5	11/16/2018	1209	OIC Quarters	0 - 0.5	20 - 30	86 ± 5
104-42-0.5	11/16/2018	1208	OIC Quarters	0 - 0.5	30 - 40	< 10
104-43-0.5	11/16/2018	1206	OIC Quarters	0 - 0.5	30 - 40	31 ± 3
104-44-0.5	11/16/2018	1205	OIC Quarters	0 - 0.5	20 - 30	52 ± 4



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
104-45-0.5	11/16/2018	1154	OIC Quarters	0 - 0.5	10 - 20	84 ± 5
104-46-0.5	11/16/2018	1155	OIC Quarters	0 - 0.5	0 - 10	200 ± 7
104-47-0.5	11/16/2018	1139	OIC Quarters	0 - 0.5	0 - 10	90 ± 5
104-48-0.5	11/16/2018	1157	OIC Quarters	0 - 0.5	10 - 20	45 ± 4
104-49-0.5	11/16/2018	1158	OIC Quarters	0 - 0.5	20 - 30	43 ± 4
104-50-0.5	11/16/2018	1200	OIC Quarters	0 - 0.5	30 - 40	12 ± 4
104-51-0.5	11/16/2018	1202	OIC Quarters	0 - 0.5	30 - 40	17 ± 3
104-52-0.5	11/16/2018	1152	OIC Quarters	0 - 0.5	20 - 30	14 ± 4
104-53-0.5	11/16/2018	1154	OIC Quarters	0 - 0.5	10 - 20	29 ± 4
104-54-0.5	11/16/2018	1141	OIC Quarters	0 - 0.5	10 - 20	37 ± 4
104-55-0.5	11/16/2018	1155	OIC Quarters	0 - 0.5	20 - 30	35 ± 4
104-56-0.5	11/16/2018	1157	OIC Quarters	0 - 0.5	20 - 30	42 ± 4
104-57-0.5	11/16/2018	1159	OIC Quarters	0 - 0.5	20 - 30	55 ± 4
104-58-0.5	11/16/2018	1201	OIC Quarters	0 - 0.5	30 - 40	49 ± 5
104-59-0.5	11/16/2018	1202	OIC Quarters	0 - 0.5	30 - 40	58 ± 5
104-60-0.5	11/16/2018	1203	OIC Quarters	0 - 0.5	30 - 40	30 ± 4
104-61-0.5	11/16/2018	1204	OIC Quarters	0 - 0.5	30 - 40	34 ± 4
104-62-0.5	11/16/2018	1144	OIC Quarters	0 - 0.5	30 - 40	32 ± 4
104-63-0.5	11/16/2018	1146	OIC Quarters	0 - 0.5	0 - 10	160 ± 7
104-64-0.5	11/16/2018	1148	OIC Quarters	0 - 0.5	10 - 20	34 ± 3
104-65-0.5	11/16/2018	1134	OIC Quarters	0 - 0.5	20 - 30	1011 ± 18
104-65-1.0	11/16/2018	1309	OIC Quarters	0.5 - 1.0	20 - 30	1823 ± 38
104-65-1.5	11/16/2018	1318	OIC Quarters	1.0 - 1.5	20 - 30	165 ± 7
104-66-0.5	11/16/2018	1139	OIC Quarters	0 - 0.5	30 - 40	31 ± 4
104-67-0.5	11/16/2018	1140	OIC Quarters	0 - 0.5	30 - 40	16 ± 4
104-68-0.5	11/16/2018	1143	OIC Quarters	0 - 0.5	20 - 30	101 ± 6
104-69-0.5	11/16/2018	1145	OIC Quarters	0 - 0.5	10 - 20	39 ± 4



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
104-70-0.5	11/16/2018	1147	OIC Quarters	0 - 0.5	0 - 10	87 ± 6
105-01-0.5	11/14/2018	956	Boathouse	0 - 0.5	0 - 10	448 ± 9
105-01-1.0	11/14/2018	1150	Boathouse	0.5 - 1.0	0 - 10	55 ± 5
105-02-0.5	11/14/2018	1002	Boathouse	0 - 0.5	0 - 10	126 ± 5
105-03-0.5	11/14/2018	1005	Boathouse	0 - 0.5	0 - 10	143 ± 5
105-04-0.5	11/14/2018	1007	Boathouse	0 - 0.5	0 - 10	130 ± 5
105-05-0.5'	11/14/2018	1009	Boathouse	0 - 0.5	0 - 10	79 ± 4
105-06-0.5'	11/14/2018	1012	Boathouse	0 - 0.5	0 - 10	67 ± 4
105-07-0.5	11/14/2018	956	Boathouse	0 - 0.5	0 - 10	81 ± 5
105-08-0.5	11/14/2018	959	Boathouse	0 - 0.5	0 - 10	44 ± 4
105-09-0.5	11/14/2018	1001	Boathouse	0 - 0.5	0 - 10	< 12
105-10-0.5	11/14/2018	1004	Boathouse	0 - 0.5	0 - 10	198 ± 7
105-11-0.5	11/14/2018	1007	Boathouse	0 - 0.5	0 - 10	412 ± 10
105-11-1.0	11/14/2018	1153	Boathouse	0.5 - 1.0	0 - 10	21 ± 4
105-12-0.5	11/14/2018	1015	Boathouse	0 - 0.5	0 - 10	52 ± 5
105-13-0.5	11/14/2018	1018	Boathouse	0 - 0.5	10 - 20	283 ± 8
105-13-1.0	11/14/2018	1152	Boathouse	0.5 - 1.0	10 - 20	10 ± 3
105-14-0.5	11/14/2018	1020	Boathouse	0 - 0.5	10 - 20	60 ± 4
105-15-0.5	11/14/2018	1022	Boathouse	0 - 0.5	10 - 20	35 ± 4
105-16-0.5	11/14/2018	1024	Boathouse	0 - 0.5	10 - 20	57 ± 3
105-17-0.5	11/14/2018	1020	Boathouse	0 - 0.5	10 - 20	31 ± 4
105-18-0.5	11/14/2018	1022	Boathouse	0 - 0.5	10 - 20	32 ± 4
105-19-0.5	11/14/2018	1024	Boathouse	0 - 0.5	10 - 20	24 ± 4
105-20-0.5	11/14/2018	1026	Boathouse	0 - 0.5	10 - 20	30 ± 4
105-21-0.5	11/14/2018	1043	Boathouse	0 - 0.5	10 - 20	36 ± 3
105-22-0.5	11/14/2018	1045	Boathouse	0 - 0.5	10 - 20	45 ± 3
105-23-0.5	11/14/2018	1047	Boathouse	0 - 0.5	10 - 20	223 ± 7



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
105-24-0.5	11/14/2018	1050	Boathouse	0 - 0.5	10 - 20	134 ± 6
105-25-0.5	11/14/2018	1052	Boathouse	0 - 0.5	10 - 20	197 ± 6
105-26-0.5	11/14/2018	1041	Boathouse	0 - 0.5	10 - 20	207 ± 8
105-27-0.5	11/14/2018	1047	Boathouse	0 - 0.5	20 - 30	89 ± 5
105-28-0.5	11/14/2018	1049	Boathouse	0 - 0.5	20 - 30	31 ± 4
105-29-0.5	11/14/2018	1051	Boathouse	0 - 0.5	20 - 30	34 ± 4
105-30-0.5	11/14/2018	1053	Boathouse	0 - 0.5	20 - 30	48 ± 5
105-31-0.5	11/14/2018	1100	Boathouse	0 - 0.5	20 - 30	44 ± 3
105-32-0.5	11/14/2018	1102	Boathouse	0 - 0.5	20 - 30	44 ± 3
105-33-0.5	11/14/2018	1103	Boathouse	0 - 0.5	20 - 30	50 ± 3
105-34-0.5	11/14/2018	1105	Boathouse	0 - 0.5	20 - 30	32 ± 3
105-35-0.5	11/14/2018	1106	Boathouse	0 - 0.5	20 - 30	32 ± 4
105-36-0.5	11/14/2018	1107	Boathouse	0 - 0.5	20 - 30	26 ± 3
105-37-0.5	11/14/2018	1104	Boathouse	0 - 0.5	20 - 30	14 ± 4
105-38-0.5	11/14/2018	1105	Boathouse	0 - 0.5	20 - 30	22 ± 4
105-39-0.5	11/14/2018	1108	Boathouse	0 - 0.5	20 - 30	23 ± 4
105-40-0.5	11/14/2018	1109	Boathouse	0 - 0.5	20 - 30	57 ± 5
105-41-0.5	11/14/2018	1110	Boathouse	0 - 0.5	20 - 30	42 ± 5
105-42-0.5	11/14/2018	1111	Boathouse	0 - 0.5	30 - 40	30 ± 4
105-43-0.5	11/14/2018	1117	Boathouse	0 - 0.5	30 - 40	54 ± 4
105-44-0.5	11/14/2018	1120	Boathouse	0 - 0.5	30 - 40	22 ± 4
105-45-0.5	11/14/2018	1123	Boathouse	0 - 0.5	30 - 40	31 ± 4
105-46-0.5	11/14/2018	1125	Boathouse	0 - 0.5	30 - 40	26 ± 4
105-47-0.5	11/14/2018	1121	Boathouse	0 - 0.5	30 - 40	27 ± 3
105-48-0.5	11/14/2018	1123	Boathouse	0 - 0.5	30 - 40	21 ± 3
105-49-0.5	11/14/2018	1125	Boathouse	0 - 0.5	30 - 40	32 ± 3
105-50-0.5	11/14/2018	1127	Boathouse	0 - 0.5	30 - 40	66 ± 4



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
105-51-0.5	11/14/2018	1129	Boathouse	0 - 0.5	30 - 40	25 ± 3
105-52-0.5	11/14/2018	1200	Boathouse	0 - 0.5	30 - 40	27 ± 3
105-53-0.5	11/14/2018	1202	Boathouse	0 - 0.5	30 - 40	18 ± 3
105-54-0.5	11/14/2018	1204	Boathouse	0 - 0.5	30 - 40	33 ± 3
105-55-0.5	11/14/2018	1206	Boathouse	0 - 0.5	30 - 40	55 ± 4
105-56-0.5	11/14/2018	1207	Boathouse	0 - 0.5	30 - 40	37 ± 4
105-57-0.5	11/14/2018	1208	Boathouse	0 - 0.5	30 - 40	35 ± 4
105-58-0.5	11/14/2018	1210	Boathouse	0 - 0.5	30 - 40	51 ± 5
105-59-0.5	11/14/2018	1212	Boathouse	0 - 0.5	30 - 40	51 ± 5
106-1-0.5	11/14/2018	1435	Pumphouse	0 - 0.5	0 - 10	111 ± 5
106-2-0.5	11/14/2018	1438	Pumphouse	0 - 0.5	0 - 10	61 ± 6
106-3-0.5	11/14/2018	1439	Pumphouse	0 - 0.5	0 - 10	9 ± 3
107-1-0.5	11/16/2018	1225	Firehouse Pump	0 - 0.5	0 - 10	51 ± 4
107-2-0.5	11/16/2018	1228	Firehouse Pump	0 - 0.5	0 - 10	65 ± 4
107-3-0.5	11/16/2018	1229	Firehouse Pump	0 - 0.5	0 - 10	42 ± 4
107-4-0.5	11/16/2018	1221	Firehouse Pump	0 - 0.5	0 - 10	281 ± 9
112-1-0.5	11/13/2018	1604	Above Ground Fuel Tank	0 - 0.5	0 - 10	557 ± 16
112-1-1.0	11/14/2018	1348	Above Ground Fuel Tank	0.5 - 1.0	0 - 10	64 ± 4
112-2-0.5	11/13/2018	1606	Above Ground Fuel Tank	0 - 0.5	0 - 10	1086 ± 18
112-2-1.0	11/14/2018	1344	Above Ground Fuel Tank	0.5 - 1.0	0 - 10	194 ± 6
112-3-0.5	11/13/2018	1607	Above Ground Fuel Tank	0 - 0.5	0 - 10	312 ± 9
112-4-0.5	11/13/2018	1610	Above Ground Fuel Tank	0 - 0.5	0 - 10	99 ± 2
112-5-0.5	11/13/2018	1612	Above Ground Fuel Tank	0 - 0.5	0 - 10	158 ± 7
112-6-0.5	11/13/2018	1614	Above Ground Fuel Tank	0 - 0.5	0 - 10	178 ± 7
112-7-0.5	11/13/2018	1615	Above Ground Fuel Tank	0 - 0.5	0 - 10	318 ± 9
112-8-0.5	11/13/2018	1617	Above Ground Fuel Tank	0 - 0.5	0 - 10	125 ± 6
WT-1-1-0.5	11/13/2018	1514	Water Tanks	0 - 0.5	0 - 10	127 ± 6



Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm) <sup>1</sup>
WT-1-2-0.5	11/13/2018	1552	Water Tanks	0 - 0.5	0 - 10	63 ± 6
WT-1-3-0.5	11/13/2018	1554	Water Tanks	0 - 0.5	0 - 10	79 ± 6
WT-2-1-0.5	11/13/2018	1520	Water Tanks	0 - 0.5	0 - 10	97 ± 6
WT-2-2-0.5	11/13/2018	1522	Water Tanks	0 - 0.5	0 - 10	2222 ± 31
WT-2-2-1.0	11/13/2018	1620	Water Tanks	0.5 - 1.0	0 - 10	692 ± 14
WT-2-2-1.5	11/14/2018	1346	Water Tanks	1.0 - 1.5	0 - 10	159 ± 6
WT-2-3-0.5	11/13/2018	1527	Water Tanks	0 - 0.5	0 - 10	259 ± 9
WT-2-4-0.5	11/13/2018	1527	Water Tanks	0 - 0.5	0 - 10	142 ± 7
WT-3-1-0.5	11/13/2018	1531	Water Tanks	0 - 0.5	0 - 10	218 ± 9
WT-3-2-0.5	11/13/2018	1535	Water Tanks	0 - 0.5	0 - 10	< 10
WT-3-3-0.5	11/13/2018	1543	Water Tanks	0 - 0.5	0 - 10	108 ± 6
WT-4-1-0.5	11/13/2018	1546	Water Tanks	0 - 0.5	0 - 10	< 11
WT-4-2-0.5	11/13/2018	1549	Water Tanks	0 - 0.5	0 - 10	15 ± 4
WT-4-3-0.5	11/13/2018	1550	Water Tanks	0 - 0.5	0 - 10	< 11

#### Notes:

1. Concentrations that were not detected by the XRF analyzer are indicated by a "<" symbol with the detection level shown. The standard deviation provided by the XRF analyzer is indicated after the recorded value.

bgs = below ground surface

OIC = Officer In Charge

ppm = parts per million

XRF = x-ray fluorescence

# PRELIMINARY DRAFT



Sampling Area	Number of XRF Soil Samples	XRF Detecte	ed Lead Concen (ppm)	Number of Samples Greater Than 300 ppm	
	3011 Samples	Low	High	Average <sup>1</sup>	Greater Than 500 ppin
Light and Fog Signal Building (101)	68	19	8,975	795	38
Former Oil & Paint Storage Building (102)	53	15	5,643	650	21
Duplex (103)	125	12	1,352	184	21
Former Officer In Charge Quarters (104)	79	11	3,447	291	11
Boathouse (105)	62	10	448	74	2
Pumphouse & Spring Cistern (106)	3	9	111	60	0
Former Firehouse Pump Building (107)	4	42	281	110	0
Salt Water Flushing Pumphouse (108)	2				
Former Water Tanks (109, 110, 111)	15	15	2,222	348	2
Former Above Ground Fuel Oil Tank (112)	10	64	1,086	309	4

#### Notes:

- 1. Average concentration is presented for reference only. The result shown is not normalized to area and does not account for areas that could not be readily accessed for sampling. Concentrations may be skewed in areas where spatial distribution was not consistent around the entire structure.
- 2. No samples were collected from the area surrounding the Salt Water Flushing Pumphouse as there was not significant soil that could be readily collected.

ppm = parts per million

Concentration Range (ppm)	Number of XRF Soil Samples	Percent of Total
<175	267	64%
175-250	35	8%
250-500	56	13%
500-1000	29	7%
>1000	32	8%

Table 3
Mobilization 1 Summary Table
USCG Burrows Island Light Station
Burrows Island, Washington



Location ID	Location Name	Picture	XRF Samples	High (ppm)	Low (ppm)	Number of samples >300 ppm	Number of Analytical Samples	Comments
101	Light and Fog Signal Station	1/13/2018	68 total 60, 0.0-0.5 feet 7, 0.5-1.0 feet 1, 1.0-1.5 feet	8,975 ± 67	19 ± 3	38	5	<ul> <li>Paint chipping visible on some window sills and trim.</li> <li>Additional samples collected for PCB analysis from south of the building</li> <li>Bedrock outcroppings visible on west side of building towards the water</li> </ul>
102	Oil and Paint Storage Building	11/13/2018 14:16	<b>53 total</b> 42, 0.0-0.5 feet 11, 0.5-1.0 feet	5,643 ± 48	15 ± 4	21	6	<ul> <li>Sloped area present west of the concrete pad with large aggregate, possibly a retaining wall or other structure</li> <li>Shallow bedrock present west of former building</li> </ul>
103	Duplex	11/13/2018 13-41 13-54	<b>125 total</b> 121, 0.0-0.5 feet 4, 0.5-1.0 feet	1,352 ± 23	ND, <11	21	5	<ul> <li>Visible paint chipping and sloughing in areas on trim and from porches. Also very weathered in drip lines.</li> <li>Removal area within parts of the sidewalks adjacent to building.</li> <li>Fence around the east side of building is chipping and in poor condition.</li> </ul>

Table 3
Mobilization 1 Summary Table
USCG Burrows Island Light Station
Burrows Island, Washington



Location ID	Location Name	Picture	XRF Samples	High (ppm)	Low (ppm)	Number of samples >300 ppm	Number of Analytical Samples	Comments
104	OIC Quarters		<b>79 total</b> 70, 0.0-0.5 feet 6, 0.5-1.0 feet 2, 1.0-1.5 feet 1, 1.5-2.0 feet	3,447 ± 45	ND, <10	11	7	<ul> <li>Foundation and other remnants of building present and overgrown by trees and ivy. Limited soil or sampling was possible within the apparent building footprint.</li> <li>Location on NE side of former building encountered charcoal and other woody debris with elevated XRF readings (&gt;1,000 ppm) from surface to 2 feet bgs.</li> <li>West of footprint not accessible due to steep slope and helicopter pad.</li> </ul>
105	Boathouse	11/13/2018 14:19	<b>62 total</b> 59, 0.0-0.5 feet 3, 0.5-1.0 feet	448 ± 9	ND, <12	2	6	<ul> <li>Apparent excavation and replacement of siding along east, south and west sides.</li> <li>North side inaccessible for sampling due to slope and rocks.</li> <li>Some building materials with paint encountered east of the building</li> </ul>
106	Pumphouse and Spring Cistern		<b>3 total</b> 3, 0.0-0.5 feet	111 ± 5	9 ± 3	0	0	<ul> <li>Access limited, steep slope to get down to the building.</li> <li>Samples collected in sand/soil adjacent to buildings.</li> <li>Limited area that could be sampled.</li> </ul>

Table 3
Mobilization 1 Summary Table
USCG Burrows Island Light Station
Burrows Island, Washington



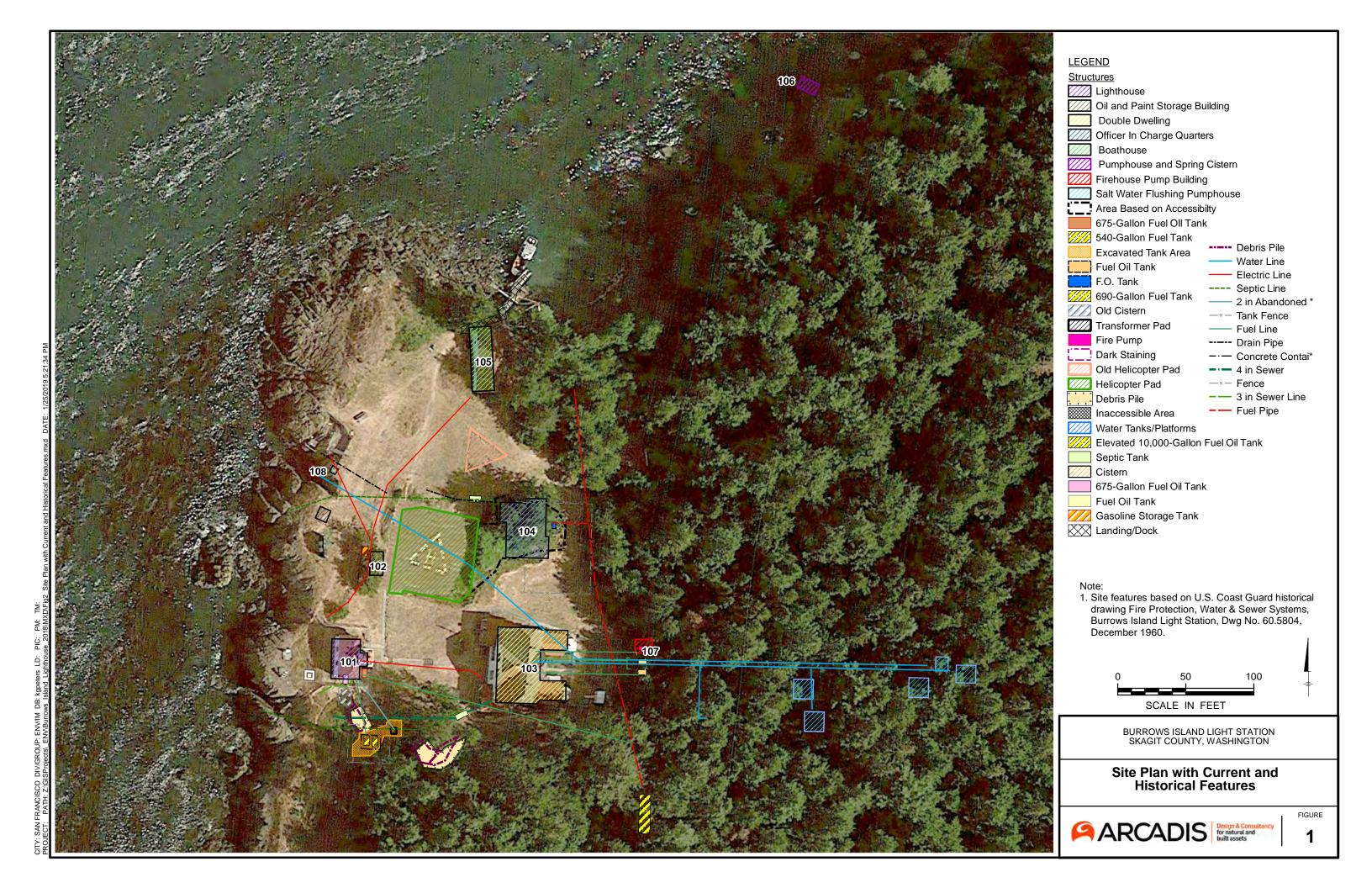
Location ID	Location Name	Picture	XRF Samples	High (ppm)	Low (ppm)	Number of samples >300 ppm	Number of Analytical Samples	Comments
107	Firehouse Pump Building		<b>4 total</b> 4, 0.0-0.5 feet	281 ± 9	31 ± 4	0	0	Former pad very overgrown, sampling access is limited due to brush and trees.
108	Salt Water Flushing Pumphouse	11/16/2018 10:47	None					<ul> <li>No XRF samples collected due to lack of soil in vicinity of the structure.</li> <li>Some woody debris and sediment present within the structure, but appears to be contained on the concrete footing.</li> <li>Concrete appears to have been poured directly onto bedrock/</li> </ul>
109, 110, 111	Water Tanks	11/13/2018	<b>15 total</b> 13, 0.0-0.5 feet 1, 0.5-1.0 feet 1, 1.0-1.5 feet	2,222 ± 31	ND, <11	2	2	<ul> <li>4 tank stands identified and located, orientation different from that shown on historical drawings.</li> <li>Tanks are collapsed, pad structures remain. Painted material visible as well as some piping.</li> <li>Once location had elevated readings, with samples collected from two additional depths.</li> </ul>

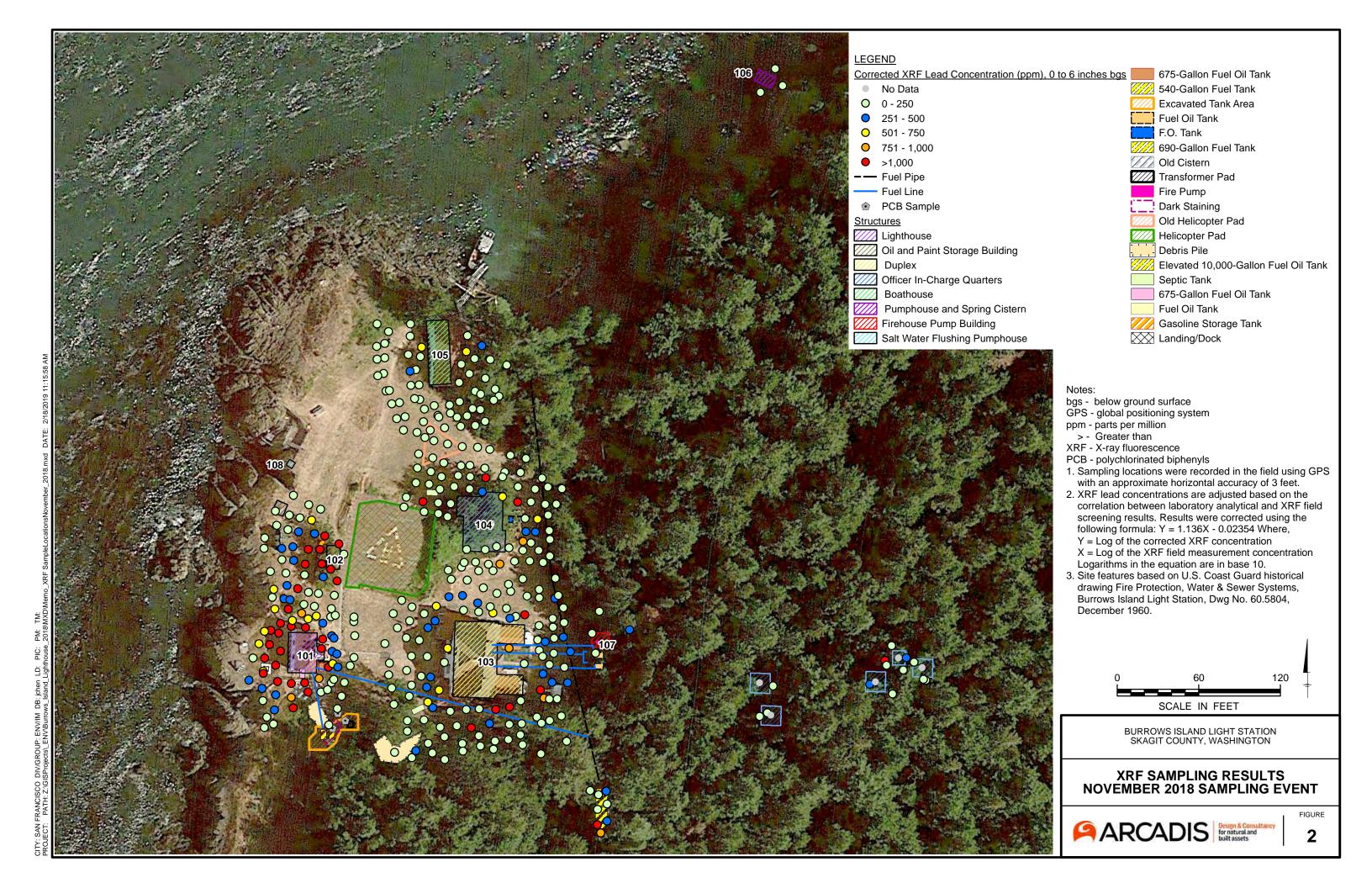
Table 3
Mobilization 1 Summary Table
USCG Burrows Island Light Station
Burrows Island, Washington



Location ID	Location Name	Picture	XRF Samples	High (ppm)	Low (ppm)	samples	Number of Analytical Samples	Comments
112	10,000- Gallon Fuel AST	11/13/2010 15:56	<b>9 total</b> 7, 0.0-0.5 2, 0.5-1.0	1,086 ± 18	64 ± 4	4	1	<ul> <li>Concrete stands for tank and pipeline components remaining, tank is no longer present.</li> <li>Area overgrown with ivy and brush.</li> <li>Pipeline visible at connection to former loading area east of the boathouse.</li> </ul>

# **FIGURES**





# **ATTACHMENT 1**

Photo Log



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 1

Date:

11/13/2018

**Description:** 

East side of light station

Location:

Light and Fog Signal Building (101)



Photo: 2

Date:

11/13/2018

**Description:** 

Peeling paint at light station

**Location:** 

Light and Fog Signal Building (101)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 3

Date:

11/13/2018

**Description:** 

West side of light station

**Location:** 

Light and Fog Signal Building (101)



Photo: 4

Date:

11/13/2018

**Description:** 

North side of light station

Location:

Light and Fog Signal Building (101)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 5

Date:

11/13/2018

**Description:** 

Pipe visible on southwest side of Light and Fog Signal Building

Location:

Light and Fog Signal Building (101)



Photo: 6

Date:

11/13/2018

**Description:** 

North side of Duplex

**Location:** 



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 7

Date:

11/13/2018

**Description:** 

West side of Duplex

Location:

**Duplex (103)** 



Photo: 8

Date:

11/13/2018

**Description:** 

Debris piles southwest of the Duplex

**Location:** 



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 9

Date:

11/13/2018

**Description:** 

Area of previous soil removal on south side of Duplex

Location:

**Duplex (103)** 



Photo: 10

Date:

11/15/2018

**Description:** 

Peeling paint visible on east side of Duplex

**Location:** 



Burrows Island Light Station Burrows Island, Anacortes, WA







Photo: 11

Date:

11/15/2018

**Description:** 

Paint deterioration visible on drip lines and trim on north side of Duplex

**Location:** 

**Duplex (103)** 

Photo: 12

Date:

11/15/2018

**Description:** 

Chipped paint in soil on west side of Duplex

**Location:** 



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 13

Date:

11/15/2018

**Description:** 

Peeling paint on trim on north side of Duplex

Location:

**Duplex (103)** 



Photo: 14

Date:

11/13/2018

**Description:** 

Fence on east side of Duplex

**Location:** 



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 15

Date:

11/13/2018

**Description:** 

East side of Duplex with water tanks

Location:

**Duplex (103)** 



Photo: 16

Date:

11/13/2018

**Description:** 

Fence and water tanks at southeast corner of Duplex

**Location:** 



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 17

Date:

11/13/2018

**Description:** 

Remaining concrete support structure for tank

Location:

Former Above Ground Fuel Oil Tank (112)



Photo: 18

Date:

11/13/2018

**Description:** 

Pipeline leading north from former tank

**Location:** 

Former Above Ground Fuel Oil Tank (112)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 19

Date:

11/13/2018

**Description:** 

West side of Boathouse

Location:

Boathouse (105)



Photo: 20

Date:

11/13/2018

**Description:** 

Excavated area at southwest side of Boathouse

Location:

Boathouse (DU-105)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 21

Date:

11/13/2018

**Description:** 

East side of Boathouse with excavated area

Location:

Boathouse (105)



Photo: 22

Date:

11/13/2018

**Description:** 

North side of boathouse at entrance to dock

Location:

Boathouse (105)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 23

Date:

11/15/2018

# **Description:**

Cistern identified south of the Light and Fog Signal Building

#### Location:

Light and Fog Signal Building (101)



Photo: 24

Date:

11/15/2018

#### **Description:**

Cistern identified south of the Light and Fog Signal Building

### **Location:**

Light and Fog Signal Building (101)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 25

Date:

11/13/2018

**Description:** 

Helicopter pad with Boathouse in distance and OIC Quarters uphill.

**Location:** 

Helicopter pad



Photo: 26

Date:

11/13/2018

**Description:** 

Concrete foundation from Former Oil & Paint Storage Building west of helicopter pad

Location:

Former Oil & Paint Storage Building (102)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 27

Date:

11/15/2018

# **Description:**

Concrete foundation from Former Oil & Paint Storage Building west of helicopter pad

#### **Location:**

Former Oil & Paint Storage Building (102)



Photo: 28

Date:

11/15/2018

#### **Description:**

Obstruction west of Former Oil & Paint Storage Building

#### Location:

Former Oil & Paint Storage Building (102)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 29

Date:

11/13/2018

**Description:** 

Location of former PCB oil spill

Location:

Light and Fog Signal Building (101)



Photo: 30

Date:

11/16/2018

**Description:** 

Location of former PCB oil spill

**Location:** 

Light and Fog Signal Building (101)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 31

Date:

11/16/2018

**Description:** 

Location of former PCB oil spill

Location:

Light and Fog Signal Building (101)



Photo: 32

Date:

11/13/2018

**Description:** 

Pipe in the back of the pumphouse building

**Location:** 

Pumphouse and Spring Cistern (106)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 33

Date:

11/13/2018

**Description:** 

Pumphouse

**Location:** 

Pumphouse and Spring

Cistern (106)



Photo: 34

Date:

11/13/2018

**Description:** 

West-facing view of salt water flushing pumphouse

**Location:** 

Salt Water Flushing Pumphouse (108)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 35

Date:

11/16/2018

**Description:** 

Salt water pumphouse on concrete foundation

Location:

Salt Water Flushing Pumphouse (108)



Photo: 36

Date:

11/13/2018

**Description:** 

Platform for water tank in the forest

**Location:** 

Former Water Tanks (109, 110, 111)



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 37

Date:

11/13/2018

**Description:** 

Platform for water tank in the forest

Location:

Former Water Tanks (109, 110, 111)



Photo: 38

Date:

11/16/2018

**Description:** 

Concrete foundation of Former Firehouse Pump Building

**Location:** 

Former Firehouse Pump Building (107)

View | HeaderFooter 19



Burrows Island Light Station Burrows Island, Anacortes, WA



Photo: 39

Date:

11/13/2018

**Description:** 

Vegetated area covering the former OIC Quarters

Location:

Former OIC Quarters (104)

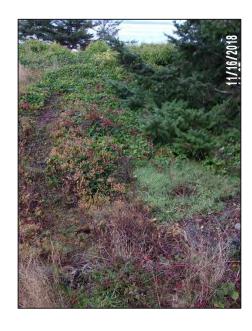


Photo: 40

Date:

11/16/2018

**Description:** 

Foundation and building debris from the OIC Quarters

**Location:** 

Former OIC Quarters (104)

View | HeaderFooter 20

# **ATTACHMENT 2**

**Field Forms** 



Probe / Trowel

Other

Sampling Equipment:

Project No.:	B0003010.0006	of
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Julia Vidinish	XRF Unit 5635
Sample Type:	XRF	Date: 11 19 13

Shot # Sample Sample ID Date **General Soil Description** Lead Time Photo Taken? Notes 72 med. brown, well-graded 4073140 1300 102-25-0.5 Sandy silt 100-0594 245T 102-22-0,5 SAA 1333 100-0595 102-23-0.5 SAA 100/11/4 1 100-0596 1335 brown, well-grades 4720142 102-28-0.5 19 100-0597 1337 Sandy silt, high organics med brown, well 1299117 102-26-0.5 104-0598 1346 P graded, Stity-sand med brown, well-graded 1344 19416 0 100-0599 sandy stil med brown well-WT-2-2-1,5' 81 1346 159I 6 0 100-0600 graded, sandy soil med brown well grades 348 100-0602 sandy plus grave med brown, well grades, sandy silt 354 12375 100-0603 1356 02-12-1 SAM 5/14 0 100-0604 100-0605 X 358 SAA dark brown, well-graded 407+9 100-0606 1400 02-31-0.5 Sandy silt 252 = 7 02-32-0.5 402 100-0607 X SAA 5643 I 48 100-0608 102-33-0,5 0 1403 SAA 97 \$ 4 1410 102-34-0.5 100 -0609 SAA



Project No.:	B0003010.0006	Page of			
Site Location:	Burrows Island Light Station, Anacortes, WA				
Personnel:	Julia Vidonish	XRF Unit 5635			
Sample Type:	XRF	Date:			

Sampling Equipment: Probe / Trowel Other\_\_\_\_

Shot	Sample ID	Date	Time	General Soil Description	Lead 4	Photo Taken?	Notes
53	105-55-0.5	11/14/18	1206	dark brown, well-graded + Sand	335000	~ •	100-0577
57	102-1-0,5	11/14/18	1221	dark brown, well-graded Sandysilt	133±5		100-0578
58	102-2-0.5	11/14/18	1224	SAA	82=4		100-0579
59	102-3-0.5	11/14/18	1226	SAA	120±5		100-0380
60	102-4-0.5	11/14/18	1228	SAA	42019	•	100-0581
61	102-5-0.5	11/14/18	1230	SAIA	91 14		100-0585
62	102-7-0.5	11/14/18	1232	SAA	6714		100-0583
63	102-8-0.5	11/14/18	1233	SAA	82 - 4	P	104-058-5
64	102-9-0.5	11/14/18	1235	SAA	88±5	<b>D</b>	100-0586
65	102-10-0.5	11/14/18	1236	SAA	248=7	0	100-0587
66	102-17-0.5	11/14/18	1240	dark brown, Weil- graded Sundy silt	233 + 6		100-0588
67	102-18-0.5	11/14/18	1242	Medium brown, well-graded, Sandy Selt	27857	0	100-00000593
68	102-19-6.5	11/14/18	1244	SAA	157 t 6		100-4550589
69	102-20-8.5	11/14/18	1245	SAA	13/15	0	100 - 0590 0590
70	102-21-0.5	11/14/18	1249	SAA	4874	0	100-08920591

Sample

LIN



Project No.:	B0003010.0006	Page of
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Idia Vidonish	XRF Unit 5635
Sample Type:	XRF	Date: 11/18/1 (1/14/18
Sampling Equipment: Probe	e / Trowel Other	120

Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
102-35-0.5	11/14/13	1415	dark brown, well-gradal, sandy sit	20377		100-0611
102-36-0.5	11/14/18	1417	SAA	130-6		100-0612
102-37-0.5	11/14/18	14/8	SAA	128±5	0	100-0613
102-38-0.5	11/14/18	1422	SAA.	167-6		1100-0614
102-39-0.5	11/14/18	1424	SAA	143+6	B	100-0615
102-40-0.5	11/14/18	1425	94	362 18	0	100-0616
102-41-0.5	11/14/18	1427	SAA	215 [ 6	<b>B</b>	100-0617
102-42-0.5	11/14/18	1428	SAA	42 ± 4	6	100-808 0618
106-1-0,5	11/14/18	1435	med brown well-gradai, Sandy silt	1115		100-0018 0615
106-2-0.5	11/14/18	1438	med Nam well-availed	6155	Ø	101-0319
106-3-0.5	11/14/18	1439	grey-brown Sand Well graded	9±3		100-0620
102-33-1" (refused a	1) 11/14/18	1450	dark brown wen-graden, Sandy silt	588711	₽/	100-00000621
102-31-1	11/14/18	1452		217+6	В	100-00000
102-15-1	11/14/18	1457	SAA	572-10		100-06983
101-7-0.5	11/14/18	1548	dark brown, well-gradel, Sandy silt	931 ± 13		100-0625



Project No.:	B0003010.0006	Page of
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Mark Wilery	XEF Unit: 10102
Sample Type:	XRF	Date: 11/14/19

Sampling Equipment: Probe / Trowel Other\_\_\_\_

4 #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
7	105-59-0.5	11/14/18	1212	their graded sand, no fame, black/grey	SI±5	团	101-283	
1	102-6-0.5	11/11/18	1223	Savily silt, some organ, de brown	5215	)XI	101-284	
2	102-11-0.8	11/11/13	1240	Silty sund, some organ		<b>1</b> 3	101-296	
3	102-12-05	11/14/18	1242	SAA	1006±18	DK.	101-294	
4	102-13-05	114/18	1244	SHA	1119±18	Ø	101-297	
	102-14-0.5	11/14/19	1247	5AA	9115	Ø	1a - 298	
0	102-15-25	11/4/19	1250	Sity sand, paring graduly de brown	879+16	<b>×</b>	101-300	
7	102-16-0.5	11/14/18	1253	941A	918+17		101-301	
-	102-27-0.5	1111118	1333	Selty sand, poorly gradely de brown	367±10	×	(01-305	
>	102-28-0.5	1114/18	1339	SAA	19817	B.	101-305	
	102-29-05	11/14/18	1342	Silt with some sand, ogames, elle brown	15±4	Ø	101-304	
	102-30-05	11/13	1345	344	10026	Ø	101-308	
	102 -15-1.0	1/14/18	1415	de brown	627 \$ 13	'M	(01- 31-0	
	102-10-10	1111118	1420	SAA	25219	図	101-312	
	102-24-10	1/14/13	1422	organies, black	3718244	₽.	101-313	



Project No.:	B0003010.0006	Page of
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	shilta Widonish 3 Kelsey Fram	XPF unit #8580

Sample Type: XRF

Sampling Equipment: Probe / Trowel Other\_\_\_\_\_

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
18	103-111-0.5	11/16/18	0908	+ have organics	34±4	Ø	100-0689
19	103-112-0-5		0910	S.A.A	35± 4		100-0680
20	103-113-0.5		0911	S. A. A.	14714		100-0691
21	103-114-0.5		0913	S.A.A	89IT		100-0692
22	103-118-0.5		0915	Silty Sand w/ Organics + gravel	152+6	9	100-0696
23	103-119-0.5		0917	S.A.A	189± 6	D	100 - 0697
24	103-120-0.5		0919	S.A.A.	157±6	0/	100-0699
25	104-3-0.5		1039	dark brown, well- graded, sandy silt	134工6		100-0700
26	104-5-0.5		1041	SHA	193º7	0/	100-0701
27	104-15-0.5		1044	SAA	596 I 13		160-0702
28	104-16-6.5		1645	SIAA 29	EDD ADS	1975	100-0703
29	104-17-0.5		1047	SAA	7815	0	100-0704
30	104-18-0.5		1049	SAA	289 - 9		100-0705
3(	164-19-005		1052	SAA	287 1 9	0/	100-0706
32	104- 20-0.5	1	1053	344	B±5	6	100-0707



Sample

# **Burrows Island XRF Sample Log**

Project No.:		B0003010.0006 Pageof  Burrows Island Light Station, Anacortes, WA							
Site Location:									
Personnel:		More illey				SOIOL FINN FAX			
Sample Type:						1113118			
Sampling Equipme	ent: Probe / Trowe	Trowel Other							
	ample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes		
109-3-0	7.5	4/13/18	1607	Sw with organics, It brown	312:19	Ø	Julia's Phan		
100T-41-0		11/13/18	1610	-800, de brouer	9912	<b>IX</b> :	Julia's Pha		
104-5-8	),5	"/13/18	1612	Sw, elle brown	158±7	<b>1</b> 2	Julia's Phone		
104-6-	•	113/18	1614	Su, de brain	178±7	Ø	Julia's Mone		
12-7-	0.5	11/13/18	1615	Sw w/ gravel, de bran	31819	Ø	Julia's Phon		
109-8-	0.5	11/13/18	1617	Sw, de brain	12526	Ø	Tulta's Phone		
WT-Z-Z	-1.0	11/13/18	1620	Sw, de brown	692±14	121	Julias Phone		
		V							
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Project No.:	B0003010.0006	Page of
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Mary Wilery	12F Unit 10102
Sample Type:	XRF	Date: 11/13/18

				1	Som			2
w+ +0/	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
8	WT-1-1-0.5	113/16	1514	SW, de brown w/ org	127±6	Ø	100-529	1
a	Wt-2-1-0,5	11/13/18	1520	Sw, de brain worg	97±6	Ø	100-531	T
23	WT-2-2-0.5	113/18	1522	Sw, It boun of wood	2,222131	Ø	100-533	1
22	WT-8-3-05	Wlishe	1527	Sw, d'e brown w/ 0.53	259 I 9	<b>D</b>	100-134	1
23	WT-ゼー4-0.5	11/13/18	1529	Sw, de brown.	142 ± 7	12	100-535	1
24	WT-3-1-0.5	113/13	1531	Sw, de brown wo org	Z18±9	D.	100-537	1
25	WT-3-2-0.5	11/13/18	1535	Sw, de brown/grey	<10	Ø	100-538	1
28	WT-3-3-0,5	11/13/18	1543	Organic, black/brown	108 ± 6	12	100-539	1
29	WT-4-1-0,5	11/13/18	1544	Sw, dh bran	<11	□.	100-540	1
30	WT-4-2-0.5	11/13/18	1549	Sw/ de borner, w/org	15±4	Ø	100-542	1
31	WT-4-3-05	113/18	1550	sw. die ione wolong	< 11	Ø	100-543	1
32	WT-1-2-0.	~115/18	1552	Sw. de bran w/og	632 le	具	400- STA Tulais	no.
33	WT-1-3-0.5	13/18	1554	Sw. de bran w/org	7916		Julia's Phone	
37	WICHOG 104-1-0.5	113/19	1604	Sw/w/grame, de brank	557±16	<b>Ø</b>	ty ta	
38	109-2-0.5	11/13/18	1404	Sw, de bram w/ org	1086 ± 18		Julia's show	1



Project No.:	B0003010.0006	ofof
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Mark ullery	XRF Unit 10102
Sample Type:	XRF	Date: \\ \\ \ / \B

Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
105-37-0.5	114/18	1104	Well greded sand of the	14+4	DZ.	101-264
105-38-0,5	11/14/18	1105	SAA	2214	Ø	101-266
105-39-0.5	11/11/13	1108	Well gowled sand, de boun/black	2314	XQ	101-267
105-40-0.8	11/14/18	1109	well gouled send, trace	S715	<b>Ø</b>	101-268
105-41-0.5	11/14/18	1110	well growed sand, cla	42±5	<b>B</b> K	101-269
105-42-0.5	114/13	1111	well granted sand, trace would debus, light/cik llarger	30±41	8	101-270
105-43-2.5	1/14/18	1117	well graded sand, black	5414	⊠.	101-272
105-44-0.5	11/11/18	19.20	SAA	22+4	図	101-273
105-45-0,5	11/14/18	1123	well graded sand, blacky ale brown	3114	Ø	101-2721
105-46-05	114/18	1128	debas, black/de brown	ZU±H	Ø	101-275
105-1-1.0	114/18	1150	Well graded sand, tight	55±5	Ø	101-276
105-11-1.0	11/14/18	(153	Well graded sand, dk from black	Y ZI±4		101-278
105-56-0,5	1114/13	1207	tived gouled sivil, with	るマナリ		101-279
105-57-0.5	11/14/18	1208	SAA	35±4	N.	101-281
105-58-0.5	11/14/18	1210	SAA	5115		101-202



Project No.:	B0003010.0006	ofof

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Mark Wiley XRF Unit 1010Z

Sample Type: XRF Date: 11/14/18

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
21	(05-7-0.5	1111118	0954	Well gouled Sand, black	81±5	凶	101-247	
22	105-8-08	114/18	9959	SIAA	44+4	Ø	101-248	
Z3	105-9-0.5	11/11/13	1001	SAA	<12		101-249	
28 24	105-10-005	1/14/13	1004	SNA	19817	DX.	101-250	
25	105-11-0.5	11/14/18	1007	well graded sand, some organics I wood, birch	412±10	<b>Þ</b>	101-251	
26	105-12-0.5	1111/18	1015	Well graded Sand, whale	5215	Ø	101-252	
27	105-17-0.5	114/18	1020	Sand with some force,	3114	Ø	101-253	
28	105-19-0.5	~114/18	1022	94A	3214	DK.	101-254	
29	105-19-0.5	11/14/18	1324	· SAH.	2414	₽	101-255	
30	105-20-0.5	1111118	1026	SAA	3014		101-256	
34	105-2626-0.5	1111119	1041	well graded sand by some organics, black/dk was	207±8		101-258	
32 35	105-27-0.5	11/14/18	1047	Well graked sand, de boun/	20 89±5	M.	101-至259	
38 36	105-28-0.5	1-114/13	1049	SAA	31+21	. 🗵	101-260	
354 37	105-29-0.5	11/14/18	1051	Well graded Sand, de brown/	34±4	×	101-241	
38	105-30-0.5	11/14/18	1053	5177	48±5	Ø	101-202	



Project No.:	B0003010.0006	ofof
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Whate unlery	XRF Unit 10102
Sample Type:	XRF	Date: 11/14/13

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Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
102-25-1.0	"lula	1425	Silty sand, party graded, fine dk brown	1191120	D <sub>C</sub>	101-314
102-26-10	11/14/18	1427	Silty sand some trace gravel, some org, de brown	302±9	1251	101-315
121-1-05	while	1537	Sandy silt with some	986± 18	Ø	101-318
101-2-0.5	4/10/13	1541	Silty sand, some organics	1920 ± 29	図	101-320
101-3-05	1/14/18	1544	Sitty send with some grave and auguries, brown	1515 ± 25	Ø	101.321
101-4-0.5	11/11/18	1546	Sity send, truce grawi,	591+14	Ø	101-355
101-5-0,5	11/14/18	1547	silty sind trace would	3592148		101-323
101-6-0.5	11/14/18	1549	solty sami with organics de brain	1455 = 24		101-324
101-13-0.5	11/14/18	1555	State Silt with organies, trace sand, ille bown	40411	<b>Þ</b> C.	101-328
101-14-05	114/18	1557	SAA	761 ± 15	図	101-329
101-15-0.5	1114/13	1559	sandy SIA, de bracen	92++15	区	101-330
101-16-0.5	11/14/18	1601	Silt trace sand,	775214		(01-331
101-17-0.5	11/14/18	1002	Silty trace cubble, and Sand, brown	112619	Ø	101-332
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Project No.:	B0003010.0006	Pageof
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Julia Vidonish	XRF Unit 5635
Sample Type:	XRF	Date: /1/14/18

Sampling Equipment: Probe / Trowel Other\_\_\_\_

	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
35	105-31-0.5	11/14/18	1100	brown, sand, Nell-graded	4413	•	100-0562
36	105-32-0.5	11/14/18	1102	SHA	44 13		100-0563
37	105-33-0.5	11/14/18	1103	SAA	50±3	0	100-0564
8	105-34-0.5	1//19/18	1105	SAA	32±3		100-0565
9	105-35-0.5	1/14/18	1106	SAA	32± 4		100-0566
10	105-36-0.5	(114/1)	1107	SAA	267 3	<b>a</b> /	100-0567
4	105-47-05	11/19/07	1121	SAA	27±3	D/	100-0568
15	105-48-0.5	11/14/18	1123	SAA	2/73	D/	100-0569
6	105-49-0.5	ke/14/18	1125	brown sand, well gradely	32+3		100 - 0570
7	105-50-0.5	11/14/18	1127	SAA	66±4		100-0571
18	105 - 51 - 0.5	4/14/18	1129	SAA	2513	12	100-0572
9	105-13-1	4/14/18	1152	light brown, well-graded	1013	0	100-0573
0	105-52-0.5	4/1/18	1200	dark brown, well-graded,	27 + 3	0	100 -0574
7	105-53-0.5	11/14/18	1202	SAA	18±3		100-0575
2	105-60 54-0.5	11/14/18	1904	SAA	33 <sup>†</sup> 3	0	100-0576

Sample



Project No.:	B0003010.0006	ofof
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Julia Vidonish	XRF Unit \$5635
Sample Type:	XRF	Date: 11/14/2018

Sampling Equipment: Probe / Trowel Other\_\_\_\_\_\_

Sample ID Date Time General Soil Description Lead Photo Taken? Notes

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
17	105-1-0.5	11/14/18	0956	Dark brown, high organics	448 ± 9		100-0545	7
18	105-2-0.5'	11/14/18	1002	Well graded, bown, sand,	126±5		100-0546	
19	105-3-0.5	11/14/18	1005	Well graded sand, brown	143±3		100-0547	
20	105-4-0.5	11/14/18	1007	well graded sand, brown	130±5		100-0548	
21	105-5-0.5'	11/14/18	1009	Well graded, brown, Sand, organic	75±4	•	100-0549	
22	105-6-0.51	11/14/18	1012	well graded, sand, brown	6774		100-0551	
23	105-13-0.5'	11/14/18	1018	Well graded stand with large organic fraction , wood	283 ± 8		100-0553	×
24	105-14-0.5	4/14/18	1020	well graded, sandy, brown	60±4		100-0554	
25	105-15-0.51	11/14/18	1022	wal graded, sandy, brown	35 ± 4		100-0555	
gr 2626	105-16-0.51	11/14/17	1024	dark brown, Well-grades,	57±3		100-0556	
7 5 30 7 31	105-21-0.5	11/14/18	1043	dark brown, well-graded, sand	36±3	Ø	100-0557	
~ D31	105-22-0.5	11/14/18	1045	dark brown, well-graded	15±3	Ø	100-0558	
32	105-23 -0.5	ulalis	1047	dark brown, well-graded	的聲	Б	100 - 0559	
33	105-24 -0.5	11/14/13	1050	dark brown, Weil-graded,	13476	Ø	100-0560	
34	105-25-0.5	11/14/18	1052	SAA	19716	Ø	100-056/	



Project No.:	B0003010.0006	Page 3 of
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Helsey Franz	XRF-10102
Sample Type:	XRF	Date:

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
57	103-14-0.5	11/15/18	1340	Sandy Silt w/	21218	₾/	101-0380
58	103-1-0.5	11/15/18	1343	Sily send w/	414111	9	101-0381
59	103-2-0.5	11/15/18	1345	sity sund wi trace	31719	19	101-0382
60	103-3-0.5	1115118	1346	sandy silt wi	546±13	Ø	101-0383
61	103-4-0.5	11/15/18	1347	sa.a.	17±4	⊌′	101-0384
62	103-5-0.5	11115118	1349	Silty Sand of graul	321±9	Ø	101-0385
63	103-6-0.5	11/15/18	1351	5.0.0.	433111	8	101-0386
64	103-7-0.5	11/15/18	1352	Sandy Silt w/ open	378±10	<b>☑</b>	101-0387
65	103-8-0.5	11/15/16	1353	S.a.a.	43±5	Ø	101-0388
66	103-9-0.5	11/15/18	1356	S.a-a.	199±7	Ø	101-0389
67	103-10-0-5	11518	1357	sity Sand w/ grad	135 = 7	Ø	101-0390
68	103-11-0.5	11115/18	1358	5.4.4.	1352523	Ø	101-0391
729	103-24-0.5	1115118	1417	5. a. a.	8 (Xot15	Ø	101-6392
73 m	103-35-0.5	11/15/18	1419	5 a.a.	368-9	□/	101-6393
B000	103-36-05	11/15/18	1421	sandy sitt orl	55 ±5	<b>D</b> ′	101-0394



Project No.:	B0003010.0006	Page of
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	K. Haslan	XRF Ser. No 8580
Sample Type:	XRF	Date: 11-15-2018

wt #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
17	103-24-0.5	11/15/18	14:16	Silty Send w/ organis	98±6	M	100-0657
18	103-25-0.5	11/15/18	14:20	SAA	256±8	<b>12</b>	100-0658
19	103-26-0.5		14:21	SAA	110 = 6.	Ø	100-0659
20	10 3-27-0.5		14:23	Silty Sad, bluk	FEREND	Ø	100-0660
21	103-28-0.5		14:24	Silty Sand w/ sonegar	194±7	B	100-0661
22	103-79-0.5		14:26	SAA	112+6	Ø	100-0667
23	103-30-0.5		14:27	SAA	430-11	, <b>p</b>	100-0663
24	103-31-05		14:28	SAA	60 + 4	Þ	100 - 0664
25	103-32-0.5		14:30	SAA	133-6	₽	100-0665
26	108-33-0.5		14:31	SAA; luts of arguics	154+6	₩.	100-0666
28	103-51-0.5		14:35	Silty Send w/ organs	900 23728	<b>Ø</b>	100 - 0667
33	103-62-0.5		15:07	Silty Sondal sonequel	29 + 4	Ø.	100-669
34	103-63-0.5		15:00	SAA	39+4	Ø	100-670
35	103-64-0.5		15:12	SAA	55± 5	国	100-671
36	103-65-0.5		15:14	SAA	35-4	Ø	100-672



Project No.:

B0003010.0006

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Site Location:

Burrows Island Light Station, Anacortes, WA

Personnel:

helsey Franz

XPF Unit 10102

Sample Type:

Sampling Equipment:

Probe / Trowel

XRF

hot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
93	103-53-0.5	11115/18	1505	Y freeze organics	Mark .		101-0410
94	103-54-0.5	11/15/18	1506	S.A.A	124±6	<b>D</b>	101-0411
96	100-56-0.5	11/15/18	1510	S.A.A	65±5	0	101-0413
98	103-57-05	11/15/18	1512	S.A.A.	57±5	Ē	101-04-14
15	103-55-0.5	11/15/18	1508	S.A.A.	88±6	0	101-0412
98	103-58-0.5	11/15/18	1514	S.A.A	SITS	<b>1</b>	101-0415
99	103-59-0.5	11/15/18	1515	SAA	12±3	Ò	101-0416
100	103-60-0.5	11/5/18	1517	S.A.A	9215	Ø	101-0917
01	103-61-65	11/15/18	1518		231t8		101-0418
02	103-680.5	1115118	1520	S.A.A.	94±6		101-0420
03	103-69-0.5	11/15/18	1521	Sundy Silt in gravel	31+4	0	101-0421
14	103-74-0.5	11/15/18	1523	C	83±6	6	101-0422
05	103-75-0.5	11/15/18	1525	S.A.A	139±6		101-0423
06	103-72-0.5	1115/18	1526	S.A.A.	367 ±10	Ø	101-6429
07 L	103-81-0.5	115/18	1520		18657	. /	101-6425



Project No.:

B0003010.0006

XRF

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10102

Site Location:

Burrows Island Light Station, Anacortes, WA

Personnel:

Helsey Franz

Date: 11/15/18

Sample Type:

Sampling Equipment:

Probe / Trowel

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
108	103-82-0.5	11/15/18	1531	Silty Sund W/	18±5	d	101-0426	
109	103-83-0.5	11/15/18	1533	5.A.A.	ATIT	Ą	101-0427	
110	103-84-0.5	11/15/18	1534	5.A.A.	5415	Ф/	101-0428	
111	103-85-0.5	11/15/18	1536	S.A.A	128±6	0	101-0429	
115	103-86-0.5	11/15/18	1547	S.A.A	32 ± 4	id	101-0430	X
116	103-87-0.5	11/15/18	1548	SAA	75±5	7	101-0431	
117	163-88-0.5	11/5/18	1550	S.A.A	5815	Ð	101-0433	
118	103 - 89 - 0.5	1115/18	1557	S.A.A	60±5	P	101-0439	
119	103-90-0.5	11/15/18	1553	marel wither org.	6215	9	101-0435	
120	103-91-0.5	1115/18	1555	S.A.A	32±9	A.	101-0436	
121	103-92-0.5	1115/18	1557	silty sand wighout	32=4		101-0437	
122	103-93-0.5	11115/18	1558	S.A.A	19±4		101-0438	
123	103-94-0.5	111516	1603	SAA	211	9	101-0439	
124	103-95-0.5	11/15/18	1604	S.A.A	203+6	V	101-0490	
125	103-96-0.5	11/15/18	1606	S.A.A	98±5	Ø	101-0441	



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B0003010.0006

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Site Location:

Burrows Island Light Station, Anacortes, WA

Personnel:

Helsey Franz

. RF unit 10102

Sample Type:

XRF

Date: 1115 118

Sampling Equipment:

Probe / Trowel

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
75	103-37-0.5	11/15/18	1423	I truce promises	55+7	Ø	101-0395
76	103-38-0.5	1115/18	1425	Sa.a.	80±6		101-0396
77	103-39-0.5	11/15/18	1496	5.4-4.	699±15		101-0397
78	103-40-6.5	11/15/14	1428	Sa.a.	849±16	Ø	101-0398
79	103-41-0-5	11115/18	1430	5.0.0	259±8	Ø	101-0399
80	103-42-0.5	11/15/18	1431	S.a.a.	19917	8	101-0400
81	103-43-0.5	11/15/18	1433	Sa.a.	279±8	6	101-0401
82	103-44-0.5	11/15/18	1434	S.a.a.	180±7		101-0402
83	103-45-05	11115/18	1436	S.a.a.	119 I 6		101-0403
84	103-46-0.5	1115/18	1437	S.a. a.	157±6		101-0404
85	103-47-0.5	11/15/18	1439	Sa.a.	10416		101-0405
86	103-48-0.5	111518	1440	Saa.	145±6	Þ	101-0406
87	103-49-0.5	11/15/18	1441	5.0.0.	278±8	<b>D</b>	101-0407
88	103-50-0.5	1115/18	1443	S-a-a.	254 ±8	<b>D</b> /	101-0408
92	103-52-0.5	11115/18	1503	5.a.a.	414	6	101-0409



Project	No .		

B0003010.0006

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Site Location:

Burrows Island Light Station, Anacortes, WA

Personnel:

Mark Ullery

XEF Unit 10102

Sample Type:

XRF

Date: 11/15/18

Sampling Equipment:

Probe / Trowel

"Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
35	(0)-55-015	4/15/18	1043	Silty soud, some	86±6	Ð	101-354	
36	101-56-05	11/15/19	1045	'silty sand, de braun	13216	<del>J</del>	121-355	
37	101-27-02	11/15/10	1247	Silty sand, truce organics,	9615	Q	101-356	
41	101-15-1	1115/18	1224	sity sand wil gravel	45±5	12	101-0368	
46	101-27-11	11/15/18	1318	Sain	808=15		101-0367	2
47	103-15-0.5	1115118	1326	silly sing with	56±6	<b>9</b>	101-0370	
98	163-16-0.5	11115/18	1327	S.a.a.	653±14		101-0370	
49	103-17-05	11/15/18	1329	S.a.a	25 ts		101-0372	
50	103-18-05	1115/18		S.a.a.	183±8	E	101-0373	
	103-19-0.5	11/15/18	1333	sity sand wigness and trace acordines	917517	0	101-0374	X
51		11/15/18		S.a.a.	36750	<b>u</b>	101-0375	
53	103-22-05	11/15/18	1336	sundy sit wignows	9055	Б	101-0376	
	103-23-05	11/15/18		S.a.a.	16± 4	9	101-0377	
54	103-12-0.5	11/15/18	10-	silty sand of	1057-16		101-0378	X
56	12 11 2	1	1340	S-a.a.	13t 4		101-0379	



Project No.:	B0003010.0006	Page 2 of	
Site Location:	Burrows Island Light Station, Anacortes, WA		
Personnel:	Helsey Frant a legle Holan	XRF Unit = 5635	
Sample Type:	XRF	Date: 11/15/18	
Sampling Equipment: Probe / Trowel Other			

ot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
35	101-46-05	11/15/18	1039	Silly sand wi organics	4453	ø	100-0642
36	101-47-0.5	11/15/18	1040	Sa.a.	19±3	6	100-0643
37	101-48-05	1115116	1042	Silty Said of gracel	103±5	8	100-0649
34	101-\$9-0.5	11115/18	1043	Silty sand wi organics	45±4		100 - 06 75
39	101-60-0.5	11115118	1046	silty sand wil organics and some grand	34±3		100-0646
40	101-58-0.5	11/15/18	1048	sity sand wil organics	109±5	9	100-0697
51	103-21-0.5	11/15/18	13:10	Sity Sad u/ songerel	504± 10	<b>⊠</b>	100-0654
52-	103-23-0.5	11/15/18	,	Sity Sad w/ genet; ban		Ø	100-0656
-							



Pro	ject	No.	:

B0003010.0006

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Site Location:

Burrows Island Light Station, Anacortes, WA

Personnel:

Helsey Franz

XPF Unit # (0102 Date: 11/16/18

Sample Type:

Sampling Equipment:

XRF

Probe / Trowel

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
18	103-105-0.5	11/16/18	0902	Silty Soil Wigners	47±5		100-0683
19	103-106-05		0904	S.A.A.	382±10	D	100-0684
20	103-107-0.5		0906	S. A. A	115 £ 6		100-0685
21	103-108-0.5		0907	S.A.A	284±8	Ø	100-0686
22	103-109-0.5		0910	S.A.A	326±10	D	100-0687
23	103-110-0.5		0911	S. A.A	177 7	4	100-0688
24	103-115-0.5		0913	S.A.A	8755		100-0693
25	103-116-0.5		0915	S.A.A	8715		100-0694
26	103-117-0.5		0917	S.A.A	118±6	<b>D</b>	100-0695
27	103-120-0.5		0919	Silty Sand w/ cryanics clay and silt wil have	159±7		100-0698
31	103-39-1		1014	clay and sit wi had	211	b	101-0470
32	103-19-1		1016	silty sand w/ trans	17:4	V	101-0471
33	103-11-1		1017	silty sund oil some	13057		101-0472
34	103-12-1		1018	silty Sand wi time organics + grand	411	V	101-0473



Project No.:	B0003010.0006	
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	K. Haslan	XRF Ser. No. 8580
Sample Type:	XRF	Date: 11-15-2018
Sampling Equipment: Probe	/ Trowel Other	

Sample ID Date Time General Soil Description Lead Photo Taken? Notes 11/15/18 37 103-66-0.5 43+4 100-673 M 38 15:20 103-67-0.5 32+4 M 100-674 39 103-70-0.5 100-675 X 40 103-71-0.5 15:24 143+6 Ø 100-676 41 Silty Sand, black, virgins 103-73-0,5 100-677 M 42 103-76-0.5 15:29 SAA Ø SAA-15:32 100-679 103-78-0,5 15:33 SAA 308:9 D. 100-680 103-79-0.5 15:35 SAA 31 + 4 D. 100-681 103-80-0.5 15:36 SAA 100-682 109±5 K 



Project No.:	B0003010.0006	Page 7 of 7
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Helsey Fanz	XRF UNI 10102
Sample Type:	XRF	Date: 11/15/18
Sampling Equipment: Probe	/ Trowel Other	

Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
103-97-0.5	1115/18	1613	+ trace organics	70±6	Ø	101-049-
103-98-0.5	11/5/18	1615	S.A.A.	13326		101-0449
103-99-0.5	115/18	1616	S.AA.	94 = 6	D	101-0445
103-100-0.5	11/15/18	1618	S.A.A	93±5		101-0446
103-101-0.5	11/15/18	1619	S.A.A	445	Ø	101-0947
103-102-0.5	11/15/18	1620	S.A.A	33± 4	Ø	101-0449
103-103-0.5	11/15/16	1622	S.AA	33±4	D D	101-0450
103-104-0.5	11/15/18	1623	S.A.A	32+4	4	101-045
			*			
	1					



Project No.:	
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B0003010.0006

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Site Location:

Burrows Island Light Station, Anacortes, WA

Personnel:

Julia Vidonish / Helsey Franz

XRF Unit = 5635

Sample Type:

XRF

Date: 11 15/18

Sampling Equipment:

Probe / Trowel

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
17	101-22-0.5	11/15/18	0937	Sandy, Silt W/ ogani	27657	Ø	100-0626	
18	101-23-0.5	11/15/18	09 91	Saa	446±9	Ø	100-0627	
19	101-24-05	11115118	0948	Saa	90±4		100-0628	
20	101-25-05	11/15/18	0951	S. a.a.	14815	Ø	100-0629	
21	101-26-0.5	1115118	0952	S.a.a.	824±12	the state of the s	100-0630	X
22	101-27-0.5	1115118	0953	Saa	702 ti2	Ø	100-0631	
23	100-28-0.5	11115/18	0955	Sandy soit wingmis and some grand	219±7	ď	100-0632	
24	100+29-05	4/15/18	0957	5ilty sand is 1 organics	6214	Ø	100-0633	X
25	100-40-0.5	1115118	0958	Sandy Sit wigmen	160±6		100-0634	
26	101-39-05	11/15/18	1000	5.a.a.	397±9	9	100-0635	
30	101-41-05	1115/18	1029	Silty sund wlongmus	147+5		100-0637	
31	101-42-0.5	1115118	1031	Sily sund wil agents	273±6	0	100-0638	
32	101-43-0.5	1115/18	1033	SILY Said w/ organics	313±8		100-0639	X
33	101-44-05	11/15/18	1635	Saa.	237=6	12	100-0690	
34	101-45-0.5	11/15/18	1036	5.4.4.	78±4	9	100-0691	



Sample Type:

Project No.:	B0003010.0006	Dana
Site Location:	Burrows Island Light Station, Anacortes, WA	Pageof
Personnel:	Julia Vidonish	XRF Unit 5635

Sampling Equipment: Probe / Trowel Other\_\_\_\_

XRF

Shot	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
113	101-8-0.5	11/14/18	1549	dark brown, Well- Graded, sandy silt	8975 ± 67	0	101-0325
114	101-9-0.5	11/14/18	1551	SAA	2535±28	D)	101-0326
15	101-10-0.5	11/14/18	1553	med brown, poorly-grade solt minu sand	2367-27	12	Julia's phone
116	101-11-0.5	11/14/18	1555	dark brown, nell - graded, sundy sitt	838 T_ 15	•	Julia's phone
117	101-12-0.5	11/1/18	1556	SAA	5885 ±51		Julia's phone
118	161-19-0.5	11/14/18	155.8	SAA	388 ± 8		Julias phone
((9	101-21-0.5	11/14/18	1559	SAA	271 = 7		Julia's phone
120	101-20-0.5	11/14/18	1600	SAA	366±9	ø	Julia's show
121	101-18-0.5	11/14/18	1602	SAA	510 t 10	D/	Julia's thong
4444	101-2-1.0	11/15/18	12:06	light born sity and it	50 + 4	D'	100-0648
45	101-6-1,0	11/15/18	12:08	det som silty send	404+9	9	100-0649
46	101-12-1.0	11/15/18	12:10	SAA; organ mother	1,206±17	0/	100-0650
48	101-17-1.0	11/15/18	12:12	dele your silty sand	208±7		100-0651
49	101 - 23 - 1,0	11/15/18	12:15	# SAA in/ some affect	161 = 6	/	100-0657
50	101-12-1,5	11/15/18	12:40	1 - 1 - 2000 11 .	279+10		100-0653

Sample

×



Project No.:	B0003010.0006	

Site Location:

Burrows Island Light Station, Anacortes, WA

Personnel:

XPF 10/02

Sample Type:

XRF

Date:

Sampling Equipment: Probe / Trowel

Other\_

Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
101-30-0.5	11/15/18	938	with some organics, of box		<b>₽</b>	19-333
101-31-0.5	11/1.5/18	940	softy sand with some	884±15	Ø	101-334
131-32-0,5	11/15/18	948	Silty sand, clk brown	78±5	Ø	101-335
101-33-05	11/15/18	950	Gitz sand with organics,	360210	<b>□</b> :	101-340
101-34-0.5	115/18	952	SPA	386±10	<b>3</b>	101-341
101-35-05	118/18	984	Sit, trace send, de	388±10	Ø	101-342
101-36-05	MITHA	954	SEE Silt, de brum	509112	<b>D</b> *	101-343
101-37-08	11/15/18	958	Silt, with organics,	1367±19	12	101-344
101-38-05	1115/18	(२०००	SAIT	678±13	Æ	101-345
101-49-05	11/14/18	1028	Set Stand Silt, Some	102±5	Ø	101-340
101-50-0.5	11/15/18	1033	Silty Sand de brown	328±9	Ø	101-250 349
101-51-55	4/15/18	1035	Silty Stend with gracely	3239±44	<b>⊠</b>	101-350
101-52-0.5	11/15/18	1037	944	(00 15	Ø	101-351
101-53-05	11/15/13	1039	SAN	38±4	D.	(31-352
101-54-0,5	11/15/180	1342	Sand with organis,	61+4	Ø	(01-323



Sampling Equipment: Probe / Trowel

Project	No.:	
1 10100	110	

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Site Location:

Burrows Island Light Station, Anacortes, WA

Personnel:

Helsiy Frant

XFF unit#8580

Sample Type:

XRF

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
51	104-45-0.5	11/16/18	1154	Silty Sund wigner	84 IS	9	100-0723
57	104-46-0.5		1155	SAA	200±7	0	100-0724
53	104-48-0.5		1157	SAA	45+4	4	100-0725
54	104-49-05		4	SAA	43t4	Q	100-0726
55	104-50-0.5		1200	SAA	12 ± 4	tz/	100-0727
56	104-51-0.5		1202	SAA	17:13	Ø	100 0728
57	104-44-0.5		1205	SAA	5244		100-0729
58	104-43-05		1206	Silty Clay wis and granics	31±3	0	100-07-30
59	104-42-0.5		1208	SAA	410	0	100-0731
60	104-43-0.5		1209	& Hace organics	8615		100-0732
61	104-40-0.5		1210	SAA	3947=4	5 1	100-0733
62	104-37-0,5		1213	SAA	11872	M	100-0734
63	104-36-0.5		1214	SAA	8055	Ø	100-0735
64	107-1-0.5		1225	Sily sand w/gmill	5/±4	Ħ	100-0736
65	107-2-0.5	1	1228	SAA	65t 4	g	100-0737



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Project No.:	B0003010.0006	Page T of T
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Julia Vidonish	XRF Unit H 10102
Sample Type:	XRF	Date: 11/16/18
Sampling Equipment: Probe	/ Trowel Other	

Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
104-35-0.5	11/16/18	1207	med. brown, well-graded sundy silt	12=5	0	101-6506
104-34-0.5		1208	SAA	22 14	0	101-0507
104-33-0.5		1212	SAA	412	0	101-0508
104-32-0-5		1214	SAA	44 15	0	101-0509
104-22-1						
						V
						×
	1					
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Project No.:	B0003010.0006	Page of T
Site Location:	Burrows Island Light Station, Anacortes, WA	
Personnel:	Gelsey Franz	XRF Unit # 8580
Sample Type:	XRF	Date: 11/16/18
Sampling Equipment: Broke	/ Tenual Other	

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
66	107-3-0.5	11/16/18	1229	Silty sand of grand	42±4	4	100-0738
67	107-4-0.5		1221	SAA	28/=9	ė	100-0739
73	104-27-1		1253	is true organics	1890场	0	101-0513
74	104-22-1		1254	SAA	130±5	0	101-0511
75	104-15-1		1256	SAA	162+7	D	101-0512
76	104-38-1		1258	grill + true agences	11+3	Ò	100-0754
77	104-40-1		1259	Silty Sand wi grevel	197+8	Ù	100-0758
78	104-27-15		1304	SAA + charcoal	2095±32	D	100-0756
79	104-65-10		1309	S.A.A	1823+38	S 🗹	100-0757
80	104-27-20		1312	Silty sound w/ govel and charcoal . BLACK	334514	+ 0/	100-0758
81	104-65-1.5'		1318	Silly send of goul	16517		100-0759
				1			
		- 10					
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Sampling Equipment: Probe / Trowel

Project	No .

-B0003010.0006

Site Location:

Burrows Island Light Station, Anacortes, WA

Other

Personnel:

Julia Vidonish/Helsey Franz

Sample Type:

XRF

J

XRF Unit # 10/02 Date: 11/18/18

Sample ID Date Time General Soil Description Lead Photo Taken? Notes dark brown, well 1035 1821 101-6474 35 avadea, sandy silt SAM 36 1638 D 101-0475 SAA 16 18 1041 01-0476 6 1050 U 4-9-0-5 88±5 9 0 101-0482 1107 D 101-0483 0 SAA SAA D 10 SAA 田 SAA SAA



Project No.:	B0003010.0006	Page 3 of 4

Site Location:

Burrows Island Light Station, Anacortes, WA

\$ on	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
53 50	104-65-0.5	11/16/19	1139	grades sandy silt	1011 = 18	9	101-042396
54	164-66-0.5	1	1139	SAA	3/14		101-048990
55	104-67-0.5		1140	SAA	16±4		101-04 90 91
56	104-68-0.5		1143	Brandy silt + organ	1		101-0452
57	104-69-0.5		1145	SAA	39±4		161-045
58	104-70-0,5		1147	SAA	87±6		101-04935
59	104-52-0.5		1152	SAA	1414	4	101-0495
60	104-53-0.5		1154	SAA	29+4	0	101-0498
61	104-55-0.5		1155	SAA	35 + 4	0	101-0499
62	104-56-0.5		1157	SAA	4214		101-0\$500
63	104-57-0.5		1159	SAA	55 ty	•	101-0501
64	104-58-0.5		1201	SAA	49±5	D/	101-0502
65	104-59-0.5		1202	SAA	58±5		101-0503
66	104-60-6.5	d d	1203	SAA	3014		101-0504
67	104-61-0.5		1204	SAR	3414	<b>P</b>	101-0505



Project No :	

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Site Location:

Burrows Island Light Station, Anacortes, WA

Personnel:

Julia Vidonish Melsey Frant

XPF unit # 8580

Sample Type:

Sampling Equipment:

XRF

Probe / Trowel

5:	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
33	104-21-0.5	11/16/18	1108	Sandy sitt	150±6		100-05000 0708
34	104-23-0.5	, ,	1110	SAA	75 15		100-0601 0709
35	104-29-0.5		1112	SAA	98±5		100-0000
36	104-35286.5		1113	SAA	23+4	•	109-0000000
37	104-20-6.5		1116	SAA	745		100-000000071
38	104-12-0.5		1118	SAA	16 t 3	Ð	100-06000 0713
39	104-14-0.5		1120	544	68±5		100-0000
3	104-31-0.5		1135	SAA	15±3	0	100-0715
44	104-47-0-5		1139	SAA	9055		100-0716
45	164-54-0.5		1141	med. brown, well- To Graked, Sandy silt	37 1 4	0	100-0717
46	104-62-0.5		1144	SAA	32 1 4		100-0718
47	104-63-0-5		1146	594	14057		100-0719
44	104-64-0.5		1148	SAA	34±3	Þ	100-6720
49	104-38-0.5		1150	& the organics	444 ±10	Ø	100-0721
50	104-39-0-5	1 W	1152	SAA	307 ±9	D'	100-0722

# Standards

SIOZ	Blank	2
-		

SW2 Blank		200
Shot #	tine	<u>Ph</u> < 10
28	0850	
7 9	0851	210
10	0853	210
11	0855	410
12	0856	< 11
42	1127	<10
73	1971	1
70	1248	210

Shot #	time	Ph
2	0	197 +7
3	6844	
4	0875	189±7
5	0844	20157
6	0847	181+7
7	0849	107=7
40	1124	195=7
TES.	200904	12 t 8
72	1252	194+7

Shot #	time .	Pb
13	0357	132±7
14	0858	しらナナ
15	0900	ロンナナ
16	0907	12957
17	0904	
41	1125	12117
312	1757	
71	1249	138七8

Calibration: NIST Z702 11/13/18 XRF unt 10102 76 (ms/4g) Shot # 122 ± 8 mg/kg 11418 114 ± 8 116 ± 8 7 114±8 35 1359 109±7 114 +8 NIST 2781

Shot #	1	Pb (maller)
8		18717
9		178±7
10		186± 7
11		183±7
12		180±7
36	14/00	171 = 7
Si 02	Blank	

Shot !	±	Ph (ng/kg)
13		z 13
14		<13
15		< 14
16		< 14
17		< 14
34	1318	< 14

Z702			8:02		
Time	Pb (Pau)	-00	Shot #	Time	Pb (ppm)
8920	106 ± 8			1028	< 14
0927	119 ± 8			1114	< 15
	121±8		58	1216	215
			68	1326	<16
				1844	< 11
0930	118 1 0		84	1531	< 13
Blank			NIST 2781		
	Pb (ppul		Shot #	Time	Pb (ppm)
			32	1030	1731 7
			47	1117	1907 7
			59	1218	18747
0937	215		70	1330	18117
0939	216		83	1448	18447
0941	< 14		85	1533	17217
2781			NEST 2702		
Time	Ph (ppm)		Shot #	Time	DP ( Bbm)
			33	1032	121 ± 8
					111±8
0945					106± 7
0947			71	1373	115±8
0948			82	1446	1127 8
0944	181 17		36	1535	115 # 8
	0920 0927 0928 0929 0930 Blance Time 0935 0935 0935 0937 0937 0939 0941 2781 Time 0943 0945 0945	Time Pb (Ppm)  0920 106 ± 5  0927 11919  0928 12118  0929 106 ± 8  106 ± 8  106 ± 8  106 ± 8  108 ± 8  Pb (ppm)  0938 <174  0937 <15  0939  216  0941	Time Pb (Ppm)  0920 104 ± 5  0927 119 ± 9  0928 121 ± 8  0929 106 ± 8  106 ± 8  108 ± 8  Pb (Ppm)  0938 < 15  0937 < 15  0937 < 15  0939 214  0941 < 214  2781  2781  2781  2781  296 (Ppm)  0943 197 ± 7  0944 192 ± 7  0948 191 ± 7	Time Pb (Pam)  0920  104 ± 3  0927  11919  0928  121 ± 8  0929  0929  106 ± 8  0930  118 ± 8  84   Pb (pam)  0936 <iv #="" 0937="" 0939="" 0941="" 0945="" 0948="" 187="" 214="" 216="" 2702="" 33="" 46="" 7="" 7<="" 85="" <iv="" nest="" shot="" td="" ±=""><td>Time Pb (Pau)  0920 106 ± 8  0927 11918  0928 121 ± 8  0929 121 ± 8  0929 1326  0930 118 ± 8  84 1531  Blance  Dist 2781  Time Pb (Pau)  0936 &lt; 174 372  0937 &lt; 15  0937 &lt; 15  0939 216 83 1448  0941 &lt; 214 85 1533  2781  NIST 2702  Time Pb (Pau)  0948 187 ± 7  0948 187 ± 7  0948 187 ± 7  0948 187 ± 7  0948 181 ± 7</td></iv>	Time Pb (Pau)  0920 106 ± 8  0927 11918  0928 121 ± 8  0929 121 ± 8  0929 1326  0930 118 ± 8  84 1531  Blance  Dist 2781  Time Pb (Pau)  0936 < 174 372  0937 < 15  0937 < 15  0939 216 83 1448  0941 < 214 85 1533  2781  NIST 2702  Time Pb (Pau)  0948 187 ± 7  0948 187 ± 7  0948 187 ± 7  0948 187 ± 7  0948 181 ± 7

# Calibration: XRF Unit 5635 11/14/18

Sioz Shot #	Blank	Pb (ppm)	Shot #	Time	Pb (ppm)
7 3	0905	<7 <7 <7	27 42 54	1027	< 10 < 9 < 9
5 6	0912	27 <6	74 101 109	1327 144/ 1543	< 9 < 8 11 <sup>±</sup> 3
Shot # 7 8 9 10 11	81 Blank Time 0927 0929 0932 0932 0935	Pb (ppm) 167 \$ 6 159 \$ 5 160 \$ 6 173 \$ 6 163 \$ 6	Shot #  28 41 55 73 /03 /10	Time 1028 1114 1215 1215 1215 1215 1215	Po (ppm)  166±6  167±6  165±6  178±6  161±6  161±6
Shot# 12 13 14 15	02 Time 0937 0939 0940 0941	Pb (ppm) 117 ± 7 126 ± 7 121 ± 6 128 ± 7 122 ± 7	Shot # 29 43 56 75 102 111	Time 1030 1118 1216 1330 1444 1546	Pb (ppm) 119±6 110±6 123±7 132±7 130±7 132±7

11/15/7018 Senil No 8580

Shell		
5:02		
Shoul Shot	Time	Lecd
2 3	13:37	612
y 56	13:41	L12 L10
29	13:43	L11 210
2781 Shot	Time	Lud
7	13:45	195 = 7
8	13:46	188±7 185±7 188±7
2702 30	13:49	192 = 7
Shat	Tine	Leid
12	13:52	127 = 7
13	13.54	124 + 7
16	13:56	124±7
31	14:41	125±7

# Sioz Blank time Shot # 28 51 28 51

reading (Pb)

<14 \$

# 

2101		
Shot #	time	Pb
13	0852	187+7
14	6854	186±7
15	0855	169±7
16	0856	18147
17	0858	175 = 7
29	1010	18357
52	1126	17917

```
11/15/18
      Siaz
  Shot 17
                                        Lead
                        lime
                     0857
    23145682
                                        AN VV
  2781
Shot # 3 4 5 6 7 29 71
                                      Lead
                   (ine
                                   175 ± 6
167 ± 6
165 ± 6
165 ± 6
168 ± 5
165 ± 6
                   0859
                 0900
                  1012
                  1054
  2702
```

# 8 ogob 122 16 8 ogob 122 16 9 ogob 122 17 10 ogio 119 16 11 ogi2 125 17 12 ogi4 119 16 27 1007 123 17 42 1057 126 17

# Calibration Log: XXF Unit 10102 11/15/19

SiOz Snot #	Time	Plo (ppm)	Shot#	time 1310	Plo (ppm) ZIT
2	900	<15	43	1400	415
3	903	214	69	1 4 44	415
4	905	< 14	89	1538	216
5	907	< 15	112		
le	909	< 14			
26	1005	214			
33	1090	<14			
NIST 2	781				
Shot #	Time	Pb (ppul	Shot #	T.m.	Sp ( bim)
7	911	19518	39	1052	17917
8	912	181 = 7	70	1313	17717
a	914	184± 7	90	1445	1910 57
10	916	18527	113	1539	18317
11	917	(7717			
27	1008	168±7			
NIST Z	702				
Shat #	Time	Pb (ppm)	Shot #	Thu	Pb (Ppm)
12	920	115 ± 8	45	1054	115±8
13	923	110 ± 8	71	1317	116 ± 8
14	924	108+8	91	1404	
15	915	113±8	114	15 40	109+8
16	926	102 = 7			
28	1010	10648			



14648 NE 95<sup>th</sup> Street, Redmond, WA 98052 • (425) 883-3881

November 27, 2018

Josh Gravenmier Arcadis U.S., Inc. 1100 Olive Way, Suite 800 Seattle, WA 98101

Re: Analytical Data for Project USCG Burrows Island

Laboratory Reference No. 1811-174

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on November 19, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister Project Manager

**Enclosures** 



Date of Report: November 27, 2018 Samples Submitted: November 19, 2018

Laboratory Reference: 1811-174 Project: USCG Burrows Island

### **Case Narrative**

Samples were collected on November 16, 2018 and received by the laboratory on November 19, 2018. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: November 27, 2018 Samples Submitted: November 19, 2018

Laboratory Reference: 1811-174 Project: USCG Burrows Island

### PCBs EPA 8082A

Matrix: Soil

Units: mg/Kg (ppm)

0 0 11 7				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	TP-1					
Laboratory ID:	11-174-32					
Aroclor 1016	ND	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1221	ND	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1232	ND	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1242	ND	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1248	ND	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1254	ND	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1260	1.7	0.083	EPA 8082A	11-26-18	11-26-18	
Surrogate:	Percent Recovery	Control Limits				
DCB	52	39-130				
Client ID:	TP-2					
Laboratory ID:	11-174-33					
Aroclor 1016	ND	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1221	ND	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1232	ND	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1242	ND	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1248	ND	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1254	ND	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1260	7.3	1.5	EPA 8082A	11-26-18	11-27-18	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	TP-3					
Laboratory ID:	11-174-34					
Aroclor 1016	ND	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1221	ND	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1232	ND	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1242	ND	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1248	ND	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1254	ND	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1260	0.84	0.092	EPA 8082A	11-26-18	11-26-18	
Surrogate:	Percent Recovery	Control Limits				
DCB	44	39-130				

Laboratory Reference: 1811-174 Project: USCG Burrows Island

### PCBs EPA 8082A QUALITY CONTROL

Matrix: Soil

Units: mg/Kg (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1126S1					
Aroclor 1016	ND	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1221	ND	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1232	ND	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1242	ND	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1248	ND	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1254	ND	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1260	ND	0.050	EPA 8082A	11-26-18	11-26-18	
		0	•	•	<u> </u>	•

Surrogate: Percent Recovery Control Limits
DCB 82 39-130

Analyte	Re	sult	Spike	Level	Source Result		rcent covery	Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB11	26S1									
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	0.349	0.349	0.500	0.500	N/A	70	70	56-124	0	18	
Surrogate:											
DCB						85	84	39-130			

Laboratory Reference: 1811-174 Project: USCG Burrows Island

### % MOISTURE

Date Analyzed: 11-20-18

Client ID	Lab ID	% Moisture
TP-1	11-174-32	40
TP-2	11-174-33	34
TP-3	11-174-34	45



### **Data Qualifiers and Abbreviations**

- A Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B The analyte indicated was also found in the blank sample.
- C The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E The value reported exceeds the quantitation range and is an estimate.
- F Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I Compound recovery is outside of the control limits.
- J The value reported was below the practical quantitation limit. The value is an estimate.
- K Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L The RPD is outside of the control limits.
- M Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 Hydrocarbons in diesel range are impacting lube oil range results.
- O Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P The RPD of the detected concentrations between the two columns is greater than 40.
- Q Surrogate recovery is outside of the control limits.
- S Surrogate recovery data is not available due to the necessary dilution of the sample.
- T The sample chromatogram is not similar to a typical \_\_\_\_\_\_.
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 The practical quantitation limit is elevated due to interferences present in the sample.
- V Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

7 -

ND - Not Detected at PQL

PQL - Practical Quantitation Limit

RPD - Relative Percent Difference





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14648 NE 95<sup>th</sup> Street, Redmond, WA 98052 • (425) 883-3881

November 29, 2018

Josh Gravenmier Arcadis U.S., Inc. 1100 Olive Way, Suite 800 Seattle, WA 98101

Re: Analytical Data for Project USCG Burrows Island

Laboratory Reference No. 1811-174

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on November 19, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister Project Manager

**Enclosures** 



Laboratory Reference: 1811-174 Project: USCG Burrows Island

### **Case Narrative**

Samples were collected on November 13, 14, 15 and 16, 2018 and received by the laboratory on November 19, 2018. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

### TCLP Metals EPA 1311/6010D/7470A Analysis

Due to a limited amount of sample, less than the required 100g was tumbled for TCLP analysis. The amount of sample used was: (40 g).

### Total Lead EPA 6010D Analysis

The Matrix Spike/ Matrix Spike Duplicate recoveries for Lead are outside control limits due to matrix inhomogeneity . The samples were re-extracted and re-analyzed with similar results. The Spike Blank recovery was 96%.

The Matrix Spike/Matrix Spike Duplicate RPD for Lead is outside control limits due to matrix inhomogeneity. The samples were re-extracted and re-analyzed with similar results.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Laboratory Reference: 1811-174 Project: USCG Burrows Island

### TCLP METALS EPA 1311/6010D/7470A

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	PPE-1					
Laboratory ID:	11-174-31					
Arsenic	ND	0.40	EPA 6010D	11-29-18	11-29-18	
Barium	ND	0.20	EPA 6010D	11-29-18	11-29-18	
Cadmium	ND	0.020	EPA 6010D	11-29-18	11-29-18	
Chromium	ND	0.020	EPA 6010D	11-29-18	11-29-18	
Lead	ND	0.20	EPA 6010D	11-29-18	11-29-18	
Mercury	ND	0.0050	EPA 7470A	11-29-18	11-29-18	
Selenium	ND	0.40	EPA 6010D	11-29-18	11-29-18	
Silver	ND	0.040	EPA 6010D	11-29-18	11-29-18	
Client ID:	WC-1					
Laboratory ID:	11-174-35					
Arsenic	ND	0.40	EPA 6010D	11-29-18	11-29-18	
Barium	0.52	0.20	EPA 6010D	11-29-18	11-29-18	
Cadmium	ND	0.020	EPA 6010D	11-29-18	11-29-18	
Chromium	ND	0.020	EPA 6010D	11-29-18	11-29-18	
Lead	0.25	0.20	EPA 6010D	11-29-18	11-29-18	
Mercury	ND	0.0050	EPA 7470A	11-29-18	11-29-18	
Selenium	ND	0.40	EPA 6010D	11-29-18	11-29-18	
Silver	ND	0.040	EPA 6010D	11-29-18	11-29-18	

Laboratory Reference: 1811-174 Project: USCG Burrows Island

### TCLP METALS EPA 1311/6010D/7470A QUALITY CONTROL

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1129TM1					
Arsenic	ND	0.40	EPA 6010D	11-29-18	11-29-18	
Barium	ND	0.20	EPA 6010D	11-29-18	11-29-18	
Cadmium	ND	0.020	EPA 6010D	11-29-18	11-29-18	
Chromium	ND	0.020	EPA 6010D	11-29-18	11-29-18	
Lead	ND	0.20	EPA 6010D	11-29-18	11-29-18	
Selenium	ND	0.40	EPA 6010D	11-29-18	11-29-18	
Silver	ND	0.040	EPA 6010D	11-29-18	11-29-18	
Laboratory ID:	MB1129T1					
Mercury	ND	0.0050	EPA 7470A	11-29-18	11-29-18	

					Source	Pe	rcent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Result	Rec	overy	Limits	RPD	Limit	Flags
DUPLICATE											
Laboratory ID:	11-17	74-31									
	ORIG	DUP									
Arsenic	ND	ND	NA	NA		1	NΑ	NA	NA	20	
Barium	ND	ND	NA	NA		1	NΑ	NA	NA	20	
Cadmium	ND	ND	NA	NA		1	NΑ	NA	NA	20	
Chromium	ND	ND	NA	NA		1	NΑ	NA	NA	20	
Lead	ND	ND	NA	NA		1	NΑ	NA	NA	20	
Selenium	ND	ND	NA	NA		1	NA	NA	NA	20	
Silver	ND	ND	NA	NA		<u> </u>	NA	NA	NA	20	
Laboratory ID:	11-17	74-35									
Mercury	ND	ND	NA	NA		ľ	NΑ	NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	11-17										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	3.85	3.96	4.00	4.00	ND	96	99	75-125	3	20	
Barium	3.96	4.00	4.00	4.00	ND	99	100	75-125	1	20	
Cadmium	1.78	1.80	2.00	2.00	ND	89	90	75-125	1	20	
Chromium	3.86	3.88	4.00	4.00	ND	97	97	75-125	0	20	
Lead	9.16	9.23	10.0	10.0	ND	92	92	75-125	1	20	
Selenium	4.08	4.09	4.00	4.00	ND	102	102	75-125	0	20	
Silver	0.934	0.936	1.00	1.00	ND	93	94	75-125	0	20	
Laboratory ID:	11-17	74-35									
Mercury	0.0447	0.0466	0.0500	0.0500	ND	89	93	75-125	4	20	



Project: USCG Burrows Island

### **TOTAL LEAD EPA 6010D**

Matrix: Soil

			Date	Date	
Result	PQL	Method	Prepared	Analyzed	Flags
1800	7.5	EPA 6010D	11-26-18	11-26-18	
WT-2-2-1.0					
970	5.9	EPA 6010D	11-26-18	11-26-18	
109-2-0.5					
11-174-03					
520	6.3	EPA 6010D	11-26-18	11-26-18	
102-32-0.5					
380	8.8	EPA 6010D	11-26-18	11-26-18	
105-33-0.5					
11-174-05					
54	7.0	EPA 6010D	11-26-18	11-26-18	
102-13-1.0					
850	7.1	EPA 6010D	11-26-18	11-26-18	
105-11-0.5					
11-174-07					
180	5.8	EPA 6010D	11-26-18	11-26-18	
102-33-0 5					
11000	40	EPA 6010D	11-26-18	11-26-18	
	WT-2-2-0.5 11-174-01 1800  WT-2-2-1.0 11-174-02 970  109-2-0.5 11-174-03 520  102-32-0.5 11-174-04 380  105-33-0.5 11-174-05 54  102-13-1.0 11-174-06 850  105-11-0.5 11-174-07 180	WT-2-2-0.5 11-174-01 1800 7.5  WT-2-2-1.0 11-174-02 970 5.9  109-2-0.5 11-174-03 520 6.3  102-32-0.5 11-174-04 380 8.8  105-33-0.5 11-174-05 54 7.0  102-13-1.0 11-174-06 850 7.1  105-11-0.5 11-174-07 180 5.8	WT-2-2-0.5 11-174-01  1800 7.5 EPA 6010D  WT-2-2-1.0 11-174-02 970 5.9 EPA 6010D  109-2-0.5 11-174-03 520 6.3 EPA 6010D  102-32-0.5 11-174-04 380 8.8 EPA 6010D  105-33-0.5 11-174-05 54 7.0 EPA 6010D  105-11-0.5 11-174-07 180 5.8 EPA 6010D	Result         PQL         Method         Prepared           WT-2-2-0.5 11-174-01         1800         7.5         EPA 6010D         11-26-18           WT-2-2-1.0 11-174-02         11-174-02         970         5.9         EPA 6010D         11-26-18           109-2-0.5 11-174-03         520         6.3         EPA 6010D         11-26-18           102-32-0.5 11-174-04         380         8.8         EPA 6010D         11-26-18           105-33-0.5 11-174-05         7.0         EPA 6010D         11-26-18           102-13-1.0 11-174-06         11-26-18         EPA 6010D         11-26-18           105-11-0.5 11-174-07         180         5.8         EPA 6010D         11-26-18           102-33-0.5 11-174-08         11-174-08         11-26-18         11-26-18	Result         PQL         Method         Prepared         Analyzed           WT-2-2-0.5         11-174-01         1800         7.5         EPA 6010D         11-26-18         11-26-18           WT-2-2-1.0         11-174-02         970         5.9         EPA 6010D         11-26-18         11-26-18           109-2-0.5         11-174-03         520         6.3         EPA 6010D         11-26-18         11-26-18           102-32-0.5         11-174-04         380         8.8         EPA 6010D         11-26-18         11-26-18           105-33-0.5         11-174-05         54         7.0         EPA 6010D         11-26-18         11-26-18           105-11-0.5         11-174-06         850         7.1         EPA 6010D         11-26-18         11-26-18           102-33-0.5         11-174-07         180         5.8         EPA 6010D         11-26-18         11-26-18           102-33-0.5         11-174-08         5.8         EPA 6010D         11-26-18         11-26-18

Project: USCG Burrows Island

### **TOTAL LEAD EPA 6010D**

Matrix: Soil

orins. Hightig (ppin)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	105-13-0.5					
Laboratory ID:	11-174-09					
Lead	1800	6.4	EPA 6010D	11-26-18	11-26-18	
Oli ID	405.05.0.5					
Client ID:	105-25-0.5					
Laboratory ID:	11-174-10		ED4 0040D	11.00.10	11.00.10	
Lead	220	6.7	EPA 6010D	11-26-18	11-26-18	
Client ID:	105-27-0.5					
Laboratory ID:	11-174-11					
Lead	88	6.6	EPA 6010D	11-26-18	11-26-18	
Client ID:	105-1-0.5					
Laboratory ID:	11-174-12					
Lead	2900	7.3	EPA 6010D	11-26-18	11-26-18	
Olivert ID:	400.40.0.5					
Client ID:	102-16-0.5					
Laboratory ID:	11-174-13	7.4	EDA 0040D	11 00 10	44.00.40	
Lead	1100	7.1	EPA 6010D	11-26-18	11-26-18	
Client ID:	102-15-1.0					
Laboratory ID:	11-174-14					
Lead	700	7.1	EPA 6010D	11-26-18	11-26-18	
a	400					
Client ID:	102-6-0.5					
Laboratory ID:	11-174-15					
Lead	78	7.7	EPA 6010D	11-26-18	11-26-18	
Client ID:	101-43-0.5					
Laboratory ID:	11-174-16					
Lead	440	7.7	EPA 6010D	11-26-18	11-26-18	

Project: USCG Burrows Island

### **TOTAL LEAD EPA 6010D**

Matrix: Soil

3 3 (1 )				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	101-11-0.5					
Laboratory ID:	11-174-17					
Lead	7400	350	EPA 6010D	11-26-18	11-26-18	
Client ID:	101-8-0.5					
Laboratory ID:	11-174-18					
Lead	35000	760	EPA 6010D	11-26-18	11-26-18	
Client ID:	101-26-0.5					
Laboratory ID:	11-174-19					
Lead	920	6.7	EPA 6010D	11-26-18	11-26-18	
Client ID:	101-29-0.5					
Laboratory ID:	11-174-20					
Lead	50	7.0	EPA 6010D	11-26-18	11-26-18	
Client ID:	104-22-0.5					
Laboratory ID:	11-174-21					
Lead	370	8.1	EPA 6010D	11-26-18	11-26-18	
Client ID:	104-27-0.5					
Laboratory ID:	11-174-22		EDA	44.05.15	44.05.15	
Lead	1700	6.4	EPA 6010D	11-26-18	11-26-18	
Client ID:	104-38-0.5					
Laboratory ID:	11-174-23					
Lead	310	6.3	EPA 6010D	11-26-18	11-26-18	
	0.0	0.0	217(00100	11 20 10	11 20 10	
Client ID:	104-40-0.5					
Laboratory ID:	11-174-24					
Lead	34	6.1	EPA 6010D	11-26-18	11-26-18	

Project: USCG Burrows Island

### **TOTAL LEAD EPA 6010D**

Matrix: Soil

oring, rig/rig (ppin)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	104-15-0.5					
Laboratory ID:	11-174-25					
Lead	560	7.0	EPA 6010D	11-26-18	11-26-18	
Client ID:	104-1-0.5					
Laboratory ID:	11-174-26					
Lead	170	6.4	EPA 6010D	11-26-18	11-26-18	
Client ID:	103-19-0.5					
Laboratory ID:	11-174-27					
Lead	840	6.7	EPA 6010D	11-26-18	11-26-18	
Client ID:	103-50-0.5					
Laboratory ID:	11-174-28					
Lead	260	6.4	EPA 6010D	11-26-18	11-26-18	
Client ID:	103-3-0.5					
Laboratory ID:	11-174-29					
Lead	290	5.8	EPA 6010D	11-26-18	11-26-18	
Client ID:	103-86-0.5					
Laboratory ID:	11-174-30					
Lead	24	6.0	EPA 6010D	11-26-18	11-26-18	
Client ID:	103-12-0.5					
Laboratory ID:	11-174-36					
Lead	800	6.5	EPA 6010D	11-26-18	11-26-18	
Client ID:	103-54-0.5					
Laboratory ID:	11-174-37					
Lead	82	6.7	EPA 6010D	11-26-18	11-26-18	

Laboratory Reference: 1811-174 Project: USCG Burrows Island

### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	104-40-0.5					
Laboratory ID:	11-174-38					
Lead	5500	30	EPA 6010D	11-26-18	11-27-18	

Laboratory Reference: 1811-174 Project: USCG Burrows Island

### TOTAL LEAD EPA 6010D QUALITY CONTROL

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1126SM1					
Lead	ND	5.0	EPA 6010D	11-26-18	11-26-18	
Laboratory ID:	MB1126SM2					
Lead	ND	5.0	EPA 6010D	11-26-18	11-26-18	

					Source	Pe	rcent	Recovery		RPD	
Analyte	Res	sult	Spike	e Level	Result	Rec	overy	Limits	RPD	Limit	Flags
DUPLICATE											
Laboratory ID:	11-17	74-03									
	ORIG	DUP									
Lead	418	444	NA	NA			NA	NA	6	20	
Laboratory ID:	11-17	78-01									
	ORIG	DUP									
Lead	ND	ND	NA	NA			NA	NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	11-17	74-03									
	MS	MSD	MS	MSD		MS	MSD				
Lead	702	907	250	250	418	113	195	75-125	25	20	V,W
Laboratory ID:	11-17	78-01									
	MS	MSD	MS	MSD	•	MS	MSD		•	•	
Lead	216	219	250	250	ND	86	88	75-125	2	20	

Laboratory Reference: 1811-174 Project: USCG Burrows Island

### % MOISTURE

Date Analyzed: 11-20-18

Client ID	Lab ID	% Moisture
WT-2-2-0.5	11-174-01	33
WT-2-2-1.0	11-174-02	16
109-2-0.5	11-174-03	20
102-32-0.5	11-174-04	43
105-33-0.5	11-174-05	29
102-13-1.0	11-174-06	29
105-11-0.5	11-174-07	14
102-33-0.5	11-174-08	38
105-13-0.5	11-174-09	22
105-25-0.5	11-174-10	26
105-27-0.5	11-174-11	24
105-1-0.5	11-174-12	31
102-16-0.5	11-174-13	30
102-15-1.0	11-174-14	29
102-6-0.5	11-174-15	35
101-43-0.5	11-174-16	35
101-11-0.5	11-174-17	29
101-8-0.5	11-174-18	34
101-26-0.5	11-174-19	26
101-29-0.5	11-174-20	28
104-22-0.5	11-174-21	38
104-27-0.5	11-174-22	22
104-38-0.5	11-174-23	20
104-40-0.5	11-174-24	18
104-15-0.5	11-174-25	28
104-1-0.5	11-174-26	22
103-19-0.5	11-174-27	25

Laboratory Reference: 1811-174 Project: USCG Burrows Island

### % MOISTURE

Date Analyzed: 11-20-18

Client ID	Lab ID	% Moisture
103-50-0.5	11-174-28	22
103-3-0.5	11-174-29	13
103-86-0.5	11-174-30	16
103-12-0.5	11-174-36	23
103-54-0.5	11-174-37	26
104-40-0.5	11-174-38	18



### **Data Qualifiers and Abbreviations**

- A Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B The analyte indicated was also found in the blank sample.
- C The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E The value reported exceeds the quantitation range and is an estimate.
- F Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I Compound recovery is outside of the control limits.
- J The value reported was below the practical quantitation limit. The value is an estimate.
- K Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L The RPD is outside of the control limits.
- M Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 Hydrocarbons in diesel range are impacting lube oil range results.
- O Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P The RPD of the detected concentrations between the two columns is greater than 40.
- Q Surrogate recovery is outside of the control limits.
- S Surrogate recovery data is not available due to the necessary dilution of the sample.
- T The sample chromatogram is not similar to a typical \_\_\_\_\_.
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 The practical quantitation limit is elevated due to interferences present in the sample.
- V Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

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ND - Not Detected at PQL

PQL - Practical Quantitation Limit RPD - Relative Percent Difference





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Optionnatograms with final report	Optionnatograms with final report	Reviewed/Date			SO)	Tipha	Alpha	1 / /	Arrait	ompany	1052	9101	1403		1358	1103	1100	(600	1520	1510		(other)		dard (7 Days)		П
Opportung with final report    Opportung Standard    Opportung Sta	Onomatograms with final report				M						01 1		1 )60	1 160	021	011			Sail 1	1 1		er of C	ontain	ers	3 Days	1 Day
Chromatograms with final report	Chromatograms with final report				11/19/11	81/15/11	1/18/1n	91/41/V	Whahe	Date											NWTP	PH-Gx/E PH-Gx	BTEX	/ SG Cl	ean-up)	
mate package: Standard Chlorinated Acid Herbicides 8151A  Total RCRA Metals  (with low-level PAHs)  (with low-level PAHs)  PAHs 8270D/SIM (low-level)  PCBs 8082A  Organochlorine Pesticides 8081B  Organophosphorus Pesticides 8270D/SIM  Total RCRA Metals	minimated grams  with final report  Level  (with low-level PAHs)  (with low-level PAHs)  PAHs 8270D/SIM (low-level)  PCBs 8082A  Organochlorine Pesticides 8081B  Organophosphorus Pesticides 8270D/SIM  Chlorinated Acid Herbicides 8151A  Total RCRA Metals				1215	12115	12:15	logo	-	Time											Haloge	enated	Volatile			
Total MTCA Metals	Total MTCA Metals	Chromatograms	Data Package:							Comments/Spe											PAHs PCBs	8270D/ 8082A	el PAHs SIM (lo	) w-level)		
Total MTCA Metals	Total MTCA Metals	with final repor								ial Instructions											Organ	ophosp	horus I	Pesticide	es 8270	D/SIM
	the Deliverables (TE																				Total N	MTCA N	/letals	) 1664A		



Page 2 of

hen Carh Alpha	hed MMMMy Account;	And Mile My Accounting Silvery Land Alpha	Mich Clay Account;	<i>H A</i>	Signature / Company Date	20 101-29-0.5 W/15/18 1138 Soil 1	19 101-26-05 11/15/18 1137 50:1 1	18 101-8-0.5 111/11 1135 5011 1	17 101-11-0.5 11/15/18 1136 Sect 1	6 101-43-05 W/15/18 1139 Soil 1	15 102-6-0.5 11/14/18 1223 50:1 1	14 102-12-100 WININ 11118 20:1 1	13 102-16-05 11/14/18 1253 50:1 1	12 105-1-6.5 111111111111111111111111111111111111	1 1105-27-85 11/11/11 7:0- +55-201 11	NWTP	(other)	)	Burrows Island A Standard (7 Days)	er: 2 Days	cadis	Analytical Laboratory Testing Services  14648 NE 95th Street · Redmond, WA 98052  (in working days)  Laboratory Null
25		7		(080)	Comments/Special Instructions	*	×	*	×	×	*	*	*	х	×	EDB E Semiv. (with lo PAHs 8 PCBs Organo Organo Chlorir Total F Total N TCLP	PA 801  olatiles  ow-leve  3270D/3  8082A  ochlorir  ophosp  nated A  RCRA M  MTCA M  Metals  oil and	1 (Water 8270D 18 PAHS		081B es 8270l 8151A	D/SIM	mber: 11-174



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Reviewed/Date				M Alah	tack A/p	Acad:	Company	11/15/18 1130	11/15/18 150th	11/K/B 1339	1116/18 1235	11/16/18 900	11/16/18 855	11/16/18 850	11/16/18 B45	Date Time Sampled Sampled	(other)		Standard (7 Days)	Same Day	Same Day	(Check One)	Turnaround Request (in working days)
		280E	19	dis		7	1,38	1 138 1	1 1:95 5	1 1/09	1.19	Soil	Solid 1	Matrix		ontaine		3 Days	1 Day	One)	Request g days)		
			11/16/18 1215	11/18/18/11	51:01 81/11/11	(1/19/18 1000	Date Time									NWTP NWTP NWTP Volatile Haloge	H-HCIE H-Gx/E H-Gx H-Dx ([ es 8260	Acid  C  Volatiles	/ SG Cless 8260C		)		Laboratory Number:
Chromatograms with final report   Electronic Data Deliverables (EDDs)	Data Package: Standard ☐ Level III ☐ Level IV ☐						Comments/Special Instructions	×	×	*	*	*	*	*	7	(with lot PAHs & PCBs and Organo Chlorin Total R Total M TCLP M HEM (co	pow-leve 3270D/3 8082A pochlorin pophospi atted A CRA M ITCA M Metals bil and g	horus P cid Herl etals letals	v-level) cides 80 esticides	s 8270	D/SIM		: 11-174

### **APPENDIX B**

Field Documentation

Daily Field Logs

Utility Locate Report

X-Ray Fluorescence Field Log



Project No.:	B00003010.0	0006 Page of									
Site Location:	Burrows Islan	s Island, WA									
Prepared By:	Mark Ullery										
Personnel:	Mark Ullery,	Julia Vidonish, Alex Pink, Emily Zikmund, Ryan Brauchla, Daniel Gilbert									
Date	Time	Description of Activities									
3/25/19	600	eet at Seattle Arcadis field room (Mark, Julia, Alex, Emily), pack up equipment and epare to mobilize to Anacortes. Ryan and Daniel meet separately to mobilize.									
	830	Arrive at Skyline Marina, complete H&S tailgate with the team. Unload equipment and prepare for mobilization to Burrows Island.									
		Load onto boat and travel to Burrows Island.									
		Arrive at Burrows Island. Unload equipment and stage near the boathouse. Complete initial inspection of site. Utility markings and ISM sample locaiton flags appear to be intact									
	1000	Set up working are near the Duplex. Complete initialization and calibration of XRF instrument (see calibration log). Prepare for soil sampling (see FieldNow logs).									
	1505	Complete XRF analysis on ISM-DU-03-0.5-1.0. Average concentration from selected samples is 38.4 mg/kg. No additional sampling depths attempted.									
	1520	Complete XRF analysis on ISM-DU-01-0.5-1.0. Average concentration is 263.5 mg/kg. Additional sample from 1.0-1.5 feet bgs will be collected.									
	1722	Collect equipment blank EB-032519 using DI water and a decontaminated sampling spoon used for compositing.									
	1730	Wrap up sampling for the day. ISM composite and SU samples collected for ISM-01-A-0-0.5, ISM-01-A-0.5-1.0, ISM-02-A-0-0.5, ISM-03-A-0.5-1.0, and ISM-06-A-0-0.5. Increments collected for ISM-02-A-0.5-1.0, but will be processed tomorrow. Increment sample collection was started for ISM-06-A-0.5-1.0, but not finished. Sample collection and processing will be completed tomorrow.									
	1800	Demobilize from Burrows Island to Anacortes. Pack samples and head to hotel. Arcadis off-									



Project No.:	B00003010.0	0006 Page of								
Site Location:	Burrows Islai	nd, WA								
Prepared By:	Mark Ullery									
Personnel:	Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Ryan Brauchla, Daniel Gilbert									
Date	Time	Description of Activities								
3/26/19	715	Mobilize to Skyline Marina, complete tailgate H&S meeting.								
	800	Board Island Express ferry and mobilize to Burrows Island.								
	815	Arrive at Burrows Island. Unload equipment, set up work area near the Duplex and prepare for sampling. See sample logs.								
	830	Initialize XRF unit. Internal calibrations good. Calibrate to standards, see calibration log.								
	1000	Completed XRF analysis on ISM-02-A-0.5-1.0. Average total lead concentration of 33.7 mg/kg. No additional depth intervals required.								
	1010	Encountered shallow refusal in numerous locations in DU-06. In instances where refusal was between 0.5 and 1.0 feet, sample was collected for compositing and XRF analysis with the refusal depth noted. If refusal encountered at less than 0.5 feet in multiple borings near the sample location, no samples were collected as noted.								
	1120	Completed XRF analysis on ISM-06-A-0.5-1.0. Average total lead concentration of 380.5 mg/kg. Will collect additional ISM sample from 1.0-1.5 feet bgs interval.								
	1330	Completed XRF analysis on ISM-07-A-0.5-1.0. Average lead concentration of 28.2 mg/kg. No additional depth intervals required.								
	1510	Complete XRF analysis on ISM-01-A-1.0-1.5. Average lead concentration of 63.2 mg/kg. No additional depth intervals required.								
	1600	Complete XRF analysis on ISM-08-A-0.5-1.0. Average lead concentration of 341.7 mg/kg. Additional ISM sample from 1.0-1.5 feet bgs interval will be collected.								
	1710	Complete XRF analysis on ISM-11-A-0.5-1.0. Average lead concentration of 68.5 mg/kg. No additional depth intervals required.								
	1800	Completed sampling for the day and packed up equipment. Collected soil increments from DU-11 0-0.5 feet bgs interval and the B and C replicates from DU-02, but did not have time to complete processing. Samples will be composited and processed tomorrow.								
	1824	Collect equipment blank EB-032619 using DI water and a decontaminated sampling spoon used for compositing.								
	1900	Pickup from Burrows Island by Island Express. Return to Anacortes. Arcadis off-site.								



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Project No.:	B00003010.0006 Page										
Site Location:	Burrows Islan	nd, WA									
Prepared By:	Mark Ullery	Mark Ullery									
Personnel:	Mark Ullery,	Julia Vidonish, Alex Pink, Emily Zikmund, Ryan Brauchla, Daniel	Gilbert								
Date	Time Description of Activities										
3/27/19	715	Arrive at Skyline Marina, complete H&S tailgate, prepare for boa	rding ferry.								
	800	Board Island Express ferry and mobilize to Burrows Island.									
		Arrive at Burrows Island. Unload equipment, set up work are neafor sampling. See sampling forms.	r the Duplex a	nd prepare							
	830	Initialze XRF unit. Internal claibrations good. Calibrate to standar	ds. See calibra	ation log.							
	1010	Complete sample collection and XRF analysis of increments from Average lead concentration of 89.8 mg/kg. Refusal at less than 1 increment sample locations with no samples. No additional depth on XRF results.	l.0 feet encour	ntered in 11							
	1035	Complete sample collection and XRF analysis of increments from Average lead concentration of 621.5 mg/kg. Refusal at less than increment sample locations with no samples. Additional depth inflocations that can be sampled. Metal chunk noted in sample from XRF result of >3,000 mg/kg.	1.0 feet encoเ terval will be at	untered in 15 ttempted in							
	1150	Complete sample collection and XRF analysis of increments from Refusal encountered at depths less than 1.5 feet in 24 increments samples. Average lead concentration in samples that were collect Additional depth interval will be attempted.	t locations resu	ulting in no							
	1200	Discuss addiitonal sampling in DU-06 with Paul McCullough. Ref 2 increment locations at less than 2 feet. Decide to obtain discre- maximum depth that can be readily sampled in locations 06-10 a	te soil samples								
	1240	Collect SB-06-10-2.0-2.5 at 1240. Refusal encountered at 2.6 fee 3.5 at 1242. Refusal encountered at 3.5 feet.	et. Collect SB-	06-22-3.0-							
	1645	Complete sample collection and XRF analysis of increments from Average lead concentration of 64.5 mg/kg. No additional depth in XRF results.	ntervals require	ed based on							
	1745	Complete sample collection and XRF analysis of increments from Average lead concentraiton of 21.8 mg/kg. No additional depths results.									
	1830	Complete sampling for the day, pack up equipment and prepared	d for demobiliz	ation.							
		Collect equipment blank EB-032719 using DI water and a decon									
	1915	Transfer equipment and personnel to the pickup point for the ferr	<b></b> У.								
		Demobilize from the site on the Island Express ferry. Arcadis off-									



Project No.:	: <u>B00003010.0006</u> Page of									
Site Location:	Burrows Isla	urrows Island, WA								
Prepared By:	Mark Ullery									
Personnel:	Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Ryan Brauchla, Daniel Gilbert									
Date	Time	Description of Activities								
3/28/19	615	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.								
	645	Board Island Express ferry and mobilize to Burrows Island.								
	700	Arrive at Burrows Island. Unload equipment, set up work are near the Duplex and prepare for sampling. See sampling forms.								
	715	Complete XRF initialization. Internal checks good. See calibration log.								
	800	Relocated select locations in DU 09 based on the presence of solid material/concrete on the south side of Building 101, outside of the fence line. Locations that were adjusted are noted in Collector with updated locations.								
	830	Encountered shallow refusal less than 0.5 feet in 9 locations, with no samples collected in 5 locations due to the presence of concrete or hard material. These locations could not be readily relocated within the DU, so no samples were collected.								
		Complete sample collection and XRF analysis on increments from ISM-09-A-0.5-1.0. Average lead concentration of 94.8 mg/kg. No additional depth intervals required based on XRF results.								
	1150	Complete sample collection and XRF analysis on increments from ISM-05-A-0.5-1.0. Average lead concentration of 40.7 mg/kg. No additional depth intervals required based on XRF results.								
	1315	Complete sample collection and XRF analysis on increments from ISM-12-0.5-1.0. Average lead concentration of 32.8 mg/kg. No additional depth intervals required based on XRF results.								
	1415	Complete sample collection for ISM-13-A-0.5-1.0. Will complete XRF on samples tomorrow. Clean up equipment and prepare for demobilization.								
	1430	Demobilize from the site on Island Express ferry. Arcadis off-site.								





Project No.:	B00003010.0	0006 Page of							
Site Location:	Burrows Islai	nd, WA							
Prepared By:	Mark Ullery								
Personnel:	Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Ryan Brauchla, Daniel Gilbert								
Date	Time	Description of Activities							
3/29/19	615	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.							
	645	Board Island Express ferry and mobilize to Burrows Island.							
	700	Arrive at Burrows Island. Unload equipment, set up work are near the Duplex and prepare for sampling. See sampling forms.							
	715	Complete XRF initialization. Internal checks good. See calibration log.							
	800	Complete XRF analysis of samples from ISM-13-A-0.5-1.0. Average lead concentration is 66.5 mg/kg. No additional depth intervals required based on XRF results.							
	1050	Complete collection and XRF analysis of samples from ISM-14-A-0.5-1.0. Average lead concentration is 103.8 mg/kg. No additional depth intervals required based on XRF results.							
	1230	Mark out locations in DU 16 by measuring tape instead of GPS due to close sample spacing and poor GPS signal. Locations 16-8, 16-9, 16-13, 16-14, 16-18, 16-19, 16-23 and 16-24 were adjusted outside of the footprint of the former tank structures so that they could be accessed. Locations were placed at the closest point near the edge of the remaining portion of the structures.							
	1340	Complete sample collection and XRF analysis for ISM-15-A-0.5-1.0. Two locations within concrete pad and no samples were recovered. Average lead concentration is 1218 mg/kg. Will collect samples from 1.0-1.5 foot interval.							
	1415	Clean up sampling equipment and prepare for demobilization.							
	4445	Develority of the state of the							
	1445	Demobilize from the site on the Island Express Ferry. Arcadis off-site.							





Project No.:	B00003010.0	0006	Page	of								
Site Location:	Burrows Islan	nd, WA										
Prepared By:	Mark Ullery	Mark Ullery										
Personnel:	Mark Ullery,	Julia Vidonish, Alex Pink, Emily Zikmund, Daniel Gilbert										
Date	Time Description of Activities											
3/30/19	730	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.										
	800	Board Island Express ferry and mobilize to Burrows Island.										
	815	Arrive at Burrows Island. Unload equipment, set up work are r for sampling. See sampling forms.	ear the Duple	uplex and prepare								
		Collect equipment blank EB-033019 from decontaminated har										
		830 Complete XRF initialization. Internal checks good. See calibration log.										
	900 Mark out DU 17 using measuring tape instead of GPS due to poor signal.											
	1005	Complete XRF analysis of samples from ISM-16-A-0.5-1.0. All samples analyzed were not detect. No additional depth intervals required based on XRF results.										
	1200	Mark out DU 18 locations. Access is generally good, except for the sloped area covere ivy on the west side of the DU adjacent to the helicopter pad. Locations recorded in 1200 Collector.										
	1250	Complete sample collection and XRF analysis for ISM-17-A-0. of six samples analyzed at a concentration of 53 mg/kg.	5-1.0. Lead de	etected in one								
	1315	Complete sample colleciton and XRF analysis for ISM-15-A-1.0-1.5. Refusal encounter at 1.0 feet or less in 15 sample locations resulting in no samples. Average lead concentration in samples analyzed by XRF is 45.5 mg/kg. No additional depth intervals based on XRF results.										
	1605	omplete sample collection and XRF analysis for ISM-18-A-0.5-1.0. Average lead oncentration is 49 mg/kg. No additional depth intervals based on XRF results.										
	1615	Complete sampling and pack up equipment. Prepare for demo	bilizatoin.									
	1630	Demobilize from the site on the Island Express ferry. Arcadis of	off-site.									





Project No.:	B00003010.0	0006 Page of	
Site Location:	Burrows Island, WA		
Prepared By:	Mark Ullery		
Personnel:	Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Daniel Gilbert		
Date	Time	Description of Activities	
3/31/19	730	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.	
	800	Board Island Express ferry and mobilize to Burrows Island.	
	815	Arrive at Burrows Island. Unload equipment, set up work are near the Duplex and prepare for sampling. See sampling forms.	
	910	Complete discrete sample collection around Building 106.	
	1240	Complete discrete sample collection around former 10,000-gallon above ground tank (Building 112). Generally encountered shallow refusal at less than 2 feet. Samples were collected from the deepest interval that could be obtained before refusal.	
	1440	Complete collection of discrete samples along the pipelines. Where possible, the samples were collected from the interval below the pipeline. If the depth was not known or could not be determined, samples were collected from the deepest interval that could be obtained before refusal. PL-8, PL-9 and PL-10 were relocated in the approximate location of the pipeline based on field observations and utility marks.	
	1515	Complete sampling around the tank associated with Building 101.	
	1620	Complete sampling around the tanks associated with Building 107. Shallow refusal encountered in deeper samples at around 1 foot bgs.	
		Complete sampling around tank associated with Building 104. Sample from location SB-104-2 was likely from backfill material that was replaced following removal of UST. Material was a well graded sand and different from material in surrounding area. Deeper sample was collected from beneath the backfill in apparant native material. Locations SB-104-1 and SB-104-3 were located outside of backfill. Samples were collected from deepest intervals that could be obtained.	
	1715	Clean up work area and demobilze from site on the Island Express Ferry. Arcadis off-site.	





# **DAILY LOG**

Project No.:	B00003010.0	0006 Page of					
Site Location:	Burrows Island, WA						
Prepared By:	Mark Ullery						
Personnel:	Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Daniel Gilbert						
Date	Time	Description of Activities					
3/31/19	730	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.					
	800	Board Island Express ferry and mobilize to Burrows Island.					
	015	Arrive at Burrows Island. Unload equipment, set up work are near the Duplex and prepare					
		for sampling. See sampling forms.  Collect equipment blank from hand auger prior to starting sampling, EB-033119.					
		Called David at Onsite and realized that the incorrect VOAs had been filled for benzene analysis. Methanol VOAs had been used for discrete samples on 3/31 instead of sodium bisulfate preserved bottles. Since benzene is a contingent analysis, David said they should be able to meet the detection limit with the methanol VOA or by collection an additional sample from the unpreserved jars that were submitted for non-volatile analysis. Discussed with Paul and determined this was an appropriate path forward. Correct bottle ware for volatiles is available for samples from Building 102, which is the only known gasoline storage area.					
	1050	Complete sampling around former tank associated with Building 102. Encounter shallow refusal in sample locaitons SB-102-2 and SB-102-3. No deeper sample could be obtained from SB-102-2.					
	1100	Probe and mark out discrete sample locations around former transformer area. Use shovel to try to find the edge of concrete fill so that samples can be collected outside of the fill area. 12 sampling locations selected and recorded in Collector.					
	1306	Collect equipment blank from hand auger, EB-040119.					
	1310	Complete sampling around the former transformer pad associated with Building 101.  Encountered shallow refusal in select locations as noted in field forms. Deeper samples collected from the deepest interval that could be obtained prior to refusal.					
	1330	Clean and pack up equipment. Move soil and liquid drums to the north basement in the Duplex building. 14 soil drums and 2 liquid drums were generated.					
		Collect SED-01 from location below tide line in sandy beach adjacent to Boathouse.  Material consists of sand with cobbles.					
	1403	Collect waste characterization sample from decontamination water, PW-040119.					
	1405	Collect SED-02 from along erosion line above the beach as far from the tide line as is accessible. Location is approximately 25 feet to the west of SED-01. Material is sandy with cobbles.					
	1445	Demobilize equipment and supplies on the Island Express ferry. Return to Skyline Marina.					
	1500	Complete inventory of samples and generate COCs.					
	1700	Rent additional van to provide enough space for equipment and supplies. Load equipment.					
	1800	Demobilize from Anacortes and head to Seattle Arcadis office.					
	1930	Unload equipment and samples. Place sample jars in refrigerator for storage overnight to be transferred to the lab tomorrow.					



MARCH 25, 2019 BURROWS ISLAND LIGHT STATION

DOSIMETERS: OPERATOR 1 = JULIA VIDONISH OPERATOR 2 = MARK CLIERY OPERATOR 3 = ALEX PINK OPERATOR 4 = EMILY ZIKMUND OPERATOR 5 = DANIEL GILBERT OPERATOR 6 = RYAN BRACHULA

XRF SAMPLE LOG

CALIBA	PATION WITH	clip (11.00)	
lime	Sample 10	Pb READING	READING #
11:22		ND 219	2
11 :24	5:02	ND 2/9	4
11:26	Si Oz	ND 49	5
11:28	Si Oz	ND KDO	6
11:30	S1 02	ND = 19	7
11:32	SiOz	ND 419	8
11:33	51.02	ND 2/9	9
11:34	Si 02	ND < 19	10
11335	Silz	ND 2 20"	1/
11:37	Si 02	ND 49	12
11 38	2709	16 ± 4	13
11:40	2709	ND =12	14
11:41	2709	NP 3</td <td>15</td>	15
11:43	2709	ND 412	14
11:44	2709	13 1 4	17
11:46	2709	19 ±4	18
11.47	2709	ND 4/2	19
11.49	2709	1414	20
11:30	2709	18 ty	2/
11.32	27/19	13£4	22
11:54	2781	185 ±7	23
11:56	278/	194 17	24
11:37	278/	185 ± 7	25
11:59	2781	193±7	26
12:00	2781	185 =7	27
•		Rite in the Rain.	

Int	SAMPLE 1D	PB READING	READING #	- 2
12.02	2781	200 #7	28	-
12:04	2781	186 IF	29	
12:05	2781	19/ I7	30	
12:06	2781	195 to	31	•
12:08	2781	18717	32	
	3-5-0.5-1	87 26	34	
2:42	2781	168 E7	35	
2 44	2709	ND <13	36	
2:45	Si Oz	ND 48	37 Clip	C
3:00 2:46	3-8-0.5-1	35 14	38 2) calib.	
not	3-14-0.5-1	ND < /1	35 40	
3:01 2000	3-22-0.5-1	24 54	第41	
15:03	3-26-0.5-1	35±5	42	
15-09	0/-05-0.5-1	13/ 56	43	
15:11	01-14-0.5-1	72 15	44	
15:13	01-11-0.5-1	1180 19	45	
15:15	01-17-0.5-1	78 ±5	46	
15-17	01-22-0.5-1	3054	47	
15:18	01-27-0-5-1	90 th	48	
			9	
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MARCH 26, 20/9 Buppows ISLAND, WA

XRF SAMPLE LOG		
2	2	
Caupantion Les (clip	( e) 8:5\$.	
Charles 120 (11)		
Time Samue 1D	Pb READING READ	DING #
1104		
(CLIP (a) 8:54)	4	
8:55 502	ND29 6	
8:56 SiOz	ND-10	
8:57 5:02	ND<10	
8:59 S:02	NDCO	
g:00 5:0 <sub>2</sub>	ND SID' 10	=
0.01 5.0,	ND <10	
9:02 5:02	NDEW	
9:03 5:01	ND 511	
9.04 5.02	NDS9	
	ND <10 15	
, ,	136 ± 10 16	
9:07 2702	116 + 9 17	
2.0	155 + 11	
9:00 2702	13/110 19	
	155±11 20	
	[1]4 = 10 21	
1 2	138 + 10 22	
9:14 2702	164 + 11 23	
9:15 2702	161+11 24	
9:16 2702	131 ± 10 25	
9:17 2702	Morris 26	
9:101 2781	21110	
9:21 274	227 + 11	
9:23 2781	202 111 28	
9:24 2781	205+10 30	
9:25 2761	2071 0 30	
9:26 2781	2/5 10 31	
9:27 2781	192 + 10 32	
9120 2781	211+10 33	
9:31 2781	2114 10 34	
9:31 2781	208210 35	

Rite in the Rain.

Time Sample 10 Pb Renoins Remains H  9:44 $2-5A-0.5-1$ $72 \pm 5$ $36$ 9:45 $2-134-0.5-1$ $15\pm 3$ $37$ 9:46 $2-8A-0.5-1$ $30\pm 4$ $38$ 9:48 $2-18A-0.5-1$ $15\pm 3$ $39$ 9:52 $2-24A-0.5-1$ $36\pm 3$ $40$ 9:54 $2-24A-0.5-1$ $36\pm 3$ $40$ 9:55 $2-24A-0.5-1$ $36\pm 3$ $40$ 9:56 $50_2$ $ND26$ $42$ 10:56 $50_2$ $ND26$ $42$ 10:57 $2702$ $278$ $2702$ $278$ $27$	
9:45 $2-134-0.5-1$ $15-3$ $37$ $9:46$ $2-84-0.5-1$ $30\pm4$ $38$ $9:48$ $2-18A-0.5-1$ $15\pm3$ $39$ $9:52$ $2-24A-0.5-1$ $36\pm3$ $40$ $9:54$ $0-29A-0.5-1$ $0-29$	
9:46 $2-84-0.5-1$ $30\pm 9$ $38$ $9:18$ $2-18A-0.5-1$ $15\pm 7$ $39$ $9:52$ $2-24A-0.5-1$ $36\pm 3$ $40$ $9:54$ $2-29A-0.5-1$ $37\pm 9$ $41$ $10:56$ $302$ $10:57$ $2702$ $13/27$ $13$	
$9:48$ $9:52$ $2-144-0.5-1$ $9:54$ $2-29A-0.5-1$ $34!4$ $40$ $9:54$ $2-29A-0.5-1$ $34!4$ $41$ $10:56$ $50_2$ $10:57$ $2702$ $131!4$ $15:59$ $11:04$ $11:04$ $11:04$ $11:06$ $11:06$ $11:06$ $11:09$	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
10.59 $278/$ $11.04$ $11.04$ $11.06$ $11.06$ $11.06$ $11.06$ $11.09$	
11:04 11:04 11:06 11:09 11:09 11:09 11:09 11:09 11:09 11:09 11:12 11:12 11:12 11:14 11:15 11:16 11:16 11:16 11:16 11:16 11:16 11:17 11:18	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
$11.09$ $6-13-0.5-1$ $11.12$ $6-20-0.5-1$ $150 \pm 6$ $11.14$ $6-24-0.5-1$ $10 \pm 4$ $11.16$ $6-29-0.5-1$ $10 \pm 5$ $50$ $1307$ $50z$ $1304$ $1309$ $1302$ $1304$ $1304$	
$11:12$ $6-20-0.5-1$ $150\pm 6$ $16$ $11:19$ $6-24-0.5-1$ $10\pm 9$ $11:19$ $6-24-0.5-1$ $10\pm 9$	
11.14 $6-24-0.5-1$ $40-4$ $49$ $11.16$ $6-29-0.5-1$ $10-5$ $50$ $1307$ $5.02$ $13627$ $54$ $1309$ $2702$ $13627$ $55$	
11.16 $6-29-0.5-1$ $110-5$ $50$ $1307$ $5.02$ $1304$ $2702$ $13617$ $55$	
1307 S:02 ND C 7 54 1309 2702 13617 55	
1309 2702 13617 55	
The state of the s	
1311 7781 20627 56	
1313 7-29-0.5-1.0 14±3 57	
1315 7-25-0.5-1.0 8228 58	
1317 7-20-08-10 16+3 59	
1318 7-2-05-10 NDL8 60.	
1321 7-15-0.5-1.0 21±4 61	
1322 7-9-0-1-10	
1464 . 2702 14617 65	
1455 2781 218±7 66	
1457 01-11-1.0-1.5 96± 97±5 67	
1500 01-05-1.0-1.5 119±5 W8	
1507 01-14-1.0-1.5 15-3 69	:
1508 01-17-1.0-1.5 24 = 3 70	
1509 01-22-1.0-1.5 35 = 3	
1510 01-27-1.0-1.5 89 = 5 72	
1548 08-4A-0.5-1 432 ±10 73	
1550 08-7A-0.5-1, 54 ty 74	
1552 08-12A-0.5-1 395-10 75	
1554 08-16A-0.5-1 ND-9 76	
1556 08-22A-0.5-1 63±4 77	
1557. 08 -27A -0.5-1 1/06 ± 19 78 1662 2702 55 ± 4 79	
1654 2781 22127 80	

TIME	Symple 10	PG READING	READING #
1655	Sia	NDZZ	81
1657	11-1-0:5-1	7275	82
1659	11-6-0.5-1	ND 210	83
1702	11-12-05-1	113 76	89
1707	11-17-0.5-1	ND <10	85
1709	11-21-0.5-1	172 +7	86
1710	11-26-0.5-1	5714	87

Time	SAMPLE 1D	Pb READING	March 27, 2018 Burrows Island	•
· · · · · · · · · · · · · · · · · · ·			READING #	
	"		Company and the control of the contr	
STANDARD	(CUP) @ 8:43			9
8:45	Sio	ND <6	3	
08:49	# 2781	211=7	4	
08:50	2781	215 = 7	5	
08:52	278)	203 = 7	6	-
08.53	2781	219 = 7	7	
08:54	2781	208 + 7	8	
08:55	2781	211 = 7	9	
08:56	2781	220 t 7	10	9
08:58	2781	198 = 7	11	
08:59	2781	22   = 9	12	
09:01	2781	2-10=7	13	
09:04	2702	133 = 7	14	-
09:06	2702	133 ±7	15	
09:07	2702	130 =7	10	
09:08	2702	139±7	/7	
09:12	2702	135 = 7	18	-
09:13	2702	141=7	19	
09:10	2702	140-7	20	
09:17	2702	153 = 7	2/	
09:19	2702	124 =7	22	
09:32	2702	126 + 7	23	
09:58	08-05-1.0-1.5	79 ± 6	24	
04:59	08-07-1,0-1.5	48 + 4	15	
10:00	08-17-1.0-1,5	38 = 4	26	
10:02	08-16-1.0-1.5	ND 49	27	
10:05	18-22-1.0-1.5	77±5	78	
10:06	08-27-1.0-1.5	288 - 8	29	
10:19	06-07-10-15	ND < 8	30	-
10:71	06-10-1.0-1.5	3253 ± 43	3/	
10:24	06-13-1.0-1.5	415 = 11	32	
10:25	06-21-1,0-1,5	10 ± 3	33	
10:27	06-26-1.0-1.5	NDK9	34	
10:31	06-29-10-15	34 = 4	35	
10:33	06-10-1.0 -1.5 (REDO)	3846 = 49	36	
<u> </u>	piece of motal f	ound in 06-10-1,0	-1.5 bag:	nnnnnnnnnn
	Causing ske wed r	eading. Re-test	ed sample with	
	metal piece re	moved		
	Ç		3	

05/21/14 Pb Reading Sample ID Reading # Time 417-10 37 V 04-10-1.5-2.0 11:02 138 = 7 38 11:19 A 2702 211=7 39 2781 11:20 629113 40 6-10-15-20 1135 de- 6-15-15-7.0 168± 7 41 1137 6-7-115-20 42 82 My 1140 6-13-15-2.0 43 20618 1141 10-12-1.5-2.0 819116 1144 44 6-22 -1.5-2.0 NDLO 45 1146 ND <6 47 16.17 138 t7 2700 48 16,19 2781 207 + 30 + 4 16:21 49 630 04-05-0,5-1.0 16:32 04-09-0.5-1.0 04-17-0.5-10 138 -7 53 54 550 14.37 04-20-0.5-1.0 29 + 4 04-24-0,5-1,0 14:39 + 16:41 04-29-0.5-10 133 + 69 17:24 10-29-05-1.0 57 19 = 5 17:27 10-19-0.5-1.0 (2 samples, don't include in overge 25 = 3 58 17:28 10-16-0.5-1.0 48 - 4 17:29 59 10-10-0.5-1.0 10-3-0.5-1.0 17:37 15 = 3 60 30 = 4 17:38 10-5-0.5-1.0 01 10±3 17:41 10-15 -0.5-1.0 62

Rite in the Rain.

TIME	SAMPLE ID	PB READING	READING #
146	05-27-0.5-1 5:02	98 ± 5 ND27	41
1248	2702	136-17	43 44
1257	12-1-0.5-1	ND < 8	45
303	12-8-0.5-1	36±4 , 19±3	48
30b 308	12-19-0.5-1	59 ± 5 58 ± 4	59

Time	Sample	Pb Result (mg/kg)	Shot #
1022	7781	3±031	11
1023	2731	19118	12
1024	2781	HUT &	13
1027	2702	111 B	14
1029	2702	11378	15
1032	2702	(17±8	1Ç
1033	2702	3 ± PO1	17
1034	2702	. 115±8	18
1035	2702	114 28	19
103Le	2702	114±8	20
1038	2702	12518	Zi
1040	2702	1187 8	22
1041	14-05-0.5-1.0	NOLIO	23
1043	14-08-05-10	19417	24
1044	14-11-0.5-1.0	70±5	25
1047	14-20-0x-10	3114	26
1048	14-26-0.5-1.0	32±4	27
1049	14-23-0.5-1.0	286 49	28
1320	Sioz	ND28	29
1321	2701	17758	39.
1323	2702	121 18	31
1325	15-3-0,5-1	ND<12	32
1326	15-9-0,5-1	ND<10	33
1327	15-11-05-1	ND < 13	39
1329	15-18-0.5-1	1439 ± 24	35
[33]	15-22-0.5-1	5708 - 66	36
1333	15-30-0.5-1	128-16	37

MARCH	30, 2019		:
Burpon	S ISLAND LIGHT	TATION	
XRF 2	66		
		0 n	0, 5, 6
Time	SAMPLE ID	Pa REMINE	READING H
0850	SiOz	ND2//	3
0852	278/	176-19	4
10-4	2781	183 ± 9	5
0854 0855	2.78/	183-19	6
0858	270/	169 39	7
0859	278/	17419	8
DE 1901	279/	16519	. 5
0903	2781	189±9	10
0909	2781	180-9	//
0912	2781	168-9	12
0014	2781	176 ± 9	13
0914	2702	10218	14
0917	2702	103-8	15
0918	2702	99±8	16
000-	2702	116-18	17
0933	2702	114-8	18
0925	2702	118 59	19
0927	2702	97 18	20
100 12 -	2702	10128	21
0931	2702	9878	22
0)33	2702	100 1 8	2-3
V 0945	16-2-0,5-1.0	NO (10	ZH
0946	16-29-0.5-1	ND 42	25
0948	16-10-0.5-1	ND-12	26
0949	-16-13-0.5-1	ND41	27 /
0950	16-16-6.54	ND41	28 Disregard
0957	16-23-051	ND40	29)
0958	16-13-0.5-1	ND-10	30
1001	16-23-0.5-1	NDUZ	3/
1003	16-16-0.5-1	NDL9	32
1230	SiOr	ND-10	33
1234	2781	190 18	34
1236	2702	11/18	35
1238	17-03-0.5-1	N) 4/1	36
1240	17-10-0.5-1	NDCg	37
	400	Rite in the Rain.	

TIME	SAMPLE 1D	PB READING	READING H
1241	17-13-0.5-1	53 75	38
1244	17-21-0.5-1	ND 4/1	39
1246	17-23-0.5-1	ND 2</td <td>40</td>	40
1247	17-30-0.5-1	ND - 12	41
1256	15-04 -1.0-1.5	ND<11	42
1259	15-10-1.0-1.5	13±4	44
1300	15-11-1.0-1.5	NDLII	45
1302	15-20-1.0-1.5	110411	46
1305	15-22-1.0-1.5	108± 7	47
1300	15-28-1.0-1.5	59 ± 5	48
1522	2702	108 -8	49
1523	2781	17718	50
1540	S:02	NDLIO	51
1548	18-29-0.5-10	6225	52
1553	18-08-05-10	2272	53
156	18-11-0.5-1.0	39±5	54
1557	18-02-0.7-10	101±6	55
126	18-19-0.5-1.0	NDL12	56
1601	18-23-0,5-1,0	25±5	57
- EC			

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TARREST CORRESPONDENT CORRESPO

MMPCES PISCIPETE PID (ppm) SAMPLE 1B recorded in tablet 4.5 112-08-0-0.5 112-08-\$1.



# **GEOMARKOUT** a trade name of ULS

Work Order Agreement

Work Order Agreement			15151 52 <sup>nd</sup> Ave. South, Suite 2 Seattle, WA 98188 1 866 804-5734			
Job Site Location		W.A.	SOCAL	SOCAL		
Burrows Island Coast Guard			9065 Calle Del Ve	erde, Santee, CA 92071		
Light Station		EXLORE SAFEI		LY		
City, State Job D						
Burrows Island, Anacortes 26 I		FEB 19				
Washington						
CLIENT ARCADIS		FIELD TIME 0730-100 (5.5)REPORT 2		LABOR HOURS W/REPORT/ HRS 7.5		
ADDDEGG				FAVED		
ADDRESS				FAXED		
CITY, STATE, ZIP SEATTLE				TELEPHONED		
WORK REQUESTED: LOCATE REPORTED ABANDONED FUEL PIPING AND ELECTRIC ASSOCIARED WITH SOLAR PANEL LIGHT HOUSE.						
WORK PERFORMED			PRELIMINARY REVIEW OF CLIENT PROVIDED UTILITY DRAWINGS/AS-BUILTS: LIMITED			
VISUAL SITE INSPECTION (MANHOL SURFACE ONLY	ES, DRA	AINS):	EMPCL CONDUCTIVE UTILITY SURVEY: CHECKED YES GAS: X ELECTRIC: X COMM.: X WATER: X			
EMIMD METAL DETECTION SURVEY :  AMBIENT NOISE AND SETTINGS  LOW NOISE GAIN 7 LOW ELV  VERY GOOD RESPONSE			EM INSERTION: NF - INSERTION METHODS NONE DUE TO HS			
GPR NON-CONDUCTIVE SURVEY: AVAILABLE AT SITE HOWEVER NOT UTILIZED IN THIS EFFORT			CLIENT ON-SITE REVIEW OF FINDINGS:			

www.geomarkout.com WWW.ULSSERVICESCORP.COM

P.O. Box 724, Pocatello, ID 83204 (Mail only) 6742 West Buckskin Rd., Pocatello, Id 83204

SEATTLE/SAC/AK/HAW-PACIFIC RIM

**CORPORATE ADDRESS** 

FIELD SERVICES:

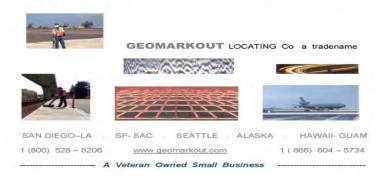
#### **GENERAL LIMITATIONS**

The work described herein is performed to industry standards (or higher) using multiple methodology and QA/QC protocol. ULS cannot guarantee the accuracy or the ability to detect all underground facilities and potential interferences. Nonconductive or conductive utilities/facilities may not be detected due to variables and constraints beyond ULS control. Where known, constraints and limitations will be brought to the client's attention. Excavation work may result in injury to persons and/or damage to facilities. Client and/or excavator are advised to take all steps necessary to avoid contact with underground facilities. This includes, but is not limited to, safe digging practices, hand tooling in congested areas and within two feet on side of marked utilities (distance may vary by law), utility drawing review, site facilities representative review, and "one-call" utilities notification. ULS and its representatives are not responsible for injury to persons or damage to facilities. This document and accompanying pages will be delivered to the client before commencement of intrusive work for the client's review. If any questions arise, please notify our office immediately.

Specific comments/limitations/constraints, known and recognized will be recorded on attached pages (field notes). Caution - some facilities (conductive or non- conductive) may not be detected. Not all limitations and constraints may be recognized.

SIGNATURE OF ULS REPRESENTATIVE ON-SITE MWB	PAGE 1	OF

# ULS SERVICES CORPORATION



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#### **GEOMARKOUT**

EXPLORE SAFELY

# BURROWS ISLAND COAST GUARD LIGHT STATION 26 FEB 19

METHODS AND GENERAL OBSERVATIONS:

#### METHODS:

ARRIVED MARINA COMPLETED HS TAILGATE AND MOBILIZED TO ISLAND CG STATION (SITE). COMPLETED SITE WALK TO REVIEW SURVEY AREAS (PROPOSED ZONES). CHECKED FOR SURFACE UTILITY MANIFESTATIONS SUCH AS VALVES, METERS, CONDUITS, TRENCHING SEAMS –SCARS. CHECKED FOR UTILITY VAULTS, SD INLETS, AND MH COVERS. BEGAN MARKOUT WORK.

METHODS UTILIZED INCLUDE: EM PIPE AND CABLE LOCATOR USING AMBIENT, GROUND INDUCTION AND CONNNECTION MODE SWEEPS. EM INDUCTION METAL DETECTOR, FOCUSED INLINE INDUCTION AT ABANDONED PIPING.

A CARTISIAN GRID PATH IS WALKED AT EACH PROPOSED ZONE USING ALL METHODOLOGY. A GENERAL SURVEY OF AREA IS ALSO CONDUCTED.

OBSERVATIONS ARE MARKED WITH RED PAINT AND OBSERVATIONS COLLECTED WITH A WAAS ENABED GPS WITH ESRI ARCPAD SOFTWARE.

## SITE CALIBRATION - GENERAL OBSERVATIONS

EM PIPE AND CABLE TRANSMITTER TO RECIEVER (GROUND INDUCTION AND CONNECTION) BROADCASTING IS **EXCELLENT.**. EMIMD METAL DETECTOR BACKGROUND EM NOISE IS LOW WITH EXCELLENT SIGNAL. GPR IS NOT USED IN EFFORT AT THIS TIME.

SEE QA / QC OBSERVATION COMMENTS TO RIGHT SIDE / ABOVE AND SPECIFIC OBSERVATIONS / COMMENTS BELOW ......>

X	QA / QC Follows
X	
Х	ONECALL /DIG ALERT RECALL YES
X	UTILITY MAINS INACTIVE (1 &2) ACTIVE SOLAR (3)
X	ELECTRIC – BOATHOUSE TO LIGHTHOUSE DUPLEX TO LIGHTHOUSE SOLAR E TO LIGHTHOUSE
Х	TELEPHONE NONE
X	NAT/ PROPANE GAS -NONE
X	WATER PIPING NEAR BUILDINGS. SEE FIGURES. SOME MAYBE NOT FOUND THIS EFFORT DUE TO TIME CONSTRAINT.
X	SEWER/STORM SEPTIC TANK OBSERVED WEST OF FORMER BLDG (NE HELCOPTER PAD). DRAIN INTO ANDOUT HOWEVER EXTENT EFFLUENT NOT DETERMINED DUE TO TIME
Χ	
X	DRAIN LINES ANDOR CLEANOUT OPENINGS ARE EXPOSED ON SURFACE. NOT ALL ARE LOCATED DUE TO TIME. SNAKE INSERT OR GPR MAY BE REQUIRED.
X	UNKNOWN WATER OR STEAM CONDENSOR CISTERN IS OBSERVED SOUTH SIDE LIGHT HOUSE.
	FUELS SYSTEM REPORTED TRACED LINES

#### **GEOMARKOUT**

EXPLORE SAFELY

# BURROWS ISLAND COAST GUARD LIGHT STATION

26 FEB 19

## SPECIFIC OBSERVATIONS AND COMMENTS OR CONCERNS:

#### REMOTE FUEL LINE FROM BOAT HOUSE AREA 105 TO FORMER AST

APPROXIMATE 3-4 DIA STEEL LINE IS OBSERVED ON SURFACE AND TRACED UNDERGROUND WITH NS TREND BETWEEN 105 AREA AND FORMER AST SE OF 103.

#### **FUEL PIPE LATERAL SPUR FROM FUEL LINE TO FORMER BLDG 104**

A SECOND FUEL PIPE IS VISUALY OBSERVED FROM FORMER AST SE 103 AND TRENDS NORTH WITH REMOTE FILL FUEL PIPE UP TO FORMER BUILDING 104 WHERE IT TURNS LEFT.

#### **LIGHT HOUSE BLDG**

A FUEL PIPE REPORTED ASSOCIATED UST AT LIGHTHOUSE TRENDING SE TO AST SE OF 103 IS NOT FOUND. AREA AROUND AST CRADLE AND PIPE THERE IS CHECKED VISUALLY AND NO VALVES OR LATERALS OBSERVED OTHER THAN REPORTED ABOVE. GEOPHYSICAL LINE TRACING METHODS USED HOWEVER NO PIPING DETECTED.

## **DUPLEX BLDG**

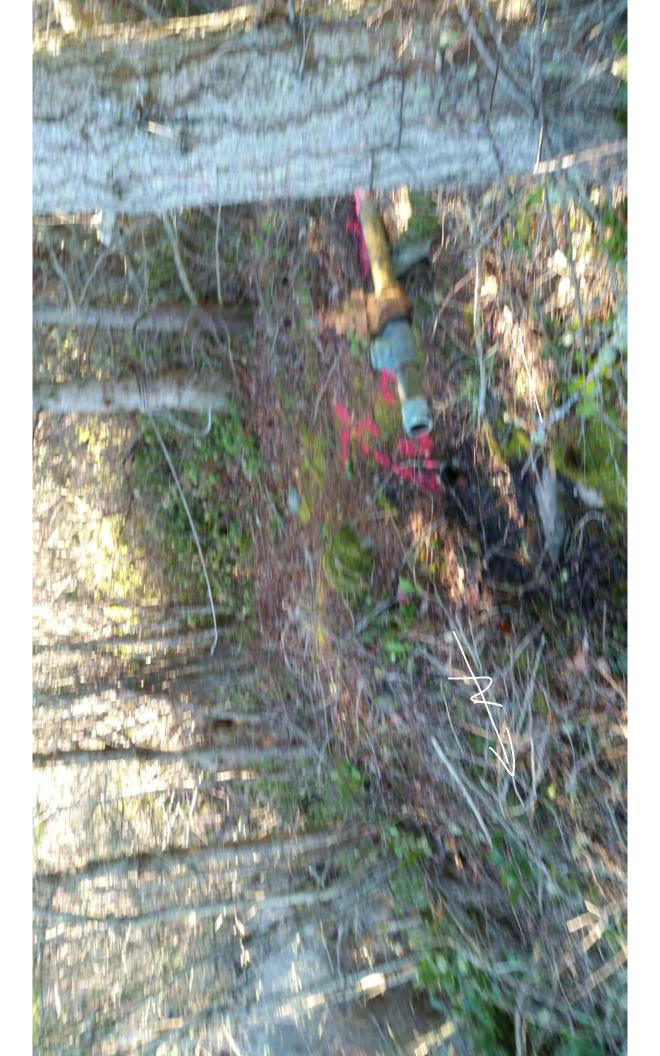
TWO FUEL PIPES REPORTED ASSOCIATED WITH AST EAST OF BLDG 103
ARE NOT FOUND. AREA AROUND BLDG IS CHECKED VISUALLY AND NO
VALVES OR LATERALS OBSERVED OTHER THAN WATER PIPE VALVES. GEOPHYSICAL
TRACING METHODS USED HOWEVER NO PIPING DETECTED. PIPING IS REPORTED AS SMALL
COPPER TUBING.

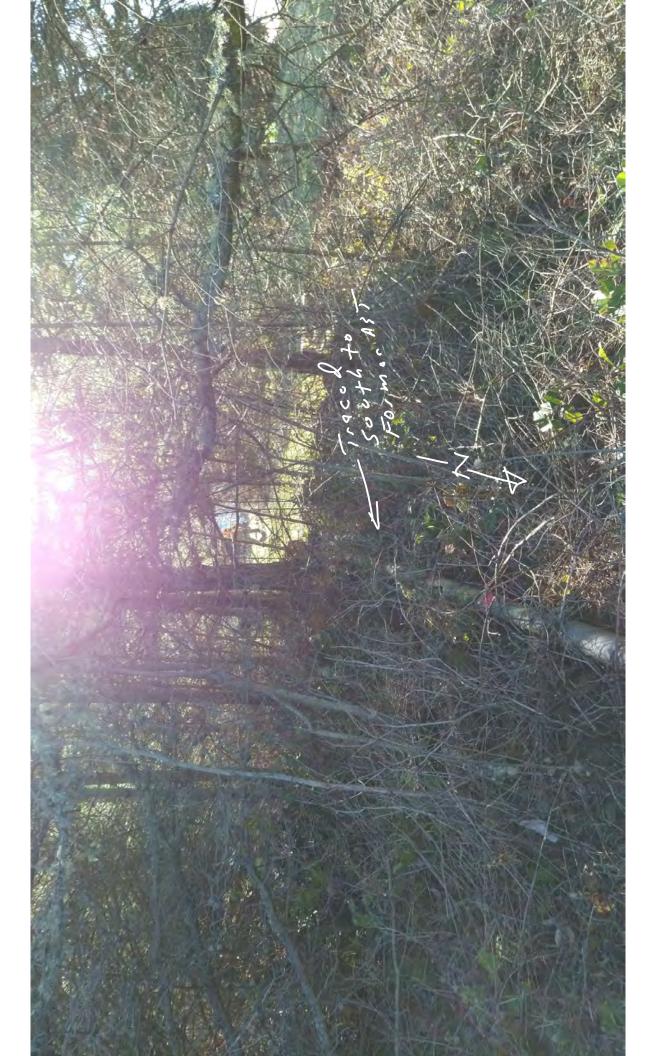
## **ELECTRIC**

ELECTRIC CABLING IS DETECTED FROM SOLAR PANEL WEST LIGHTHOUSE, EAST TO BLDG 103, NORTH TO BOAT HOUSE 105. A FORTH POSSIBLE CABLE DETECTED AND CONFIRMED WITH POT HOLE REVEALS A CABLE TRENDING SE FROM LIGHT HOUSE TOWARDS NORTH END AST AND CONTINUES EAST TOWARDS PRIVY AND WATER TANKS.

LIMITED TIME ON ISLAND.

LOCATE ENERGY ISOLATION INCLUDING WATER JACKHAMMER, AIRKNIFE / DIG CAREFULLY TO SAFE ANDPRUDENT DEPTH AT EACH LOCATION.









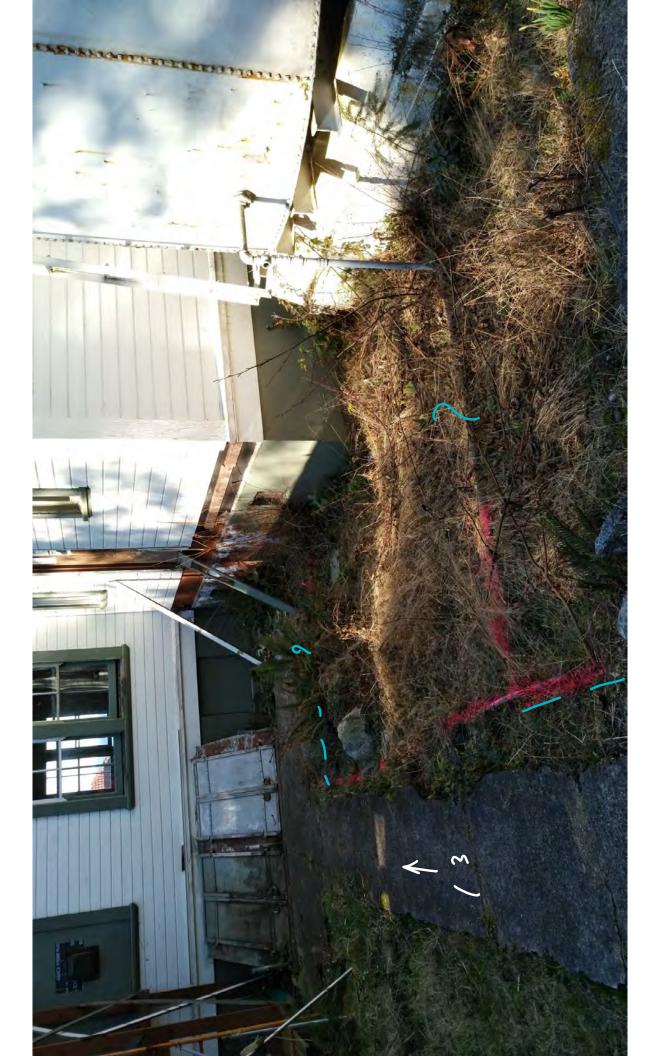


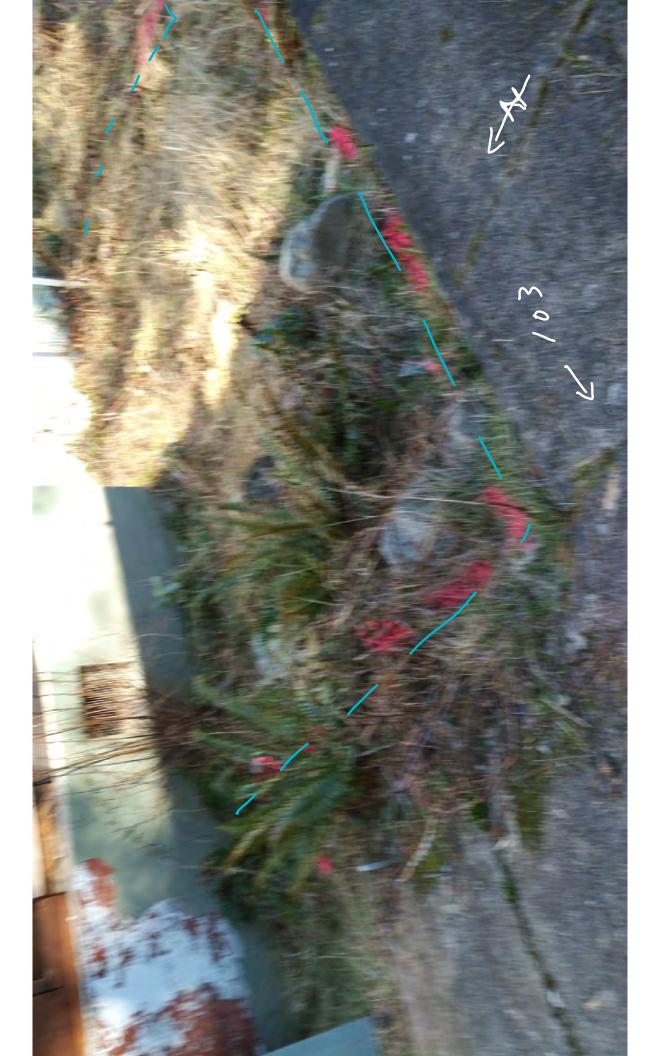




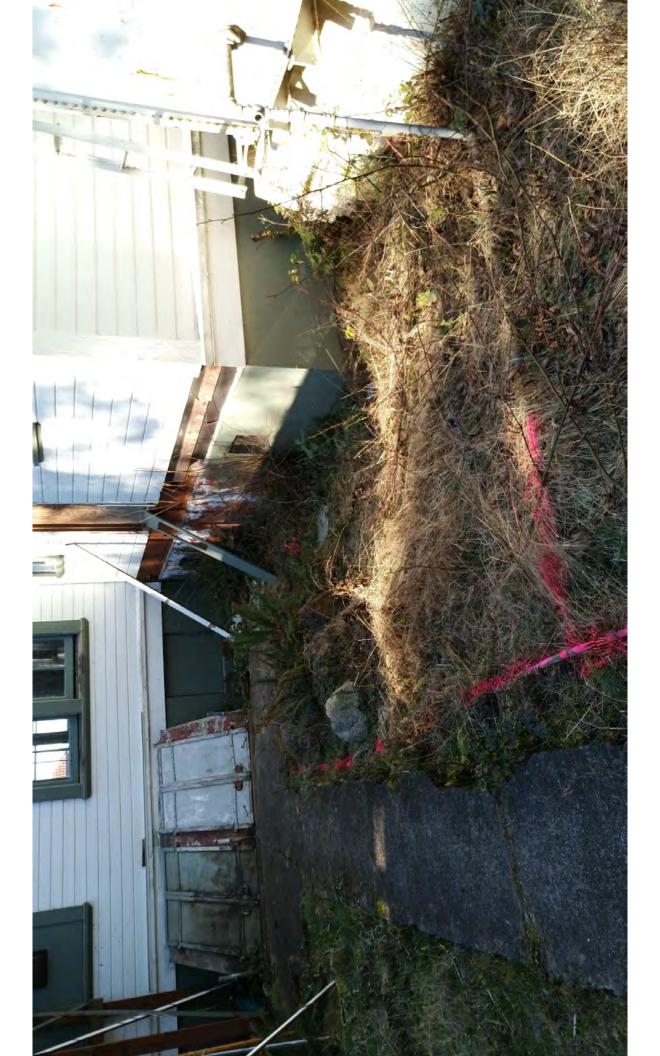




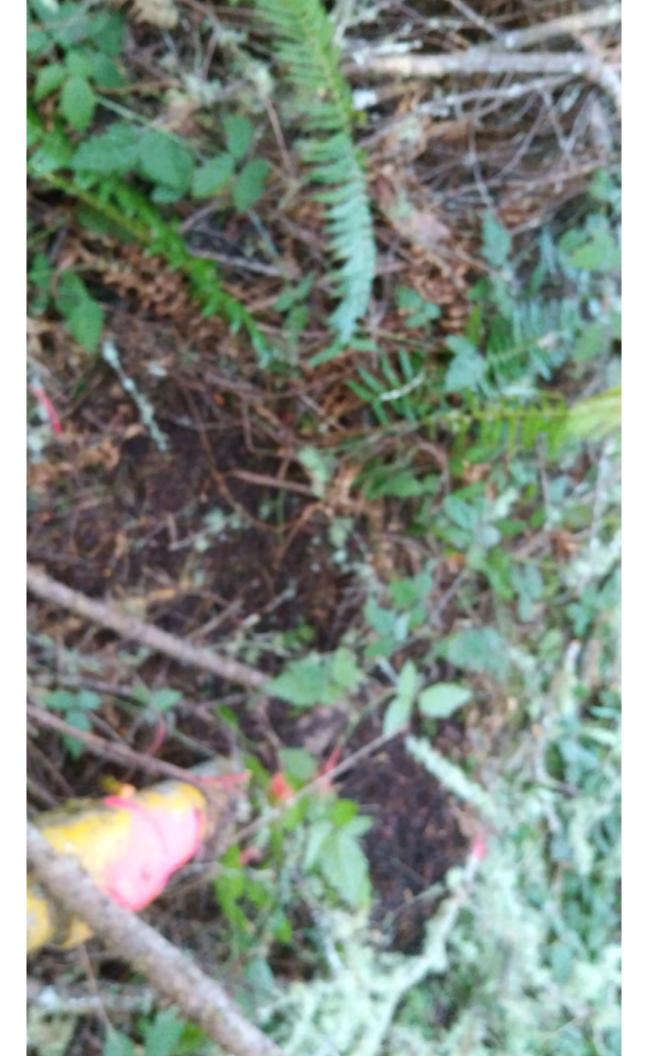


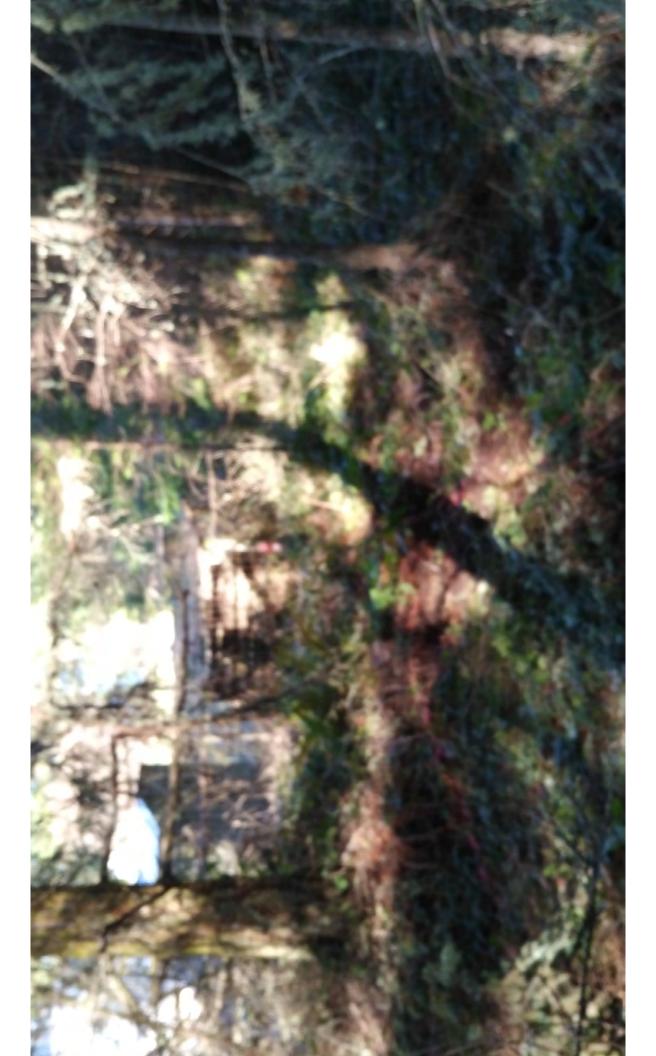






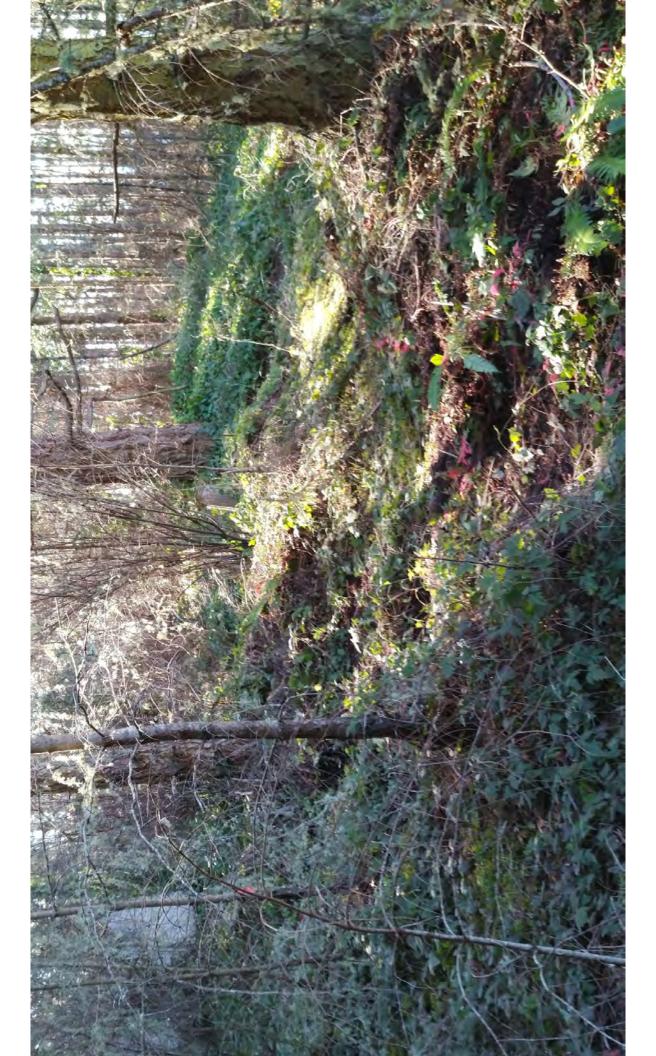


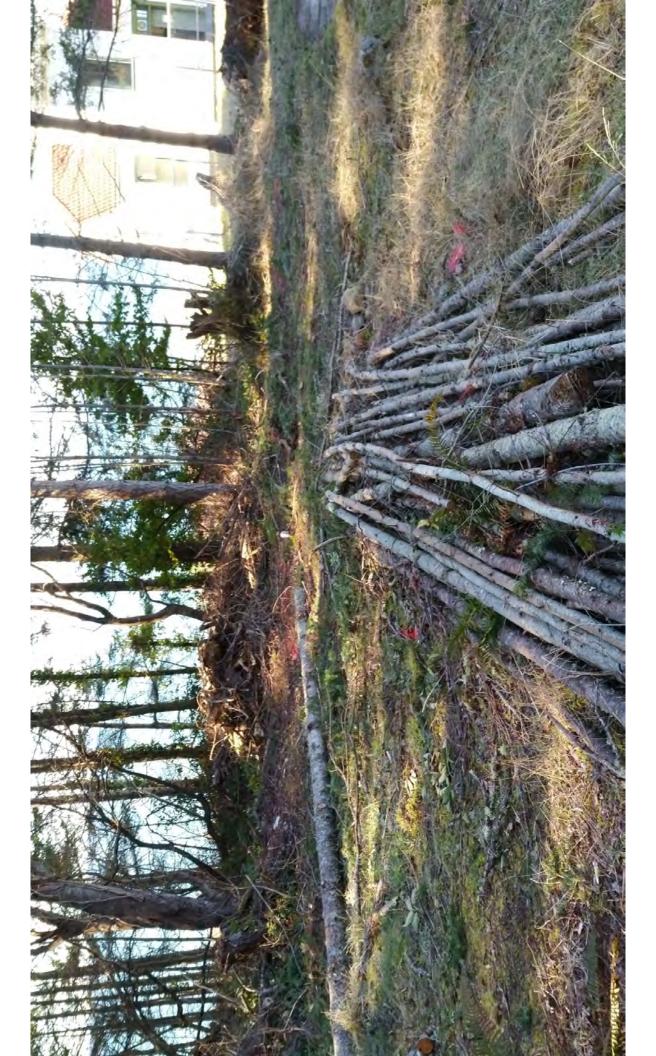




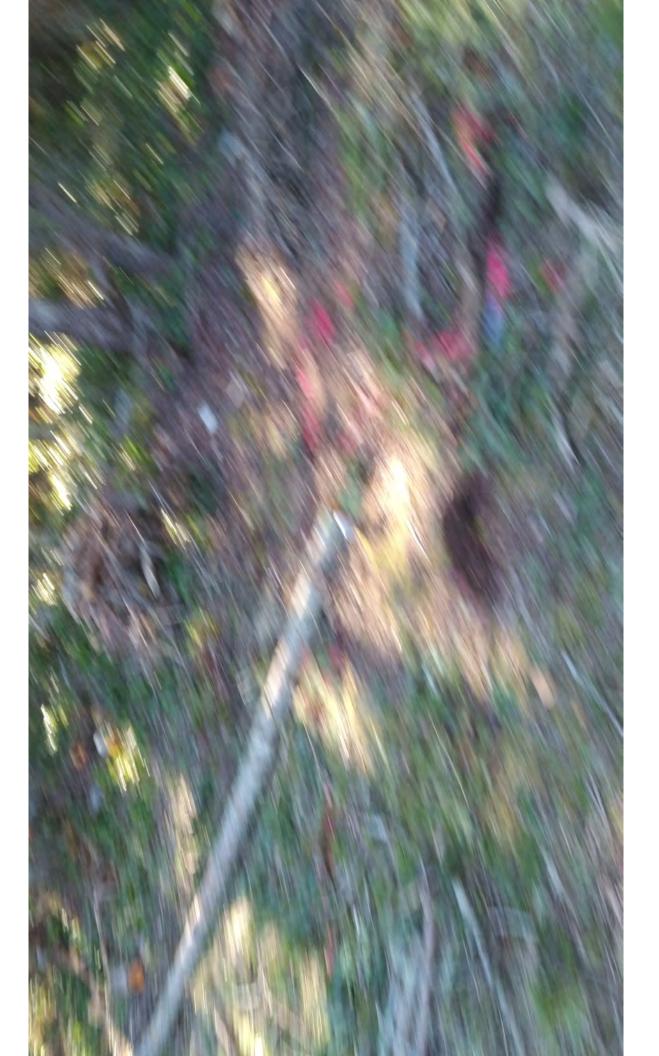


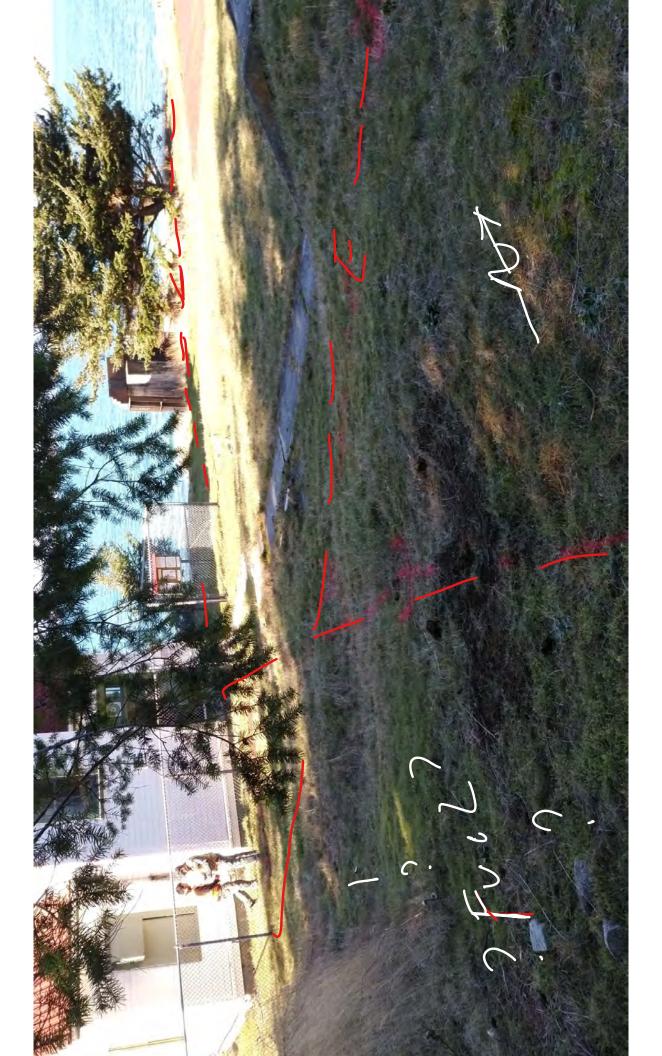


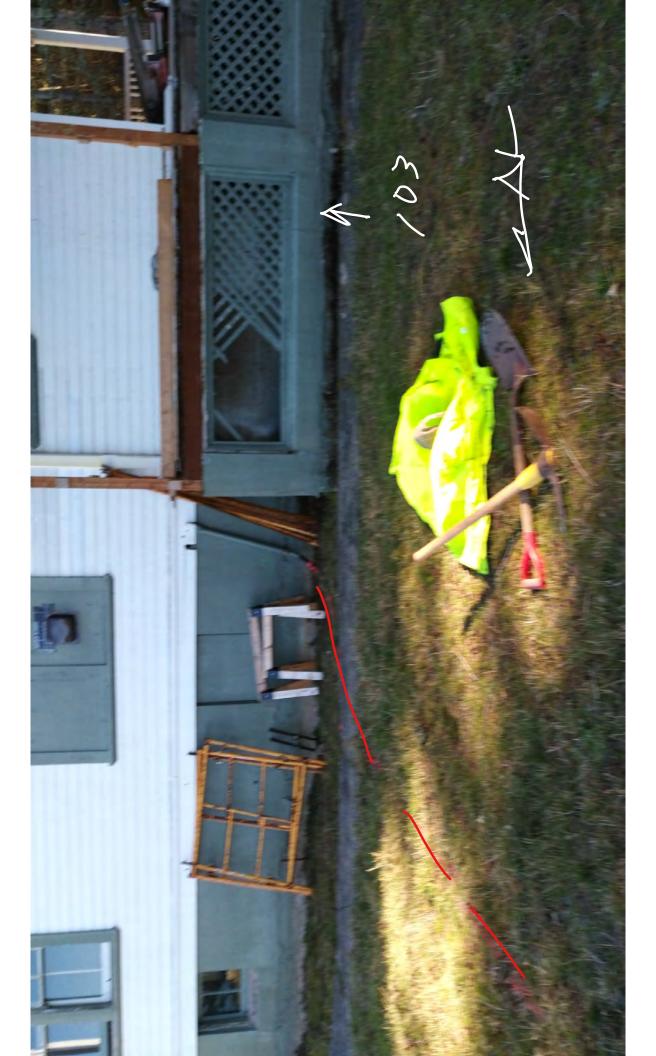




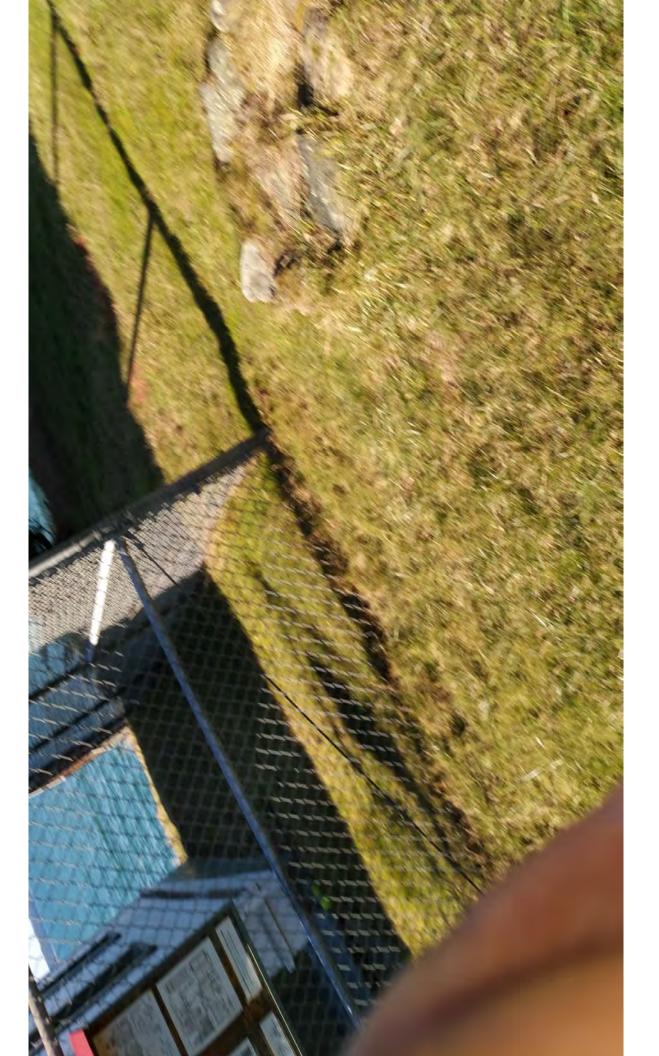




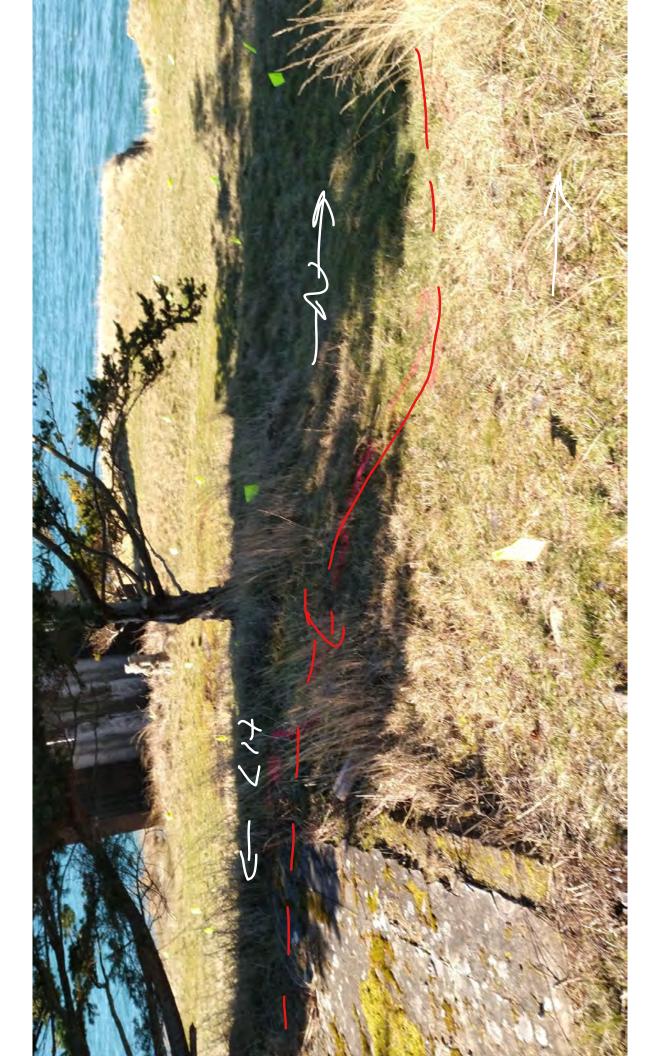




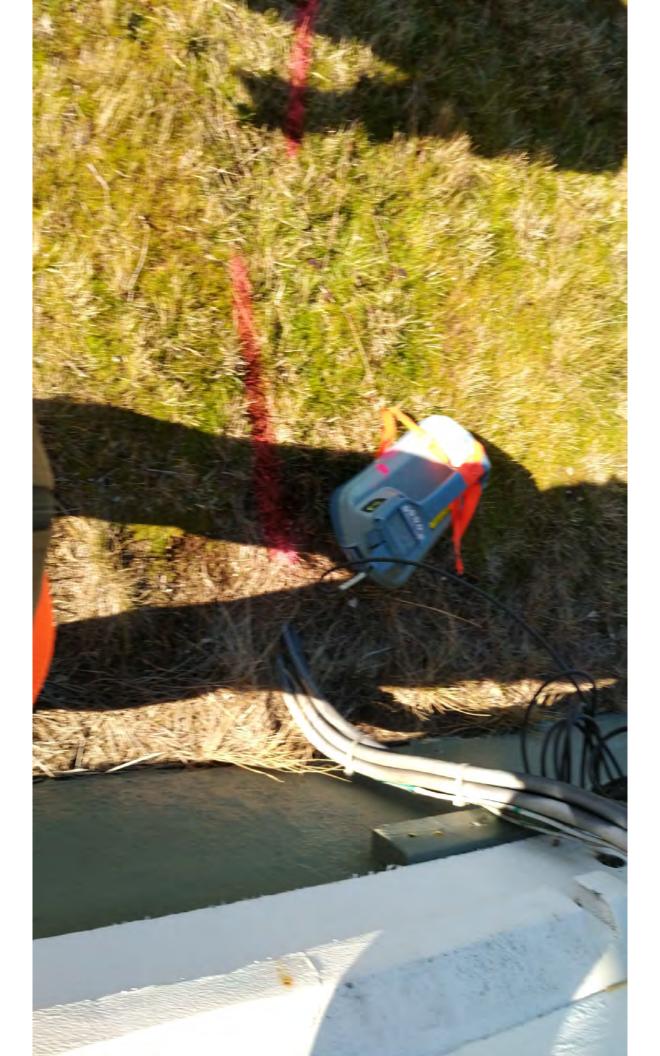


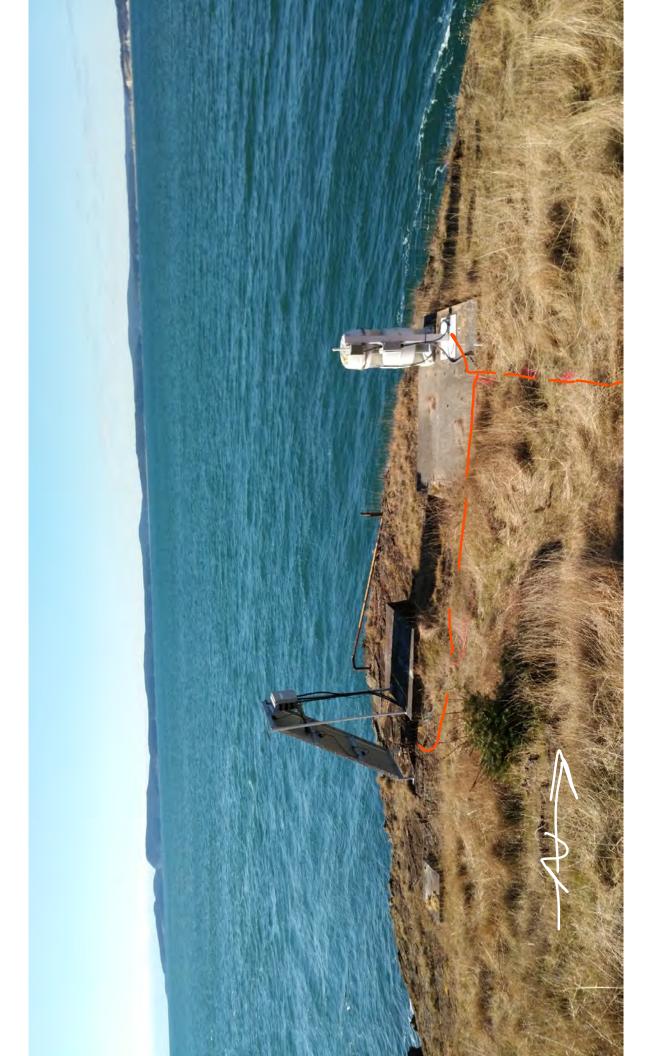


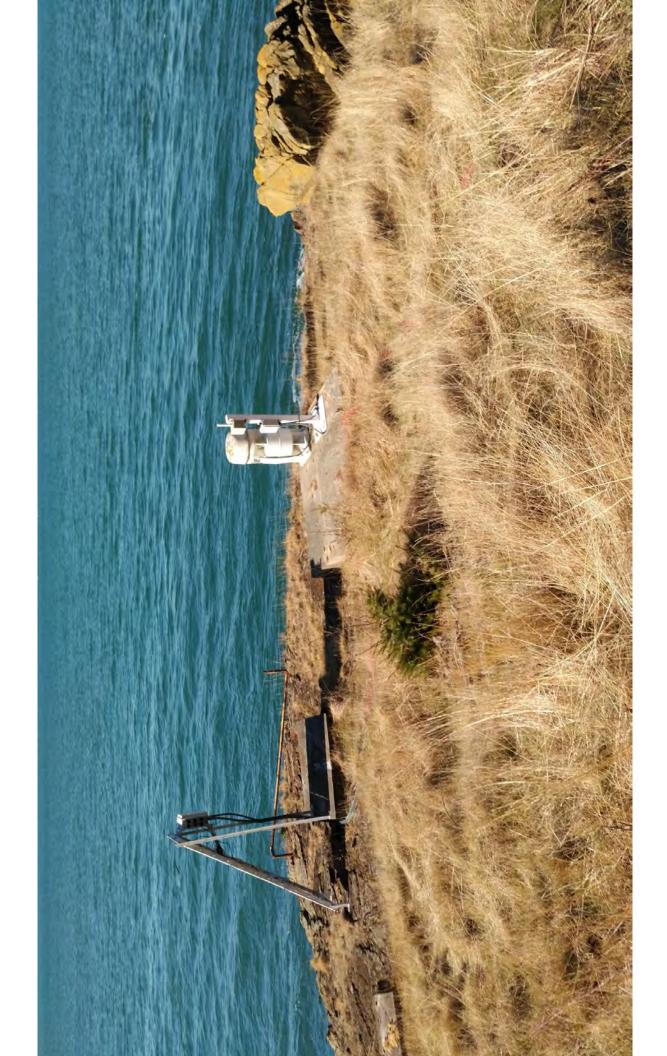












# **APPENDIX C**

Photo Log

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 1

#### **Description:**

Layout of ISM sampling increment locations marked with yellow pin flags. Locations were marked using tablet and GPS.

#### Location:

Burrows Island Light Station

# Photograph taken by:

Mark U.

Date: 3/27/2019



Photograph: 2

### **Description:**

Collection of ISM sampling increments using hand auger. Soil was collected and placed in bags. Time and date recorded in the tablet.

#### Location:

Burrows Island Light Station

# Photograph taken by:

Mark U.

Date: 3/27/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 3

### **Description:**

Increment sample from DU-02 marked with unique identifier indicting location and depth and ready for processing.

#### Location:

Burrows Island Light Station

# Photograph taken by:

Mark U.

Date: 3/25/2019



Photograph: 4

#### **Description:**

Increment samples organized by DU and awaiting processing. Samples were processed after all the increments for an ISM sample were collected and confirmed.

#### Location:

Burrows Island Light Station

### Photograph taken by:

Julia V.

Date: 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 5

#### **Description:**

XRF analysis station.
Samples were selected for analysis that were spatially representative of the DU. Average concentration from XRF was them compared to cleanup level.

#### Location:

Burrows Island Light Station

# Photograph taken by:

Julia V.

Date: 3/26/2019

Photograph: 6

# **Description:**

After analysis, composite samples were collected using decontaminated metal spoons. SUs were also collected in addition to primary DUs.

# Location:

Burrows Island Light Station

# Photograph taken by:

Julia V.

Date: 3/26/2019



United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 7

# **Description:**

ISM composite samples were collected following XRF analysis and QC'ed using the tablet. An equal soil volume was collected from each increment and composited.

### Location:

Burrows Island Light Station

# Photograph taken by:

Julia V.

Date: 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 8

# **Description:**

Beach area adjacent to the dock during low tide.

Location:

Burrows Island Light Station

Photograph taken by:

Mark U.

Date: 3/26/2019



Photograph: 9

**Description:** 

Beach area adjacent to the dock during high tide.

Location:

Burrows Island Light Station

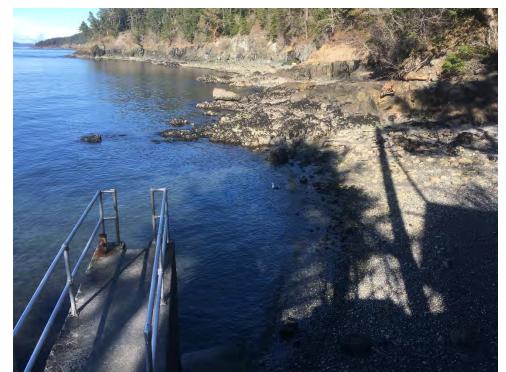
Photograph taken by:

Mark U.

Date: 3/27/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 10

**Description:** 

Beach area adjacent to the dock during low

tide.

Location:

Burrows Island Light

Station

Photograph taken by:

Mark U.

Date: 3/26/2019



Photograph: 11

**Description:** 

Beach area adjacent to the dock during high

tide.

Location:

Burrows Island Light

Station

Photograph taken by:

Mark U.

Date: 3/27/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 12

**Description:** 

Building 106 building inspection and sampling.

Location:

Burrows Island Light Station

Photograph taken by:

Mark U.

Date: 3/31/2019



Photograph: 13

**Description:** 

Building 106 seep outlet.

Location:

Burrows Island Light Station

Photograph taken by:

Mark U.

Date: 3/31/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 14

**Description:** 

Waste containers staged in north basement of duplex.

Location:

Burrows Island Light Station

Photograph taken by:

Mark U.

Date: 4/1/2019

# **APPENDIX D Laboratory Analytical Reports**



April 17, 2019

Josh Gravenmier Arcadis U.S., Inc. 1100 Olive Way, Suite 800 Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006

Laboratory Reference No. 1903-283

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on March 28, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow Project Manager

**Enclosures** 



Project: B0003010.0006

#### **Case Narrative**

Samples were collected on March 25, 26, 27, and 28, 2019 and received by the laboratory on March 28, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

#### TCLP Lead EPA 1311/6010D Analysis

Due to a limited amount of sample, less than the required 100g was tumbled for TCLP analysis. The amount of samples ISM-04-A-0-0.5, ISM-06-A-1.0-1.5, ISM-06-A-1.5-2.0, ISM-08-C-0-0.5 (03-283-36, 03-283-72, 03-283-77, and 03-283-96) used in order of the samples was 80g, 70g, 20g and 90g.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

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#### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-01-A-0-0.5					
Laboratory ID:	03-283-01					
Lead	190	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-01-A-0.5-1.0					
Laboratory ID:	03-283-06					
Lead	110	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-01-A-1.0-1.5					
Laboratory ID:	03-283-11					
Lead	43	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-02-A-0-0.5					
Laboratory ID:	03-283-16					
Lead	61	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-02-A-0.5-1.0					
Laboratory ID:	03-283-20					
Lead	35	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-02-B-0-0.5					
Laboratory ID:	03-283-24		ED4 0040D	1010	1.0.10	
Lead	50	5.6	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-02-C-0-0.5					
Laboratory ID:	03-283-25					
Lead	85	5.6	EPA 6010D	4-3-19	4-3-19	
Load		0.0	LI A OUTOD	<del>1</del> -0-10	<del>1</del> -0-10	
Client ID:	ISM-03-A-0-0.5					
Laboratory ID:	03-283-26					
Lead	68	5.6	EPA 6010D	4-3-19	4-3-19	

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#### TOTAL LEAD EPA 6010D

Matrix: Soil

			Date	Date Date		
Result	PQL	Method	Prepared	Analyzed	Flags	
ISM-03-A-0.5-1.0						
03-283-31						
30	5.4	EPA 6010D	4-3-19	4-3-19		
ISM-04-A-0-0.5						
03-283-36						
280	5.7	EPA 6010D	4-3-19	4-3-19		
ISM-04-A-0.5-1.0						
03-283-41						
74	5.3	EPA 6010D	4-3-19	4-3-19		
ISM-05-A-0-0.5						
03-283-50						
64	5.4	EPA 6010D	4-3-19	4-3-19		
ISM-05-A-0.5-1.0						
03-283-55						
56	5.3	EPA 6010D	4-3-19	4-3-19		
1300	5.8	EPA 6010D	4-3-19	4-3-19		
ISM 06 P.O.0 5						
	5.7	EDA 6010D	4 2 10	4 2 10		
2000	J.1	EFA OUTUD	4-3-19	4-0-18		
ISM-06-C-0-0.5						
03-283-66						
	ISM-03-A-0.5-1.0 03-283-31 30  ISM-04-A-0-0.5 03-283-36 280  ISM-04-A-0.5-1.0 03-283-41 74  ISM-05-A-0-0.5 03-283-50 64  ISM-06-A-0-0.5 03-283-60 1300  ISM-06-B-0-0.5 03-283-65 2000	ISM-03-A-0.5-1.0 03-283-31 30 5.4  ISM-04-A-0-0.5 03-283-36 280 5.7  ISM-04-A-0.5-1.0 03-283-41 74 5.3  ISM-05-A-0-0.5 03-283-50 64 5.4  ISM-05-A-0.5-1.0 03-283-55 56 5.3  ISM-06-A-0-0.5 03-283-60 1300 5.8  ISM-06-B-0-0.5 03-283-65 2000 5.7	ISM-03-A-0.5-1.0 03-283-31 30 5.4 EPA 6010D  ISM-04-A-0-0.5 03-283-36 280 5.7 EPA 6010D  ISM-04-A-0.5-1.0 03-283-41 74 5.3 EPA 6010D  ISM-05-A-0-0.5 03-283-50 64 5.4 EPA 6010D  ISM-05-A-0.5-1.0 03-283-55 56 5.3 EPA 6010D  ISM-06-A-0-0.5 03-283-60 1300 5.8 EPA 6010D	Result   PQL   Method   Prepared   ISM-03-A-0.5-1.0	Result   PQL   Method   Prepared   Analyzed     ISM-03-A-0.5-1.0	

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#### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
alyte	Result	PQL	Method	Prepared	Analyzed	Flags
ent ID:	ISM-06-A-0.5-1.0					
poratory ID:	03-283-67					
ad	630	5.4	EPA 6010D	4-3-19	4-3-19	
ent ID:	ISM-06-A-1.0-1.5					
poratory ID:	03-283-72					
ad	390	5.6	EPA 6010D	4-3-19	4-3-19	
ent ID:	ISM-06-A-1.5-2.0					
ooratory ID:	03-283-77					
ad	400	5.2	EPA 6010D	4-3-19	4-3-19	
ent ID:	ISM-07-A-0-0.5					
ooratory ID:	03-283-82					
ad	470	6.2	EPA 6010D	4-3-19	4-3-19	
ent ID:	ISM-07-A-0.5-1.0					
poratory ID:	03-283-86					
ad	62	5.4	EPA 6010D	4-3-19	4-3-19	
ent ID:	ISM-08-A-0-0.5					
ooratory ID:	03-283-90					
ad	1300	5.7	EPA 6010D	4-3-19	4-3-19	
ent ID:	ICM OO D O O E					
	ISM-08-B-0-0.5					
ooratory ID:	03-283-95	<i>E</i> 7	EDA 0040D	4 2 40	4 2 40	
ad	1100	5.7	EPA 6010D	4-3-19	4-3-19	
ent ID:	ISM-08-C-0-0.5					
		5.6	EPA 6010D	4-3-19	4-3-19	
poratory ID: ad	03-283-96 <b>1300</b>	5.6	EPA 6010D	4-3-19	4-3-19	

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#### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date		
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags	
Client ID:	ISM-08-A-0.5-1.0						
Laboratory ID:	03-283-97						
Lead	160	5.4	EPA 6010D	4-3-19	4-3-19		
Client ID:	ISM-08-A-1.0-1.5						
Laboratory ID:	03-283-102						
Lead	540	5.3	EPA 6010D	4-3-19	4-3-19		
Client ID:	ISM-09-A-0-0.5						
Laboratory ID:	03-283-107						
Lead	150	5.8	EPA 6010D	4-3-19	4-3-19		
Client ID:	ISM-09-A-0.5-1.0						
Laboratory ID:	03-283-112						
Lead	75	5.1	EPA 6010D	4-3-19	4-3-19		
Client ID:	ISM-10-A-0-0.5						
Laboratory ID:	03-283-117						
Lead	57	5.3	EPA 6010D	4-3-19	4-3-19		
011	1011 40 4 0 5 4 0						
Client ID:	ISM-10-A-0.5-1.0						
Laboratory ID:	03-283-122		EDA 0040D	4.0.40	4.0.40		
Lead	19	5.1	EPA 6010D	4-3-19	4-3-19		
Client ID:	ISM-11-A-0-0.5						
Laboratory ID:	03-283-127						
Lead	450	5.8	EPA 6010D	4-8-19	4-8-19		
Lodu	730	0.0	217(00100	+ O-10	<del>7</del> 0-13		
Client ID:	ISM-11-A-0.5-1.0						
Laboratory ID:	03-283-132						
Lead	120	5.4	EPA 6010D	4-8-19	4-8-19		

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#### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-12-A-0-0.5					
Laboratory ID:	03-283-137					
Lead	280	5.5	EPA 6010D	4-8-19	4-8-19	
Client ID:	ISM-12-A-0.5-1.0					
Laboratory ID:	03-283-148					
Lead	68	5.4	EPA 6010D	4-8-19	4-8-19	
Client ID:	ISM-13-A-0-0.5					
Laboratory ID:	03-283-153					
Lead	170	5.7	EPA 6010D	4-8-19	4-8-19	

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#### TOTAL LEAD EPA 6010D QUALITY CONTROL

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0403SM1					
Lead	ND	5.0	EPA 6010D	4-3-19	4-3-19	
Laboratory ID:	MB0403SM2					
Lead	ND	5.0	EPA 6010D	4-3-19	4-3-19	
Laboratory ID:	MB0408SM1					
Lead	ND	5.0	EPA 6010D	4-8-19	4-8-19	

					Source	Pe	rcent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Result	Red	covery	Limits	RPD	Limit	Flags
DUPLICATE											
Laboratory ID:	03-28	33-01									
	ORIG	DUP									
Lead	181	186	NA	NA			NA	NA	3	20	
Laboratory ID:	03-28	33-86									
	ORIG	DUP									
Lead	57.9	52.5	NA	NA			NA	NA	10	20	
Laboratory ID:	03-30	01-02									
	ORIG	DUP									
Lead	ND	ND	NA	NA			NA	NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	03-28	83-01									
•	MS	MSD	MS	MSD		MS	MSD				
Lead	414	378	250	250	181	93	79	75-125	9	20	
Laboratory ID:	03-28	83-86									
•	MS	MSD	MS	MSD		MS	MSD				
Lead	259	262	250	250	57.9	80	82	75-125	1	20	
Laboratory ID:	03-30	01-02									
	MS	MSD	MS	MSD		MS	MSD				
Lead	222	224	250	250	ND	89	90	75-125	1	20	

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#### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-06-10-2.0-2.5					
Laboratory ID:	03-283-142					
Lead	1800	6.4	EPA 6010D	4-2-19	4-2-19	
Client ID:	SB-06-22-3.0-3.5					
Laboratory ID:	03-283-143					
Lead	9.7	5.9	EPA 6010D	4-2-19	4-2-19	•

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#### TOTAL LEAD EPA 6010D QUALITY CONTROL

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0402SM1					
Lead	ND	5.0	EPA 6010D	4-2-19	4-2-19	

Analyte	Res	sult	Spike	Level	Source Result		rcent	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											<u>_</u> _
Laboratory ID:	03-30	04-22									
	ORIG	DUP									
Lead	8.50	7.45	NA	NA		l	NA	NA	13	20	
MATRIX SPIKES											
Laboratory ID:	03-30	04-22									
	MS	MSD	MS	MSD		MS	MSD				
Lead	236	238	250	250	8.50	91	92	75-125	1	20	

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### TOTAL LEAD EPA 200.8

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	EB-032819					
Laboratory ID:	03-283-144					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	EB-032719					
Laboratory ID:	03-283-145					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	EB-032619					
Laboratory ID:	03-283-146					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	EB-032519					
Laboratory ID:	03-283-147					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	

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### TOTAL LEAD EPA 200.8 QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						_
Laboratory ID:	MB0405WM1					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	

Analyte	Res	sult	Spike	Level	Source Result		rcent	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-30	03-01									
	ORIG	DUP									
Lead	ND	ND	NA	NA		l	NA	NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	03-30	03-01									
	MS	MSD	MS	MSD		MS	MSD				
Lead	110	114	111	111	ND	99	103	75-125	3	20	

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### **TCLP LEAD** EPA 1311/6010D

TCLP Extract Matrix: Units: mg/L (ppm)

Result ISM-04-A-0-0.5 03-283-36 ND ISM-06-A-0-0.5 03-283-60 0.33 ISM-06-B-0-0.5 03-283-65 0.97	0.20 0.20	Method  EPA 6010D  EPA 6010D	4-17-19 4-17-19	4-17-19 4-17-19	Flags
03-283-36 ND ISM-06-A-0-0.5 03-283-60 0.33 ISM-06-B-0-0.5 03-283-65	0.20	EPA 6010D	4-17-19		
ND ISM-06-A-0-0.5 03-283-60 0.33 ISM-06-B-0-0.5 03-283-65	0.20	EPA 6010D	4-17-19		
ISM-06-A-0-0.5 03-283-60 0.33 ISM-06-B-0-0.5 03-283-65	0.20	EPA 6010D	4-17-19		
03-283-60 0.33 ISM-06-B-0-0.5 03-283-65				4-17-19	
03-283-60 0.33 ISM-06-B-0-0.5 03-283-65				4-17-19	
0.33 ISM-06-B-0-0.5 03-283-65				4-17-19	
ISM-06-B-0-0.5 03-283-65				4-17-19	
03-283-65	0.20	EPA 6010D			
03-283-65	0.20	EPA 6010D			
	0.20	EPA 6010D			
0.97	0.20	EPA 6010D			
			4-17-19	4-17-19	
ISM-06-C-0-0.5					
03-283-66					
0.70	0.20	EPA 6010D	4-17-19	4-17-19	
ISM-06-A-0.5-1.0					
03-283-67					
0.26	0.20	EPA 6010D	4-17-19	4-17-19	
0.21	0.20	EPA 6010D	4-17-19	4-17-19	
ISM_06_A_4 5_2 0					
	0.00	EDA 0040D	4 17 10	4 47 40	
U.34	0.20	EPA 6010D	4-17-19	4-17-19	
ISM-07-A-0-0.5					
	0.20	EPA 6010D	4-17-19	4-17-19	
1	03-283-66 0.70  SM-06-A-0.5-1.0 03-283-67 0.26  SM-06-A-1.0-1.5 03-283-72 0.21  SM-06-A-1.5-2.0 03-283-77 0.34	03-283-66  0.70  0.20  SM-06-A-0.5-1.0  03-283-67  0.26  0.20  SM-06-A-1.0-1.5  03-283-72  0.21  0.20  SM-06-A-1.5-2.0  03-283-77  0.34  0.20  ISM-07-A-0-0.5  03-283-82	03-283-66  0.70  0.20  EPA 6010D  SM-06-A-0.5-1.0  03-283-67  0.26  0.20  EPA 6010D  SM-06-A-1.0-1.5  03-283-72  0.21  0.20  EPA 6010D  SM-06-A-1.5-2.0  03-283-77  0.34  0.20  EPA 6010D	03-283-66  0.70  0.20  EPA 6010D  4-17-19  SM-06-A-0.5-1.0  03-283-67  0.26  0.20  EPA 6010D  4-17-19  SM-06-A-1.0-1.5  03-283-72  0.21  0.20  EPA 6010D  4-17-19  SM-06-A-1.5-2.0  03-283-77  0.34  0.20  EPA 6010D  4-17-19	03-283-66  0.70  0.20  EPA 6010D  4-17-19  4-17-19  SM-06-A-0.5-1.0  03-283-67  0.26  0.20  EPA 6010D  4-17-19  4-17-19  SM-06-A-1.0-1.5  03-283-72  0.21  0.20  EPA 6010D  4-17-19  4-17-19  ISM-06-A-1.5-2.0  03-283-77  0.34  0.20  EPA 6010D  4-17-19  4-17-19  ISM-07-A-0-0.5  03-283-82

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### TCLP LEAD EPA 1311/6010D

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-08-A-0-0.5					
Laboratory ID:	03-283-90					
Lead	0.33	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	ISM-08-B-0-0.5					
Laboratory ID:	03-283-95					
Lead	ND	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	ISM-08-C-0-0.5					
Laboratory ID:	03-283-96					
Lead	ND	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	ISM-08-A-1.0-1.5					
Laboratory ID:	03-283-102					
Lead	ND	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	ISM-11-A-0-0.5					
Laboratory ID:	03-283-127					
Lead	0.24	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	ISM-12-A-0-0.5					
Laboratory ID:	03-283-137					
Lead	ND	0.20	EPA 6010D	4-17-19	4-17-19	

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### TCLP LEAD EPA 1311/6010D QUALITY CONTROL

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0417TM1					
Lead	ND	0.20	EPA 6010D	4-17-19	4-17-19	
Laboratory ID:	MB0417TM2					
Lead	ND	0.20	EPA 6010D	4-17-19	4-17-19	

Analyte	Res	sult	Spike	Level	Source Result	=	ercent ecovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-28	33-67									
	ORIG	DUP									
Lead	0.256	ND	NA	NA			NA	NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	03-28	33-67									
	MS	MSD	MS	MSD		MS	MSD				
Lead	9.83	9.82	10.0	10.0	0.256	96	96	75-125	0	20	

Date of Report: April 17, 2019 Samples Submitted: March 28, 2019 Laboratory Reference: 1903-283 Project: B0003010.0006

### % MOISTURE

Date Analyzed: 4-2&5-19

Client ID	Lab ID	% Moisture
ISM-01-A-0-0.5	03-283-01	4
ISM-01-A-0.5-1.0	03-283-06	4
ISM-01-A-1.0-1.5	03-283-11	5
ISM-02-A-0-0.5	03-283-16	5
ISM-02-A-0.5-1.0	03-283-20	6
ISM-02-B-0-0.5	03-283-24	12
ISM-02-C-0-0.5	03-283-25	11
ISM-03-A-0-0.5	03-283-26	11
ISM-03-A-0.5-1.0	03-283-31	7
ISM-04-A-0-0.5	03-283-36	12
ISM-04-A-0.5-1.0	03-283-41	6
ISM-05-A-0-0.5	03-283-50	7
ISM-05-A-0.5-1.0	03-283-55	6
ISM-06-A-0-0.5	03-283-60	14
ISM-06-B-0-0.5	03-283-65	12
ISM-06-C-0-0.5	03-283-66	13
ISM-06-A-0.5-1.0	03-283-67	8
ISM-06-A-1.0-1.5	03-283-72	11
ISM-06-A-1.5-2.0	03-283-77	4
ISM-07-A-0-0.5	03-283-82	19
ISM-07-A-0.5-1.0	03-283-86	7
ISM-08-A-0-0.5	03-283-90	12
ISM-08-B-0-0.5	03-283-95	12
ISM-08-C-0-0.5	03-283-96	11
ISM-08-A-0.5-1.0	03-283-97	8
ISM-08-A-1.0-1.5	03-283-102	6
ISM-09-A-0-0.5	03-283-107	14

Date of Report: April 17, 2019 Samples Submitted: March 28, 2019 Laboratory Reference: 1903-283 Project: B0003010.0006

### % MOISTURE

Date Analyzed: 4-2&5-19

Client ID	Lab ID	% Moisture
ISM-09-A-0.5-1.0	03-283-112	3
ISM-10-A-0-0.5	03-283-117	5
ISM-10-A-0.5-1.0	03-283-122	2
ISM-11-A-0-0.5	03-283-127	13
ISM-11-A-0.5-1.0	03-283-132	8
ISM-12-A-0-0.5	03-283-137	10
SB-06-10-2.0-2.5	03-283-142	22
SB-06-22-3.0-3.5	03-283-143	16
ISM-12-A-0.5-1.0	03-283-148	8
ISM-13-A-0-0.5	03-283-153	12



### **Data Qualifiers and Abbreviations**

- A Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B The analyte indicated was also found in the blank sample.
- C The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E The value reported exceeds the quantitation range and is an estimate.
- F Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I Compound recovery is outside of the control limits.
- J The value reported was below the practical quantitation limit. The value is an estimate.
- K Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L The RPD is outside of the control limits.
- M Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 Hydrocarbons in diesel range are impacting lube oil range results.
- O Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P The RPD of the detected concentrations between the two columns is greater than 40.
- Q Surrogate recovery is outside of the control limits.
- S Surrogate recovery data is not available due to the necessary dilution of the sample.
- T The sample chromatogram is not similar to a typical \_\_\_\_\_.
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 The practical quantitation limit is elevated due to interferences present in the sample.
- V Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

7 -

ND - Not Detected at PQL

PQL - Practical Quantitation Limit

RPD - Relative Percent Difference





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Sampled by: Mark Wilera   Sample Identification   Sa	Project Manager: Insh Gravenmier	B0003010.0006	Arcadis	1
	Burr	130		VE 95
Sample Identification  1-A-0-0.5  -1-0-0.5  -1-0-0.5  -1-0-0.5  -1-0-0.5  -1-0.5-1.0  -1-0.5-1.0  Signature  Signature  Signature	Burrows Island	10.0006		INTOINMENTAL INC.  14648 NE 95th Street • Redmond, WA 98052  Phone: (425) 883-3881 • www.onsite-env.com
Date Sampled 3/25/K	No.			
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					MOON LYNN	Ham W Oh	Signature	5.0-5-0-80	5,0-0-5	03-1-0-0.8	03-A-0-05	ISM-02-C-2-0:5	02-8-0-0.5	02-3-05-1.0	01-2-05-10	07-1-02-110	ISM-02-A-0.5-1.0	Sample Identification	Wilesy	sh Gravenmier	USCG Burrows Island	Project Number: B0003010.0006	lis	ENVIPORMENTAL INC.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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	er: U3-200	boratory Numb	La		(in working days		14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	



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	and HOLD	×	03/28/19 12:32	S1 ISM-05-4-0.5-1.0
	ON HOLD	X	0428/19 12:31	58 ISM-05-3-0.5-1.0 a
	ATOH NO	×	03/28/19 12:30	ISM-05-2-0.51.0
	DNO HOLD	×	03/28/17 12:29	S6 ISM-05-1-0.5-10
~		×	23/28/19 12:28	ISM-05- A-0.5-1.0
	Chap NO	×	03/28/19 11:10	SH ISM-05-4-0-0.5
	ON HOLD	×	03/18/17 11:09	SS ISM -05-3-0-0.5
	Story &	×	03/28/19 11:08	ISM-05-2-0-0.5
	ATOH SO	*	40:11 61/82/20	ISM-05-1-0-0.5
~		×	03/18/19 11:06 80:11	5075M-05-A-0-0.5
0/2		Lead (I	Date Time Sampled Sampled Matrix	Lab ID Sample Identification
		USEPA Lead (U	(other)	Mark Wheely
o is		Method		Josh Gravenmier
Hero			Standard (7 Days)	Project Name: USCG Burrows Island
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03-283	Laboratory Number:	Lab	Turnaround Request (in working days)	14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com



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×	8		03/26/19 11460	67 ISM-06-A- 0.5-1.0
×	8		03/27/19 1840	66 ISM-06-C-0-0.5
×	8		03/27/19 1805	65 ISM-06-B-0-0.5
	DN HOLD		4141	64 ISM-06- 4-0-0.5
	ON HOLD		17/6	63 ISM-04-3-0-0.5
	ATOH NO		2141	(0) TSM-010- 2-0-0.5
	QUOH NO		1 1/1/1	(0) JSM-06-1-0-0.5
~	8	1	03/12/19 05/363 50;	60 ISM-20-A-0-0.5
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, m			(other)	Sampled by:
nis	Method SEPA M	ontaine		Project Manager: Josh Gravenmier
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		(10th)	07	4	4	1154	_	ISM-06-2-15-20	70
		401D	07			1153		ISM-06-1-1.5-2.0	1
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		FOLD	8			8111		5M-06-4-1.0-1.5	767
		HOLD.	20			= 4		ISM-06-3-1.0-1.5	100
		HOLD	2			1110		SM-06-2-1.0-1.5	747
		HOLD	5			= 57	_	JSM-06-1-1.0-1.5	13
*			8			03/27/19/1050	03/17	ISM-010-11-11.0-11.5	1
		#OLD	20	-		1150	03/10/19	ISM-06-4-0.5-1.0	1
		4010	2	×	50111	1149	03/26/19	ISM-06-3-0.5-1.0	8
6/0			TCLP		Matrix Numb	Time Sampled	Date Sampled	Sample Identification	Lab ID
m			Lead (U		er of C	(other)	[	999	Sampled by:
318			ISEPA I	Method	ontaine			Josh Gravenmier	Project Manager:
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0			1311/60		☐ 3 Days			Project Number: B0003010.0006	Project N
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	ON HOLD		X		1241		-3-0-0.5	40-WST 58
	ON HOLD		7		1240		-2-0-0.5	-40-MST 179
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			Mar. 14		(other)	[		Sampled by:
			ontaine			]	Gravenmier	Josh
				0	Standard (7 Days)	Stan	Project Name: USCG Burrows Island	Project Name: USCG
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03-283	Laboratory Number:	Labora		ys)	(in working days)	Turn (in	14648 NE. 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	14648 NE. 9 Phone: (422



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N9052 (In working days)  Check One)  Same Day  2 Days  311/6010*)  Laboratory Number: 03-283		lethod 1	6010)	Standard (7 Days)	Project Name: USCG Burrows Island
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	03-283	aboratory Number	<u></u>	Turnaround Request (in working days)	14948 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



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	0V HOL)	×	THP0	115 ISM-09-3-0.5-1.0
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	ead (U		(other)	Sampled by:
oist	SEPA M	ntaine Method		Project Manager: Josh Gravenmier
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	311/60			Project Number: B0003010.0006
	10*)		(Check One)	Company: Arcadis
N3-200	Laboratory Number:	-	(in working days)	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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Ch					3/38/19 17:33 °	3/28/15 1723 .	Date Time Co	ON HOLD	ON HOLD	ON HOLD	ON HOUS		0N #02D	ON HOLD	That No	1 X ON HOLD		Number Lead (U	JSEPA	Method		1311/60	10*)	Laboratory Number:
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			Kara Cha	Shan NOW	Signature				SB-06-22-3,0-3.	B-06-10-2.0-2.5	SM-12-4-0-0.5	15M-12-3-0-0.5	15M-12-2-0-05	ZSM-12-1-0-0.5	ISM-12-A-0-0.5	Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Arcadis	Environmental Inc. 14648 NE 58th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
		•	130 OSE	Arcedis	Company				5 63/24/9 1242 1	5 18/27/19 1240	JOEN	1308	1 1307	03/28/19 1304	03/18/19 (305 Soil )	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)		x One)	Turnaround Request (in working days)
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Reviewed/Date					9A	Arcad 15	Company			3/25/19 1722 4	3/26/19/18/24	3/27/1/1838	3/28/19 1357 Water	Date Time Sampled Sampled Matrix	(other)	]	Standard (7 Days)	П	Same Day 1 Day	Turnaround Request (in working days)
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	0794 No		1346	15915M-13-2-0-0,5
	en Hald		1345	154 ISM-13-1-0-0.5
			1344	153 ISM-13-A-0-0.5
	CN HOLD		1330	1St ISM-12-4-0,5-1.0
	27 FR		1329	S TSM-12-3-0.5-1.0
	CV HOLD		1328	SO ISM-12-2-0.5-1.0
	ONHOLD		1327	49 ISM-12-1-0.5-1.0
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%	Lead (U		Date Time Sampled Sampled Ma	Lab ID Sample Identification
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0154	Method SEPA M	ontaine		Project Manager: Josh Gravenmier
H) (Q			Standard (7 Days)	Project Name: USCG Burrows Island
,	311/60	3 Days		Project Number: B0003010.0006
	10*)	1 Day	(Check One)	Company: Arcadis
03-283	Laboratory Number:		Turnaround Request (in working days)	LIVIPORIMENTA INC.  14648 NE 56th Street • Fledmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



14648 NE 95<sup>th</sup> Street, Redmond, WA 98052 • (425) 883-3881

May 24, 2019

Josh Gravenmier Arcadis U.S., Inc. 1100 Olive Way, Suite 800 Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006

Laboratory Reference No. 1903-283B

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on March 28, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow Project Manager

**Enclosures** 



Project: B0003010.0006

### **Case Narrative**

Samples were collected on March 25, 26, 27, and 28, 2019 and received by the laboratory on March 28, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

### Total Lead EPA 6010D Analysis

Samples were sieved through a 2mm sieve prior to digestion and percent moisture determination.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Project: B0003010.0006

### TOTAL LEAD EPA 6010D

Matrix: Soil

Units: mg/Kg (ppm)

Offits. Hig/Kg (ppi)	')			Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-04-1-0-0.5					
Laboratory ID:	03-283-37					
Lead	130	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-04-2-0-0.5					
Laboratory ID:	03-283-38					
Lead	160	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-04-3-0-0.5					
Laboratory ID:	03-283-39					
Lead	160	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-04-4-0-0.5					
Laboratory ID:	03-283-40					
Lead	280	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-1-1.0-1.5					
Laboratory ID:	03-283-73					
Lead	150	5.4	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-2-1.0-1.5					
Laboratory ID:	03-283-74					
Lead	100	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-3-1.0-1.5					
Laboratory ID:	03-283-75					
Lead	690	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-4-1.0-1.5					
Laboratory ID:	03-283-76					
Lead	1000	5.1	EPA 6010D	5-21-19	5-21-19	

Project: B0003010.0006

### TOTAL LEAD EPA 6010D

Matrix: Soil

Units: mg/Kg (ppm)

99 (1-1)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-06-1-1.5-2.0					
Laboratory ID:	03-283-78					
Lead	11	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-2-1.5-2.0					
Laboratory ID:	03-283-79					
Lead	11	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-3-1.5-2.0					
Laboratory ID:	03-283-80					
Lead	180	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-4-1.5-2.0					
Laboratory ID:	03-283-81					
Lead	630	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-12-1-0-0.5					
Laboratory ID:	03-283-138					
Lead	280	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-12-2-0-0.5					
Laboratory ID:	03-283-139		ED 1 22/25	= 0./	= 0/ /-	
Lead	330	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-12-3-0-0.5					
Laboratory ID:	03-283-140					
	640	5.2	EPA 6010D	5-21-19	5-21-19	
Lead	040	0.2	EFA 0010D	5-21-18	0-21-18	
Client ID:	ISM-12-4-0-0.5					
Laboratory ID:	03-283-141					
Lead	170	5.1	EPA 6010D	5-21-19	5-21-19	

Project: B0003010.0006

### TOTAL LEAD EPA 6010D QUALITY CONTROL

Matrix: Soil

Units: mg/Kg (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0521SM4					
Lead	ND	5.0	EPA 6010D	5-21-19	5-21-19	

					Source	Pe	rcent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Result	Rec	overy	Limits	RPD	Limit	Flags
DUPLICATE											
Laboratory ID:	03-28	3-141									
	ORIG	DUP									
Lead	161	168	NA	NA			NA	NA	4	20	
MATRIX SPIKES											
Laboratory ID:	03-28	3-141									
	MS	MSD	MS	MSD		MS	MSD				
Lead	377	385	250	250	161	86	90	75-125	2	20	•

### % MOISTURE

Date Analyzed: 5-22-19

Client ID	Lab ID	% Moisture
ISM-04-1-0-0.5	03-283-37	4
ISM-04-2-0-0.5	03-283-38	4
ISM-04-3-0-0.5	03-283-39	3
ISM-04-4-0-0.5	03-283-40	3
ISM-06-1-1.0-1.5	03-283-73	7
ISM-06-2-1.0-1.5	03-283-74	4
ISM-06-3-1.0-1.5	03-283-75	4
ISM-06-4-1.0-1.5	03-283-76	3
ISM-06-1-1.5-2.0	03-283-78	4
ISM-06-2-1.5-2.0	03-283-79	3
ISM-06-3-1.5-2.0	03-283-80	3
ISM-06-4-1.5-2.0	03-283-81	4
ISM-12-1-0-0.5	03-283-138	3
ISM-12-2-0-0.5	03-283-139	2
ISM-12-3-0-0.5	03-283-140	4
ISM-12-4-0-0.5	03-283-141	3



### **Data Qualifiers and Abbreviations**

- A Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B The analyte indicated was also found in the blank sample.
- C The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E The value reported exceeds the quantitation range and is an estimate.
- F Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I Compound recovery is outside of the control limits.
- J The value reported was below the practical quantitation limit. The value is an estimate.
- K Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L The RPD is outside of the control limits.
- M Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 Hydrocarbons in diesel range are impacting lube oil range results.
- O Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P The RPD of the detected concentrations between the two columns is greater than 40.
- Q Surrogate recovery is outside of the control limits.
- S Surrogate recovery data is not available due to the necessary dilution of the sample.
- T The sample chromatogram is not similar to a typical \_\_\_\_\_
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 The practical quantitation limit is elevated due to interferences present in the sample.
- V Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

7 -

ND - Not Detected at PQL

PQL - Practical Quantitation Limit

RPD - Relative Percent Difference





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					Morely Liscon	R. 30	Signature	4-8.5-10	3-05-1.0	2-05-1.0	1-0.5-1.0	A-05-10	X13-0-11-	-3-0-25	2-0-05	1-0-05	A-0-0.5	Sample Identification	Whery	Gravenmier	Project Name: USCG Burrows Island	3010.0006		ENVIPORMENTAL INC. 14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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					1723	1727	Time	hold	Hold	Hold	Hold		Holis	Hold	-	Hold							100	Laboratory Number:
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Chromatograms with final report					1735 on parent sample results (Lead Method 6010).	+ Hold samples for this analysis; running this compound is contingent	Time Comments/Special Instructions		> =	HO	a Hold	X	Hold	ROLLO	USA	Nois	*	%	<i>'</i> W'		0.46			Laboratory Number: 03-283



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								-ha-		-04-	7-0	00	1-63	203	03	1-03	1-0			Josh	SCO	B00	Arcadis	14648 NE Phone: (4
				-	4	2	Sign	W	04-2	-	1-40	3-4	3-3	-2	1	5-A	03-4-0-05	Sample Identification		Gra	3 Bu	0301		14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
					R	Som	Signature	10-1	100	101	9-0	100	-0.5	10.8	15.51	50-	0-	Identifi		aver	irrow	0.00		et • Redm 381 • www
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						* Hold samples for this analysis; running this compound is contingent		^																
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Page S of 17

Environmental inc.  14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com  Company:	Turnaround Request (in working days) (Check One)	Laboratory Number:	r: 03-283
Project Number: B0003010.0006	Same Day 1 Day	311/6010	
Project Name: USCG Burrows Island	rd (7 Days)	6010)	
Project Manager: Josh Gravenmier		ntainer Method SEPA M	
Sampled by:	(other)	SEPA N	
Lab ID Sample Identification	Date Time Sampled Sampled Matrix	Lead (U	
10 tsm-04-4-0-05	Apr 1824	1 × On Hark	
41 ISM-04-A-018-110	1 8141 41418	~ *	
19 Ism-04-1-0/8-110	11719	-X DAN HOLL	0
43 Ism-04-2-05-10	1720	1 x On Hold	
HY ISM-04-3-0,51.0	1741	1 x On Wolf	0
45 Ism-64-4-05-1.0	V (172)	-	2
150-0-4-0-015	5/28/19 1104		4M/W
F80-05-1-05-08	1407	on Hotel	
Ism 05-2-0-0x	804	1	
45M-05-3-0-05	W Hoot W	**	
Signature	Company	Date Time	Comments/Special Instructions
Relinquished When W	Accedis	13/82	* Hold samples for this analysis; running this
Received John Little	380	3/36/19 1733	on parent sample results (Lead Method 6010).
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Received			
Reviewed/Date	Reviewed/Date		Chromatograms with final report



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Chromotograms with final report			Reviewed/Date	Reviewed/Date
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on parent sample results (Lead Method 6010).	3/08/19 1723	(M	0SE	Received Wille Likely
* Hold samples for this analysis; running this compound is contingent	3/28/19 1723		Arcedis	Relinquished Lyper W Coll
Comments/Special Instructions	Date Time		Company	Signature
	and to LI	~ ×	03/28/19 12:32	31 ISM-05-4-0.5-1.0 80
	07 HOLD	X	04%/19 12:31	SB ISM-05-3-0.5-1.0 0
	ON HOLD	×	03/28/19 12:30	ISM-05-2-0.51.0
	DNO HOLD	×	03/28/17 12:29	0015M-05-1-0.5-10
×		×	03/18/19 12:28	SISM -05- A-0.5-1.0 2
	Chap No	×	03/28/19 11:10	H ISM-05-4-0-0.5
	ON HOLD	×	03/28/17 11:09	55 ISM -05-3-0-0.5
	870H 8	×	03/28/19 11:08	ISM-05-2-0-0.5
	A FOLA	_ ><	29/28/19 11:07	TSM-05-1-0-0.5
		- ×	03/28/19 11:06 80:1	075M-05-A-0-0.5
0/2	TCLP	Numb	Date Time Sampled Sampled Matrix	Lab ID Sample Identification S
	ead (U	1	(other)	Mark Wiledy
	SEPA M	ontaine Method		Project Manager: Josh Gravenmier
Hura	Method 1		Standard (7 Days)	Project Name: USCG Burrows Island
	311/60			Project Number: B0003010.0006
	10*)		(Check One)	Arcadis
03-283	Laboratory Number:	2	Turnaround Request (in working days)	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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	Chromatograms with final report			Reviewed/Date	Reviewed/Date
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0).	on parent sample results (Lead Method 6010).	3/38/19 17/33		320	Received Wille LEW
s compound is contingent	* Hold samples for this analysis; running this compound is contingent	3/28/19 1723		Arcadis	Relinquished Machine Company
THE PERSON	Comments/Special Instructions	Date Time		Company	Signature
	*	Or Hold	_	1 1148 1	(A) ISM-04-2-0.5/1,0
		02 #010		Ehll	68 ISM-00-1-0.5-1.0
×		8		03/26/19 1/460	6) ISM-06-A- 0.5-1.0
×		8		03/27/19 1840	(06 ISM-06-C-0-0.5
×		8		03/27/19 1805	(2) ISM-01-B-0-0.5
		DN HOLD		1141	64 ISM-06- 4-0-0.5
		DN HOUD		17/6	65 ISM-06-3-0-0.5
		GTOH NO		5141	00 TSM-010- 2-0-0.5
		QTOH NO		1 1/1/1	15M-06-1-0-0.5
X		8	X	03/18/19 051-363 Soil	60 ISM-00-A-0-0.5
0/0		TCLPL		Date Time Sampled Sampled Matrix	Lab ID Sample Identification
m		ead (U		(other)	pampied by:
ois		SEPA M	ontaine Method		Josh Gravenmier
tore		Method 1		Standard (7 Days)	USCG Burrows Island
2		311/60			Project Number: B0003010,0006
		10*)		(Check One)	Company: Arcadis
	03-283	Laboratory Number:	F	Turnaround Request (in working days)	ENVIRONMENTAL INC.  14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished		19 ISM-06	16 ISM-06	77 ISM-010-	16 15M-06	15 ISM-06-	74 ISM-06	13 ISM-016-	72 ISM-010-A	71 ISM-06-	70 ISM-0	Lab ID	Sampled by:	Project Manager: JOS	Project Name: USC	Project Number: BOC	Arcadis	Phone:
				•	The season	Porch	Signature	-2-1.5-	6-1-1.5-	6-A-15-	0-4-1.0-	6-3-1.0-	-2-1.0	8-1-1.0-1.5	10-A-1.0-	6-4-0.5-	ISM-010-3-0.5-1	Sample Identification		Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	S	Phone: (425) 883-3881 • www.onsite-env.com
					Treew	Jaco J		20	2.0	2.0	1.5	1.5	1.5	1.5	1.5	1.0	1.0			ier	Island	0,		-env.com
Reviewed/Date						Arco	Company	1154	1153	DEIL	8111	117	111100	1115	03/27/19/1056	03/10/19 1150	13/26/19 1149	Date Time Sampled Sampled	(0)	]	Standard (7 Days)	2 Days	Same Day	
d/Date					R	d15		4	W	6			0		Ь	9	9 Soil 1	e Matrix Number	(other)	entaine		☐ 3 Days	□ 1 Day	
					CH			<b>&amp;</b>	8		8	8	8	8			×	Lead (L		1000				1
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Chromatograms with final report	0		Reviewed/Date		Reviewed/Date
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on parent sample results (Lead Method 6010).	38/19 1783		OSE	(	Received Mary March
* Hold samples for this analysis; running this compound is contingent	5/28/19 1723		Arcadis		Relinquished Chan W Chan
Comments/Special Instructions	Date Time		Company		Signature
	CJOH NO	7 ×	1 6481	_	8/ISM-07-1-0.5-1.0
		H X	1348		86 ISM-07-A-0.5-1.0
	CHAPP NO	X	1241		85 ISM-07-3-0-0.5
	ON HOLD	7	1240		84 ISM-07-2-0-0.5
	QTOH NO	ドス	(239	_	65 ISM-07-1-0-0.5
	$\otimes$	14	1238	03/26/19	60 ISM-07-A-0-0.5
					88-010-A-88
				4	ISM-06-A-2.07.522
0	00 1 00 D	100	1156	03/27/19	B) ISM-010-4-1.5-2.0
R	0-101D	14	11155 Soil	1/17/20	BO ISM-06-3-1.5-2.0
6/6	TCLPL	Per Carlo	Time Sampled Matrix	Date Sampled	Lab ID Sample Identification
	ead (U	Mary Sales	(other)	[	sampled by:
	SEPA N	ontaine Method			Josh Gravenmier
-()\( \( \) \( \)	Method 1		Standard (7 Days)	္အ	Project Name: USCG Burrows Island
	311/60				Project Number: B0003010.0006
	10*)		(Check One) Same Day		Company: Arcadis
03-283	Laboratory Number:	-	Turnaround Request (in working days)	=	14848 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received Note Little	Relinquished Chymld Chy	Signature	9) ISM-08-A-0.5-1,0	96 ISM-08-C-0-0.5	15 ISM-08-B-0-0.5	94 ISM-08-4-0-0.5	93 ISM 08-3-0-0.5	97 ISM-08-2-0-0.5	91 ISM-08-1-0-0.5	90 ISM-08-A-0-0.5	B9 ISM-07-3-0.5-1.0	88 75M-07-2-0.5-1.0	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental Inc.  14648 NE Sth Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsid-env.com
Reviewed/Date					OSE 336/1 173	Arcadis 3/28/19 1723	Company Date Time	3/24/19/1901 1 12x	03/17/19 1502 2XX	12 X X	1 1619 1X ON HOL	1618 1× 0N FOLD	1617 1X ON HOLD	11016 7 × 02 HOL	1602 1XX	03/pully 1351 1 2 X ON HOL	09/2/19 1350 Soil 1 X ON HOL	Lead (L	JSEPA			3 Days	Same Day 1 Day	Turnaround Request (in working days) Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions		*	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \					×			9/0	Ma	) isk	ne			er: 03-283



Check One   Chec	Reviewed/Date	Received	Relinquished	Received	Relinquished	Received FURY TOKEN	Relinquished Charles	Signature	107 ISM-09-A-0-0.5 03/	106 ISM-08-4-1.0-1.5	105 ISM-08-3 -1.0-1.5	164 ISM-08-2-10-15	105 TSM-08-1-1:0-1.5	100 ISM-08-A-1,0-1.5 631	101 ISM-08-4-0.5-1.0	100 ISM-08-3-0.5-1.0	99 ISM-08-2-0.5-1.0	18 ISM-08-1-0.5-1.0 B/	Lab ID Sample Identification San	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
X X X X X X X X X X Lead (USEPA Method 6010)  TCLP Lead (USEPA Method 1311/6010°)  TCLP Lead (USEPA Method 1311/6010°)  TOLY Lead (USEPA Method 1311/6010°)	Reviewed/Date					CH	Arcadis	Company	03/28/19 0921		1048						1734			(other)		Standard (7 Days)		Che)	(in working days)
						138117	128/19 172		×	Ne X	2	X	×	×	+ No	X ON HO	×	NO HOL	Lead (l	JSEPA	Method	6010)	1311/60	10*)	Laboratory Number



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received Roul Check	Relinquished Myn Wahred	Signature	17 ISM-10-A-0.0-0.5	116 ISM-09-4-0.5-1.0	115 ISM-09-3-0.5-1.0	114 ISM-09-2-0.5-1,0	113 ISM-09-1-0.5-1.0	11d ISM-09-A-0.5-1.0	11 ISM-09-4-0-05	110 TSM-09-3-0-0.5	109 ISM-09-2-0-0.5	108 ISM-09-1-0-0.5	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental Inc.  14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					SA.	1 Arcadis	Company	0/24/10/13/1/2	0948	1440	09410	2460	2 4460	0925 1	0924	0923	03/28/19 0972 Soil	Date Time Sampled Sampled Matrix	(other)	]	Standard (7 Days)		Same Day 1 Day	Turnaround Request (in working days)
				, ,	3/38/11/783	3/28/19 1723	Date Time	*	X ON HOL	10th No X	TOH NO X	1 X ON HOL	X	TX DN HOW	1 X DN HOLL	1× oz solo	1 X ON HOLS	Lead (l	JSEPA Lead (U	Method	The same	1311/60	10*)	Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions	*					*					0/6	on a	oist	7050			03-283



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Chromatograms with final report	Chroma		Reviewed/Date	Reviewed/Date
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				Relinquished
arent sample results (Lead Method 6010).	0 EPLI 11/9	3/26	0%	Received PARU Seen
* Hold samples for this analysis; running this compound is contingent	19 1723	3/28	Arcadis	Relinquished Association
Comments/Special Instructions	Time Comm	Date	g Company	Signature
×		8	1 8460 1	137 ±5M-11-A-0-0.5
	DIN HOLD		1181	196ISM-10-4-0,5-1,0
	01V 40LD		0181	125 ISM -10-3-0.5-1.0
	6N HOLD		1809	124 ISM-10-2-0.5-1.0
	QN #PR D		8081	135 ISM-10-1-0.5-1.0
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			408/	123 ISM-10-A-0.5-1.0
	ON HOLD		11017	BI ISM-10-4-0-0.5
	ON HOLD		1616	30 ISM-10-3-0-0.5
	ON HOLLD		16/07	119 ISM-10-2-0-0.5
	CL19H NO	×	03/27/19 16/14 Soil 1	JSM-10-1-0-0.5
6/6		Lead (L	Date Time Sampled Sampled Sampled Matrix	Lab ID Sample Identification
m		JSEPA	(other)	Sampled by:
oist		Method	ontaine	Josh Gravenmier
Ure		1	rd (7 Days)	Project Name: USCG Burrows Island
		311/60		Project Number: B0003010.0006
		10*)	(Check One)	Company: Arcadis
03-283	Laboratory Number:	Labora	Turnaround Request (in working days)	ENVIPORMENTAL INC.  1448 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished		136 JSM-11	135 TSM-11-	-11-WST FEI	-11-WST SEU	11-MST PE	13 ISM-11-	130 ISM - 11	199 ISM-11-	138 ISM-11-	132-1	Lab ID Sa	Sampled by:	Project Manager: Josh	Project Name: USCG	Project Number: B0003010.0006	Company: Arcadis	14648 NE 9 Phone: (425
				4 / 4	Mary Little	Boun 162	Signature	-4-0.5-1.O	3-0.5-1.0	2-0.5-1.0	1-0.5-1.0	-M-0.5-1.0	4-0-0.5	-3-0-0.5	2-0-0.5	1-0-0.5	13-61	Sample Identification		Gravenmier	Project Name: USCG Burrows Island	3010.0006		ENVIPORMENTAL INC. 14648 NE 55th Street • Redmond, WA 89052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date				(	1950	Il Arcadis	Company	1 1812 1	8-	0181	1809	8081 1908	1 0952	015]	0950	1:8 6460 5/42/EO	\$ <del>4</del>	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)		(Check One)	Turnaround Request (in working days)
					3/38/19 1733	3/28/15 1723	Date Time	1 ON HOLI	ON HOLI	10N HOL	DN HOU		1 0N HOL	JOH NO	1 1 BN HOL	1X ON HOL		170000	JSEPA	Method SEPA M	6010)	311/60	10*)	Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010)	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions			<i>D</i>			D		<b>→</b>									03-283
						compound is contingent						×						0,6	ma	ilSkr	ne			



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Chromatograms with final report ☐		Reviewed/Date	Reviewed/Date
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S) vocassing.			Received
*		(	Relinquished
	38K N 1733	320	Received WARM CHEOU
* Hold samples for this analysis; running this compound is contingent	3/28/15 (723	Arcedis	Relinquished Wan Man
Comments/Special Instructions	Date Time	Company	Signature
		1 2421 19/4/80	45 SB-06-22-3,0-3.5
X		1240	48 SB-06-10-2.0-2.5
(X)	8 34 4	1308	H ISM-12-4-0-0.5
8	8 00 JA	1308	40 JSM-12-3-0-0.5
8	8 ON 100	1307	39 ISM-12-2-0-05
8	101 CAE	03/28/19 13010	36 ISM-12-1-0-0.5
~	1 × 8	03/28/19 1305 Soil	37 ISM-12-A-0-0.5
6/2	Lead (L	Date Time Sampled Sampled Matrix	Lab ID Sample Identification
> m(	er of Co JSEPA Lead (U	(other)	Sampled by:
DISI	Method		Project Manager: Josh Gravenmier
57 OF		Standard (7 Days)	Project Name: USCG Burrows Island
	311/60	П	Project Number: B0003010.0006
	10*)	(Check One)	Arcadis
er: 03-283	Laboratory Number:	Turnaround Request (in working days)	Environmental inc.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received MARM UTZ	Relinquished & Shan (	Signature				147 EB-032519	146 EB-032419	45 EB-03Z719	144 83-032819	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	ENVIRONMENTA INC.  14648 NE 95th Street - Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					DEW OFF	1954 Arcadis	Company				3/25/pg (722 Y	3/26/19/1824	3/27/15 1838	3/28/M 1357 Water	Date Time Sampled Sampled Matrix	(other)	]	Standard (7 Days)	☐ 2 Days	Same Day 1 Day	Turnaround Request (in working days)
				-	368 19 1733	3/28/15 1723	Date Time					×	~ ×	×	Lead (I	er of Co USEPA Lead (U	Method	6010)	1311/60	010*)	Laboratory Number:
Chromatograms with final report				Whiter Samples preserved with this-	on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions					*			0,10	5-N	76/	SAO	<del>le</del>		r: 03-283



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received JARLY SPOW	Relinquished Ships USS	Signature	#5M B-4-0-0.5 5-8	156ISM-13-3-0-0.5	15915M-13-2-0-0,5	154 ISM-13-1-0-0.5	153 ISM-13-A-0-0.5	15d ISM-12-4-0.5-1.0	S TSM-12-3-0.5-1.0	156 ISM-12-2-0.5-1.0	49 ISM-12-1-0.5-1.0	146 ISM-12-A-0.5-1.0 Bhs/19	Lab ID Sample Identification Sampled	Sampled by:	Project Manager: Josh Gravenmier	SCG Burrows Island	B0003010.0006		Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					120	Arcad S	Company	134	EHS!	1346	1345	1344	1330	1329	1328	1327	19 1326 Soil	ed Sampled Matrix	(other)		Standard (7 Days)		(Check One) Same Day 1 Day	(Charles Care)
					388191733	3/28/19 1723	Date Time	CHAPT IND	CTOH NO	0704 No	en Hald		CL70H NB	an FRD	ON HOLD	ONHOLD	X	Lead (I	JSEPA			1311/60	110*)	
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14648 NE 95<sup>th</sup> Street, Redmond, WA 98052 • (425) 883-3881

June 7, 2019

Josh Gravenmier Arcadis U.S., Inc. 1100 Olive Way, Suite 800 Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006

Laboratory Reference No. 1903-283C

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on March 28, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow Project Manager

**Enclosures** 



Date of Report: June 7, 2019 Samples Submitted: March 28, 2019 Laboratory Reference: 1903-283C

Project: B0003010.0006

#### **Case Narrative**

Samples were collected on March 25, 26, 27, and 28, 2019 and received by the laboratory on March 28, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

#### TCLP Lead EPA 1311/6010D Analysis

Due to a limited amount of sample, less than the required 100g was tumbled for TCLP analysis. The amount of sample used for ISM-06-4-1.0-1.5, (03-283-76) was 10g and the amount of sample used for ISM-12-3-0-0.5, (03-283-140) was 25g.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: June 7, 2019 Samples Submitted: March 28, 2019 Laboratory Reference: 1903-283C

Project: B0003010.0006

#### TCLP LEAD EPA 1311/6010D

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-06-4-1.0-1.5					
Laboratory ID:	03-283-76					
Lead	0.71	0.20	EPA 6010D	5-31-19	5-31-19	
Client ID:	ISM-12-3-0-0.5					
Laboratory ID:	03-283-140					
Lead	ND	0.20	EPA 6010D	5-31-19	5-31-19	

Date of Report: June 7, 2019 Samples Submitted: March 28, 2019 Laboratory Reference: 1903-283C

Project: B0003010.0006

#### TCLP LEAD EPA 1311/6010D QUALITY CONTROL

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0531TM1					
Lead	ND	0.20	EPA 6010D	5-31-19	5-31-19	

Analyte	Res	sult	Spike	Level	Source Result		rcent covery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-11	18-01									
	ORIG	DUP									
Lead	ND	ND	NA	NA			NA	NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	05-11	18-01									
	MS	MSD	MS	MSD		MS	MSD				
Lead	8.77	8.67	10.0	10.0	ND	88	87	75-125	1	20	



#### **Data Qualifiers and Abbreviations**

- A Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B The analyte indicated was also found in the blank sample.
- C The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E The value reported exceeds the quantitation range and is an estimate.
- F Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I Compound recovery is outside of the control limits.
- J The value reported was below the practical quantitation limit. The value is an estimate.
- K Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L The RPD is outside of the control limits.
- M Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 Hydrocarbons in diesel range are impacting lube oil range results.
- O Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P The RPD of the detected concentrations between the two columns is greater than 40.
- Q Surrogate recovery is outside of the control limits.
- S Surrogate recovery data is not available due to the necessary dilution of the sample.
- T The sample chromatogram is not similar to a typical \_\_\_\_\_\_.
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 The practical quantitation limit is elevated due to interferences present in the sample.
- V Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

7 -

ND - Not Detected at PQL

PQL - Practical Quantitation Limit

RPD - Relative Percent Difference





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					refect lister	R. 30	Signature	-4-8.5-1.0	-3-05-1.0	-2-05-1.0	-1-85-10	-A-05-10	X.0-0-17-	-3-0-25	-2-0-05	1-0-0.5	15M-01-A-0-05	01	Whery	Josh Gravenmier	USCG Burrows Island	03010.0006	<b>S</b> ,	ENVIPORMENTAL INC.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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14648 NE 95th Street • Redmond, WA 97 Phone: (425) 883-3881 • www.onsite-env	arite in a site
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Chromatograms with final report			ate	Reviewed/Date	Reviewed/Date	Revie
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	On Hold	×		heal	tsm-02-2-0-0.5	28
	on Hold	×		1 1623	50-0-1-20-WSF	コ
*		×		3/25/M (622	ISM-02-A-68-0.5	6
	On Hold	×	~	V 1529	TSM-01-4-4,0-1.x	5
	On Hold	×	=	1528	22m-81-3-10-11	4
	Dr. Upid	<b>/</b> ×		4281	Ism-01-2-10-15	(i)
	On Hois	<u></u>	-	1526	JSM-01-1-10-1.5	T
~		X	1:08	3127/14/525	THOUGHT SM-01-H-1:0-	=
%		Lead (	Matrix	Date Time Sampled Sampled	Sample Identification	Lab ID
<i>Machine Machine Machi</i>		er of Co USEPA Lead (U		(other)	Sampled by: Mark Ullery	Sampl
		Method			Project Manager: Josh Gravenmier	Projec
0.66				Standard (7 Days)	Project Name: USCG Burrows Island	Projec
		1311/60	☐ 3 Days	2 Days	Project Number: B0003010.0006	Projec
		10*)	1 Day	Check One)	Arcadis	Company:
03-283	Laboratory Number:	Lat	quest ays)	Turnaround Request (in working days)	ENVIPONMENTAL INC.  14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com	



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished War (	Signature	30 Jem-03-5-0-85	20-0-2-5-0-MST 8B	27 ISM-03-1-0-018	36 Ism-03-A-0-0.	JS ISM-02-C-D-	24 ISM-02-8-0-0.	23 JSM-02-3-08-	2) JSM-01-2-05-	8) Jsm-02-1-0.5-	30 ISM-02-A-0.5-	Lab ID Sample Identification	Sampled by: Mark Willery	Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					Willey OSE	and Areadis	Company	3/18/19/301	325/14 1300	3/28/14 1289	S/11/10/12/8	01/2 1/42/2 5:0	015 WEZIS >	hho!	1,0	100 1042	1.0 3/26/19 1041 5011	Date Time Sampled Sampled Matrix	(other)	97	sland Standard (7 Days)		Same Day 1 Day	(in
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Project Name: USCG Burrows Island	rd (7 Days)	6010)	+or
Project Manager: Josh Gravenmier	]	ntainer Method SEPA M	ois
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4) ISM-04-A-018-110	1 8141 414218	<u>-</u> У	×
61-50-1-10-WST CH	1719	-X On Hold	
43 Ism-04-2-0,5-1,0	1720	1 x On Hold	
HY Tom-04-3-0551.0	1761	1 X Ca Hold	
15 tm-04-4-0x-10	T241 W	1 X Em Hold	
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14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	(in working days)	Laboratory Number:	0
Company: Arcadis	(Check One)	10*)	
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Project Name: USCG Burrows Island	rd (7 Days)	6010)	Aura
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S3 ISM -05-3-0-0.5	03/18/17 11:09	X ON HOLD	
54 ISM-05-4-0-0.5	03/28/19 11:10	X ON HOLD	
SSISM-05- A-0.5-1.0	23/28/19 12:28	×	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
S6 ISM-05-1-0.5-60	03/28/17 12:29	X ON HOLD	
1 1	03/28/19 12:30	X ON HOLD	
SB ISM-05-3-0.5-1.0	03/28/19 12:31	X ON HOLD	
59 ISM-05-4-0.5-1.0	03/28/19 12:32	X on HOLD	
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Same Day	or) Obate
Number of Containers	Number of Containers  Lead (USEPA Method 6010)  TCLP Lead (USEPA Method 1311/6010*)



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any: Arc t Number: t Name: U t Manager: 15M TSM TSM TSM TSM TSM TSM TSM TSM TSM TS	Chromatograms with final report ☐	Ch	Reviewed/Date	Reviewed/Date
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TSM - O(c - A - C - O. S   1239   15M - O3 - A - O - O. S   1239   123		X 0N +01	1240	07-2-0-0.
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Check One   Same Day   1 Day				06-A-
Environmental Inc.  1.4646 NE 96th Streat - Redmond, VM, 98052 Phone: (425) 883-3881 • www.onsite-env.com  Arcadis  1.0003010.0006  1.				Ob-A-2.02.5
Environmental Inc.  1/4648 NE 95th Street - Redmond, WA 98052 Phone: (425) 883-3881 - www.snrsite-env.com  Arcadis  1/4648 NE 95th Street - Redmond, WA 98052 Phone: (425) 883-3881 - www.snrsite-env.com  (Check One)    Same Day		1		06-4-1.5-2.0
Environmental Inc.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com  Arcadis  Arcadis  Sample Identification  Laboratory Number:  (Check One)  Sampled Sampled Matrix  Laboratory Number:  (Check One)  Sampled Sampled Matrix  Laboratory Number:  (Check One)  Sampled Sampled Matrix  Laboratory Number:  (Check One)  Sampled Sampled Matrix  Number:  Laboratory Number:		NO NO NO	1155	1.5-2.0
## Containers    Containers   C		Lead (U	Time Sampled	Lab ID Sample Identification
## Check One)  ## Standard (7 Days)  ## Days		SEPA ead (U	(other)	Sampled by:
## Check One)    Same Days   Standard (7 Days)   Standard (7 Days)		Method	]	Project Manager: Josh Gravenmier
## Check One   Check One      Same Day		6010)	Standard (7 Days)	Project Name: USCG Burrows Island
19052 (In working days)    Same Day   1 Day   5   1 Day   5   5   1   1   1   1   1   1   1   1		1311/60		Project Number: B0003010.0006
Turnaround Request (in working days)  Laboratory Number:		10*)	Same Day	Company: Arcadis
	03-283	Laboratory Number:	Turnaround Request (in working days)	Environmental Inc.  14648 NE 55th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received War Livery	Relinquished Chambles	Signature	97 ISM-08-A-0.5-1.0	96 ISM-08-C-0-0.5	95 ISM-08-B-0-0.5	94 ISM-08-4-0-0.5	93 ISM 08-3-0-0.5	8-0-0-2-80-MZT 6P	a) ISM-08-1-0-0.5	90 ISM-08-A-0-0.5	B9 ISM-07-3-0.5-1.0	88 JSM-07-2-0.5-1.0	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental Inc.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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Data Package: Level III <a>III</a> Level IV</a> Electronic Data Deliverables (EDDs)<a>III</a> .



F F F F F F F F Number of Containers	Natrix  Solution  Number of Containers  X X X X X X X X X X X Lead (USEPA Method 6010)  TCLP Lead (USEPA Method 1311/60)	Matrix  Soil Number of Containers  X X X X X X X X X Lead (USEPA Method 6010)  TCLP Lead (USEPA Method 1311/60)  TCLP Lead (USEPA Method 1311/60)	Soil   Number of Containers   Number of Con	Soil   Soil	And the state of t
F F F F F F F F Number of Containers	Number of Containers   Number of Containers	P P P P P P P P P P Number of Containers   X X X X X X X X X X X X X X X X X X X		PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	P P P P P P P P P P P P P P P Number of Containers   X X X X X X X X X X X X X X X X X X
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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received The Scal Laboration	Relinquished Age Many	Signature 1	117 ISM-10-A-0.0-0.5	116 ISM-09-4-0.5-1.0	115 ISM-09-3-0.5-1.0	114 ISM-09-2-0.5-1,0	113 ISM-09-1-0.5-1.0	11d ISM-09-A-0.5-1.0	11 ISM-09-4-0-05	110 ISM-09-3-0-0.5	109 ISM-09-2-0-0.5	108 ISM-09-1-0-0.5	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental Inc.  14648 NE 95th Street • Redmond, VA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					SA SA	& Arcadis	Company	03/23/19/16/13	0948	F1160	09410	2460	1449	0925	0924	0923	03/28/19 0972 Soil	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)		Same Day 1 Day	Turnaround Request (in working days)
					3%	3/28/	Date	7 ×	2 X L	1 X e	1X z	1 ×	1 <sup>2</sup> ×	1 ×	12 X	1 ×	12 X	Lead (	er of Co USEPA Lead (U	Method		1311/60	010*)	Laborato
Ω					M 1723	-	Time C		ON HOLD	STOP NO	2 HOLD	ON HOLD		N HOLL	N FORD	S #010	STOFF NO							Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions	*					\(\frac{1}{2}\)					0/			1000			03-283



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Chromatograms with final report	Chr		Reviewed/Date	Reviewed/Date
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* Hold samples for this analysis; running this compound is contingent			Aveadis	Relinquished
Comments/Special Instructions	Date Time Con		2 Company	Signature
×	8		1 8460 1	131 ±SM-11-A-0-0.5
	ON HOLD	_	1181	136 ISM-10-4-0,5-1.0
	ON HOLD		0181	135 ISM -10-3-0.5-1.0
	6N HOLD		1809	124 ISM-10-2-0.5-1.0
	COST PO		1808	135 ISM-10-1-0.5-1.0
			1807	123 ISM-10-A-0.5-1.0
	ON HOLL		Figil	BI ISM-10-4-0-0.5
	ON HOLD		1616	30 TSM-10-3-0-05
	ON HOLD	-	1615	119 ISM-10-2-0-0.5
	ON HOLD	14	03/27/19 16/14 Soil	118 ISM-10-1-0-0.5
6/6		253125	Date Time Sampled Sampled Matrix	Lab ID Sample Identification
(W)			(other)	Sampled by:
nic l		ontaine Method		Project Manager: Josh Gravenmier
9707	Method 1	0	Standard (7 Days)	Project Name: USCG Burrows Island
	311/60			Project Number: B0003010.0006
	10*)			Company: Arcadis
03-283	Laboratory Number:		Turnaround Request (in working days)	Environmental Inc. 14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com



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Sand   Same Day   1 Day   1 Day   2 Days   3 D	Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished	STATE OF THE STATE	136 ISM-11	135 ISM-11-	134 TSM-11-	133 TSM-11-	139 ISM-11-	13 ISM-11-	130 JSM - 11	199 ISM-11-	138 ISM-11-	1-1-84	Lab ID Sa	Sampled by:	Project Manager: Josh	Project Name: USCG	Project Number: B0003010.0006	Arcadis	
Check One)   Check One)   Check One)   Check One)   I Day   Sampled   Mairix   Number of Containers   Lead (USEPA Method 6010)   I S						KIND IXER	Soul 182	Signature	-0.5-1	- 0.57	2-0.5-1.0	1-0,5-1,0	1	1	101	2-0-0.5	0-0	23-	mple Identification		Gravenmier	Burrows Island	3010.0006	-	h Street • Redmond, WA 98052 883-3881 • www.onsite-env.com
Number of Containers  Lead (USEPA Method 6010)  TCLP Lead (USEPA Method 1311/6010*)  Number of Containers  Lead (USEPA Method 1311/6010*)  TCLP Lead (USEPA Method 1311/6010*)  Number of Containers  Lead (USEPA Method 1311/6010*)	Reviewed/Date				(	380	Il Arcadis	Company	1 1812 1		0181	1 1809	8081 1908	1 0952	095)	0950	64 60 5/4C	460	Time Sampled	(other)		Standard (7 Days)		Same Day	(in working days)
					-	J	71 3/85/	1	1 ON HOL	DN HOLT	7	DA HOU		2	7	7	×		Lead (l	JSEPA	Method	6010)		010*)	Laboratory Number:
0.2						8010).	* Hold samples for this analysis; running this compound is contingent						×						0,6	m	oist	970			



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received Kally Che	Relinquished Man MB	Signature		143 SB-06-22-3,0-3	HJ SB-06-10-2.0-2.	14) ISM-12-4-0-0.5	140 ISM-12-3-0-0.5	139 ISM-12-2-0-0.5	38 ISM-12-1-0-0.5	37 ISM-12-A-0-0.5	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental Inc.  14648 NE 95th Street • Redmand, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					320 OSE	Arcadis	Company		· 2421/0/12/201	5 108/21/19 1240	1308	1308	1307	03/28/19 1306	03/28/19 (305 Soil	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)		Same Day 1 Day	Turnaround Request (in working days)
				-	388 1133	3/28/15 (723	Date Time				8 32 42	800 ON HOLI	8 97 101	S en Her	1 × 8	Lead (I	JSEPA	Method SEPA M		311/60	10*)	Laboratory Number:
Chromatograms with final report		2	Successive.	A Now MI Nample	on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions							D								03-283
						s contingent			X	X	(X	8	B	8	7	O/C	5m	OIS	W re			



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received MARI LILOW	Relinquished & San W	Signature					47 EB-032519	46 EB-032619	15 EB-032719	44 83-032819	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Radmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					03A	Arcad 15	Company					3/25/10 (722	3/26/19/824	3/27/1 1838	3/28/19 1357 Water	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)		☐ Same Day ☐ 1 Day	(in working days)
					30% M 1723	3/28/15 1723	Date Time					- ×		~ ×	^ ×	Lead (I	JSEPA	Method SEPA I		1311/60	910*)	Laboratory Number:
Chromatograms with final report				whiter Samples preserved with thing-	on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions															007-00
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Company   Comp	Chromatograms with final report	Q		Reviewed/Date	Reviewed/Date
Laboratory Number:   Laborat					Received
Laboratory Number:   Check Cong.   Check C					Relinquished
Laboratory Number:					Received
Table   Company   Compan					Relinquished
Table   Tabl	on parent sample results (Lead Method 6010).	26/19/25		OSE	Received Marcy Stew
Company   Comp	Hold samples for this analysis; running this compound is contin	128/19 1723		Arcadis	Relinquished Ships Wash
Check One)   Che	omments/Special Instructions	Time		Company	Signature
Table   Tabl		1		1-484	13-4-0-
Table   Tabl				thS:	13-3-0-1
Table   Time		-		1341	TSM-13-2
Arcadis		H		1345	ISM-13-1-0-0.
1464 N E Sam Street - Federical Manager:   1464 N E Sam Street - Federical Manager:   1464 N E Sam Street - Federical Manager:   1664 N E Sam Street - F				1344	ISM-13-A-0-0.
1448   Egish Street - Rentron (M.) 80022   (Check One)     Arcadis		-		1330	ISM-12-4-0,5-
1468   18   18   18   18   18   18   18		2		1329	ISM-12-3-0.5-1.
Arcadis  Arc		-		1328	12-2-0.5-1.
Accadis   Check One)   Check One)   Check One)   Arcadis   Number:   B0003010.0006   Same Day   1 Da		2#5	-	1327	TSM-12-1-0.5-1,
Arcadis  Arc		_	4	1326	12-A-0.5-1.0
Sland  Standard (7 Days)  Sland  (Other)  Laboratory Number:  (In working days)  Laboratory Number:  (In working days)  Laboratory Number:  (Other)  Laboratory Number:  (Other)  Laboratory Number:  (Other)  Laboratory Number:  (Other)		100		Time Sampled	Sample Identification
Sland  Standard (7 Days)  Laboratory Number: 0 3 - 2				(other)	Sampled by:
(in working days)    Laboratory Number: 03-2   Same Day			-		Josh
1 section (in working days)    Check One     Same Day				Standard (7 Days)	Project Name: USCG Burrows Island
(In working days)  Laboratory Number: 03-2  Check One)  Same Day 1 Day	,	1311/60			Project Number: B0003010.0006
(in working days) Laboratory Number: 03-2		10*)	1	(Check One) Same Day	Company: Arcadis
III A TO III	03-283	Laboratory Number:		(in working days)	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



April 26, 2019

Josh Gravenmier Arcadis U.S., Inc. 1100 Olive Way, Suite 800 Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006 Laboratory Reference No. 1904-015

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on April 2, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow Project Manager

**Enclosures** 

Project: B0003010.0006

#### **Case Narrative**

Samples were collected on March 29, 30, 31 and April 1, 2019 and received by the laboratory on April 2, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

#### NWTPH Dx (soil) Analysis

Below are the carbon ranges for the specific compounds being reported:

Diesel Fuel #2 – C10-C24 Mineral Oil – C14-C28 Lube Oil – C20-C40

#### Volatiles EPA 8260C (soil) Analysis

Surrogate Standard 4-Bromofluorobenzene is outside control limits for sample SB-107-3-0-0.5 due to sample matrix effects.

Method 5035A VOA vials were not provided for samples SB-112-6-0-0.5 and SB-107-3-0-0.5. The samples were each therefore extracted from an eight-ounce jar and analyzed. Some loss of volatiles may have occurred.

#### TCLP Lead EPA 1311/6010D Analysis

Due to a limited amount of sample for ISM-15-4-0.5-1.0 (04-015-19), less than the required 100g was tumbled for TCLP analysis. The amount of sample used was: 50g.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D

Matrix: Soil

omis. mg/rtg (ppm)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-13-A-0.5-1.0					
Laboratory ID:	04-015-01					
Lead	62	5.4	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-13-B-0-0.5					
Laboratory ID:	04-015-05					
Lead	130	5.5	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-13-C-0-0.5					
Laboratory ID:	04-015-06					
Lead	200	5.9	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-14-A-0-0.5					
Laboratory ID:	04-015-07					
Lead	350	6.1	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-14-A-0.5-1.0					
Laboratory ID:	04-015-11					
Lead	130	5.9	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-15-A-0-0.5					
Laboratory ID:	04-015-14					
Lead	160	6.2	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-15-A-0.5-1.0					
Laboratory ID:	04-015-19					
Lead	260	5.4	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-15-A-1.0-1.5					
Laboratory ID:	04-015-24					
Lead	72	5.3	EPA 6010D	4-15-19	4-15-19	
		0.0	LI / ( 00 1 0 D	1 10 10	1 10 10	

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D

Matrix: Soil

д, т.д (рр)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-16-A-0-0.5					
Laboratory ID:	04-015-29					
Lead	18	5.6	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-16-A-0.5-1.0					
Laboratory ID:	04-015-32					
Lead	8.6	5.7	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-17-A-0-0.5					
Laboratory ID:	04-015-35					
Lead	91	5.9	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-17-A-0.5-1.0					
Laboratory ID:	04-015-40					
Lead	41	5.2	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-18-A-0-0.5					
Laboratory ID:	04-015-45					
Lead	220	5.3	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-18-A-0.5-1.0					
Laboratory ID:	04-015-50					
Lead	180	5.3	EPA 6010D	4-15-19	4-15-19	

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D QUALITY CONTROL

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0415SM2					
Lead	ND	5.0	EPA 6010D	4-15-19	4-15-19	

Analyte	Res	sult	Spike	Level	Source Result		rcent	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE			Орино		rrocuit		, c . c . y				· iago
Laboratory ID:	04-04	13-81									
	ORIG	DUP									
Lead	11.3	15.1	NA	NA			NA	NA	29	20	С
MATRIX SPIKES											
Laboratory ID:	04-04	13-81									
	MS	MSD	MS	MSD		MS	MSD				
Lead	249	244	250	250	11.3	95	93	75-125	2	20	•

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D

Matrix: Soil

onno. mg/ng (ppm/				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-106-1-0-0.5					
Laboratory ID:	04-015-55					
Lead	44	5.8	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-106-1-2-2.3					
Laboratory ID:	04-015-56					
Lead	ND	6.2	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-DUP-1					
Laboratory ID:	04-015-57					
Lead	9.2	6.5	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-106-2-0-0.5					
Laboratory ID:	04-015-58					
Lead	110	11	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-106-2-2.0-2.5					
Laboratory ID:	04-015-59					
Lead	13	6.8	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-106-3-0-0.5					
Laboratory ID:	04-015-60					
Lead	7.3	5.6	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-106-3-2-2.5					
Laboratory ID:	04-015-61					
Lead	ND	6.0	EPA 6010D	4-9-19	4-9-19	

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D QUALITY CONTROL

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0409SM3					
Lead	ND	5.0	EPA 6010D	4-9-19	4-9-19	

Analyte	Res	sult	Snike	Level	Source Result		rcent	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE			Орино		Rooun						··ugo
Laboratory ID:	04-0	55-04									
	ORIG	DUP									
Lead	ND	ND	NA	NA			NA	NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	04-0	55-04									
	MS	MSD	MS	MSD		MS	MSD				
Lead	239	241	250	250	ND	96	96	75-125	1	20	

Project: B0003010.0006

### GASOLINE RANGE ORGANICS NWTPH-Gx

Matrix: Soil

Analyte   Result   PUL   Method   Prepared   Analyzed   Flags	• • •				Date	Date	
Laboratory ID:	Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Sasoline							
Surrogate:							
Client ID:   SB-102-1-1.5-2.0				NWTPH-Gx	4-4-19	4-4-19	
Client ID:		-					
Laboratory ID:         04-015-130           Gasoline         9.7         9.5         NWTPH-Gx         4-4-19         4-4-19         O           Surrogate:         Percent Recovery fluorobenzene         Control Limits         Fluorobenzene         Fluorobenzene         Fluorobenzene         Fluorobenzene         A-4-19         4-4-19         A-4-19         A-4-19	Fluorobenzene	97	57-129				
Sasoline	Client ID:	SB-102-1-1.5-2.0					
Surrogate:	Laboratory ID:	04-015-130					
Client ID:   SB-DUP-7	Gasoline	9.7	9.5	NWTPH-Gx	4-4-19	4-4-19	0
Client ID:         SB-DUP-7           Laboratory ID:         04-015-131           Gasoline         ND         10         NWTPH-Gx         4-4-19           Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         100         57-129           Client ID:         SB-102-2-0-0.5         Laboratory ID:         04-015-132           Gasoline         18         16         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits         Fluorobenzene         101         57-129           Client ID:         SB-102-3-0-0.5         Laboratory ID:         04-015-133         Oasoline         ND         14         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits         57-129         Control Limits           Fluorobenzene         108         57-129         Control Limits           Client ID:         SB-102-3-0.5-1.0         Control Limits         Control Limits           Gasoline         ND         13         NWTPH-Gx         4-4-19         4-4-19           Gasoline         ND         13         NWTPH-Gx         4-4-19         4-4-19	Surrogate:	Percent Recovery	Control Limits				
Laboratory   ID:	Fluorobenzene	120	57-129				
Gasoline         ND         10         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery 100         Control Limits         57-129         Fluorobenzene         4-4-19<	Client ID:	SB-DUP-7					
Gasoline         ND         10         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery 100         Control Limits         Fluorobenzene         100         57-129           Client ID:         SB-102-2-0-0.5         Laboratory ID:         04-015-132         4-4-19         4-4-19           Gasoline         18         16         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery 101         Control Limits 57-129         57-129         4-4-19         4-4-19           Client ID:         SB-102-3-0-0.5 Laboratory ID:         04-015-133         Control Limits 7-129         4-4-19         4-4-19           Surrogate:         Percent Recovery 108         57-129         57-129           Client ID:         SB-102-3-0.5-1.0 Laboratory ID:         04-015-134         4-4-19         4-4-19         4-4-19           Gasoline         ND         13         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits         4-4-19         4-4-19	Laboratory ID:	04-015-131					
Client ID:         SB-102-2-0-0.5           Laboratory ID:         04-015-132           Gasoline         18         16         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery 101         Control Limits 57-129         Fluorobenzene         101         57-129           Client ID:         SB-102-3-0-0.5         Laboratory ID:         04-015-133         4-4-19         4-4-19           Gasoline         ND         14         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery 108         57-129         57-129           Client ID:         SB-102-3-0.5-1.0 Laboratory ID:         04-015-134         4-4-19         4-4-19         4-4-19           Gasoline         ND         13         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits	Gasoline	ND	10	NWTPH-Gx	4-4-19	4-4-19	
Client ID:         SB-102-2-0-0.5           Laboratory ID:         04-015-132           Gasoline         18         16         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         101         57-129           Client ID:         SB-102-3-0-0.5         SB-102-3-0-0.5           Laboratory ID:         04-015-133         04-015-133           Gasoline         ND         14         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits         57-129           Client ID:         SB-102-3-0.5-1.0         SB-102-3-0.5-1.0         SB-102-3-0.5-1.0           Laboratory ID:         04-015-134         04-015-134         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits	Surrogate:	Percent Recovery	Control Limits				
Laboratory ID:         04-015-132           Gasoline         18         16         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits         Fluorobenzene         Fluorobenzene         Fluorobenzene         ND         14         NWTPH-Gx         4-4-19         4-4-19           Gasoline         ND         14         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits         57-129           Client ID:         SB-102-3-0.5-1.0         Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits	Fluorobenzene	100	57-129				
Gasoline         18         16         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         101         57-129           Client ID:         SB-102-3-0-0.5           Laboratory ID:         04-015-133           Gasoline         ND         14         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         108         57-129           Client ID:         SB-102-3-0.5-1.0           Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits	Client ID:	SB-102-2-0-0.5					
Gasoline         18         16         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         101         57-129           Client ID:         SB-102-3-0-0.5           Laboratory ID:         04-015-133           Gasoline         ND         14         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         108         57-129           Client ID:         SB-102-3-0.5-1.0           Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits	Laboratory ID:	04-015-132					
Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         101         57-129           Client ID:         SB-102-3-0-0.5           Laboratory ID:         04-015-133           Gasoline         ND         14         NWTPH-Gx         4-4-19           Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         108         57-129           Client ID:         SB-102-3-0.5-1.0           Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19           Surrogate:         Percent Recovery         Control Limits		18	16	NWTPH-Gx	4-4-19	4-4-19	
Client ID:         SB-102-3-0-0.5           Laboratory ID:         04-015-133           Gasoline         ND         14         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery I08         Control Limits 57-129           Client ID:         SB-102-3-0.5-1.0           Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19           Surrogate:         Percent Recovery         Control Limits	Surrogate:	Percent Recovery	Control Limits				
Laboratory ID:         04-015-133           Gasoline         ND         14         NWTPH-Gx         4-4-19           Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         108         57-129           Client ID:         SB-102-3-0.5-1.0           Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19           Surrogate:         Percent Recovery         Control Limits	Fluorobenzene	101	57-129				
Gasoline         ND         14         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         108         57-129           Client ID:         SB-102-3-0.5-1.0           Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19           Surrogate:         Percent Recovery         Control Limits	Client ID:	SB-102-3-0-0.5					
Gasoline         ND         14         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery 108         Control Limits 57-129           Client ID:         SB-102-3-0.5-1.0         SB-102-3-0.5-1.0           Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19           Surrogate:         Percent Recovery         Control Limits	Laboratory ID:	04-015-133					
Surrogate:         Percent Recovery         Control Limits           Fluorobenzene         108         57-129           Client ID:         SB-102-3-0.5-1.0           Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19           Surrogate:         Percent Recovery         Control Limits		ND	14	NWTPH-Gx	4-4-19	4-4-19	
Fluorobenzene         108         57-129           Client ID:         SB-102-3-0.5-1.0           Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19           Surrogate:         Percent Recovery         Control Limits	Surrogate:	Percent Recovery	Control Limits				
Laboratory ID:         04-015-134           Gasoline         ND         13         NWTPH-Gx         4-4-19         4-4-19           Surrogate:         Percent Recovery         Control Limits	•	•	57-129				
Gasoline ND 13 NWTPH-Gx 4-4-19 4-4-19 Surrogate: Percent Recovery Control Limits	Client ID:	SB-102-3-0.5-1.0					
Gasoline ND 13 NWTPH-Gx 4-4-19 4-4-19 Surrogate: Percent Recovery Control Limits	Laboratory ID:						
Surrogate: Percent Recovery Control Limits			13	NWTPH-Gx	4-4-19	4-4-19	
		Percent Recovery			-	-	
	_						

Project: B0003010.0006

#### **GASOLINE RANGE ORGANICS NWTPH-Gx QUALITY CONTROL**

Matrix: Soil

Units: mg/kg (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0404S1					
Gasoline	ND	5.0	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	98	57-129				

				Source	Percent	Recovery		RPD	
Analyte	Res	sult	Spike Lev	vel Result	Recovery	Limits	RPD	Limit	Flags
DUPLICATE									
Laboratory ID:	04-01	5-130							
	ORIG	DUP							
Gasoline	6.98	7.05	NA N	NΑ	NA	NA	1	30	0,0
Surrogate:									

Surrogate:

Fluorobenzene 120 117 57-129

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### GASOLINE RANGE ORGANICS/BTEX NWTPH-Gx/EPA 8021B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-04012019			<u> </u>		
Laboratory ID:	04-015-169					
Benzene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
Toluene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
Ethyl Benzene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
m,p-Xylene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
o-Xylene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
Gasoline	ND	100	NWTPH-Gx	4-4-19	4-4-19	

Surrogate: Percent Recovery Control Limits Fluorobenzene 82 66-117

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#### GASOLINE RANGE ORGANICS/BTEX NWTPH-Gx/EPA 8021B QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0404W1					
Benzene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
Toluene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
Ethyl Benzene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
m,p-Xylene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
o-Xylene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
Gasoline	ND	100	NWTPH-Gx	4-4-19	4-4-19	
					_	

Surrogate: Percent Recovery Control Limits Fluorobenzene 72 66-117

					Source	Pe	rcent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Result	Rec	overy	Limits	RPD	Limit	Flags
DUPLICATE											
Laboratory ID:	04-01	5-169									
	ORIG	DUP									
Benzene	ND	ND	NA	NA			NA	NA	NA	30	
Toluene	ND	ND	NA	NA			NA	NA	NA	30	
Ethyl Benzene	ND	ND	NA	NA			NA	NA	NA	30	
m,p-Xylene	ND	ND	NA	NA			NA	NA	NA	30	
o-Xylene	ND	ND	NA	NA			NA	NA	NA	30	
Gasoline	ND	ND	NA	NA			NA	NA	NA	30	
Surrogate:											
Fluorobenzene						82	<i>7</i> 5	66-117			
SPIKE BLANKS											
Laboratory ID:	SB04	04W1									
	SB	SBD	SB	SBD		SB	SBD				
Benzene	46.4	45.0	50.0	50.0		93	90	82-122	3	11	
Toluene	48.5	47.1	50.0	50.0		97	94	83-123	3	12	
Ethyl Benzene	49.4	47.8	50.0	50.0		99	96	83-123	3	12	
m,p-Xylene	48.2	46.8	50.0	50.0		96	94	83-123	3	12	
o-Xylene	48.5	47.1	50.0	50.0		97	94	83-123	3	11	
Surrogate:											
Fluorobenzene						81	80	66-117			

Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-112-1-0-0.5			•	•	
Laboratory ID:	04-015-62					
Diesel Range Organics	100	37	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	910	75	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	81	50-150				
Client ID:	SB-112-1-0.5-0.7					
Laboratory ID:	04-015-63					
Diesel Range Organics	150	38	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	1000	76	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	76	50-150				
Client ID:	SB-112-2-0-0.5					
Laboratory ID:	04-015-64					
Diesel Range Organics	36	32	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	280	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-112-2-1-1.5					
Laboratory ID:	04-015-65					
Diesel Range Organics	230	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	150	66	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	80	50-150				
Client ID:	SB-112-3-0-0.5					
Laboratory ID:	04-015-66					
Diesel Range Organics	40	34	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	340	67	NWTPH-Dx	4-3-19	4-3-19	. •
Surrogate:	Percent Recovery				- · · · ·	
o-Terphenyl	94	50-150				
Client ID:	SB-112-3-1-1.3					
Laboratory ID:	04-015-67					
Diesel Range Organics	ND	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	79	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits		. 5 . 6		
o-Terphenyl	103	50-150				
	, , ,	55 755				

Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-112-4-0-0.5					
Laboratory ID:	04-015-68		NIM/TOLL D.	4.0.40	4.0.40	
Diesel Range Organics	110 340	33 67	NWTPH-Dx	4-3-19	4-3-19	
<u>Lube Oil Range Organics</u> Surrogate:	Percent Recovery	Control Limits	NWTPH-Dx	4-3-19	4-3-19	
o-Terphenyl	86	50-150				
0-Terprierryi	00	30-130				
Client ID:	SB-DUP-2					
Laboratory ID:	04-015-69					
Diesel Range Organics	ND	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	84	50-150				
Client ID:	SB-112-4-0.5-1					
Laboratory ID:	04-015-70					
Diesel Range Organics	ND	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	67	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-112-5-0-0.5					
Laboratory ID:	04-015-71					
Diesel Range Organics	350	37	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	850	75	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	87	50-150				
Client ID:	SB-112-5-0.5-0.9					
Laboratory ID:	04-015-72					
Diesel Range Organics	270	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	260	69	NWTPH-Dx	4-3-19 4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits	THE	1010	1010	141
o-Terphenyl	81	50-150				
C. O. Prioriji		33 700				
Client ID:	SB-112-6-0-0.5					
Laboratory ID:	04-015-73					
Diesel Range Organics	2000	210	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	2700	430	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	72	50-150				

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## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

<b>5 5 1 1 1</b>				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-112-6-1-1.5					
Laboratory ID:	04-015-74					
Diesel Range Organics	240	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	150	68	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	78	50-150				
Client ID:	SB-112-7-0-0.5					
Laboratory ID:	04-015-75					
Diesel Range Organics	120	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	520	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	68	50-150				
OII . I ID	<b>OD</b> 440 F 5 F 5 F					
Client ID:	SB-112-7-0.5-0.8					
Laboratory ID:	04-015-76					
Diesel Range Organics	130	32	NWTPH-Dx	4-3-19	4-3-19	NIA
Lube Oil Range Organics	130	64	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits 50-150				
o-Terphenyl	53	50-150				
Client ID:	SB-112-08-0-0.5					
Laboratory ID:	04-015-77					
Diesel Range Organics	280	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	380	68	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	75	50-150				
Client ID:	SB-DUP-3					
Laboratory ID:	04-015-78					
Diesel Range Organics	310	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	460	68	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	83	50-150				
Client ID:	SB-112-08-1-1.5					
Laboratory ID:	04-015-79					
Diesel Range Organics	64	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits			. 0 10	
o-Terphenyl	78	50-150				
	. •					

Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-112-9-0-0.5	•		- 1		
Laboratory ID:	04-015-80					
Diesel Range Organics	52	36	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	340	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	88	50-150				
Client ID:	SB-112-9-0.5-1					
Laboratory ID:	04-015-81					
Diesel Range Organics	89	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	190	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	87	50-150				
Client ID:	SB-112-10-0-0.5					
Laboratory ID:	04-015-82					
	81	32	NWTPH-Dx	4-3-19	4-3-19	
Diesel Range Organics Lube Oil Range Organics	120	32 64	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	
	Percent Recovery	Control Limits	INVV I PIT-DX	4-3-19	4-3-19	
Surrogate: o-Terphenyl	77	50-150				
о-тегрпепут	77	50-150				
Client ID:	SB-112-10-0.5-1					
Laboratory ID:	04-015-83					
Diesel Range Organics	93	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	390	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	76	50-150				
Client ID:	SB-112-11-0-0.5					
Laboratory ID:	04-015-84					
Diesel Range Organics	390	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	240	59	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits	TWO THE DA	1010	1 0 10	
o-Terphenyl	66	50-150				
о . с. <i>рсу.</i>		00 /00				
Client ID:	SB-112-11-1.5-2					
Laboratory ID:	04-015-85					
Diesel Range Organics	100	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	180	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	97	50-150				

Project: B0003010.0006

# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-112-12-0-0.5	I QL	Wictifod	Перагса	Analyzea	riugs
Laboratory ID:	04-015-86					
Diesel Range Organics	170	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	520	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	82	50-150				
Client ID:	SB-112-12-1-1.5					
Laboratory ID:	04-015-87					
Diesel Range Organics	48	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	83	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate: o-Terphenyl	Percent Recovery 69	Control Limits 50-150				
Client ID:	SB-PL-1-0-0.5					
Laboratory ID:	04-015-88					
Diesel Range Organics	38	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	87	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	79	50-150				
Client ID:	SB-PL-2-1-1.5					
Laboratory ID:	04-015-89					
Diesel Range Organics	46	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	120	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	73	50-150				
Client ID:	SB-PL-3-0-0.5					
Laboratory ID:	04-015-90					
Diesel Range Organics	32	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	170	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits		-	-	
o-Terphenyl	81	50-150				
Client ID:	SB-PL-4-1-1.5					
Laboratory ID:	04-015-91					
Diesel Range Organics	ND	32	NWTPH-Dx	4-3-19	4-5-19	
Lube Oil Range Organics	210	64	NWTPH-Dx	4-3-19	4-5-19	
Surrogate:	Percent Recovery	Control Limits		- · · ·	- · ·	
o-Terphenyl	89	50-150				



Project: B0003010.0006

### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-PL-5-0-0.5					
Laboratory ID:	04-015-92	22	NW/TDLL Dv	4 2 40	4.0.40	
Diesel Range Organics	56 210	32 63	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics Surrogate:	Percent Recovery	Control Limits	NWTPH-Dx	4-3-19	4-3-19	
o-Terphenyl	74	50-150				
0-тегрпенуі	74	30-730				
Oli ( ID-	OD DI 0.4.4.5					
Client ID:	SB-PL-6-1-1.5					
Laboratory ID:	04-015-93	00	NIM/TOLL Dec	4.0.40	4.0.40	
Diesel Range Organics	33	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	120	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	82	50-150				
Client ID:	SB-DUP-4					
Laboratory ID:	04-015-94					
Diesel Range Organics	ND	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	120	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	91	50-150				
Client ID:	SB-PL-7-0-0.5					
Laboratory ID:	04-015-95					
Diesel Range Organics	71	42	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	360	83	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	79	50-150				
Client ID.	CD DI 0445					
Client ID:	SB-PL-8-1-1.5					
Laboratory ID:	04-015-96		104/TD::-	10:5	10.15	
Diesel Range Organics	30	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND (D	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	84	50-150				
Client ID:	SB-PL-9-0-0.5					
Laboratory ID:	04-015-97					
Diesel Range Organics	ND	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	290	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits	INVV II TIPUX	4-0-13	<del>1</del> -J-18	
o-Terphenyl	79	50-150				
о-тегрпенуі	19	30-130				

Project: B0003010.0006

# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-PL-10-2-2.5					
Laboratory ID:	04-015-98					
Diesel Range Organics	ND	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	70	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	97	50-150				
Client ID:	SB-PL-11-0.5-1					
Laboratory ID:	04-015-99					
Diesel Range Organics	ND	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits	IWITIDA	+010	+ 0 10	
o-Terphenyl	87	50-150				
o respiration.	0,	00 700				
Client ID:	SB-PL-12-1-1.5					
Laboratory ID:	04-015-100					
Diesel Range Organics	ND	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	87	50-150				
Client ID.	CD DI 42 4 4 5					
Client ID:	SB-PL-13-1-1.5					
Laboratory ID:	04-015-101	20	NWTPH-Dx	4 2 40	4 2 40	
Diesel Range Organics	ND ND	29 58		4-3-19	4-3-19	
Lube Oil Range Organics		Control Limits	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery 90	50-150				
o-Terphenyl	90	50-150				
Client ID:	SB-PL-14-1-1.5					
Laboratory ID:	04-015-102					
Diesel Range Organics	46	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	55	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	91	50-150				
• •						
Client ID:	SB-101-1-0-0.5					
Laboratory ID:	04-015-103					
Diesel Range Organics	160	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	620	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	95	50-150				

Project: B0003010.0006

# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-101-1-2-2.5					110.94
Laboratory ID:	04-015-104					
Diesel Range Organics	650	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	220	59	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	81	50-150				
Client ID:	SB-101-2-0-0.5					
Laboratory ID:	04-015-105					
Diesel Range Organics	79	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	220	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-DUP-5					
Laboratory ID:	04-015-106					
Diesel Range Organics	87	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	210	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	81	50-150				
Client ID:	SB-101-2-2-2.5					
Laboratory ID:	04-015-107					
Diesel Range Organics	260	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	110	58	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits	IWWIIIIDX	+ 0 10	+ 0 10	101
o-Terphenyl	88	50-150				
, ,						
Client ID:	SB-101-3-0-0.5					
Laboratory ID:	04-015-108					
Diesel Range Organics	57	31	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	360	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	82	50-150				
Client ID:	SB-101-3-2-2.5					
Laboratory ID:	04-015-109					
Diesel Range Organics	73	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	91	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	90	50-150				



Project: B0003010.0006

#### **DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx**

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-107-1-0-0.5			•	<u> </u>	
Laboratory ID:	04-015-110					
Diesel Range Organics	530	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	760	60	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	83	50-150				
Client ID:	SB-107-1-1-1.5					
Laboratory ID:	04-015-111					
Diesel Range Organics	710	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	720	60	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	87	50-150				
Client ID:	SB-107-2-0-0.5					
Laboratory ID:	04-015-112					
Diesel Range Organics	420	38	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	890	75	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	79	50-150				
Client ID:	SB-107-2-0.5-1					
Laboratory ID:	04-015-113					
Diesel Range Organics	270	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	500	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits	TWV TI TI DX	1010	1010	
o-Terphenyl	87	50-150				
Client ID:	SB-107-3-0-0.5					
Laboratory ID:	04-015-114 <b>2700</b>	170	NWTPH-Dx	4-3-19	4-3-19	
Diesel Range Organics Lube Oil Range Organics	2700 2900	340	NWTPH-DX	4-3-19 4-3-19	4-3-19 4-3-19	N1
Surrogate:	Percent Recovery	Control Limits	INVV I T TI-UX	4-3-18	4-3-18	INI
o-Terphenyl	91	50-150				
о гогрнопут	91	JU-1JU				
Client ID:	SB-107-3-0.5-1					
Laboratory ID:	04-015-115					
Diesel Range Organics	1600	160	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	2300	320	NWTPH-Dx	4-3-19	4-3-19	N1
		320 Control Limits 50-150	NWTPH-Dx	4-3-19	4-3-19	N1

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## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-107-4-0-0.5			•	-	_
Laboratory ID:	04-015-116					
Diesel Range Organics	1300	170	NWTPH-Dx	4-3-19	4-5-19	
Lube Oil Range Organics	1300	340	NWTPH-Dx	4-3-19	4-5-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	102	50-150				
Client ID:	SB-DUP-6					
Laboratory ID:	04-015-117					
Diesel Range Organics	1000	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	1100	68	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	104	50-150				
Client ID:	SB-107-4-0.5-1					
Laboratory ID:	04-015-118					
Diesel Range Organics	370	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	350	57	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	98	50-150				
Client ID:	SB-107-5-0-0.5					
Laboratory ID:	04-015-119					
Diesel Range Organics	140	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	400	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	95	50-150				
Client ID:	SB-107-5-0.5-1					
Laboratory ID:	04-015-120					
Diesel Range Organics	130	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	300	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery		THE	1010	1010	
o-Terphenyl	94	50-150				
Client ID:	SB-107-6-0-0.5					
Laboratory ID:	04-015-121					
Diesel Range Organics	920	35	NWTPH-Dx	4-3-19	4-3-19	
	920 1200	35 69				NIA
Lube Oil Range Organics			NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits 50-150				
o-Terphenyl	101	50-150				

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# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Result	PQL	Method	Date Prepared	Date Analyzed	Flags
SB-107-6-0.5-1			_	-	
04-015-122					
580	36	NWTPH-Dx	4-3-19	4-3-19	
810	72	NWTPH-Dx	4-3-19	4-3-19	N1
Percent Recovery	Control Limits				
101	50-150				
SB-104-1-0-0.5					
04-015-123					
56	35	NWTPH-Dx	4-3-19	4-3-19	
400	70	NWTPH-Dx	4-3-19	4-3-19	
Percent Recovery	Control Limits				
96	50-150				
SB-104-1-2.5-3					
04-015-124					
	30	NWTPH-Dx	4-3-19	4-3-19	
100	60				
Percent Recovery	Control Limits				
96	50-150				
SR-104-2-0-0 5					
	31	NW/TPH-Dv	1-3-10	/L3_10	
-					
		INVVII II-DX	<del>1</del> -0-13	<del>1</del> -0-10	
<u>-</u>					
37	00 100				
SB-104-2-4-4.5					
		NWTPH-Dx	4-3-19	4-3-19	
	Control Limits				
97	50-150				
SB-104-3-0-0.5					
04-015-127					
36	30	NWTPH-Dx	4-3-19	4-3-19	
30					
190	60	NWTPH-Dx	4-3-19	4-3-19	
			4-3-19	4-3-19	
· · ·	SB-107-6-0.5-1 04-015-122 580 810 Percent Recovery 101  SB-104-1-0-0.5 04-015-123 56 400 Percent Recovery 96  SB-104-1-2.5-3 04-015-124 ND 100 Percent Recovery 96  SB-104-2-0-0.5 04-015-125 120 290 Percent Recovery 97  SB-104-2-4-4.5 04-015-126 74 96 Percent Recovery 97  SB-104-3-0-0.5	SB-107-6-0.5-1       04-015-122         580       36         810       72         Percent Recovery 101       Control Limits 50-150         SB-104-1-0-0.5       35         04-015-123       Control Limits 50-150         Percent Recovery 96       Control Limits 50-150         SB-104-1-2.5-3 04-015-124       Control Limits 50-150         ND 30 60       Control Limits 50-150         SB-104-2-0-0.5 04-015-125       31 290 63         Percent Recovery 97       Control Limits 50-150         SB-104-2-4-4.5 04-015-126       Control Limits 50-150         Percent Recovery 97       Control Limits 50-150         SB-104-3-0-0.5       Control Limits 50-150	SB-107-6-0.5-1           04-015-122         36         NWTPH-Dx           810         72         NWTPH-Dx           Percent Recovery 101         Control Limits 50-150         NWTPH-Dx           SB-104-1-0-0.5 04-015-123         NWTPH-Dx         NWTPH-Dx           Percent Recovery 96         Control Limits 50-150         NWTPH-Dx           SB-104-1-2.5-3 04-015-124         Control Limits 50-150         NWTPH-Dx           Percent Recovery 96         Control Limits 50-150         NWTPH-Dx           SB-104-2-0-0.5 04-015-125         NWTPH-Dx         NWTPH-Dx           Percent Recovery 97         Control Limits 50-150         NWTPH-Dx           SB-104-2-4-4.5 04-015-126         NWTPH-Dx         NWTPH-Dx           Percent Recovery 96         Control Limits 50-150         NWTPH-Dx           SB-104-3-0-0.5         Control Limits 50-150         NWTPH-Dx	Result         PQL         Method         Prepared           SB-107-6-0.5-1 04-015-122         36         NWTPH-Dx         4-3-19 4-3-19           S80         36         NWTPH-Dx         4-3-19 4-3-19           Percent Recovery 101         Control Limits 50-150         WTPH-Dx         4-3-19 4-3-19           SB-104-1-0-0.5 04-015-123         Control Limits 50-150         4-3-19 NWTPH-Dx         4-3-19 4-3-19           Percent Recovery 96         Control Limits 50-150         NWTPH-Dx         4-3-19 4-3-19           Percent Recovery 96         Control Limits 50-150         NWTPH-Dx         4-3-19 4-3-19           SB-104-2-0-0.5 04-015-125         31 120         NWTPH-Dx         4-3-19 4-3-19           Percent Recovery 97         Control Limits 50-150         NWTPH-Dx         4-3-19 4-3-19           SB-104-2-4-4.5 04-015-126         NWTPH-Dx         4-3-19 4-3-19           Percent Recovery 97         Control Limits 50-150         NWTPH-Dx         4-3-19 4-3-19           SB-104-3-0-0.5         Control Limits 50-150         4-3-19	Result   PQL   Method   Prepared   Analyzed

Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-104-3-2.5-3					1 10.94
Laboratory ID:	04-015-128					
Diesel Range Organics	ND	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	69	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	83	50-150				
Client ID:	SB-102-1-0-0.5					
Laboratory ID:	04-015-129					
Diesel Range Organics	36	35	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	330	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	93	50-150				
Client ID:	SB-102-1-1.5-2.0					
Laboratory ID:	04-015-130					
Diesel Range Organics	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	100	69	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	
Surrogate:	Percent Recovery	Control Limits	INVVIFIEDX	4-3-19	4-3-19	
o-Terphenyl	88	50-150				
о-тегрпенут	00	30-100				
Client ID:	SB-DUP-7					
Laboratory ID:	04-015-131					
Diesel Range Organics	88	34	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	440	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-102-2-0-0.5					
Laboratory ID:	04-015-132					
Diesel Range Organics	140	40	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	690	80	NWTPH-Dx	4-3-19	4-3-19	• •
Surrogate:	Percent Recovery	Control Limits			- 1 <del>1</del>	
o-Terphenyl	86	50-150				
Client ID:	SB-102-3-0-0.5					
Laboratory ID:	04-015-133					
Diesel Range Organics	150	44	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	860	89	NWTPH-Dx	4-3-19 4-3-19		IN
		Control Limits	INVV I CU-DX	4-3-19	4-3-19	
Surrogate:	Percent Recovery 87					
o-Terphenyl	0/	50-150				

Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-102-3-0.5-1.0					
Laboratory ID:	04-015-134					
Diesel Range Organics	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	220	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	102	50-150				
Client ID:	SB-101-4-0-0.5					
Laboratory ID:	04-015-135					
Diesel Range Organics	ND	100	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	110	31	NWTPH-Dx	4-3-19	4-3-19	_
Lube Oil Range Organics	330	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	82	50-150				
Client ID:	SB-101-4-2.0-2.5					
Laboratory ID:	04-015-136					
Diesel Range Organics	ND	440	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	460	32	NWTPH-Dx	4-3-19	4-3-19	0.
Lube Oil Range Organics	270	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	89	50-150				
Client ID:	SB-DUP-8					
Laboratory ID:	04-015-137					
Diesel Range Organics	ND	370	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	380	32	NWTPH-Dx	4-3-19	4-3-19	01
Lube Oil Range Organics	240	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	95	50-150				
Client ID:	SB-101-5-0-0.5					
Laboratory ID:	04-015-138					
	ND	94	NWTPH-Dx	4-3-19	4-3-19	U1
Diesel Range Organics Mineral Oil	טא 110	94 32	NWTPH-DX	4-3-19 4-3-19	4-3-19 4-3-19	UT
Lube Oil Range Organics	360	32 64				
	Percent Recovery	Control Limits	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	,					
o-Terphenyl	75	50-150				

Project: B0003010.0006

### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analysis	D II	DOI	Madhad	Date	Date	Fla
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-5-0.5-1.0					
Laboratory ID:	04-015-139		NW/TDLL Dec	4.0.40	4.0.40	114
Diesel Range Organics	ND	68	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	77 140	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics		59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	91	50-150				
Client ID:	SB-101-6-0-0.5					
Laboratory ID:	04-015-140					
Diesel Range Organics	ND	32	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	190	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	92	50-150				
Client ID:	SB-101-6-0.5-1.0					
Laboratory ID:	04-015-141					
Diesel Range Organics	ND	83	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	78	30	NWTPH-Dx	4-3-19	4-3-19	•
Lube Oil Range Organics	ND	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-101-7-0.5-1.0					
Laboratory ID:	04-015-142					
Diesel Range Organics	48	45	NWTPH-Dx	4-3-19	4-3-19	N
Mineral Oil	ND	47	NWTPH-Dx	4-3-19	4-3-19	U1
Lube Oil Range Organics	290	90	NWTPH-Dx	4-3-19	4-3-19	0.
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	79	50-150				
с тог <i>р</i> логу.	, ,	00 .00				
Client ID:	SB-101-7-1.5-2.0					
Laboratory ID:	04-015-143					
Diesel Range Organics	ND	34	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	44	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	77	50-150				

Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-101-8-0-0.5			-		
Laboratory ID:	04-015-144					
Diesel Range Organics	ND	860	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	930	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	900	68	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	90	50-150				
Client ID:	SB-101-8-1.0-1.5					
Laboratory ID:	04-015-145					
Diesel Range Organics	ND	140	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	140	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	150	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	74	50-150				
Client ID:	SB-101-9-0-0.5					
Laboratory ID:	04-015-146					
Diesel Range Organics	ND	200	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	190	30	NWTPH-Dx	4-3-19	4-3-19	-
Lube Oil Range Organics	180	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	103	50-150				
Client ID:	SB-DUP-9					
Laboratory ID:	04-015-147					
Diesel Range Organics	ND	62	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	65	34	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	240	68	NWTPH-Dx	4-3-19	4-3-19	.,
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	80	50-150				
Client ID:	SB-101-9-1.5-2.0					
Laboratory ID:	04-015-148	400	NIM/TOLL D	4 2 42	4.0.40	114
Diesel Range Organics	ND	160	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	170 66	29	NWTPH-Dx	4-3-19	4-3-19	<b>K14</b>
Lube Oil Range Organics		59	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	85	50-150				

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## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-101-10-0-0.5			-		
Laboratory ID:	04-015-149					
Diesel Range Organics	ND	88	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	94	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	240	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	94	50-150				
Client ID:	SB-101-10-0.5-1.0					
Laboratory ID:	04-015-150					
Diesel Range Organics	ND	48	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	56	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	96	50-150				
Client ID:	SB-101-11-0-0.5					
Laboratory ID:	04-015-151					
Diesel Range Organics	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	210	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	85	50-150				
Client ID:	SB-101-11-0.5-1.0					
Laboratory ID:	04-015-152					
Diesel Range Organics	ND	31	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	150	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	85	50-150				
Client ID:	SB-101-12-0-0.5					
Laboratory ID:	04-015-153					
Diesel Range Organics	ND	39	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	47	39 31	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	UI
Lube Oil Range Organics	220	63	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	
Surrogate:	Percent Recovery	Control Limits	INVVIIIII	<del>1</del> -0-13	∓-∪-।∂	
o-Terphenyl	95	50-150				
o roipiionyi	30	00 100				

Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Pocult	POI	Mothod	Date	Date	Flags
	FQL	Wethou	Frepareu	Allalyzeu	гіауз
	29	NWTPH-Dx	4-3-19	4-3-19	
	_				
120	-				
Percent Recovery					
92	50-150				
OD 404 40 0 0 5					
	0.1	NW/TOUR	4.0.40	1.0.10	N.
_	-				N
					U1
		NVV I PH-DX	4-3-19	4-3-19	
87	50-150				
SB-101-13-1.0-1.5					
04-015-156					
ND	30	NWTPH-Dx	4-3-19	4-3-19	
ND	30	NWTPH-Dx	4-3-19	4-3-19	
160	61	NWTPH-Dx	4-3-19	4-3-19	
Percent Recovery	Control Limits				
85	50-150				
SP-DUP-10					
	22	NIM/TDLI Dv	1 2 10	1 2 10	
		INVVII II-DX	7-0-19	<del>1</del> -0-10	
•					
30	00 700				
SB-101-14-0-0.5					
<b>SB-101-14-0-0.5</b> 04-015-158					
	35	NWTPH-Dx	4-3-19	4-3-19	
04-015-158	35 35	NWTPH-Dx NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	
04-015-158 ND ND 130					
04-015-158 ND ND	35	NWTPH-Dx	4-3-19	4-3-19	
	Percent Recovery 92  SB-101-13-0-0.5 04-015-155 37 ND 290 Percent Recovery 87  SB-101-13-1.0-1.5 04-015-156 ND ND 160 Percent Recovery	SB-101-12-1.0-1.5           04-015-154         29           ND         29           ND         29           120         57           Percent Recovery 92         Control Limits 50-150           SB-101-13-0-0.5         34           ND         39           290         67           Percent Recovery 87         Control Limits 50-150           SB-101-13-1.0-1.5         30           ND         30           ND         30           ND         30           ND         30           SB-101-13-1.0-1.5         Control Limits 50-150           SB-101-13-1.0-1.5           04-015-156         Control Limits 50-150           SB-DUP-10           04-015-157         37           37         33           ND         30	SB-101-12-1.0-1.5         04-015-154       ND       29       NWTPH-Dx         ND       29       NWTPH-Dx         120       57       NWTPH-Dx         Percent Recovery Recovery 87       Control Limits 50-150         SB-101-13-0-0.5       04-015-155         37       34       NWTPH-Dx         ND       39       NWTPH-Dx         Percent Recovery 87       Control Limits 50-150         SB-101-13-1.0-1.5       04-015-156       NWTPH-Dx         ND       30       NWTPH-Dx         ND       30       NWTPH-Dx         Percent Recovery 85       Control Limits 50-150         SB-DUP-10       04-015-157       33       NWTPH-Dx         ND       33       NWTPH-Dx         Percent Recovery       Control Limits         Control Limits       Control Limits	Result         PQL         Method         Prepared           SB-101-12-1.0-1.5 04-015-154         Value of the control of the contr	Result         PQL         Method         Prepared         Analyzed           SB-101-12-1.0-1.5 04-015-154         38-101-12-1.0-1.5 04-015-154         4-3-19

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# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-101-14-1.0-1.5					
Laboratory ID:	04-015-159					
Diesel Range Organics	ND	31	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	82	50-150				
Client ID:	SB-101-15-0-0.5					
Laboratory ID:	04-015-160					
Diesel Range Organics	ND	36	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	140	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	81	50-150				
Client ID:	SB-101-15-0.5-1.0					
Laboratory ID:	04-015-161					
Diesel Range Organics	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND ND	35 35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	140	70	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	
Surrogate:	Percent Recovery	Control Limits	INVVIIII-DX	4-3-19	4-3-19	
o-Terphenyl	89	50-150				
о-тегрпенуі	09	30-130				
Client ID:	SB-101-16-0-0.5					
Laboratory ID:	04-015-162					
Diesel Range Organics	ND	34	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	87	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	109	50-150				
Client ID.	SB 404 46 2 0 2 5					
Client ID:	SB-101-16-2.0-2.5					
Laboratory ID:	04-015-163		NA/TOLL C	1010	1010	
Diesel Range Organics	ND	28	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	95	50-150				

Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-DUP-11					_
Laboratory ID:	04-015-164					
Diesel Range Organics	ND	33	NWTPH-Dx	4-3-19	4-3-19	_
Mineral Oil	ND	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	73	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	93	50-150				

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### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx METHOD BLANK QUALITY CONTROL

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK	- TOOUIT			opa. oa	7.11.a.y_0a	90
Laboratory ID:	MB0403S1					
Diesel Range Organics	ND	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	95	50-150				
Laboratory ID:	MB0403S2					
Diesel Range Organics	ND	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	80	50-150				
Laboratory ID:	MB0403S3					
Diesel Range Organics	ND	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	92	50-150				
Laboratory ID:	MB0403S4					
Diesel Range Organics	ND	25	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	95	50-150				
Laboratory ID:	MB0403S5					
Diesel Range Organics	ND	25	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	84	50-150				
Laboratory ID:	MB0403S6					
Diesel Range Organics	ND	25	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	105	50-150				

Project: B0003010.0006

### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx DUPLICATE QUALITY CONTROL

Matrix: Soil

• • •	_	•			Source	Perc		Recovery		RPD	
Analyte	Res	sult	Spike	Level	Result	Reco	very	Limits	RPD	Limit	Flags
DUPLICATE	24.04	. = 00									
Laboratory ID:	04-01										
	ORIG	DUP									
Diesel Range Organics	67.7	44.1	NA	NA		N/		NA	42	NA	Ν
Lube Oil Range Organics	612	344	NA	NA		N/	4	NA	56	NA	
Surrogate:											
o-Terphenyl						81	70	50-150			
Laboratory ID:	04-01	15-71									
	ORIG	DUP									
Diesel Range Organics	231	179	NA	NA		N/	4	NA	25	NA	
Lube Oil Range Organics	568	387	NA	NA		N/	4	NA	38	NA	
Surrogate:											
o-Terphenyl						87	76	50-150			
Laboratory ID:	04-01	15-82									
	ORIG	DUP									
Diesel Range Organics	63.0	51.7	NA	NA		N/	4	NA	20	NA	
Lube Oil Range Organics	92.9	78.8	NA	NA		N/	4	NA	16	NA	
Surrogate:											
o-Terphenyl						77	78	50-150			
Laboratory ID:	04-01	15-91									
	ORIG	DUP									
Diesel Range	ND	ND	NA	NA		N/	4	NA	NA	NA	
Lube Oil Range Organics	163	147	NA	NA		N/	Ą	NA	10	NA	
Surrogate:											
o-Terphenyl						89	83	50-150			
Laboratory ID:	04-01	15-98									
<u> </u>	ORIG	DUP									
Diesel Range	ND	ND	NA	NA		N/	Α	NA	NA	NA	
Lube Oil Range Organics	62.7	56.6	NA	NA		N/		NA	10	NA	
Surrogate:											
o-Terphenyl						97	96	50-150			
								55 700			

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### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx DUPLICATE QUALITY CONTROL

Matrix: Soil

5 5 (11 )					Source	Percent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Result	Recovery	Limits	RPD	Limit	Flags
DUPLICATE										
Laboratory ID:	04-01	5-102								
	ORIG	DUP								
Diesel Range Organics	41.2	34.9	NA	NA		NA	NA	17	NA	
Lube Oil Range	ND	ND	NA	NA		NA	NA	NA	NA	
Surrogate:										
o-Terphenyl						91 86	50-150			
Laboratory ID:	04-01	5-121								
	ORIG	DUP								
Diesel Range Organics	668	545	NA	NA		NA	NA	20	NA	
Lube Oil Range Organics	892	768	NA	NA		NA	NA	15	NA	N1
Surrogate:										
o-Terphenyl						101 102	50-150			
Laboratory ID:	04-01	5-122								
	ORIG	DUP								
Diesel Range Organics	407	349	NA	NA		NA	NA	15	NA	
Lube Oil Range Organics	568	508	NA	NA		NA	NA	11	NA	N1
Surrogate:										
o-Terphenyl						101 90	50-150			
Laboratory ID:	04-01	5-130								
	ORIG	DUP								
Diesel Range	ND	ND	NA	NA		NA	NA	NA	NA	
Lube Oil Range Organics	73.5	55.7	NA	NA		NA	NA	28	NA	
Surrogate:										
o-Terphenyl						88 88	50-150			
Laboratory ID:	04-01	5-144								
	ORIG	DUP								
Diesel Range	ND	ND	NA	NA		NA	NA	NA	NA	U1
Mineral Oil	680	485	NA	NA		NA	NA	33	NA	
Lube Oil Range Organics	660	531	NA	NA		NA	NA	22	NA	N1
Surrogate:										
o-Terphenyl						90 84	50-150			

Project: B0003010.0006

### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx DUPLICATE QUALITY CONTROL

Matrix: Soil

					Source	Percent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Result	Recovery	Limits	RPD	Limit	Flags
DUPLICATE										
Laboratory ID:	04-01	5-151								
	ORIG	DUP								
Diesel Range	ND	ND	NA	NA		NA	NA	NA	NA	
Mineral Oil	ND	ND	NA	NA		NA	NA	NA	NA	
Lube Oil Range Organics	148	135	NA	NA		NA	NA	9	NA	
Surrogate:										
o-Terphenyl						<i>85 79</i>	50-150			
Laboratory ID:	04-01	5-163								
	ORIG	DUP								
Diesel Range	ND	ND	NA	NA		NA	NA	NA	NA	
Mineral Oil	ND	ND	NA	NA		NA	NA	NA	NA	
Lube Oil Range	ND	ND	NA	NA		NA	NA	NA	NA	
Surrogate:					•					•
o-Terphenyl						95 103	50-150			

Project: B0003010.0006

# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

				Date	Date		
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags	
Client ID:	EB-03312019						
Laboratory ID:	04-015-168						
Diesel Range Organics	ND	0.26	NWTPH-Dx	4-4-19	4-5-19		
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	4-4-19	4-5-19		
Surrogate:	Percent Recovery	Control Limits					
o-Terphenyl	98	50-150					
Client ID:	EB-04012019						
Laboratory ID:	04-015-169						
Diesel Range Organics	ND	0.26	NWTPH-Dx	4-4-19	4-5-19		
Lube Oil Range Organics	ND	0.42	NWTPH-Dx	4-4-19	4-5-19		
Surrogate:	Percent Recovery	Control Limits					
o-Terphenyl	101	50-150					

Project: B0003010.0006

### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx QUALITY CONTROL

Matrix: Water Units: mg/L (ppm)

Analyte	Result	PQL	Method	Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0404W1					
Diesel Range Organics	ND	0.25	NWTPH-Dx	4-4-19	4-5-19	
Lube Oil Range Organics	ND	0.40	NWTPH-Dx	4-4-19	4-5-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	99	50-150				

					Source	Percent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Result	Recovery	Limits	RPD	Limit	Flags
DUPLICATE										
Laboratory ID:	SB04	04W1								
	ORIG	DUP								
Diesel Fuel #2	1.16	1.10	NA	NA		NA	NA	5	NA	
Lube Oil Range	ND	ND	NA	NA		NA	NA	NA	NA	
Surrogate:										
o-Terphenyl						111 99	50-150			

Project: B0003010.0006

#### **VOLATILE ORGANICS EPA 8260C**

Matrix: Water Units: ug/L

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	PW-040119					·
Laboratory ID:	04-015-165					
Benzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Toluene	ND	1.0	EPA 8260C	4-3-19	4-3-19	
Ethylbenzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
m,p-Xylene	ND	0.40	EPA 8260C	4-3-19	4-3-19	
o-Xylene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
Dibromofluoromethane	93	75-127				
Toluene-d8	99	80-127				
4-Bromofluorobenzene	99	78-125				

Project: B0003010.0006

# VOLATILE ORGANICS EPA 8260C METHOD BLANK QUALITY CONTROL

Matrix: Water Units: ug/L

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Laboratory ID:	MB0403W1					
Benzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Toluene	ND	1.0	EPA 8260C	4-3-19	4-3-19	
Ethylbenzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
m,p-Xylene	ND	0.40	EPA 8260C	4-3-19	4-3-19	
o-Xylene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
Dibromofluoromethane	95	75-127				
Toluene-d8	99	80-127				
4-Bromofluorobenzene	98	78-125				

Project: B0003010.0006

# VOLATILE ORGANICS EPA 8260C SB/SBD QUALITY CONTROL

Matrix: Water Units: ug/L

					Per	cent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Reco	overy	Limits	RPD	Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB04	03W1								
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	8.63	8.39	10.0	10.0	86	84	62-129	3	15	
Benzene	9.07	8.73	10.0	10.0	91	87	77-127	4	15	
Trichloroethene	10.5	10.1	10.0	10.0	105	101	70-120	4	15	
Toluene	9.98	9.73	10.0	10.0	100	97	82-123	3	15	
Chlorobenzene	10.3	10.0	10.0	10.0	103	100	79-120	3	15	
Surrogate:										
Dibromofluoromethane					94	94	75-127			
Toluene-d8					101	101	80-127			
4-Bromofluorobenzene					100	100	78-125			

Date of Report: April 26, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

#### cPAHs EPA 8270D/SIM

Matrix: Water Units: ug/L

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	EB-03312019					
Laboratory ID:	04-015-168					
Benzo[a]anthracene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Chrysene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[b]fluoranthene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo(j,k)fluoranthene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[a]pyrene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Indeno[1,2,3-cd]pyrene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Dibenz[a,h]anthracene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorophenol	35	12 - 80				
Phenol-d6	29	10 - 82				
Nitrobenzene-d5	52	30 - 103				
2-Fluorobiphenyl	63	33 - 103				
2,4,6-Tribromophenol	<i>7</i> 5	20 - 121				
Terphenyl-d14	78	32 - 113				

Date of Report: April 26, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

#### cPAHs EPA 8270D/SIM

Matrix: Water Units: ug/L

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	EB-04012019					
Laboratory ID:	04-015-169					
Benzo[a]anthracene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Chrysene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[b]fluoranthene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo(j,k)fluoranthene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[a]pyrene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Indeno[1,2,3-cd]pyrene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Dibenz[a,h]anthracene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorophenol	<i>4</i> 5	12 - 80				
Phenol-d6	37	10 - 82				
Nitrobenzene-d5	65	30 - 103				
2-Fluorobiphenyl	73	33 - 103				
2,4,6-Tribromophenol	87	20 - 121				
Terphenyl-d14	85	32 - 113				

Project: B0003010.0006

# cPAHs EPA 8270D/SIM METHOD BLANK QUALITY CONTROL

Matrix: Water Units: ug/L

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Laboratory ID:	MB0403W1					
Benzo[a]anthracene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Chrysene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[b]fluoranthene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo(j,k)fluoranthene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[a]pyrene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Indeno[1,2,3-cd]pyrene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Dibenz[a,h]anthracene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorophenol	34	12 - 80				
Phenol-d6	32	10 - 82				
Nitrobenzene-d5	56	30 - 103				
2-Fluorobiphenyl	74	33 - 103				
2,4,6-Tribromophenol	83	20 - 121				
Terphenyl-d14	92	32 - 113				

Project: B0003010.0006

# CPAHS EPA 8270D/SIM SB/SBD QUALITY CONTROL

Matrix: Water Units: ug/L

					Per	cent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Rec	overy	Limits	RPD	Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB04	03W1								
	SB	SBD	SB	SBD	SB	SBD				
Phenol	11.5	13.3	40.0	40.0	29	33	24 - 52	15	28	
2-Chlorophenol	20.6	24.0	40.0	40.0	52	60	44 - 91	15	30	
1,4-Dichlorobenzene	9.84	11.3	20.0	20.0	49	57	36 - 82	14	33	
n-Nitroso-di-n-propylamine	11.3	12.7	20.0	20.0	57	64	43 - 93	12	29	
1,2,4-Trichlorobenzene	10.3	11.9	20.0	20.0	52	60	40 - 86	14	28	
4-Chloro-3-methylphenol	28.1	30.0	40.0	40.0	70	75	49 - 99	7	25	
Acenaphthene	12.7	13.2	20.0	20.0	64	66	47 - 90	4	25	
4-Nitrophenol	12.8	17.3	40.0	40.0	32	43	23 - 61	30	30	
2,4-Dinitrotoluene	14.2	15.2	20.0	20.0	71	76	42 - 97	7	26	
Pentachlorophenol	25.5	32.8	40.0	40.0	64	82	39 - 115	25	29	
Pyrene	15.9	15.6	20.0	20.0	80	78	51 - 100	2	22	
Surrogate:										
2-Fluorophenol					35	43	12 - 80			
Phenol-d6					29	34	10 - 82			
Nitrobenzene-d5					52	60	30 - 103			
2-Fluorobiphenyl					64	69	33 - 103			
2,4,6-Tribromophenol					73	83	20 - 121			
Terphenyl-d14					80	77	32 - 113			

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

5 5 41 7				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-4-0-0.5					
Laboratory ID:	04-015-135					
Aroclor 1016	ND	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	2.9	0.61	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	SB-101-4-2.0-2.5					
Laboratory ID:	04-015-136					
Aroclor 1016	ND	0.063	EPA 8082A	4-9-19	4-9-19	_
Aroclor 1221	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	0.37	0.063	EPA 8082A	4-9-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	85	39-130				
Client ID:	SB-DUP-8					
Laboratory ID:	04-015-137					
Aroclor 1016	ND	0.063	EPA 8082A	4-9-19	4-10-19	_
Aroclor 1221	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	0.52	0.063	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	81	39-130				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

omis. mg/rtg (ppm)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-5-0-0.5					
Laboratory ID:	04-015-138					
Aroclor 1016	ND	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	45	6.4	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	SB-101-5-0.5-1.0					
Laboratory ID:	04-015-139					
Aroclor 1016	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	0.95	0.059	EPA 8082A	4-9-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	84	39-130				
Client ID:	SB-101-6-0-0.5					
Laboratory ID:	04-015-140					
Aroclor 1016	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	0.58	0.065	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	91	39-130				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-6-0.5-1.0					
Laboratory ID:	04-015-141					
Aroclor 1016	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	68	39-130				
Client ID:	SB-101-7-0.5-1.0					
Laboratory ID:	04-015-142					
Aroclor 1016	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	1.2	0.090	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	74	39-130				
Client ID:	SB-101-7-1.5-2.0					
Laboratory ID:	04-015-143					
Aroclor 1016	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	0.11	0.065	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	79	39-130				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

Analyte   Result   PQL   Method   Prepared   Analyzed   Flags	3 3 (i i )				Date	Date	
Laboratory ID: 04-015-144  Aroclor 1016	Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Aroclor 1016	Client ID:	SB-101-8-0-0.5					
Aroclor 1221 ND 0.068 EPA 8082A 4-9-19 4-9-19 Aroclor 1232 ND 0.068 EPA 8082A 4-9-19 4-9-19 Aroclor 1242 ND 0.068 EPA 8082A 4-9-19 4-9-19 Aroclor 1248 ND 0.068 EPA 8082A 4-9-19 4-9-19 Aroclor 1248 ND 0.068 EPA 8082A 4-9-19 4-9-19 Aroclor 1254 ND 0.068 EPA 8082A 4-9-19 4-9-19 Aroclor 1250 0.28 0.068 EPA 8082A 4-9-19 4-9-19 Aroclor 1260 0.28 0.068 EPA 8082A 4-9-19 4-10-19 Aroclor 121 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1221 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1232 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1242 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1250 0.26 0.063 EPA 8082A 4-9-19 4-10-19 EPA 8002A 4-9-19 4-10-19 Aroclor 1250 0.069 EPA 8082A 4-9-19 4-10-19 Aroclor 1250 0.069 EPA 8082A 4-9-19 4-10-19 Aroclor 1250 0.069 EPA 8082A 4-9-19 4-10-19 Aroclor 1250 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1250 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1251 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1252 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1252 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1252 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1256 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 125	Laboratory ID:	04-015-144					
Aroclor 1232	Aroclor 1016	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	Aroclor 1221	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	Aroclor 1232	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254         ND         0.068         EPA 8082A         4-9-19         4-9-19           Aroclor 1260         0.28         0.068         EPA 8082A         4-9-19         4-9-19           Surrogate:         Percent Recovery         Control Limits         62         39-130           Client ID:         SB-101-8-1.0-1.5         Laboratory ID:         04-015-145           Aroclor 1016         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1221         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1222         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1232         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.26         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.26         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.26	Aroclor 1242	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Arcolor 1260   D.28	Aroclor 1248	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Surrogate:         Percent Recovery         Control Limits           DCB         62         39-130           Client ID:         SB-101-8-1.0-1.5           Laboratory ID:         04-015-145           Aroclor 1016         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1221         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1232         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.26         0.063         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits           DCB         72         39-130           Client ID:         Surrogate:         Percent Recovery         Control Limits           Aroclor 1221         ND         0.060	Aroclor 1254	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Client ID:   SB-101-8-1.0-1.5	Aroclor 1260	0.28	0.068	EPA 8082A	4-9-19	4-9-19	
Client ID: SB-101-8-1.0-1.5 Laboratory ID: 04-015-145  Aroclor 1016 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1221 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1232 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1242 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1256	Surrogate:	Percent Recovery	Control Limits				
Laboratory ID:         04-015-145           Aroclor 1016         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1221         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1232         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.26         0.063         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits           DCB         72         39-130         39-130    Client ID:  SB-101-9-0-0.5  Laboratory ID:  Ot-015-146  Aroclor 1016  ND  Ot-060  EPA 8082A  Ot-015-146  Aroclor 1221  ND  Ot-060  EPA 8082A  Ot-015-149  Ot-060  EPA 8082A  Ot-015-149  Ot-019  Ot-	DCB	62	39-130				
Aroclor 1016         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1221         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1232         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.26         0.063         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits           DCB         72         39-130         39-130    Client ID:  SB-101-9-0-0.5  Laboratory ID:  04-015-146   Client ID:  ND  0.060  EPA 8082A  04-9-19  04-10	Client ID:	SB-101-8-1.0-1.5					
Aroclor 1221 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1232 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1242 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1260 0.26 0.063 EPA 8082A 4-9-19 4-10-19  Surrogate: Percent Recovery Control Limits DCB 72 39-130  Client ID: SB-101-9-0-0.5 Laboratory ID: 04-015-146  Aroclor 1221 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1232 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1232 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1242 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1256 D.664 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1260 D.664 0.060 EPA 8082A 4-9-19 4-10-19  Surrogate: Percent Recovery Control Limits	Laboratory ID:	04-015-145					
Aroclor 1232 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1242 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1250 0.26 0.063 EPA 8082A 4-9-19 4-10-19  Surrogate: Percent Recovery Control Limits DCB 72 39-130  Client ID: SB-101-9-0-0.5 Laboratory ID: 04-015-146  Aroclor 1016 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1221 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1232 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1242 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1242 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1256 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1260 0.64 0.060 EPA 8082A 4-9-19 4-10-19  Surrogate: Percent Recovery Control Limits	Aroclor 1016	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.063 EPA 8082A 4-9-19 4-10-19 Aroclor 1260 0.26 0.063 EPA 8082A 4-9-19 4-10-19  Surrogate: Percent Recovery Control Limits DCB 72 39-130  Client ID: SB-101-9-0-0.5 Laboratory ID: 04-015-146  Aroclor 1016 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1221 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1232 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1242 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1242 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1260 0.64 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1260 0.64 0.060 EPA 8082A 4-9-19 4-10-19 Surrogate: Percent Recovery Control Limits	Aroclor 1221	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	Aroclor 1232	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254         ND         0.063         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.26         0.063         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits         DCB         72         39-130           Client ID:         SB-101-9-0-0.5           Laboratory ID:         04-015-146         Variable         Vari	Aroclor 1242	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260         0.26         0.063         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery T2         Control Limits T2         39-130           Client ID:         SB-101-9-0-0.5           Laboratory ID:         04-015-146           Aroclor 1016         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1221         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1232         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1248	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Surrogate:         Percent Recovery T2         Control Limits 39-130           Client ID:         SB-101-9-0-0.5           Laboratory ID:         04-015-146           Aroclor 1016         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1221         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1232         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1254	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Client ID: SB-101-9-0-0.5 Laboratory ID: 04-015-146  Aroclor 1016 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1221 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1232 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1242 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1248 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19 Aroclor 1260 0.64 0.060 EPA 8082A 4-9-19 4-10-19 Surrogate: Percent Recovery Control Limits	Aroclor 1260	0.26	0.063	EPA 8082A	4-9-19	4-10-19	
Client ID: SB-101-9-0-0.5  Laboratory ID: 04-015-146  Aroclor 1016 ND 0.060 EPA 8082A 4-9-19 4-10-19  Aroclor 1221 ND 0.060 EPA 8082A 4-9-19 4-10-19  Aroclor 1232 ND 0.060 EPA 8082A 4-9-19 4-10-19  Aroclor 1242 ND 0.060 EPA 8082A 4-9-19 4-10-19  Aroclor 1248 ND 0.060 EPA 8082A 4-9-19 4-10-19  Aroclor 1254 ND 0.060 EPA 8082A 4-9-19 4-10-19  Aroclor 1260 0.64 0.060 EPA 8082A 4-9-19 4-10-19  Surrogate: Percent Recovery Control Limits	Surrogate:	Percent Recovery	Control Limits				
Laboratory ID:         04-015-146           Aroclor 1016         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1221         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1232         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	DCB	72	39-130				
Aroclor 1016         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1221         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1232         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Client ID:	SB-101-9-0-0.5					
Aroclor 1016         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1221         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1232         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Laboratory ID:	04-015-146					
Aroclor 1221         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1232         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits			0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1242         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1221	ND					
Aroclor 1242         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1248         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1232						
Aroclor 1248         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1254         ND         0.060         EPA 8082A         4-9-19         4-10-19           Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits							
Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1248	ND	0.060		4-9-19	4-10-19	
Aroclor 1260         0.64         0.060         EPA 8082A         4-9-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1254	ND		EPA 8082A	4-9-19	4-10-19	
Surrogate: Percent Recovery Control Limits	Aroclor 1260	0.64					
·		Percent Recovery	Control Limits				
	-	_	39-130				

Date of Report: April 26, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil

3 3 (r) /				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-DUP-9					
Laboratory ID:	04-015-147					
Aroclor 1016	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	1.3	0.068	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	76	39-130				
Client ID:	SB-101-9-1.5-2.0					
Laboratory ID:	04-015-148					
Aroclor 1016	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	81	39-130				
Client ID:	SB-101-10-0-0.5					
Laboratory ID:	04-015-149					
Aroclor 1016	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	1.4	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	87	39-130				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-10-0.5-1.0					
Laboratory ID:	04-015-150					
Aroclor 1016	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	0.32	0.057	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	70	39-130				
Client ID:	SB-101-11-0-0.5					
Laboratory ID:	04-015-151					
Aroclor 1016	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.68	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	71	39-130				
Client ID:	SB-101-11-0.5-1.0					
Laboratory ID:	04-015-152					
Aroclor 1016	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.28	0.063	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	77	39-130				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

3 3 (11 )				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-12-0-0.5					
Laboratory ID:	04-015-153					
Aroclor 1016	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	4.3	1.2	EPA 8082A	4-8-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	SB-101-12-1.0-1.5					
Laboratory ID:	04-015-154					
Aroclor 1016	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	1.2	0.057	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	79	39-130				
Client ID:	SB-101-13-0-0.5					
Laboratory ID:	04-015-155					
Aroclor 1016	ND	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	ND	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	ND	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	ND	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	ND	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	ND	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	6.4	1.3	EPA 8082A	4-8-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-13-1.0-1.5					
Laboratory ID:	04-015-156					
Aroclor 1016	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	ND	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	4.9	1.2	EPA 8082A	4-8-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	SB-DUP-10					
Laboratory ID:	04-015-157					
Aroclor 1016	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	1.2	0.066	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	74	39-130				
Client ID:	SB-101-14-0-0.5					
Laboratory ID:	04-015-158					
Aroclor 1016	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	1.7	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	81	39-130				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-14-1.0-1.5					
Laboratory ID:	04-015-159					
Aroclor 1016	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	1.2	0.061	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	83	39-130				
Client ID:	SB-101-15-0-0.5					
Laboratory ID:	04-015-160					
Aroclor 1016	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.32	0.072	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	71	39-130				
Client ID:	SB-101-15-0.5-1.0					
Laboratory ID:	04-015-161					
Aroclor 1016	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.28	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	74	39-130				

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#### PCBs EPA 8082A

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-16-0-0.5					
Laboratory ID:	04-015-162					
Aroclor 1016	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.40	0.068	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	69	39-130				
Client ID:	SB-101-16-2.0-2.5					
Laboratory ID:	04-015-163					
Aroclor 1016	ND	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	ND	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	ND	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	ND	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	ND	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	ND	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	3.8	1.1	EPA 8082A	4-8-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	SB-DUP-11					
Laboratory ID:	04-015-164					
Aroclor 1016	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.51	0.067	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	77	39-130				

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# PCBs EPA 8082A QUALITY CONTROL

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0408S2					
Aroclor 1016	ND	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	ND	0.050	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	83	39-130				
Laboratory ID:	MB0409S1					
Aroclor 1016	ND	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	ND	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	ND	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	ND	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	ND	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	ND	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	ND	0.050	EPA 8082A	4-9-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	89	39-130				

					Source	Pe	rcent	Recovery		RPD	
Analyte	Re	sult	Spike	Level	Result	Rec	covery	Limits	RPD	Limit	Flags
MATRIX SPIKES											
Laboratory ID:	04-01	5-144									
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	0.644	0.645	0.500	0.500	0.202	88	89	45-118	0	15	
Surrogate:											
DCB						89	89	39-130			
Laboratory ID:	04-01	5-163									
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	NA	NA	0.500	0.500	3.44	NA	NA	45-118	NA	15	Α
Surrogate:											
DCB						73	81	39-130			

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#### PCBs EPA 8082A

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	PW-040119					
Laboratory ID:	04-015-165					
Aroclor 1016	ND	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1221	ND	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1232	ND	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1242	ND	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1248	ND	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1254	ND	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1260	2.8	0.51	EPA 8082A	4-5-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		44-144				S
Client ID:	EB-04012019					
Laboratory ID:	04-015-169					
Aroclor 1016	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1221	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1232	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1242	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1248	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1254	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1260	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Surrogate:	Percent Recovery	Control Limits			_	
DCB	99	44-144				

Project: B0003010.0006

# PCBs EPA 8082A QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0405W1					
Aroclor 1016	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1221	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1232	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1242	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1248	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1254	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1260	ND	0.050	EPA 8082A	4-5-19	4-8-19	
<u> </u>	5 15	0			•	

Surrogate: Percent Recovery Control Limits DCB 96 44-144

Analyte	Re	sult	Spike	Level	Source Result		cent overy	Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB04	05W1									
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	0.502	0.527	0.500	0.500	N/A	100	105	71-131	5	12	
Surrogate:											
DCB						106	104	44-144			

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# TOTAL METALS EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	PW-040119					
Laboratory ID:	04-015-165					
Arsenic	280	6.7	EPA 200.8	4-5-19	4-5-19	
Barium	870	56	EPA 200.8	4-5-19	4-5-19	
Cadmium	ND	4.4	EPA 200.8	4-5-19	4-5-19	
Chromium	1000	22	EPA 200.8	4-5-19	4-5-19	
Lead	1000	2.2	EPA 200.8	4-5-19	4-5-19	
Mercury	ND	0.50	EPA 7470A	4-8-19	4-8-19	
Selenium	ND	5.6	EPA 200.8	4-5-19	4-5-19	
Silver	ND	11	EPA 200.8	4-5-19	4-5-19	
Client ID: Laboratory ID:	<b>EB-032919</b> 04-015-166					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID: Laboratory ID:	<b>EB-033019</b> 04-015-167					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID: Laboratory ID:	<b>EB-03312019</b> 04-015-168					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
•						

Project: B0003010.0006

#### TOTAL METALS EPA 200.8/7470A QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0405WM1					
Arsenic	ND	3.3	EPA 200.8	4-5-19	4-5-19	
Barium	ND	28	EPA 200.8	4-5-19	4-5-19	
Cadmium	ND	4.4	EPA 200.8	4-5-19	4-5-19	
Chromium	ND	11	EPA 200.8	4-5-19	4-5-19	
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Selenium	ND	5.6	EPA 200.8	4-5-19	4-5-19	
Silver	ND	11	EPA 200.8	4-5-19	4-5-19	
Laboratory ID:	MB0408W1					
Mercury	ND	0.50	EPA 7470A	4-8-19	4-8-19	

					Source	Pei	rcent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Result	Rec	overy	Limits	RPD	Limit	Flags
DUPLICATE											
Laboratory ID:	03-30	03-01									
	ORIG	DUP									
Arsenic	4.78	5.09	NA	NA		1	NA	NA	6	20	
Barium	ND	ND	NA	NA		1	NΑ	NA	NA	20	
Cadmium	ND	ND	NA	NA		1	NΑ	NA	NA	20	
Chromium	ND	ND	NA	NA		1	NΑ	NA	NA	20	
Lead	ND	ND	NA	NA		1	NΑ	NA	NA	20	
Selenium	ND	ND	NA	NA		1	NA	NA	NA	20	
Silver	ND	ND	NA	NA		1	NA	NA	NA	20	
Laboratory ID:	03-30	03-03									
Mercury	ND	ND	NA	NA		1	NA	NA	NA	20	
MATRIX SPIKES	00.04										
Laboratory ID:	03-30										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	119	125	111	111	4.78	103	108	75-125	5	20	
Barium	136	139	111	111	23.3	101	104	75-125	2	20	
Cadmium	110	114	111	111	ND	100	103	75-125	4	20	
Chromium	108	114	111	111	ND	98	103	75-125	5	20	
Lead	110	114	111	111	ND	99	103	75-125	3	20	
Selenium	126	131	111	111	ND	114	118	75-125	4	20	
Silver	118	121	111	111	ND	107	109	75-125	2	20	
Laboratory ID:	03-30	03-03									
Mercury	11.5	10.7	12.5	12.5	ND	92	85	75-125	7	20	

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# **VOLATILE ORGANICS EPA 8260C**

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-112-6-0-0.5					
Laboratory ID:	04-015-73					
Benzene	ND	0.0018	EPA 8260C	4-10-19	4-10-19	
Toluene	ND	0.0091	EPA 8260C	4-10-19	4-10-19	
Ethylbenzene	ND	0.0018	EPA 8260C	4-10-19	4-10-19	
m,p-Xylene	ND	0.0036	EPA 8260C	4-10-19	4-10-19	
o-Xylene	ND	0.0018	EPA 8260C	4-10-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
Dibromofluoromethane	107	68-139				
Toluene-d8	101	79-128				
4-Bromofluorobenzene	83	71-132				

Date of Report: April 26, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

# **VOLATILE ORGANICS EPA 8260C**

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-107-3-0-0.5					
Laboratory ID:	04-015-114					
Benzene	ND	0.0015	EPA 8260C	4-10-19	4-10-19	
Toluene	ND	0.0074	EPA 8260C	4-10-19	4-10-19	
Ethylbenzene	ND	0.0015	EPA 8260C	4-10-19	4-10-19	
m,p-Xylene	ND	0.0030	EPA 8260C	4-10-19	4-10-19	
o-Xylene	ND	0.0015	EPA 8260C	4-10-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
Dibromofluoromethane	108	68-139				
Toluene-d8	95	79-128				
4-Bromofluorobenzene	70	71-132				Q

Project: B0003010.0006

# VOLATILE ORGANICS EPA 8260C METHOD BLANK QUALITY CONTROL

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Laboratory ID:	MB0410S2					
Benzene	ND	0.0010	EPA 8260C	4-10-19	4-10-19	
Toluene	ND	0.0050	EPA 8260C	4-10-19	4-10-19	
Ethylbenzene	ND	0.0010	EPA 8260C	4-10-19	4-10-19	
m,p-Xylene	ND	0.0020	EPA 8260C	4-10-19	4-10-19	
o-Xylene	ND	0.0010	EPA 8260C	4-10-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
Dibromofluoromethane	110	68-139				
Toluene-d8	102	79-128				
4-Bromofluorobenzene	105	71-132				

Project: B0003010.0006

# VOLATILE ORGANICS EPA 8260C SB/SBD QUALITY CONTROL

					Per	cent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Rec	overy	Limits	RPD	Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB04	10S2								
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	0.0533	0.0514	0.0500	0.0500	107	103	53-141	4	17	
Benzene	0.0546	0.0520	0.0500	0.0500	109	104	70-130	5	15	
Trichloroethene	0.0501	0.0491	0.0500	0.0500	100	98	74-122	2	16	
Toluene	0.0517	0.0502	0.0500	0.0500	103	100	76-130	3	15	
Chlorobenzene	0.0543	0.0511	0.0500	0.0500	109	102	75-120	6	14	
Surrogate:										
Dibromofluoromethane					105	105	68-139			
Toluene-d8					101	102	79-128			
4-Bromofluorobenzene					104	102	71-132			

Project: B0003010.0006

# PAHs EPA 8270D/SIM

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-112-6-0-0.5					
Laboratory ID:	04-015-73					
Benzo[a]anthracene	ND	0.014	EPA 8270D/SIM	4-10-19	4-12-19	U1
Chrysene	ND	0.023	EPA 8270D/SIM	4-10-19	4-12-19	U1
Benzo[b]fluoranthene	ND	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo(j,k)fluoranthene	ND	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[a]pyrene	ND	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Indeno(1,2,3-c,d)pyrene	ND	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Dibenz[a,h]anthracene	ND	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	73	40 - 117				
Pyrene-d10	88	38 - 119				
Terphenyl-d14	116	47 - 135				

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# PAHs EPA 8270D/SIM

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-107-3-0-0.5					
Laboratory ID:	04-015-114					
Benzo[a]anthracene	ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Chrysene	ND	0.012	EPA 8270D/SIM	4-10-19	4-12-19	U1
Benzo[b]fluoranthene	ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo(j,k)fluoranthene	ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[a]pyrene	ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Dibenz[a,h]anthracene	ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	61	40 - 117				
Pyrene-d10	94	38 - 119				
Terphenyl-d14	109	47 - 135				

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#### PAHs EPA 8270D/SIM

			Date	Date	
Result	PQL	Method	Prepared	Analyzed	Flags
SB-107-3-0.5-1					
04-015-115					
ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Percent Recovery	Control Limits				
54	40 - 117				
78	38 - 119				
112	47 - 135				
	SB-107-3-0.5-1 04-015-115 ND ND ND ND ND ND ND ND Percent Recovery 54 78	SB-107-3-0.5-1         04-015-115       0.0087         ND       0.0087         ND       0.0087         ND       0.0087         ND       0.0087         ND       0.0087         ND       0.0087         Percent Recovery       Control Limits         54       40 - 117         78       38 - 119	SB-107-3-0.5-1           04-015-115         0.0087         EPA 8270D/SIM           ND         0.0087         EPA 8270D/SIM           Percent Recovery         Control Limits           54         40 - 117           78         38 - 119	Result         PQL         Method         Prepared           SB-107-3-0.5-1 04-015-115         FPA 8270D/SIM         4-10-19           ND         0.0087         EPA 8270D/SIM         4-10-19           Percent Recovery         Control Limits           54         40 - 117         40 - 117           78         38 - 119         40 - 117	Result         PQL         Method         Prepared         Analyzed           SB-107-3-0.5-1 04-015-115         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-10-19         SB-10-19         SB-10-19         SB-10-19         A-12-19         A-12-19 <t< td=""></t<>

Project: B0003010.0006

# PAHS EPA 8270D/SIM METHOD BLANK QUALITY CONTROL

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Laboratory ID:	MB0410S2					
Benzo[a]anthracene	ND	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Chrysene	ND	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Benzo[b]fluoranthene	ND	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Benzo(j,k)fluoranthene	ND	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Benzo[a]pyrene	ND	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Dibenz[a,h]anthracene	ND	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	73	40 - 117				
Pyrene-d10	78	38 - 119				
Terphenyl-d14	74	47 - 135				

Project: B0003010.0006

# PAHS EPA 8270D/SIM SB/SBD QUALITY CONTROL

					Per	cent	Recovery		RPD	
Analyte	Re	sult	Spike	Level	Rec	overy	Limits	RPD	Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB04	110S2								
	SB	SBD	SB	SBD	SB	SBD				
Benzo[a]anthracene	0.0717	0.0740	0.0833	0.0833	86	89	64 - 132	3	15	
Chrysene	0.0613	0.0629	0.0833	0.0833	74	76	64 - 127	3	15	
Benzo[b]fluoranthene	0.0649	0.0681	0.0833	0.0833	78	82	57 - 128	5	15	
Benzo(j,k)fluoranthene	0.0573	0.0624	0.0833	0.0833	69	75	62 - 130	9	15	
Benzo[a]pyrene	0.0653	0.0681	0.0833	0.0833	78	82	62 - 125	4	15	
Indeno(1,2,3-c,d)pyrene	0.0607	0.0645	0.0833	0.0833	73	77	55 - 130	6	15	
Dibenz[a,h]anthracene	0.0626	0.0656	0.0833	0.0833	75	79	58 - 129	5	15	
Surrogate:										
2-Fluorobiphenyl					69	72	40 - 117			
Pyrene-d10					<i>7</i> 5	77	38 - 119			
Terphenyl-d14					69	73	47 - 135			

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

5 5 (11 /				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-112-6-0-0.5					
Laboratory ID:	04-015-73					
Aroclor 1016	ND	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	ND	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	ND	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	ND	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	ND	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	0.20	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	0.15	0.085	EPA 8082A	4-10-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	60	39-130				
Client ID:	SB-107-3-0-0.5					
Laboratory ID:	04-015-114					
Aroclor 1016	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	61	39-130				
Client ID:	SB-107-3-0.5-1					
Laboratory ID:	04-015-115					
Aroclor 1016	ND	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	ND	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	ND	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	ND	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	ND	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	ND	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	ND	0.065	EPA 8082A	4-10-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	53	39-130				

Project: B0003010.0006

# PCBs EPA 8082A QUALITY CONTROL

Matrix: Soil

Units: mg/Kg (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0410S1					
Aroclor 1016	ND	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	ND	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	ND	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	ND	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	ND	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	ND	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	ND	0.050	EPA 8082A	4-10-19	4-10-19	
0	D D	0				

Surrogate: Percent Recovery Control Limits DCB 70 39-130

Analyte	Re	sult	Spike	Level	Source Result		rcent covery	Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	04-01	15-114									
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	0.245	0.255	0.500	0.500	ND	49	51	45-118	4	15	
Surrogate:											
DCB						65	65	39-130			

Project: B0003010.0006

#### TCLP LEAD EPA 1311/6010D

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-14-A-0-0.5					
Laboratory ID:	04-015-07					
Lead	ND	0.20	EPA 6010D	4-24-19	4-24-19	
Client ID:	ISM-15-A-0.5-1.0					
Laboratory ID:	04-015-19					
Lead	ND	0.20	EPA 6010D	4-24-19	4-24-19	

Project: B0003010.0006

#### TCLP LEAD EPA 1311/6010D QUALITY CONTROL

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0424TM1					
Lead	ND	0.20	EPA 6010D	4-24-19	4-24-19	

Analyte	Res	sult	Spike	Level	Source Result		rcent	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE			-				-				
Laboratory ID:	04-2	55-01									
	ORIG	DUP									
Lead	ND	ND	NA	NA		1	NA	NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	04-2	55-01									
	MS	MSD	MS	MSD		MS	MSD				
Lead	9.89	9.80	10.0	10.0	ND	99	98	75-125	1	20	

Date of Report: April 26, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

# % MOISTURE

Date Analyzed: 4-3,5,12&15-19

Client ID	Lab ID	% Moisture
ISM-13-A-0.5-1.0	04-015-01	8
ISM-13-B-0-0.5	04-015-05	9
ISM-13-C-0-0.5	04-015-06	15
ISM-14-A-0-0.5	04-015-07	18
ISM-14-A-0.5-1.0	04-015-11	16
ISM-15-A-0-0.5	04-015-14	19
ISM-15-A-0.5-1.0	04-015-19	7
ISM-15-A-1.0-1.5	04-015-24	5
ISM-16-A-0-0.5	04-015-29	11
ISM-16-A-0.5-1.0	04-015-32	12
ISM-17-A-0-0.5	04-015-35	15
ISM-17-A-0.5-1.0	04-015-40	4
ISM-18-A-0-0.5	04-015-45	6
ISM-18-A-0.5-1.0	04-015-50	5
SB-106-1-0-0.5	04-015-55	14
SB-106-1-2-2.3	04-015-56	20
SB-DUP-1	04-015-57	23
SB-106-2-0-0.5	04-015-58	53
SB-106-2-2.0-2.5	04-015-59	27
SB-106-3-0-0.5	04-015-60	11
SB-106-3-2-2.5	04-015-61	16
SB-112-1-0-0.5	04-015-62	33
SB-112-1-0.5-0.7	04-015-63	34
SB-112-2-0-0.5	04-015-64	22
SB-112-2-1-1.5	04-015-65	24
SB-112-3-0-0.5	04-015-66	26
SB-112-3-1-1.3	04-015-67	16

Date of Report: April 26, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

# % MOISTURE

Date Analyzed: 4-3,5,12&15-19

Client ID	Lab ID	% Moisture
SB-112-4-0-0.5	04-015-68	25
SB-DUP-2	04-015-69	17
SB-112-4-0.5-1	04-015-70	19
SB-112-5-0-0.5	04-015-71	33
SB-112-5-0.5-0.9	04-015-72	27
SB-112-6-0-0.5	04-015-73	41
SB-112-6-1-1.5	04-015-74	26
SB-112-7-0-0.5	04-015-75	31
SB-112-7-0.5-0.8	04-015-76	22
SB-112-08-0-0.5	04-015-77	26
SB-DUP-3	04-015-78	26
SB-112-08-1-1.5	04-015-79	18
SB-112-9-0-0.5	04-015-80	31
SB-112-9-0.5-1	04-015-81	26
SB-112-10-0-0.5	04-015-82	22
SB-112-10-0.5-1	04-015-83	27
SB-112-11-0-0.5	04-015-84	15
SB-112-11-1.5-2	04-015-85	19
SB-112-12-0-0.5	04-015-86	28
SB-112-12-1-1.5	04-015-87	23
SB-PL-1-0-0.5	04-015-88	27
SB-PL-2-1-1.5	04-015-89	13
SB-PL-3-0-0.5	04-015-90	20
SB-PL-4-1-1.5	04-015-91	22
SB-PL-5-0-0.5	04-015-92	21
SB-PL-6-1-1.5	04-015-93	22
SB-DUP-4	04-015-94	25

Date of Report: April 26, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

# % MOISTURE

Date Analyzed: 4-3,5,12&15-19

Client ID	Lab ID	% Moisture
SB-PL-7-0-0.5	04-015-95	40
SB-PL-8-1-1.5	04-015-96	12
SB-PL-9-0-0.5	04-015-97	27
SB-PL-10-2-2.5	04-015-98	10
SB-PL-11-0.5-1	04-015-99	17
SB-PL-12-1-1.5	04-015-100	15
SB-PL-13-1-1.5	04-015-101	14
SB-PL-14-1-1.5	04-015-102	9
SB-101-1-0-0.5	04-015-103	20
SB-101-1-2-2.5	04-015-104	15
SB-101-2-0-0.5	04-015-105	18
SB-DUP-5	04-015-106	19
SB-101-2-2-2.5	04-015-107	13
SB-101-3-0-0.5	04-015-108	20
SB-101-3-2-2.5	04-015-109	14
SB-107-1-0-0.5	04-015-110	16
SB-107-1-1.5	04-015-111	17
SB-107-2-0-0.5	04-015-112	34
SB-107-2-0.5-1	04-015-113	27
SB-107-3-0-0.5	04-015-114	25
SB-107-3-0.5-1	04-015-115	23
SB-107-4-0-0.5	04-015-116	26
SB-DUP-6	04-015-117	26
SB-107-4-0.5-1	04-015-118	13
SB-107-5-0-0.5	04-015-119	26
SB-107-5-0.5-1	04-015-120	28
SB-107-6-0-0.5	04-015-121	28

Date of Report: April 26, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

# % MOISTURE

Date Analyzed: 4-3,5,12&15-19

Client ID	Lab ID	% Moisture
SB-107-6-0.5-1	04-015-122	30
SB-104-1-0-0.5	04-015-123	29
SB-104-1-2.5-3	04-015-124	16
SB-104-2-0-0.5	04-015-125	20
SB-104-2-4-4.5	04-015-126	10
SB-104-3-0-0.5	04-015-127	17
SB-104-3-2.5-3	04-015-128	14
SB-102-1-0-0.5	04-015-129	28
SB-102-1-1.5-2.0	04-015-130	28
SB-DUP-7	04-015-131	26
SB-102-2-0-0.5	04-015-132	37
SB-102-3-0-0.5	04-015-133	44
SB-102-3-0.5-1.0	04-015-134	28
SB-101-4-0-0.5	04-015-135	18
SB-101-4-2.0-2.5	04-015-136	21
SB-DUP-8	04-015-137	21
SB-101-5-0-0.5	04-015-138	22
SB-101-5-0.5-1.0	04-015-139	15
SB-101-6-0-0.5	04-015-140	23
SB-101-6-0.5-1.0	04-015-141	17
SB-101-7-0.5-1.0	04-015-142	44
SB-101-7-1.5-2.0	04-015-143	23
SB-101-8-0-0.5	04-015-144	27
SB-101-8-1.0-1.5	04-015-145	21
SB-101-9-0-0.5	04-015-146	17
SB-DUP-9	04-015-147	26
SB-101-9-1.5-2.0	04-015-148	15

Date of Report: April 26, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

# % MOISTURE

Date Analyzed: 4-3,5,12&15-19

Client ID	Lab ID	% Moisture
SB-101-10-0-0.5	04-015-149	17
SB-101-10-0.5-1.0	04-015-150	13
SB-101-11-0-0.5	04-015-151	28
SB-101-11-0.5-1.0	04-015-152	20
SB-101-12-0-0.5	04-015-153	20
SB-101-12-1.0-1.5	04-015-154	13
SB-101-13-0-0.5	04-015-155	26
SB-101-13-1.0-1.5	04-015-156	18
SB-DUP-10	04-015-157	24
SB-101-14-0-0.5	04-015-158	29
SB-101-14-1.0-1.5	04-015-159	18
SB-101-15-0-0.5	04-015-160	30
SB-101-15-0.5-1.0	04-015-161	29
SB-101-16-0-0.5	04-015-162	26
SB-101-16-2.0-2.5	04-015-163	10
SB-DUP-11	04-015-164	25



## **Data Qualifiers and Abbreviations**

- A Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B The analyte indicated was also found in the blank sample.
- C The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E The value reported exceeds the quantitation range and is an estimate.
- F Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I Compound recovery is outside of the control limits.
- J The value reported was below the practical quantitation limit. The value is an estimate.
- K Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L The RPD is outside of the control limits.
- M Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 Hydrocarbons in diesel range are impacting lube oil range results.
- O Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P The RPD of the detected concentrations between the two columns is greater than 40.
- Q Surrogate recovery is outside of the control limits.
- S Surrogate recovery data is not available due to the necessary dilution of the sample.
- T The sample chromatogram is not similar to a typical \_\_\_\_\_\_.
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 The practical quantitation limit is elevated due to interferences present in the sample.
- V Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

7 -

ND - Not Detected at PQL

PQL - Practical Quantitation Limit

RPD - Relative Percent Difference





April 18, 2019

Mr. David Baumeister OnSite Environmental, Inc. 14648 NE 95th Street Redmond, WA 98052

Dear Mr. Baumeister,

On April 10th, 3 samples were received by our laboratory and assigned our laboratory project number EV19040073. The project was identified as your Lab Ref 04-015 Proj B0003010.0006. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

**ALS Laboratory Group** 

Rick Bagan

Laboratory Director



CLIENT: OnSite Environmental, Inc. DATE: 4/18/2019

14648 NE 95th Street ALS JOB#: EV19040073
Redmond, WA 98052 ALS SAMPLE#: EV19040073-01

CLIENT CONTACT: David Baumeister DATE RECEIVED: 04/10/2019

CLIENT PROJECT: Lab Ref 04-015 Proj B0003010.0006 COLLECTION DATE: 3/31/2019 11:31:00 AM

CLIENT SAMPLE ID SB-112-6-0-0.5 WDOE ACCREDITATION: C601

# SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	14	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	190	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	79	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	20	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	20	5.0	1	MG/KG	04/12/2019	EBS

			ANALISIS	AIVAL I SIS	
SURROGATE	METHOD	%REC	DATE	BY	
C25	NWEPH	116	04/12/2019	EBS	
p-Terphenyl	NWEPH	106	04/12/2019	EBS	

U - Analyte analyzed for but not detected at level above reporting limit.



CLIENT: OnSite Environmental, Inc. DATE: 4/18/2019

14648 NE 95th Street ALS JOB#: EV19040073 Redmond, WA 98052 ALS SAMPLE#: EV19040073-02

CLIENT CONTACT: **David Baumeister** DATE RECEIVED: 04/10/2019

**CLIENT PROJECT:** Lab Ref 04-015 Proj B0003010.0006 **COLLECTION DATE:** 3/31/2019 3:48:00 PM

**CLIENT SAMPLE ID** SB-107-3-0-0.5 WDOE ACCREDITATION: C601

CLILINI SAIVII LL ID	3D-107-3-0-0.3		WDOLA	CILDITATION.	C00 i		
		SAMPLE	DATA RESULTS				
ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS A	ANALYSIS By
>C8-C10 Aliphatics	NWEPH	280	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	8.0	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	89	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	740	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	310	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	33	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	9.2	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	93	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	93	5.0	1	MG/KG	04/12/2019	EBS
						ANALYSIS	
SURROGATE	METHOD	%REC				DATE	BY
C25	NWEPH	123				04/12/2019	EBS
p-Terphenyl	NWEPH	104				04/12/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.



CLIENT: OnSite Environmental, Inc. DATE: 4/18/2019

14648 NE 95th Street ALS JOB#: EV19040073 Redmond, WA 98052 ALS SAMPLE#: EV19040073-03

CLIENT CONTACT: **David Baumeister** DATE RECEIVED: 04/10/2019

**CLIENT PROJECT:** Lab Ref 04-015 Proj B0003010.0006 **COLLECTION DATE:** 3/31/2019 3:52:00 PM

**CLIENT SAMPLE ID** WDOE ACCREDITATION: SB-107-3-0.5-1 C601

CLILINI SAMI LL ID	3D-101-3-0.3-1		WDOLA	SCINEDITATION.	0001		
		SAMPLE	DATA RESULTS				
ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS A	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	51	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	6.6	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	100	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	500	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	200	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	6.1	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	52	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	59	5.0	1	MG/KG	04/12/2019	EBS
						ANALYSIS	ANALYSIS
SURROGATE	METHOD	%REC				DATE	BY
C25	NWEPH	119				04/12/2019	EBS
p-Terphenyl	NWEPH	101				04/12/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.



4/18/2019 CLIENT: OnSite Environmental, Inc. DATE:

14648 NE 95th Street ALS SDG#: EV19040073

Redmond, WA 98052 WDOE ACCREDITATION: C601

**CLIENT CONTACT: David Baumeister** 

**CLIENT PROJECT:** Lab Ref 04-015 Proj B0003010.0006

# LABORATORY BLANK RESULTS

# MB-041019S - Batch 139774 - Soil by NWEPH

ANALYTE	METHOD	RESULTS	UNITS	LIMITS	ANALYSIS Date	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C10-C12 Aliphatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C12-C16 Aliphatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C16-C21 Aliphatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C21-C34 Aliphatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C8-C10 Aromatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C10-C12 Aromatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C12-C16 Aromatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C16-C21 Aromatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C21-C34 Aromatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

ALS Group USA, Corp dba ALS Environmental



4/18/2019 CLIENT: OnSite Environmental, Inc. DATE:

14648 NE 95th Street ALS SDG#: EV19040073

Redmond, WA 98052 WDOE ACCREDITATION: C601

**CLIENT CONTACT: David Baumeister** 

**CLIENT PROJECT:** Lab Ref 04-015 Proj B0003010.0006

# LABORATORY CONTROL SAMPLE RESULTS

# ALS Test Batch ID: 139774 - Soil by NWEPH

				LIN	MITS	ANALYSIS	ANALYSIS BY
SPIKED COMPOUND	METHOD	%REC	RPD QUAL	MIN	MAX	DATE	
>C8-C10 Aliphatics - BS	NWEPH	86.9		70	130	04/11/2019	EBS
>C8-C10 Aliphatics - BSD	NWEPH	87.8	1	70	130	04/11/2019	EBS
>C10-C12 Aliphatics - BS	NWEPH	91.8		70	130	04/11/2019	EBS
>C10-C12 Aliphatics - BSD	NWEPH	92.5	1	70	130	04/11/2019	EBS
>C12-C16 Aliphatics - BS	NWEPH	99.2		70	130	04/11/2019	EBS
>C12-C16 Aliphatics - BSD	NWEPH	99.4	0	70	130	04/11/2019	EBS
>C16-C21 Aliphatics - BS	NWEPH	104		70	130	04/11/2019	EBS
>C16-C21 Aliphatics - BSD	NWEPH	103	1	70	130	04/11/2019	EBS
>C21-C34 Aliphatics - BS	NWEPH	93.9		70	130	04/11/2019	EBS
>C21-C34 Aliphatics - BSD	NWEPH	91.7	2	70	130	04/11/2019	EBS
>C8-C10 Aromatics - BS	NWEPH	82.2		70	130	04/11/2019	EBS
>C8-C10 Aromatics - BSD	NWEPH	76.3	7	70	130	04/11/2019	EBS
>C10-C12 Aromatics - BS	NWEPH	73.5		70	130	04/11/2019	EBS
>C10-C12 Aromatics - BSD	NWEPH	85.5	15	70	130	04/11/2019	EBS
>C12-C16 Aromatics - BS	NWEPH	99.7		70	130	04/11/2019	EBS
>C12-C16 Aromatics - BSD	NWEPH	90.7	9	70	130	04/11/2019	EBS
>C16-C21 Aromatics - BS	NWEPH	105		70	130	04/11/2019	EBS
>C16-C21 Aromatics - BSD	NWEPH	98.7	6	70	130	04/11/2019	EBS
>C21-C34 Aromatics - BS	NWEPH	87.3		70	130	04/11/2019	EBS
>C21-C34 Aromatics - BSD	NWEPH	93.5	7	70	130	04/11/2019	EBS

APPROVED BY

Laboratory Director

Page 1 of 1

Laboratory Reference #: 04-015

Project Manager: David Baumeister

dbaumeister@onsite-env.com

email:

B0003010.0006

Project Number:

Project Name:

Other:

Standard

3 Day

1 Day

8620 Holly Drive Everett, WA 98208 Phone Number: (425) 356-2600

**Turnaround Request** 2 Day

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory: ALS Environmental

Attention: Rick Bagan

C OnSite Environmental Inc.

***************************************		Date	Time		#o#	
99	Sample   dentification	Sampled	Sampled Sampled	Matrix	Cont	Requested Analyses
73 S	SB-112-6-0-0.5	3/31/19	11:31	ဟ	_	ЕРН
2 114 S	SB-107-3-0-0.5	3/31/19	15:48	S	~	ЕРН
3 115 S	115 SB-107-3-0.5-1	3/31/19	15:52	S	1	ЕРН
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	Signature (7)	Company	any		Daje	Time Comments/Special Instructions
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Relinquis	John Gall Al.	8H1		7,	00:21 6/6/1/2	12:00
Received	Received by Shawn Corperator ALS	S		7	00:01 61/01/h	Q0: E/
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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished Many Hard	Signature	とうとうとうまかす	5,0-0-4-41- WSI 6	8 ISM-14-1-0-0.5	7 ISM -14-A-0-0,5	6 ISM-13-C-0-0,5	5 ISM-13-B-0-0.5	4 ISM -13-3-0.5 -1.0	2 ISM-13-2-0-5-10	2 ISM -13-1 -0.5-1.0	1 ISM-13-A-0.5-1.0	Lab ID Sample Identification	Sampled by, Mark Ullery	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Arcadis	Phone: (425) 883-3881 • www.onsite-env.com	14648 NE 95th Street • Redmond, WA 98052
Reviewed/Date					000	Arcadis	Company		1 6952 1 1	045/ 1	0950 1	1 12511	1115 1 1	1 1520	0730 1	1 1500	3/29/19 0738 50:11		(other)		Standard (7 Days)	☐ 2 Days ☐ 3 Days	☐ Same Day ☐ 1 Day	(Check One)	(in working days)
					asii righ	1/2/19 1150	Date Time		X ON HO	X Ox Ho	X	×		X On As Co	X an Role	X ON TOPE		GRO DRO/ PCBs Benz cPAH	(NWTP HO/Min s (USEP/	H-Gx) neral Oil A Method SEPA Me	(NWTP 18082) Method 8 thod 82	'H-Dx)	•		Laboratory Nulliber.
Chromatograms with final report		O Added Allsin 1		Alder APILA STA	contingent on the results of the GRO/DRO/HO resu	* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are	Comments/Special Instructions		A		0						3	PCB BTE	s (USE X (USE	PA Met	EPA Mehod 808	(2) (60)			
		7	NA	安安	sults.	ds is contingent on d VPH are		1					- >				>	2	omo	0151	VPG				



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Reviewed/Date					Syll Shills 1780	cadis 4/2/19 11	Company Date Time	1354 1 1 X 0x	1353 1 X	1334 X DH	333 X On	133) 1 X Du	133) 1X DM	1336 LX	1037 1 1 X DA	1036 1 X dn F	1035 Soil 1 X	Lead (U GRO (I DRO/H PCBs (	USEPA NWTPH HO/Mine (USEPA ene (US	Method	1 6010) (NWTP)	3 Days	1 Day	(Check One)	Turnaround Request (in working days) Laboratory Number:
Chromatograms with final report					contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are	Comments/Special Instructions	Ho Cd	0	F. J.	Rold	10 C	700	×	Hold	6	×	EPH (VPH (RCRA PCBs BTEX	NWTPI 8 Meta (USEF	H-EPH) H-VPH) Is (USE A Meth	*	2) 0) a.d	110)		nber: 04-015

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Corpustry   Arcadis   Corpustry   Arcadis   Companies   Companie	Chromatograms with final report	-		Reviewed/Date	Reviewed/Date
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Check One)   Company   C					Received
TSM					Relinquished
TSM	parent sample results, benzere, crAHs, EPH, and VH contingent on the results of the GRO/DRO/HO results.	112/18/1/18		380	Received
Table   Signature   Company   Comp	* Hold for these samples; running these compounds is contingent on	2/		1	Relinquished All Links
Table   Tabl	Comments/Special Instructions			Company	Signature
TSM - 15 - 4 - 0.5 - 1.0   1335   1.5		九工	<u>~</u> ×	1039	12-0-1-91-WST
Arcadis   Check One)   Check			- X	1038	ISM -16-A-0
Arcadis			×	1529	1-07-12-18-18I
### Arcadis  ###################################		on Hola	- ×	1398	-15-3-1.0-1
any: Arcadis  Arcadis  Arcadis  Arcadis  Arcadis  Alamager: USCG Burrows Island  Alamager: Josh Gravenmier  Booggan Josh Josh Josh Josh Josh Josh Josh Josh		on Hola	- X	1327	1-4-51- WSI
Arcadis  Arcadis  Arcadis  Arcadis  Alumber: (25) 883-3881 * www.onsite-enucon  Arcadis  Alumber: (25) 883-3881 * www.onsite-enucon  BO003010.0006  Alumber: B0003010.0006  Al		on Hold	×	1326	-15-1-1.0-1
Arcadis  Arc			×	8	ISM -15-A-1.0-1.5
Arcadis  Arcadis  Arcadis  Winner  Booo3010.0006  Same Day  I Name:  USCG Burrows Island  I Name		on Hald		1357	TSM-15-4-015-1
# Number:   Check One)   Check One)   Check One)   Arcadis   Sample   Sampled   Sample		On Hold	- X	1356	ISM -15-3-0.5-1.
Arcadis  Arc		I	- ×	9 1355 60	-15-2-0.5-1.0
(Check One)    Same Day   1 Day   1 Day   2 Days   2 Days   1 Day   2 Days   1 Day   2 Days	PCBs (	DRO/H PCBs (I Benzer cPAHs		Time Sampled	Sample Identification
Standard (7 Days)  Standard (7 Days)  Standard (7 Days)  Method 6010)  GX  PA Method 8260)*  A Method 8270 SIM)*  EPH)*  CVPH)*  G (USEPA Method 6010)  Method 8082)  Method 8082)  Method 8082)  Method 8082)  Method 8082)	Metals USEPA	O/Miner USEPAM ne (USE (USEPA		(other)	Sampled by:
Check One)   Check One	(USEF	ral Oil (N Method 8 EPA Method A Method	100000		Josh Gravenmier
Check One)  Same Day  2 Days  2 Days  Check One)  Laboratory Number:  Laboratory Number:  1 Day  0 0 6010)	d 8082)	082) thod 826			
(In working days)  Laboratory Number: 04 - 01  Check One)  Same Day  1 Day	od 6010	60)*			Project Number: B0003010.0006
(in working days)  Laboratory Number: U4 - U 1	)			k One)	Arcadis
	04-01	aboratory Numbe	-	(in working days)	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com

Data Package: Level III 

Level IV 

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Chromatograms with final report						* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions				8						8	VPH (I	NWTPH 8 Metal (USEP/	s (USE	PA Method 8082)		0)	er: 04-015
						nt on	4	X					X			X		24	m	01	STU	PE		

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Electronic Data Deliverables (EDDs)

Same Day   Date   Time   Same Day   1 Day		Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished	Signature	\$ ISM -18	49 ISM-18-	.81-WSI 84	81-MST CH	46 ISM-18.	81- WST SN	21- WSI	- 21- WSI Sh	42 ISM - 17 -	41 ISM -17	Lab ID Sample Id	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Arcadis Arcadis	14648 NE 95th Street ( Phone: (425) 883-3881
Check One   Same Day   2 Days   3 Days   4 Date   4 Dat	Same Day   1 Day   2 Days   2 Days   3 Days						A O	Carline	ture	A-0,5-1	4-0-0	3-0-	2-0-0.	1-0-0,	A.0-0,	4-05-1.	3-0.5-1.	2,0-1	1-0.5-1	entification		venmier	rows Island	0.0006		www.onsite-env.com
Number of Containers  H X X X X X X X X X Lead (USEPA Method 6010)  GRO (NWTPH-Gx)  DRO/HO/Mineral Oil (NWTPH-Dx)  PCBs (USEPA Method 8082)  Benzene (USEPA Method 8260)*  CPAHs (USEPA Method 8270 SIM)*	Number of Containers  Lead (USEPA Method 6010)  GRO (NWTPH-Gx)  DRO/HO/Mineral Oil (NWTPH-Dx)  PCBs (USEPA Method 8082)  Benzene (USEPA Method 8260)*  CPAHs (USEPA Method 8270 SIM)*  EPH (NWTPH-EPH)*	Reviewed/Date					300	Av cadi	Company	1 1559	1557	1556	1555	1554	1553	1354	1353	1 1352	19/19 1351 50	Time Sampled	(other)		Standard (7 Days)			(Check One)
	DEPH (NWTPH-EPH)*						4118 11S	1/2/19 //	Time		0 1	0	0		~ X	v.	1 X O I F.	0	1 x on the	Lead ( GRO ( DRO/H PCBs Benze	USEPA NWTP HO/Min (USEPA ene (US	Method H-Gx) eral Oil Method SEPA M	(NWTP 8082)	260)*		

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Electronic Data Deliverables (EDDs)

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sults.	contingent on the results of the GRO/DRO/HO results.	21/8/1/2/12	M	0	Received
ds is contingent on d VPH are	* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are	4/8/19 11 20	4.5	Arca	Relinquished May Muse
Patter A Patter	Comments/Special Instructions	Date Time		Company	,,
~			X	3/31/19 0901	- 401-as
			X	3/3/19 0906	59 56-106-2-2025
			×	19/3/1/9 0900	58 SB-106-2-0-0.5
			X	3/3//19	57 SB - DUP-1
			. ×	3/3/19 091/	sc SB-106-1-2-2.3
			%/×		SS 5B-106-1-0-0.5
<		on their		1 00	J5M-18-4-0.5-1.0
		-	- ( ×	1607	53 ISM-18-3-0,5-1.0
		On Hold		1601	27 FM-18-9-02 -10
		on Hold	X	3/30/19 1600 500	51 ISM-18-1-057.0
9	RCR/	DRO/H PCBs Benze cPAH	Numb	Date Time Sampled Sampled Matrix	Lab ID Sample Identification
e m	A 8 Me	HO/Min (USEP/ ene (USE) (USE) (NWTF	USEPA	(other)	Sampled by:
ois	PA Me	SEPA METHOR			Project Manager: Josh Gravenmier
NR	EPA Mahod 808	Method 82	ers od 6010	X Standard (7 Days)	Project Name: USCG Burrows Island
E	32)	3260)*		2 Days 3 Days	Project Number: B0003010.0006
	010)	)*	N.	Same Day 1 Day	Arcadis
				(Check One)	Phone: (425) 883-3881 • www.onsite-env.com
	04-075	Laboratory Number:	Lat	Turnaround Request (in working days)	Environmental Inc.
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Reviewed/Date					- (OSE	Arcalis	Company	1100 1 3	3/3/10 - 3/6	1055 3	1080	1046	1041	1038	1035	3/3/19 1020 (	3/31/19 09/2 50:1	Date Time Sampled Sampled Matrix	(other)		X Standard (7 Days)		Same Day 1 Day	Turnaround Request (in working days) (Check One)
					HILLIS IIS	1/2/19 1150	Date Time	X XX	× ×	3 × × ×	×	X	× × ×	× × ×	× ×	×	×	Lead (I GRO (I DRO/H PCBs I Benze	er of Co USEPA NWTPH HO/Mine (USEPA ene (USE	Method  Fal Oil ( Method I  EPA Method I  PA Method	1 6010) NWTPH 8082) ethod 82	260)*		Laboratory Number:
Chromatograms with final report				* cample pentere trom jar	contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions	×		×			×	X	X	×		VPH (RCRA PCBs BTEX	NWTPH 8 Meta (USEP) (USEP)	I-VPH)* Is (USE A Metho	EPA Met od 8082 od 8260	(1)	10)	er: 04-015

Data Package: Level III 

Level IV 

Electronic Data Deliverables (EDDs) 

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Reviewed/Date Reviewed/Date	Received	Relinquished	Received	Relinquished	Received (C	Relinquished My fluit fr	Signature Company	8058-112-9-0-0.5 1216	79 58-112-08-1-1.5 120	78 JB- DUP-3 38/19-	7 5B-112-18-0-0.5 1300	16 8-112-7-0.5-0.8 114.	111 5:0-0-84-01-82 81	58-112-6-1-1.5	73 SB-112-6-0-0.5 /13	7258-112-5-0.5-0.9 1129	71 513-112-5-0-0.5 3/3/19/115	Lab ID Sample Identification Sampled Sampled		Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island   Standard (7 Days)		Sam
ed/Date					286	cad's		0	1306 3	1 W	30	3	8 3	135 3	3	3	501/3	Matrix Numb	er of C	ontaine Method	ers	☐ 3 Days	e Day
					412/1s 112D	4/2/19 1150	Date Time	XXX	XXX	XXX	XXX	XXX	XXX	メメメ	NOSON NOSON	X X X X	X	GRO ( DRO/H PCBs Benze	NWTPH HO/Mine (USEPA me (USE)	H-Gx)  rel Oil (  Method	(NWTPH 8082) athod 8270	260)	EX
Chromatograms with final report				* Cample Benzene from Jar.	contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions											VPH ( RCRA PCBs BTEX	NWTPH 8 Meta (USEP	I-VPH)*	PA Met od 8082 od 8260	)	00)

Data Package: Level III 🗌 Level IV 🗍 Electronic Data Deliverables (EDDs) 🗌



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				18E	3	calis			S	Cu Cu	Cu	Cu	Cu	S	0	0)	Soil 3	Matrix Numb	er of C	ontaine Method	rs	3 Days	1 Day	days)	equest
				unin	2/10	1/2/19	Date	$\times$	$\times$	×	*	$\times$	×	${\sim}$	$\times$	×	×	GRO (I	NWTPI		NWTPH	I-Dx)		Laboratory Number:	
				1000	3	1150	Time	X	XXX	XXX	XXX	X X	XXX	XXX	XXX	XXX	XXX	cPAHs	(USE	EPA Meth	od 8270			Number:	
			* Jumple Dentelle from Jun-	contingent on the results of the GRO/DRO/HO results.	parent sample results. Benzene, cPAHs, EPH, and VPH are	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions											RCRA PCBs	8 Meta	H-VPH)*  Ils (USE  A Metho	PA Meti od 8082	)	0)	. 04 - 0 1 5	0
			1	,		nt on		_									8	90	m	PIST	UPE	_			

Data Package: Level III 

Level IV 

Electronic Data Deliverables (EDDs) 

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Page 10 of 18

Arcadis  Arcadis  Arcadis  Arcadis  Arcadis  Arcadis  Arcadis  B0003010.0006    Same Dowy   1 Day    Sample   Same Dowy   1 Day    Sample   Sample Dowy   1 Day    Sample   Sa	Chromatograms with final report				Reviewed/Date	Reviev	Reviewed/Date
Sample							elinquished
Same   Days   Sample   Same   Days   Days   Days   Days   Days   Days   Days   Days	Jar.						sceived
Same Day   1	* SIMPLE BENTERE						elinquished
Arcadis  Arc	contingent on the results of the GRO/DRO	1150	4/2/18		200	(	sceived
Same   Check One	* Hold for these samples; running these co	1150	4/8/19		und's	An	elinquished flee fluich
Sample Identification   Sample   Samp	Comments/Special Instructions	Time '	Date		у	Compan	Signature
Sample   S		X	X	w	1	1 /4	SB-PC-12-1-1,5
Arcadis   Arca		X	×	a		14.	SB-P2-11-0.5-1
Arcadis  Booo3010.0006   Same Day  Sam	MS/MSD	X	X	40		141	SB-PL-10-2-2
Arcadis  Arc		XX	$\sim$	le	0	14.	JB-PL-9-0-0,
Painy:   Arcadis   Arcadis   Arcadis   Arcadis   Arcadis   Arcadis   Arcadis   Arcadis   Booo3010.0006   Same Day   1 Day		X	×	W	00	190	SB-PL-8-1-15
Same   Date   Time   Sample   Sampled   Same   Day   Sa		X	×	a	35	/3	SB-R-7-00
Pany: Arcadis  Arcadis  Check One)  Arcadis  Check One)  Same Day  S		XXX	$\times$	Co	1	3/3/10 -	1 SB-DUP-4
Phone: (425) 883-3881 • www.conilide-procons  Arcadis  Arcadis  Same Day  Standard (7 Days)  Sampled Sampled  Sampled Sampled (NWTPH-Dx)  PCBs (USEPA Method 8082)  SPANS  PCBs (USEPA Method 8082)  SPANS  SPANS  PCBs (USEPA Method 8082)  PCBs (USEPA Method 8082)  RCRA 8 Metals (USEPA Method 8082)  PCBs (USEPA Method 8082)		X	$\times$	W	29	/ /3.	3 B-PL-6-1-1.5
Phone: (425) 883-3881 * *********************************		X	X	w	1 40	) /3:	SB-PL-5-0-0
Arcadis  Arcadis  Arcadis  Arcadis  Arcadis  Same Day  I Number: B0003010.0006  Sample Identification  Check One  Same Day  Same Day  Standard (7 Days)  Sample Identification  Sample Identification  Sample Identification  Check One  Same Day  Standard (7 Days)  Standard (7 Days)  And I Day  Sample Identification  Sample		X	×	W	0	19	SB-R-4-1-1.5
Sland    Same Day   Check One	RCRA	cPAH	DRO/H			1	
Sland    Same Day   Check One	8 Meta	(USE	IO/ <del>Min</del> e		other)		npled by:
Same Day	ls (USE	PA Meti	eral Oil		24	N	Josh
	PA Met	nod 827	10.40		Days)	Standard (7	USCG Burrows Island
(Check One)	2)		H-Dx)	Ü.	3 Days	2 Days	B0003010.0006
(Charle Ope)	10)					Same Day	Arcadis
				1	Onel	(Charle	Phone: (425) 883-3881 • www.onsite-env.com

Data Package: Level III 🗌 Level IV 🗍 Electronic Data Deliverables (EDDs) 🗎 \_\_

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Date					XF 412/18	cardis 4/2/1	Date	3 X	3		3	S X	\ \ \	(3)	3	40 ×	Soil 3 X	Numb Lead (I	er of (USEP)	Contain A Metho H-Gx)	ers d 6010) (NWTP	3 Days	1 Day	
Chr				*	1150	0		X	X	X	X	X	X		X	XXX	X	Benze cPAH	ene (U s (USE	SEPA N	lethod 8 hod 827			
Chromatograms with final report				* Jample offitere from ju	contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are	Comments/Special Instructions									MS/MSO		PCBs	(USE	PA Meti	EPA Me nod 808 nod 826	2)	110)	

Data Package: Level III 🗌 Level IV 🗎 Electronic Data Deliverables (EDDs) 🗎 \_

port 🗆	Chromatograms with final report				Reviewed/Date	Reviewed/Date
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- sample Trum Jur.	* Benzera					Relinquished
공	contingent on the results	150	412118		OXE	Received
* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are	* Hold for these samples	1150	4/2/		& Arcadis	Relinquished May Mind
tions	Comments/Special Instructions	Time	Date		Company	Signature
		XXX	>	W	1610	12.0-5-401-BOM
			×	W	1607	119 58-107-5-0-0.5
		X	$\sim$	W	1604	118 58-107-4-0,5-1
		X	$\sim$	W	361/19	11 SP - DUP-6
		XXX	×	w	1556	116 30-107-4-0-0.5
		NAN/O	8	S	1552	115 58-107-3-0.57
			X	W	845/	11456-107-3-0-0.5
		XXX	$\times$	W	1543	1-5.0-6-401-80.5-1
		X	×	W	1538	112 SB-107-2-0-0.5
->		X	×	W	3/3/1/9 1531 Soil	111 SB-107-1-1-1.5
1 2	RCRA	cPAH:		2000	Date Time Sampled Sampled Matrix	Lab ID Sample Identification
Me	8 Me	s (USE	IO/ <del>Mir</del>			Sampled by:
olsa	PA Meti	SEPA Met		Contain A Metho	× 5 DAMS	Project Manager: Josh Gravenmier
VPI	* EPA Me nod 808 nod 826	ethod 8 hod 827	(NWTP 8082)	ers d 6010)	Standard (7 Days)	Project Name: USCG Burrows Island
<u> </u>	2)	260)* 70 SIM)*	H-Dx)		2 Days 3 Days	Project Number: B0003010.0006
	110)	TEX			Same Day 1 Day	Company: Arcadis
					(Check One)	Phone: (425) 883-3881 • www.onsite-env.com
	04-015	Laboratory Number:	Laborator		Turnaround Request (in working days)	Environmental Inc.
						THE CHOICE

Data Package: Level III 🗌 Level IV 🗎 Electronic Data Deliverables (EDDs) 🗎 \_

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Reviewed/Date Reviewed/Date	Relinquished	Received	Relinquished	Received	Rich	Signature Company	18 35/01-3-6:30		10 B-104-3-1-0.5 16	31 - 104-2 - 4-45 - 16	35 SB-164-2-0-0.5 164	SB-104-01-2,5-3	23 SB-104-1-0-0.5 (1633	1/1/5:0-9-40/-	-0.5 3/31/19	Date Time Sample Identification Sampled Sampled		Project Manager: Josh Gravenmier S DAYS	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Sam	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com (Check One)	(III WOTKING days)
Reviewed/Date				(CXE LIBIL 280)	rend's 4/4/19 1150	Date Time		3 × ×	7	45 3 X XX	7 3 X X X	1639 3 XXX	33 3 XXX	6/8 3 X X	3 Soil 3 XXX	Matrix Numb Lead GRO DRO// PCBs Benz CPAF	OPER OF CONTROL OF CON	Contain A Metho PH-Gx) Deral Oil A Metho SEPA I	d 8082) Method 82	PH-Dx) 8260)*	1 Day	One)	uays)
Chromatograms with final report □			1	contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are	Comments/Special Instructions										VPH RCR PCB BTE	A 8 Mee	PH-VPH tals (US	H)* SEPA M thod 80	82)	5010)		

Data Package: Level III 🗌 Level IV 🗍 Electronic Data Deliverables (EDDs) 🗎

Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished Mac Mack	Signature	137 SB- DUP-8 H/1/19	136 SB-101-4- 2.0-2.5 H/1/19	135 88-101-4-0-0:5 4/1/18	18-7-2-1-88-188-1	134 SB-102-3-0,5-1,0 4/1/1	131 SB-107-3-0-0-5 HILLS	132 SB-102-2-0-0.5 4/1/19	131.28- DUP- 7 - 41/16	SB-102-1-1.5	SB- 100	Lab ID Sample Identification Sampled	Sampled by: Mark Ullery	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006		Hohe NE Sur Durber * Industrial * New Cooks Phone: (425) 883-8881 * www.onsite-env.com	10
Reviewed/Date					JAKO	An condis	Company	9 - 50:11	1113 50:11	1109 50:11	1.06 OSEO 10	19 1048 20:1 4	1007 50:1	0959 50:1 4	1 50:1 1	0950 50:1	0937 50:1 4	100 Y	ber of (	Contain	Standard (7 Days)	☐ 3 Days	Same Day 1 Day	(Check One)	Turnaround Request (In working days)
					9211 1150	0511 61/1/4	Date Time	××	X	×	XXXXXX	XXXX	XXXX	× × × × × × ×	× × × ×	XXXX	× × × ×	GRO DRO PCB Benz	(NWTP /HO/Mir s (USEP zene (U	H-Gx)  Heral-Oil  A Method  SEPA M	(NWTF d 8082) Method 8 thod 82	PH-Dx)	*		<b>Laboratory Number:</b>
Chromatograms with final report					contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are	Comments/Special Instructions					X	X	X	X	-	×	RCR	A 8 Me	PA Met			010)		04-015
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Data Package: Level III 

Level IV 

Electronic Data Deliverables (EDDs) 

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Environmental Inc.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com  Company: Arcadis	Turnaround Request (in working days) (Check One)	Request g days) One)		Laborat	Laboratory Number:	mber:	04	0	5		-	- 191		1		
Arcadis Project Number: B0003010.0006	Same Day	1 Day			0(1)			31A 270D/SIM	151A	ircle one)						
Project Name: USCG Burrows Island	Standard (7 Days)		s		was	MI			icides 8	etals (c	1664					
Project Manager: Josh Gravenmier	5 DAY 6		ntainer	EX	3	olatiles 3270D/S PAHs) SIM (low-		e Pestici orus Pes	id Herbi	ITCA M	grease)					
Sampled by: Mart Willer	Ot	(other)		H-Gx/BT	s 8260E	olatiles 8 w-level	3082		ated Ac	100						
Lab ID Sample Identification	Date Time Sampled Sampled	e led Matrix	Numbe		100	Semivo (with lo	PCBs 8		Chlorin		TCLP I					1
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32	1 1121	7	_		×		×									1
140 58-101-6-0-05	1123	7	_		Х		×									1
141 SB-101-6-015-110	1126	6	_		×		×									1
142 SB-101-7-05-110	1129	4	_		×		人									1
143 SB-101-7-1.5-2.0	1136	6	_		K		×									1
14 88-101-8 - 101-005	1139	9	-		×		*					-	12/2	nis	0	1
145 SB-101-8-1-0-1.5	11111		_		*		メ									1
M6 SB-101-9-0-0.5	1143	3	_		*		×									1
b-and-gs (MI	_	_	_		1		~	_								1
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Number of Containers  NWTPH-HCID  NWTPH-GX  NWTPH-GX  NWTPH-DX  Volatiles 8260B  Halogenated Volatiles 8270D/SIM (with low-level PAHs)  PAHs 8270D/SIM (low-level)  PAHs 8270D/SIM (low-level)  PAHs 8270D/SIM (low-level)  Organophosphorus Pesticides 8081A  Organophosphorus Pesticides 8270D/SIM  Chlorinated Acid Herbicides 8151A	Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished LCC / NECK	Signature	157 58-048-10	156 56-101-13-110-15	155 SB-101-13-0-0.5	154 5B-101-12-00 1:0-1.5	153 58-101-12-0-05	152 56-19-11-05-10	151 53-101-11-0-05	150 513-101-10-05-10	149 56-101-10-0-0.5	0.2-5:1-b-101-85 8H	Lab ID Sample Identification	Sampled by: Wark Willery	Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Number of Containers  NWTPH-HCID  NWTPH-GX  NWTPH-GX  NWTPH-GX  NWTPH-GX  Volatiles 8260B  Halogenated Volatiles 8270D/SIM ((with low-level PAHs))  PAHs 8270D/SIM ((low-level))  PCBs 8082  Organochlorine Pesticides 8081A  Organochlorine Pesticides 8270D/SIM (Organochlorine Pesticides 8151A)  Organophosphorus Pesticides 8151A  Total RCRA / MTCA Metals (circle one)	Reviewed/Date					080	Anca	Company	1	1213	12001	1215	1207	1200	1351	1203	1148	MHI	Time Sampled		5	Standard (7 Days)		T (one)	(in working days)
Chromatograms with final report  Chlorinated Acid Herbicides 8151A  Total RCRA / MTCA Metals (circle one)						17	A Sip	Dat	_	-	_	^	_	_	^	-	7	1,000	Numb	H-HCID	)	rs	3 Days	Day	
Chromatograms with final report  Chlorinated Acid Herbicides 8151A  Total RCRA / MTCA Metals (circle one)						12/19 1150	13/19 1150		×	Λ	×	メ	×	*	×	*	ß	7	NWTP NWTP Volatile Haloge	H-Gx H-Dx es 8260 enated \	DB Volatiles	8260B		5/1	oratory Numbe
								Comments/Special Instructions	7	X	×	^	X	*	*	~	×	*	PAHs PCBs Organ Organ Chlorir Total F	8270D/S 8082 ochlorin ophosph nated A	SIM (low ne Pestio norus Per cid Hert	cides 80 sticides 8	8270D/SI 3151A		010



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Reviewed/Date					380	Minish Arcad	Company		< 1 ×	7 1308	1235	1241	1240	1223	4/1/19 1218 3611	Date Time Sampled Sampled Matrix	(other)	S SDAYS	land   Standard (7 Days)		☐ Same Day ☐ 1 Day	.com (Check One)
					412/18	13 4/2/18	Date			*	×	*	*	×		Numb	PH-HCI PH-Gx/ PH-Gx	ВТЕХ	ers			
Chron					USU	1150	Time Comi									Halog Semiv (with I	volatile: ow-lev 8270D	Volatile s 8270D el PAHs	s 8260E	3		
Chromatograms with final report							Comments/Special Instructions		r	×	×	X	*	×	*	Organ Chlori Total I	nochlor nophosp inated RCRA	ohorus P Acid He / MTCA	esticides 8 esticides rbicides Metals	8270D/ 8151A		
										(asm/500)												
									4					+	->	% M	oisture					



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Revie	Received	Relino	Received	Relino	Received	Relino			169	891	167	166	165	Lab ID	Sampled by:	Project	Project	Project	Company:	
Reviewed/Date	ved	Relinquished	ved	Relinquished	ved 8	Relinquished Man	Signature		68503 FB-04012019	EB-03312019	EB-033019	EB-032919	PW-04019	Sample Identification	Mark Ullery	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
					V	11	Cc		WIN	4/1/15	3/30/M	3/24/4	4/1/15	Date Sampled			X Star	2 Days	Same Day	Tun (ir
Reviewed/Date				(	C	Arc	Company		1306	2160	0820	1700	1403	Time Sampled	(other)		X Standard (7 Days)	ays	ne Day	(in working days)
0					R	and !			+			_	Water	Matrix				3 Days	☐ 1 Day	est s)
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					1	1	D	-	~						H-HCID H-Gx/B		_		-	La
					0	2	Date	4	× 3%				-	NWTP		ILA			-	bor
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Chromatograms with final report							Comments/Special Instructions		1				X	PCBs	8082					4
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	T						1 1					1	1	% Moi	sture					



Mat 28, 2019

Josh Gravenmier Arcadis U.S., Inc. 1100 Olive Way, Suite 800 Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006

Laboratory Reference No. 1904-015B

# Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on April 2, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow Project Manager

**Enclosures** 

Project: B0003010.0006

## **Case Narrative**

Samples were collected on March 29, 30, 31 and April 1, 2019 and received by the laboratory on April 2, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Project: B0003010.0006

# TOTAL LEAD EPA 6010D

Matrix: Soil

Units: mg/Kg (ppm)

3 3 (T)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-14-1-0-0.5					
Laboratory ID:	04-015-08					
Lead	300	5.3	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-14-2-0-0.5					
Laboratory ID:	04-015-09					
Lead	420	5.3	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-15-1-0.5-1.0					
Laboratory ID:	04-015-20					
Lead	24	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-15-2-0.5-1.0					
Laboratory ID:	04-015-21					
Lead	55	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-15-3-0.5-1.0					
Laboratory ID:	04-015-22					
Lead	6600	26	EPA 6010D	5-23-19	5-24-19	
Client ID:	ISM-15-4-0.5-1.0					
Laboratory ID:	04-015-23		ED4 0040D		= 00 t0	
Lead	47	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-18-1-0-0.5					
Laboratory ID:	04-015-46					
	460	5.1	EPA 6010D	5-23-19	5-23-19	
Lead	400	5.1	EFA OUTUD	J-2J-19	0-23-18	
Client ID:	ISM-18-2-0-0.5					
Laboratory ID:	04-015-47					
Lead	83	5.2	EPA 6010D	5-23-19	5-23-19	

Project: B0003010.0006

# TOTAL LEAD EPA 6010D

Matrix: Soil

Units: mg/Kg (ppm)

				Date	Date		
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags	
Client ID:	ISM-18-3-0-0.5						
Laboratory ID:	04-015-48						
Lead	34	5.1	EPA 6010D	5-23-19	5-23-19		
Client ID:	ISM-18-4-0-0.5						
Laboratory ID:	04-015-49						
Lead	220	5.1	EPA 6010D	5-23-19	5-23-19	•	

Project: B0003010.0006

# TOTAL LEAD EPA 6010D QUALITY CONTROL

Matrix: Soil

Units: mg/Kg (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0523SM2					
Lead	ND	5.0	EPA 6010D	5-23-19	5-23-19	

					Source	Pe	rcent	Recovery		RPD	
Analyte	Res	sult	Spike	Level	Result	Red	covery	Limits	RPD	Limit	Flags
DUPLICATE											
Laboratory ID:	04-01	15-47									
	ORIG	DUP									
Lead	80.7	97.6	NA	NA			NA	NA	19	20	
MATRIX SPIKES											
Laboratory ID:	04-01	15-47									
	MS	MSD	MS	MSD		MS	MSD				
Lead	316	315	250	250	80.7	94	94	75-125	0	20	•

# % MOISTURE

Client ID	Lab ID	% Moisture
ISM-14-1-0-0.5	04-015-08	6
ISM-14-2-0-0.5	04-015-09	5
ISM-15-1-0.5-1.0	04-015-20	3
ISM-15-2-0.5-1.0	04-015-21	4
ISM-15-3-0.5-1.0	04-015-22	5
ISM-15-4-0.5-1.0	04-015-23	4
ISM-18-1-0-0.5	04-015-46	3
ISM-18-2-0-0.5	04-015-47	3
ISM-18-3-0-0.5	04-015-48	2
ISM-18-4-0-0.5	04-015-49	2



## **Data Qualifiers and Abbreviations**

- A Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B The analyte indicated was also found in the blank sample.
- C The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E The value reported exceeds the quantitation range and is an estimate.
- F Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I Compound recovery is outside of the control limits.
- J The value reported was below the practical quantitation limit. The value is an estimate.
- K Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L The RPD is outside of the control limits.
- M Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 Hydrocarbons in diesel range are impacting lube oil range results.
- O Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P The RPD of the detected concentrations between the two columns is greater than 40.
- Q Surrogate recovery is outside of the control limits.
- S Surrogate recovery data is not available due to the necessary dilution of the sample.
- T The sample chromatogram is not similar to a typical \_\_\_\_\_\_.
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 The practical quantitation limit is elevated due to interferences present in the sample.
- V Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

7 -

ND - Not Detected at PQL

PQL - Practical Quantitation Limit

RPD - Relative Percent Difference





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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished MMAH	Signature	からしいとするかの	9 ISM-14-2-0-0,5	8 ISM-14-1-0-0.5	7 ISM -14-A-0-0,5	6 ISM-13-C-0-0.5	5 ISM-13-B-0-0.5	4 ISM -13-3-0.5 1,0	3 ISM-13-2-0.5-1.0	2 ISM -13-1 -0.5-1.0	1 ISM-13-A-0.5-1.0	Lab ID Sample Identification	Sampled by, Mark Ullery	Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis		Environmental Inc.
Reviewed/Date					5	Silving	Company	1	1 0952 1	0451	0950	2.511	1115	1570	0730	1 2539	3/29/19 0728 50:1	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)		(Crieck One)	(in working days)	Turnaround Request
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Chromatograms with final report	(x) Added Stiller Total	O Atdect 4118/19 STA I	C) Addoor 4PILIS TA TO	contingent on the results of the GRO/DRO/HO results.	parent sample results. Benzene, cPAHs, EPH, and VPH are	* Hold for these samples: numing these compounds is continue	Comments/Special Instructions				0				8			VPH (I RCRA PCBs BTEX	WTPH 8 Metal: (USEPA	-VPH)* s (USEI	PA Method 8082)		0)		01-015
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Page 2 of 18

Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished		8	19	8	5	16	2	41	2	72	=	Lab ID	Sampled by:	Project Manager:	Project N	Project N	Company:	
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				(	R	alle	Signature	15-1-1	-15-A-	-15-4-	15-3-1	15-2-	15-1-	15-A-	14-2-6	14-1-6	14-A-C	Sample Identification		Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006		
					1	This sill		0.5-1.0	0.5-1.0	0-0,5	5-0.5	0-0.5	0-0.5	0-0.5	0,5-1,0	0.5-1.0	0.5-1.0			er	sland			
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report					sults of the GRO/D	ples; running these	ructions											12	L		_ea	a		
					RO/HO results.	* Hold for these samples; running these compounds is contingent on																		
					ire	tingent on		2	×					X			X	20	m	215	ruf	Æ		



Page 3 18

### BO003010.0006    SCG Burrows Island   Sample Day   1 Day	Sampled   Samp	Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished		7	29 I	7 86	14	7 %	K H	I he	7	22 7	24	Lab ID	Sampled by:	Project Manager:	Project Name	Project Numb	Company:	
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Reviewed/Date    Check One   Check One   Check One   All Says   Days   Days   Days   Days   Date   Days   Date   Days   Date   Days   Date   Days   Days   Date   Days   Days   Date   Days   D	13							leik		0,5	5.0	1	1	57	-1.5	27-6	1	,	1.0	S			and			ans.
Number of Containers  X X X X X X X X X X X X X X X X X X X	Number of Containers  Lead (USEPA Method 6010)  GRO (NWTPH-Gx)  DRO/HO/Mineral Oil (NWTPH-Dx)  PCBs (USEPA Method 8082)  Benzene (USEPA Method 8260)*  CPAHs (USEPA Method 8270 SIM)*  EPH (NWTPH-EPH)*	Reviewed/Date					380	Arcad	Company	1 3601	1038	1529	1378	7527	1326	130/19	1 1357	1356	9 1355 60	Time Sampled	(other)		X Standard (7 Days)		K One)	101-10-1
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VPH (NWTPH-VPH)*  RCRA 8 Metals (USEPA Method 6010)  PCBs (USEPA Method 8082)  BTEX (USEPA Method 8260)  BTEX (USEPA Method 8260)  * Hold for these samples; running these compounds is contingent on the results. Benzene, cPAHs, EPH, and VPH are contingent on PAHs, EPH, and VPH are							esults.	and vou			×					×	(X)	X	R	901	no	I STI	DRÉ			



Environmental Inc. 14648 NE 95th Street • Redmond, WA 98052	Turnaround Request (in working days)	Laboratory Number:	04-015
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Project Number: B0003010.0006	2 Days 3 Days	60)*	PE
Project Name: USCG Burrows Island	d (7 Days)	6010) IWTPH-	18082)
Project Manager: Josh Gravenmier		al Oil (N lethod 80 PA Metho	(USEP Method Method
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21 -2.0 - 6-91- NSI he	11123	X on Hall	
35 ISM-17-A-0-0.5	12/5		×
36 ISM-17-1-0-0.5	1220	X Ox To	
37 ISM-17-2-0-0.5	1661	X Du Ho	
38 ISM-17-3-0-05	アナナ	X on Hel	
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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished		SO ISM	49 ISM	WSI 8h	MSI CH	46 ISM	WSI Sh	WSI hh	,	WSI ZW	HH	HHH	724	727 127 127 127 127 127 127 127 127 127	iled by:	ct Name;	ct Number of Name:	A ct Number ct Name:
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						White		-0,5-10	0-0.5	5.0-0	5.0-0	0-0,5	7.0-0.5	05-1.0		0.5-1.0	1/2	7.7	0.2.7.	0.2.7.	0,5-1.		sland er	8land er 6,5-1.
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Page 6 of 18

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								9	90	90	4	-90	06	81-	18	7	-	Sai		sh	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Si	Environmental inc. 14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
					)		Signature	Un.	1	1	0	1	1	1	ŧ	8	00	Sample Identification		Gravenmier	Bu	01		h Street 883-388
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	Chromatograms with final report				Reviewed/Date	Reviewed/Date
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7 K - 1 M	Comments/Special Instructions	Time	Date		Company	Signature
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Æ	PA Mett od 8082 od 8260	od 8270			Standard (7 Days)	Project Name: USCG Burrows Island
		60)* SIM)*				Project Number: B0003010.0006
	00)	EX			Same Day 1 Day	Company: Arcadis
	04-015	Number:	Laboratory Number:		Turnaround Request (in working days)	ENVIRONMENTA INC.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-9881 • www.onsite-env.com



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished Man Mink	Signature	No SB-PL-3-0-0.5	89 SB-PL-2-1-1,5	88 SB-PL-1-0-0.5	87 513-12-1-1.5	86 SB-112-12-00.5	85 511-11-15-2	845B-112-11-0-0.5	1-5.0-01-011-95 58	81 56-112-10-0-0.5	81 58-112-9-0.5-1	Lab ID Sample Identification	sampled by:	Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010,0006	Arcadis	Environmental Inc.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					380	Avend	Company	1315	(3/3	1310	638	1233	1230	1326	120	( 1218 )	3/31/19 1215 Soil	Date Time Sampled Sampled Matrix		S DAYS	Standard (7 Days)	П	Same Day 1 Day	Turnaround Request (in working days)
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O					155	1150	Time	X	XXX	XXX	X	X	XXX	XXX	XXX	XXX	XXX	Benzel cPAHs EPH (I	ne (USE	EPA Meth	thod 82			ry Number:
Chromatograms with final report				* Jample Benzene from jar.	parent sample results, benzene, crAns, Ern, and vrn are contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions										8	PCBs BTEX	8 Meta	I-VPH)* Is (USEI A Method A Method	od 8082)		00)	04-015



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished flush	Signature	100 SB-R-12-1-15	99 SB-P2-11-0.5-1	88 B-PL-10-2-2.5	97 08-12-9-0-0,5	96 B-R-8-1-15	35 B-N-7-0-0.5	84 SB-DUP-4	33 SB-P2-6-1-1.5	92 JB-PL-5-0-0.5	21 58-12-4-1-1.5	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					(9%E	Arindis	Company	1/427 1 3	1423 3	14/6	1410	1400 3	/335 3	38/10 -	/ /329 \ 3	1 1324 / 3	36/19 1319 Soil 3	Date Time Sampled Sampled Matrix	(other)	STAYS	Standard (7 Days)		Same Day 1 Day	(in working days)
					411/18/112	7/2/19 115	Date Time	X	× × ×	XXX	×	× × ×	×	X	> > X	X	×	Lead (U GRO (I DRO/H PCBs ( Benze	JSEPA NWTPH IO/Mine USEPA ne (US	Method	6010) NWTPH 8082)	60)*		Laboratory Number:
Chromatograms with final report			Aur.	* Surple Dentene 7 1000	contingent on the results of the GRO/DRO/HO results	* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are	Comments/Special Instructions	X		X MS/MSD	X			X			×	EPH (IVPH (IRCRA	NWTPH NWTPH 8 Metal (USEP)	H-EPH)* I-VPH)* Is (USE) A Method	PA Meti	nod 601	0)	ber: 04-010



Page // of / 8

Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished May Inve	Signature	110 SB-107-10-1-0-0.5	109 58-101-3-2-2.5	108 58-101-3-0-0.5	107 58-101-2-2,5	106 SB-DUP-5	105/8-101-2-0-0.5	10458-101-1-2-2,5	10356-\$101-1-0-0.5	102 SB- PL-14-1-1.5	101 B-R-13-1-15	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental Inc.  14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date				(	380	Availis	Company	1525 \ 3	15/3 3	1508 3	1, 1504 3	331/10 - 3	1428 3	1452 3	( 1449 )	1438 (48	3/21/19 1431 Soil 3	Date Time Sampled Sampled Matrix	(other)	5 DAY	Standard (7 Days)	2 Days	Same Day 1 Day	Turnaround Request (in working days)
					4/2/151 /150	1/2/19 1120	Date Time	XXX	XX	X	× × ×	X	\ \ \ \	× × ×		XXX	XXX	Lead (I GRO (I DRO/H PCBs ( Benze cPAHs	USEPA NWTPH HO/Mine USEPA ene (USEPA	Method I-Gx) ral Oil ( Method 8	6010) NWTPH 8082) thod 82	60)*		Laboratory Number:
Chromatograms with final report				* Jample benzere from jor.	contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions									( MS/MSD		VPH (I	NWTPH 8 Metal (USEP)	I-VPH)* Is (USE) A Method	PA Metion of 8082 of 8260 of 8		0)	r: 04-015



Chromatograms with final report	Chro			Reviewed/Date	Reviewed/Date
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Benzene - sample from jar.	*			(	Relinquished
parient sample results. Benzene, CPAHS, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	5	118/12/14		000	Received
* Hold for these samples; running these compounds is contingent on	H. 05/	4/2/19		& Arcadis	Relinquished Mey Musu
Comments/Special Instructions	7	Date Time		Company	Signature
		× ×	W	1610	120 56-107-5-0.51
		×	W	1607	119 58-107-5-0-0.5
	X	$\times$	W	1604	118 SB-107-4-0,5-1
	X	×	W	3/3/19	IN SB-PUP-6
	X	×	w	155%	116 58-107-4-0-0.5
	88	X8)	W	1552	115.58-107-3-0.57
		XXX	W	845/	11456-107-3-0-0,5
	×	×	W	1543	113 58-107-2-0,5-1
	X	X	W	1538	III SB-107-2-0-0.5
X	X	×	W	3/3/1/19 1531 Soil	III SB-107-1-1-15
PCBs	CPAHS	PCBs (		Date Time Sampled Sampled Matrix	Lab ID Sample Identification
(USEP	(USEF	O/Mine	No. of the last		Sampled by:
A Method A Method A Method	PA Meth H-EPH)*	H-Gx) cral Oil ( Method 8 EPA Me	ontaine Method	X 5 DAYS	Project Manager: Josh Gravenmier
od 8082)	od 8270	3082)		Standard (7 Days)	Project Name: USCG Burrows Island
	SIM)*				Project Number: B0003010.0006
0)		EY		(Cneck One)	Company: Arcadis
4-015	umber: 0	Laboratory Number:		Turnaround Request (in working days)	Environmental Inc.  14648 NE 56th Street • Redmond, VM, 98052 Phone: (425) 883-3881 • www.onsite-env.com



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished Men M	Signature	128 SB-104-3-2,5-3	121 83-104-3-0-0.5	12-104-5 - 4-4'S	135 56-164-2-00	124 SB-164-01-2,5-	123 5/3-104-1-0-0.	1-5.0-9-40/-80 KEI	121 56-107-6-0-0.5	Lab ID Sample Identification	Sampled by:	Project Manager:  Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental inc.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					(CXF)	with Ar condi	Company	3 /650	1647	1645	5 1641	3 /639	5 (1633)	1 8/9/	5 3/31/19 1613 Soil	Date Time Sampled Sampled Matrix	(other)	N S DAYS	Standard (7 Days)	2 Days	Same Day 1 Day	Turnaround Request (In working days)
				•	411 51/214	5 // W/1 1150	Date Time	\(\times\)	\(\text{\tint{\text{\tinit}\\ \text{\texi}\text{\text{\text{\text{\text{\text{\text{\texi}\text{\text{\texi}\text{\text{\text{\text{\text{\text{\text{\texi}\text{\texit{\text{\tex{	3 X X X	3 X X X	ω ×	3 ×	3 X X X	3 X X X X	Lead (I GRO (I DRO/H PCBs ( Benze	JSEPA NWTPH O/Mine USEPA ne (USI	ral Oil ( Method & EPA Me	1 6010) NWTPH	260)*		Laboratory Numb
Chromatograms with final report			7	* Take Benzene from jar.	contingent on the res	0	Comments/Special Instructions									VPH (I RCRA PCBs	NWTPH 8 Metal (USEP)	A Metho			0)	ber: 04-015



Page 14 of 18

	Chromatograms with final report				Reviewed/Date	Reviewed/Date	77
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						Relinquished	71
						Received	т
						Relinquished	77
	parent sample results. Benzene, CPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	1150	412/19		SAR	Received	70
ent on	*Hold for these samples; running these compounds is contingent on	1150	1/2/19		Ar condis	Relinquished Man Mink	
	Comments/Special Instructions	Time	Date		Company	Signature	
~			X		11/19 - 50:1	137 SB- DUP-8	13
			X	_	1/19 1113 50:1	136 SB-101-4- J.O-J.5 H	77
·×			X	-	1/18 1100 20:1	135 88-101-4-0-0,5	2
	X X ASO	* * * *	X		4/19 ORSO 20,1-1	1 28-182-1 - 834-82-1	1
4	X	XXX	×	2	11/19 1048 50:1	13450-102-3-0,5-1,0 4	17
	X	XXX	X	2	1/19 1007 50:1	133 SB-107-3-0-0:5 4	5
	X	XXX	×	7	1119 0959 5011	132 SB-102-8-0-015 4	2
	X	X X	X	2	W/1/19 - Soil	131.28- DAL- 2	13
	X MS/WSD	X X	×	120	1/19 0950 50:1	130 SB-102-1-1.5-2.0 4	E.
X	X	X X	×	7	11/19 0937 50:1	128 SB-102-1-0-0.5 M	7
9.	RCRA	сРАН	DRO/H		Date Time Sampled Sampled Matrix	Lab ID Sample Identification S	Lal
ma	NWTPH 8 Metal (USEP)	ene (USE s (USEF	NWTPH HO/Mine (USEPA	USEPA	(other)	Sampled by: Mark Ullery	S
710	Is (USE	PA Meth	ral Oil	575.000	5 DAYS	Josh Gravenmier	7
70	PA Method 8082	od 8270			Standard (7 Days)	Project Name: USCG Burrows Island	P
F	)		I-Dx)			Project Number: B0003010.0006	P
-	0)				Same Day 1 Day	Arcadis	Q
	04-015	Laboratory Number:	aboratory	  -	Turnaround Request (in working days)	14548 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-8881 • www.onsite-env.com	
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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished MM Mich	Signature	147 SE-DUP-9	146 SB-101-9-0-0.5	145 SB-101-8-1-0-15	144 8B-101-8 - 0-0.5	143 53-101-7-1.5-2.0	142 SB-101-7-0.5-1:0	141 SP-101-6-05-10	140 53-101-6-0-0.5	139 56-101-5-05-110	138 188 188-101-8-0-0:2 1	Lab ID Sample Identification	Sampled by: Mark Willery	Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					38O)	Aran	Company	1	1143	1141	1139	1136	1129	1126	1123	1121	WINA MA S	Date Time Sampled Sampled Ma		S DAYS	Standard (7 Days)		Same Day 1 Day	Turnaround Request (in working days)
					4/4	g/2 K/0	Date	_	_	_	-	_	-	-	_	_	Soil 1	NWTP	PH-HCID		rs	Days	Day	Labo
					NS11 5117	1/19 1150	Time	^	*	*	*	_	×	×	*	×	*	Haloge	PH-Dx es 8260 enated V	olatiles		ocl	)	Laboratory Number:
Chromatograms with final report							Comments/Special Instructions		*	*	x (ms/m/sid)	×		×	X	*	×	PAHs PCBs Organ Organ Chlorir Total F	ochloring ophospho nated Ad RCRA / M Metals oil and g	BIM (low e Pestic orus Pes id Herb	ides 800 ticides 8 icides 8 letals (c	270D/S 151A		04-015



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Reviewed/Date F	Received	Relinquished	Received	Relinquished	Received	Relinquished flow from from the first flow flow flow flow flow flow flow flow	Signature	151 SB-DUR-10	156 58-101-13-110-1.5	155 56-101-13-0-25	154 5B-101-12-00 1:0-15	0.8	152 58-10-11-0.5-1.0	151 53-101-11-0-05	150 513-101-10-0.5-1.0	149 56-101-10-0-0.5	MIN 28-101-9-15-5:0 A/IN	Lab ID Sample Identification Sampled	sampled by: Whey Whey		ISCG Burrows Island		Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 (in Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					280	tradis	Company	1	1213	12001	1215	1207	12de	1351	1203	1648	1,46 2011	Time Sampled Matrix	(other)	S DAYS	Standard (7 Days)	2 Days 3 Days	k One)	(in working days)
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					13/11/20	19 1150	Time	×	_	×	*	×	*	×	*	ム	*	Haloge	es 8260 enated V	olatiles	8260B	al o	5	Laboratory Number:
Chromatograms with final report							Comments/Special Instructions	7	X	×	^	X	*	*	~	×	*	PAHs & PCBs of Organo Organo Chlorir	pphospho	Pestic Pestic Pestic Pestic	ides 808 sticides 8 icides 8	270D/SIM		04-015
							18											TCLP (	Metals	rease)	1664			
								_									×	% Mois	sture					



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished	Signature		164 53-042-11	163 56-101-16-20	33-101-16-0-	161 58-101-15-05-	160 58-101-15-0-05	159 58-101-14-10	158 58-101-14-0-	Lab ID Sample Identification	sampled by:	Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
						R Minist				22-5	2.0	1/3	7	10-15	5.0-	ation		mier	's Island	)06		onsite-env.com
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Chron					llso	6 1150	Time Com		_	7	×	,	*	×	×	Volatile Haloge Semivo	nated \ natiles w-level	B /olatiles B270D/S	8260B SIM	10.1		Laboratory Number: 0
Chromatograms with final report							Comments/Special Instructions		4	×	×	X	*	X	*	Organo	phosph ated Ac	e Pestic orus Pes cid Herb MTCA M	ticides 8	270D/S		4-015
							THE REPORT AND			(ms/msD)						AN		grease)	1664			
									4						X	% Mois	sture					

Data Package: Level III <a>III</a> Level IV</a> Electronic Data Deliverables (EDDs)</a>

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						V	Mills				4/1/M	4/1/15	3/30/M	3/24/4	4/1/16	Date Sampled	[		⊠ sŧ		Ss	110
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ite					1	A.	and				+			_	Water	Matrix			9)	3 Days	1 Day	ys)
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				+		7	N	Date			X						H-Gx/B				-	Lab
						0	8	œ			3%					NWTP	H-Gx					Laboratory Number:
						2	R				X	+				NWTP	H-Dx					tory
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togram								ents/S			<i>&gt;</i>				1			e Pestic	ides 80	81A	-	1
s with								pecia								Organo	phosph	orus Pe	sticides 8	3270D/S	IM	0
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port								ction							X	Total F	CRAY	MTCA N	fetals (c	ircle on	e)	
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																HEM (	oil and o	grease)	1664			
																EP	#>					
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												×	^	X		TE	tal	Lea	d			
																					-	
																% Moi	sture					



14648 NE 95<sup>th</sup> Street, Redmond, WA 98052 • (425) 883-3881

June 7, 2019

Josh Gravenmier Arcadis U.S., Inc. 1100 Olive Way, Suite 800 Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006

Laboratory Reference No. 1904-015C

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on April 2, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow Project Manager

**Enclosures** 



Date of Report: June 7, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015C

Project: B0003010.0006

### **Case Narrative**

Samples were collected on March 29, 30, 31 and April 1, 2019 and received by the laboratory on April 2, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

### TCLP Metals EPA 1311/6010D/7470A

Due to a limited amount of sample, less than the required 100g was tumbled for TCLP analysis. The amount of sample used for ISM-14-2-0-0.5, (04-015-09) was 25g and the amount of sample used for ISM-18-1-0-0.5, (04-015-46) was 25g.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: June 7, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015C

Project: B0003010.0006

### TCLP LEAD EPA 1311/6010D

Matrix: TCLP Extract Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	ISM-14-2-0-0.5	I QL	Wictiloa	Перагса	Analyzea	ı iagə
Laboratory ID:	04-015-09					
Lead	ND	0.20	EPA 6010D	5-31-19	5-31-19	
Client ID:	ISM-18-1-0-0.5					
Laboratory ID:	04-015-46					
Lead	ND	0.20	EPA 6010D	5-31-19	5-31-19	

Date of Report: June 7, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015C

Project: B0003010.0006

### TCLP LEAD EPA 1311/6010D QUALITY CONTROL

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0531TM1					
Lead	ND	0.20	EPA 6010D	5-31-19	5-31-19	•

Analyte	Res	sult	Spike	Level	Source Result		rcent	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							, , , , , , , , , , , , , , , , , , ,				
Laboratory ID:	05-11	18-01									
	ORIG	DUP									
Lead	ND	ND	NA	NA			NA	NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	05-11	18-01									
	MS	MSD	MS	MSD		MS	MSD				
Lead	8.77	8.67	10.0	10.0	ND	88	87	75-125	1	20	



### **Data Qualifiers and Abbreviations**

- A Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B The analyte indicated was also found in the blank sample.
- C The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E The value reported exceeds the quantitation range and is an estimate.
- F Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I Compound recovery is outside of the control limits.
- J The value reported was below the practical quantitation limit. The value is an estimate.
- K Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L The RPD is outside of the control limits.
- M Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 Hydrocarbons in diesel range are impacting lube oil range results.
- O Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P The RPD of the detected concentrations between the two columns is greater than 40.
- Q Surrogate recovery is outside of the control limits.
- S Surrogate recovery data is not available due to the necessary dilution of the sample.
- T The sample chromatogram is not similar to a typical \_\_\_\_\_\_.
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 The practical quantitation limit is elevated due to interferences present in the sample.
- V Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

7 -

ND - Not Detected at PQL

PQL - Practical Quantitation Limit

RPD - Relative Percent Difference





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Reviewed/Date					020	Arcadis	Company		1 6952 1 10	045/	0950 1	1 1 2511	1115 1 12	1 1520	0730	1 1 1800 1	3/29/19 0738 5:11		(other)		rd (7 Days)		(Check One)	Turnaround Request (In working days)
Chr					0511 Byelh	1/2/19 1150.	Date Time Co		Not to	S) din Hola	_	×	_	x on Hold	X Cu Hold	X Jutole	~	GRO (N DRO/H PCBs (I Benzer cPAHs	JSEPA I  WTPH- O/Miner  JSEPA I  USEPA I  (USEPA  WTPH- IWTPH-	Gx) al Oil (Nethod 8) PA Method Method Method	NWTPH 082) thod 826	50)*		Laboratory Number:
Chromatograms with final report (	(x) Added Studies Teter Lead	O Arder 4118/19 STA BO	& Address 4 Pills SIA DE		parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	Hold for these samples; running these compounds is contingent on	Comments/Special Instructions				0			,		7		PCBs (	Metals USEPA USEPA	(USEP) Method	i 8082) i 8260)			04-015



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	Chromatograms with final report			Reviewed/Date	Reviewed/Date	D
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					Received	D
					Relinquished	R
are	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	2/18/11/50	14	- 08E	Received	D.
ntingent on	* Hold for these samples; running these compounds is contingent on	119 1150	1/4	Arcadis	Relinquished Aug Aug	D.
	Comments/Special Instructions	Time	Date	Company	Signature	87
2		Que 110	Š	1 1354 1	20 ISM-15-1-0.5-1.0	2
×	0		_ X	1353	19 ISM -15-4-0.5-1.0	-9
		ON Ha	- ×	1334	18 ISM -15-4-0-0,5	2
		an Ao	×	1333	1) ISM -15 - 3 - 0 - 0,5	7
		an Ho	- X	1332	16 ISM-15-2-0-0.5	11
	8	on to	_ ×	(33)	5'0-0-1-51-WST SI	2
X			~ X	7/09/19 1330	14 ISM -15-A-0-0.5	7
	B	on Ho	<u>×</u>	1 7801	13 ISM-14-J-0.5-1.0	-
	8	on Ho	<i>→</i>	1036	12 ISM -14-1-0,5-1,0	3
X			~ ×	3/29/19/075 50:1	11 ISM-14-A-0.5-1.0	_
20	RCRA PCBs BTEX	PCBs ( Benze cPAHs	Lead (l	Date Time Sampled Sampled Matrix	Lab ID Sample Identification	Lab
m	(USEPA	USEPAI	USEPA	(other)	Sampled by:	Sa
215	Metho	Method 8 EPA Me A Metho	Method		Project Manager: Josh Gravenmier	Pro
rue	PA Method 8082)	thod 82		X Standard (7 Days)	Project Name: USCG Burrows Island	Pro
E		60)*			Project Number: B0003010.0006	Pro
	))			(Check One)	Company: Arcadis	δ
	04-015	Laboratory Number:	Labo	Turnaround Request (in working days)	Environmental Inc.  14648 NE 55th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	



Environmental Inc. 14648 NE 95th Street • Redmond, WA 98052	Turnaround Request (in working days)	Laboratory Number:	04-015
Company: Arcadis	k One)		<u> </u>
Project Number: B0003010.0006	2 Days 3 Days	50)*	od 6010
Project Name: USCG Burrows Island	rd (7 Days	6010) NWTPH-	d 8082) d 8260)
Project Manager: Josh Gravenmier		al Oil (Nethod 80 PA Met	Method Method
Sampled by:	(other)	SEPA M WTPH- D/Miner USEPA M He (USE	USEPA USEPA
Lab ID Sample Identification	Date Time Sampled Sampled Matrix	Lead (U GRO (N DRO/He PCBs (U Benzer cPAHs	PCBs (BTEX (
21 ISM -15-2-0,5-1.0	3/34/9 1355 50:1	8 /4 /4	
22 ISM -15-3-0.5-1.0	1356	8	7 CE
23 TSM-15-4-0.5-1.0	1 1357	8 On Hall	(X)
24 ISM -15-4-1.0-15	3/70/10 1325	×	×
25 ISM -15-1-1.0-1.5	1326	X on Hold	
51-01-4-51-WST 96	7527	X Su Hold	
27 ISM -15-3-1.0-1.5	1378	X Du Hold	
28 ISM -15-4-10-15	1329	X ex Rale	
29 ISM -16-A-0-0.5	1038	×	×
30 ISM-16-1-0-0,5	1 3601	1 X on Hol	
Signature	Company	Date Time	Comments/Special Instructions
Relinquished Man Milk	Arcadis	4/2/19 1150	* Hold for these samples; running these compounds is contingent on
Received	380	112/1s 1150	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.
Relinquished	(		
Received			
Relinquished			
Received			
Reviewed/Date	Reviewed/Date		Chromatograms with final report



Page 4 18

Reviewed/Date Revi	Received	Relinquished	Received	Relinquished	Received	Relinquished May Mills	Signature Company	1 0.1-5.0-1	\$ 10-0- H-21- WSI	1 50-0-8-11-MST 88	ISM-17-2-0-0.5	J-SM-17-1-0-0.5	15M-17-A-0-0.5	1 12M-19-7-0-2-110	33 ISM -16-1-0-5-10 1	ISM-16-A-0.5-1.0	TSM-16-7-0-02 3/2/6	Lab ID Sample Identification Sampled S	Sampled by:	Josh Gravenmier	Project Name: USCG Burrows Island		Sam	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					08/2 Holls 1180	1 readis 4/2/19 1150	any Date Time	1350 1 1 1	1223 1 1 X ON FR	1 × 00 A	X 1 16PI	1200 - X ON T	12/2	123 X On Ho	122 - X ON +16	12 X	1040 2011 1 X 040 HO	Lead (U GRO (N DRO/H PCBs (I Benzer	JSEPA NWTPH O/Mine USEPA I	ral Oil (N Method 8 EPA Met	's 6010)	3 Days -Dx)	(Check One)	ys) Laboratory Num
Chromatograms with final report					parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions				0			8				VPH (N RCRA I PCBs () BTEX ()	(USEPA	VPH)*  (USEF  Method	1 8082)			ber: 04-015



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ENVIPORMENTAL INC.  14848 NE 95th Street - Redmond, WA 98052	Turnaround Request (in working days)	Laboratory Number:	04-015	
Company: Arcadis	k One)			
Project Number: B0003010.0006	☐ 2 Days ☐ 3 Days	60)*	od 6010)	-
Project Name: USCG Burrows Island	rd (7 Days)	6010) NWTPH-	d 8082) d 8260)	re
Project Manager: Josh Gravenmier	]	Method Gx) al Oil (N Method 8 PA Method	Method	1 ST
Sampled by:	(other)	JSEPAN ne (USE	WTPH- B Metals USEPA USEPA	mo
Lab ID Sample Identification	Date Time Sampled Sampled Matrix	Lead (U GRO (I DRO/H PCBs (I Benze	RCRA PCBs BTEX	%
N ISM -17-1-05-10	10	1 X OM Hold		
12 ISM - 17 - 2-0,5-1.0	1 1350	1 x 0 x 1/4		
43 ISM -17-3-0.5-1.0	1353	1 X Ou Hold		
01-50-4-21-WSI hh	1354	1 × 0 m Rol		
45 ISM -18-4-0-0.5	1553	7		X
46 ISM-18-1-0-0,5	1554	- B + 10	•	8
5.0-0-4-81-MST CA	1555	18 Ball		R
48 ISM-18-3-0-0.5	1556	- On the		(X)
45 TSM-18-4-0-0,5	1557	8		R
\$ ISM-18-A-0,5-1.0	1 1559	+		×
Signature	Company	Date Time	Comments/Special Instructions	
Relinquished Manual Man	Arcadis	4/2/19 1150	* Hold for these samples; running these compounds is contingent on	ton
Received	380	12/18 118D	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date	Reviewed/Date		Chromatograms with final report	



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished May Muster	Signature	60 58-106-3-0-0.5	59 58-106-2-20-25	58 58-106-2-0-0.5	57 SB - DUP-1	SL SB-106-1-2-2.3	55 SB-106-1-0-0.5	SN ISM-18-4-0.5-1.0	53 ISM-18-3-0.5-1.0	25 FEM-18-9-02 -10	21 ISW-18-1-027.0	Lab ID Sample Identification	Sampled by:	Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Arcadis	14848 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					1	Arcad	Company	3/31/19 0901	3/3/19 0306	13/3/10 0900	3/31/19	3/31/19 0911	3/3/19 0855 Soil	1 ) 603 1	1607	1601	3/30/19 1600 50:1	Date Time Sampled Sampled Matrix	(other)		X Standard (7 Days)	П	Same Day 1 Day	(in working days)
					42/18/12/2	15 4/2/19 1150	Date Time	X	X	X	X	×	<u>%</u> ×	-X ON He	1 X On Hole	-X ON Hold	1 x on Hold	Lead (I GRO (I DRO/H PCBs ( Benze	USEPA NWTPH IO/Mine USEPA nne (US	eral Oil ( Method & EPA Me	NWTPH 8082) ethod 82	60)*		Laboratory Number:
Chromatograms with final report				* Jample Benzene from Jar.	ntingent on the results of the GRO/DRO/HO	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions							B				VPH (I	NWTPH 8 Meta (USEP)	I-VPH)* Is (USE A Metho	PA Metion 8082)		0)	r: 04-015



	ort 🗆	Chromatograms with final report					Reviewed/Date	_		Reviewed/Date
										Received
										Relinquished
										Received
	benzene from jor	* cample							(	Relinquished
	parent sample results. Benzene, CPAHS, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	contingent on the results	Ilso	12/18	4	M	80		3	Received
3	* Hold for these samples; running these compounds is contingent on	* Hold for these samples;	1150	1/2/19	7	N.	Arcas		was fling	Relinquished
	tions	Comments/Special Instructions	Time /		Date		Company	Col	Signature	
<	<		XXX	~		S	1100		12-4-0.5-1	70 SB-11
			XXX	×	080	3		3/3/1/19	1P-2	69 SB-DU
			× ×	×		w	1055		2-4-0-0.5	68 SB- 11:
			XXX	×		a	1080	-	2-1-1.3	67 58-11
			XXX	×		()	2401		2-3-0-0.5	66 88-112
			X	×		w	1041		2-2-1-1.5	65 JB-11-
			XXX	×		(ei	1038		2-2-0-0.5	CM SB 1/2
			×	×		S	1035	-	2-1-0.5-0.7	63 SB-118
_	×		X	×	,	Co	1020	3/3/19	12-1-0-0.5	62 08-11
X					×	Soil 1	09125	3/31/19	6-3-2-2.5	61 58-106
90		RCRA PCBs	cPAHs		Lead (I	Matrix	Time Sampled N	Date Sampled	Sample Identification	Lab ID
mo	Days	(USEP	(USEP			or of Co	(other)	[		Sampled by:
IST		s (USEI		rel Oil (I	Method	ontaine			sh Gravenmier	Project Manager: Josh
RE		PA Method 8082)	thod 82 od 8270	NWTPH 8082)		200	X Standard (7 Days)	X Stan	Project Name: USCG Burrows Island	Project Name: USC
				-Dx)		3 Days	_	2 Days	Project Number: B0003010,0006	Project Number: B00
		0)			1	1 Day	Same Day	Sam	lis	Company: Arcadis
		04-015	Number:	Laboratory Num	Lab		Turnaround Request (in working days)	Turn (in	Environmental Inc. 14648 NE 55th Street • Redmond, WA 90052 Phone: (425) 883-3881 • www.onsite-env.com	14648 Phone:



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							_		-															
Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished	Signature	80 SB-112-9-1	79 58-112-08-	78 5B- 00	n 58-112-18-0	16 58-112-7-	15 56-112-78-	74 56-112-6-	7358-112-6-	1258-112-5-	11 518-112-5-	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
						1 Mil		0-0.5	-1-1.5	1P-3	2.0-	8.0-5.0	0.0.5	1-1.5	0-0.5	0.5-0.9	0-0.5	cation		nmier	vs Island	006		nond, WA 98052 v.onsite-env.com
Reviewed/Date					(0%)	Arcad-	Company	12/6	1306	3/31/19-	1200	1145	11%	1135	/13/	lee11	3/3/19/115 Soil	Date Time Sampled Sampled Matrix		N 5 DAVS	Standard (7 Days)		Same Day 1 Day	Turnaround Request (in working days)
						7		W	W	w	W	W	Cu	W	S	(v	3	Numb	er of Co			os .		[ [
					4/2/18	4/2/19	Date	X	X	$\geq$	$\times$	×	×	X	XXXX	×	X	DRO/H	USEPA	rel-Qil ( Method 8				Laboratory Num
					150	1150	Time	XXX	XXX	XXX	XX	XXX	XX	XXX	888	XXX	XX	cPAHs	(USEP	A Meth	thod 82 od 8270	60)* SIM)*	EX	Number:
Chromatograms with final report				* Jample Benzene from Ja	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions											RCRA PCBs	(USEP	s (USE	PA Method 8082) and 8260)		D)	r: 04-015
				1,		t on		-								_	X	90	moi.	SNE	Æ			



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	Chromatograms with final report				ate	Reviewed/Date	Reviewed/Date	Revi
							Received	Rec
							Relinquished	Reli
							Received	Rec
1,	* Jample Benzene from jour						Relinquished	Reli
	parent sample results. Benzene, CPAHS, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	ISSI	Mells		38	6	Received	Rec
nt on	* Hold for these samples; running these compounds is contingent on	1150	4/2/19	5	and;	Ar	Relinquished Man Mink	Reli
	Comments/Special Instructions	Time	Date			Company	Signature	
-		XXX	X	Cu		1 /3/5	305B-PL-3-0-0.5	20
		XXX	$\times$	W		(3/3	99 SB-PL-2-1-1,5	89
		XXX	$\times$	w		1310	88 SB-PL-1-0-0.5	88
		XX	×	W		638	n 5B-112-12-1-1.5	18
		X X	$\sim$	w		1233	6 SB-112-12-0-0.5	88
		XXX	X	W		1230	85 SB-112-11-1.5-2	88
		XXX	×	W		1326	845B-112-11-0-0.5	200
	( )	XXX	$\times$	Cu		120	1.5.0-01-17-95	83
		XXX	×	w		814)	156-112-10-0-05	82
8		XXX	×	M	Soil	SHI 6/11/2/2	1 50-112-9-0.5-1	9
20	RCRA PCBs	cPAHs	DRO/H		Matrix	Date Time Sampled Sampled	Sample Identification	Lab ID
mo	8 Meta	(USEF			3		Sampled by:	Samp
IST	A Metho			ontaine Method		S DAYS	Project Manager: Josh Gravenmier	Proje
UPE	PA Method 8082)	thod 82 od 8270	NWTPH 8082)		rs)	Standard (7 Days)	Project Name: USCG Burrows Island	Proje
			-Dx)		☐ 3 Days	2 Days	Project Number: B0003010,0006	Proje
	5)				1 Day	(Check One)  Same Day	Arcadis	Com
	04 01	140111001	-upolatoi y	1.	ayaj	B Sinviore in	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	
	01-015	Number-	l ahoratory Num		quest	Turnaround Request	Environmental Inc.	



Environmental Inc.  14648 NE 95th Street - Redmond, WA 98052 Phone: 1454 R84-2864 - www.north.markon.	Turnaround Request (in working days)	Laborator	Laboratory Number:	04-015	
Company: Arcadis	k One)				
Project Number: B0003010.0006	☐ 2 Days ☐ 3 Days	Dx)			
Project Name: USCG Burrows Island	d (7 Days)	6010) IWTPH-		I 8082)	IPE
Project Manager: Josh Gravenmier	ת אלי	Method (Gx) al-Oil (N		(USEP) Method	IST
Sampled by:	(other)	SEPA N		i Metals USEPA USEPA	mo
Lab ID Sample Identification	Date Time Sampled Sampled Matrix	Lead (U GRO (N DRO/H	cPAHs EPH (N	PCBs (	90
21 SB-R-4-1-15		_	X		X
92 JB-PL-5-0-0.5	\ /324 /	×	XXX		_
93 58-12-6-1-15	/ /329	3 X	X		
94 SB-DUP-4	38/19 -	X	XXX		
95 SB-R-7-0-0.5	/335	W X	XXX		
96 SB-PL-8-1-15	1400	3 X	X		
97 SB-PL-9-0-0.5	1410	2	XXX		
98 SB-PL-10-2-2.5	1416	× ×	X	MS/M/2M	
99 SB-PL-11-0.5-1	1423	G X	X	,	
100 SB-P2-12-1-1,5	1/427	w X	XXX		4
Signature	Company	Date	Time ' C	Comments/Special Instructions	
Relinquished Muss fluids	Arendis	4/d/set	1150	* Hold for these samples; running these compounds is contingent on	1
Received	3%0	42/18	liss	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	
Relinquished				* Sample Benzene from	
Received				far.	
Relinquished					
Received					
Reviewed/Date	Reviewed/Date		Ω	Chromatograms with final report	



Environmental Inc.  14948 NE 95th Street - Redmond, VA 98052	Turnaround Request (in working days)	Laboratory Num	Number: 04-015	
Company: Arcadis	(Check One)			
Project Number: B0003010.0006	2 Days 3 Days			
Project Name: USCG Burrows Island	d (7 Days)	6010) IWTPH- 082)	A Method 1 8082)	PE
Project Manager: Josh Gravenmier	カカラ	Method Gx) al Oil (N	A Methodore PH)*  VPH)*  (USEP	STU
Sampled by:	(other)	ISEPA MIWTPH- O/Miner USEPA M	(USEPA	moi
Lab ID Sample Identification	Date Time Sampled Sampled Matrix	Lead (U GRO (N DRO/HO PCBs (U	CPAHS EPH (N VPH (N RCRA & PCBs (	901
101 B-R-13-1-15	73/19 /43/ Soil	×		
102 SB-PL-14-1-15	1438 (4	X	XXX MSMS	
10356-\$101-1-0-0.5	( 1449 )	3 X		
10458-101-1-2-2,5	1452	3		
10556-101-2-0-0.5	1428	3		
106 SB-DUP-5	34/10 -	3 X		
107 56-101-2-2,5	1, 1204	W X		
108 58-101-3-0-0.5	1508	W X		
109 58-101-3-2-2.5	15/3	3 ~		
110 513-104-10-1-0-0.5	1525	3 X X		4
Signature	Company	Date Ti	Time Comments/Special Instructions	
Relinquished May Mach	Avaidia	4/4/19	*Hold for these samples; running these compounds is contingent on	ls is contingent on
Received	780	4/2//51 /	parent sample results. Benzene, CPAHS, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	ults.
Relinquished	(		* Sample benzere tro	rom jar.
Received				<
Relinquished				
Received				
Reviewed/Date	Reviewed/Date		Chromatograms with final report ☐	



Page / d of /8

	Chromatograms with final report				Reviewed/Date		Reviewed/Date
							Received
							Relinquished
	j						Received
jar.	* BENTENC - Sample from				(		Relinquished
,	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	1130	112/13		380	3	Received
ingent on	* Hold for these samples; running these compounds is contingent on	1150	4/2/19		Aradis	May Rich	Relinquished
1000	Comments/Special Instructions	Time	Date 1		Company	Signature	
<u> </u>			>,	W	1610	107-5-0.51	120 516 -1
		XX	$\times$	W	1607	107-5-0-0.5	119 58-1
		XX	$\times$	w	1604	07-4-0.5-1	118 518-1
		X	$\times$	W	51/19	DUP-6 3	11) 50 -
		XX	×	w	1556	07-4-0-0.5	116 50-1
		XXXX	8	(V)	1552	107-3-0.57	115 58-
			X	W	843/	107-3-0-0.5	114 SB-1
		X	$\times$	W	1543	107-2-0.5-1	113 513-
		XXX	×	W	1538	07-2-0-0.5	112 58-1
X		X	×	W	13/19 1531 Soil	17-1-1-15	111 8-1
20	PCBs	cPAHs	PCBs (	Number	Date Time Sampled Sampled Matrix	Sample Identification S	Lab ID
mo	8 Metal	(USEP	O/Mine		(other)		Sampled by:
ISIN	Metho		ral ⊙il (l Method 8	ntaine Method	SDAMS	Josh Gravenmier	ager:
PÉ	PA Meth d 8082) d 8260)	thod 826	- 133		rd (7 Days)	USCG Burrows Island	Project Name: US
	od 6010	BI		3		Project Number: B0003010.0006	Project Number: BC
	»)	EX			(Check One)	dis	Company: Arcadis
	04-015	Number:	Laboratory Num	F	Turnaround Request (in working days)	11V1-01111G11(3) 111G. 14848 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	146 Pho



Reviewed/Date Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished Miles Minch Ara	Signature Company	28 SB-104-3-2.53 1650	21 SB-104-3-0-0.5 1647	26-101-2-4-45 1648	25 SB-164-2-0-0.5 1641	34 SB-104-01-2,5-3 1639	23 SB-104-1-0-0.5 (1633	8/9/ 1, 1-5:0-9- to/-go to	21 SB-107-6-0-0.5 3/21/19/1613	Lab ID Sample Identification Sampled Sampled	1	Project Manager: Josh Gravenmier 5 DAYS	Project Name: USCG Burrows Island		Arcadis	Phone: (425) 883-3881 • www.onsite-env.com
ite					8E 4PG18 118	cutis 1/4/12/15	Date Time	X		1 3 X X	3 X XX	<i>₩</i>	3 ×	3 X X	501/3 XXX	Lead (I GRO (I DRO/H PCBs ( Benze	er of Country of Colored Color	ral Oil ( Method & EPA Me	rs I 6010) NWTPH	H-Dx)	1 Day	(Chock One)
Chromatograms with final report				* Take Benzene from jor.	contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions								X	VPH (I	8 Meta	A Metho				



Environmental Inc.	Turnaround Request	I shoustour Number	0
14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	(in Working days)	Laboratory Number.	04-01
Company: Arcadis	(Check One)		
Project Number: B0003010.0006		60)*	
Project Name: USCG Burrows Island	rd (7 Days)	6010) IWTPH- 082) hod 826	d 8082)
Project Manager: Josh Gravenmier	スプング	Gx)  al-Oil-(N  lethod 80  PA Method  A Method	VPH)* (USEP Method
Sampled by: Mark IIIlery	(other)	SEPA M WTPH- D/Mineral USEPA M (USEPA IWTPH-	WTPH-
Lab ID Sample Identification	Date Time Sampled Sampled Matrix	Lead (U GRO (N DRO/H PCBs (U Benzer	VPH (N RCRA I PCBs ( BTEX (
128 58-102-1-0-0.5	1890		X
130 SB-102-1-1.5-2.0	1/19 0950 soil	XXXXX	XX NS/WSD N
131.28- DUP- 7	1/1/19 - 50:1	Z X X X	X X
132 SB-102-2-0-0.5	4/1/19 0959 50:1	Z X X X X X X X X X X X X X X X X X X X	*
5.0-0-8-101-3-0-0-5	4/1/19 1007 50:1	× × X X	X X
134 50-102-3-0,5-1,0	1/1/19 1048 50:1	X   X   X   X   X   X   X   X   X   X	X
1 SB-7 15-7 15-7 6	1.50 OSSO 1174	** X X X X X X X X X X X X X X X X X X	TX ANX ASO
135 SB-101-4-0-0,5	1/1/18 1109 50:1	XXX	×
136 SB-101-4-2.0-2.5	4/1/19 1113 50:1	~ X X	
137 SB- DUP-8	4/1/19 - 50il	×	
Signature	Company	Date Time	Comments/Special Instructions
Relinquished Man Milli	& Arcadis	1/4/19 1150	* Hold for these samples; running these compounds is contingent on
Received	SWE	9/2/19 1150	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.
Relinquished			
Received			
Relinquished			
Received			
Reviewed/Date	Reviewed/Date		Chromatograms with final report



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished MM Mini	Signature	147 SB-042-9	MG SB-101-9-0-0.5	145 SB-101-8-1-0-1.5	14 88-101-8 - NO-0-0.8	143 53-101-7-1.5-2.0	142 SB-101-7-0.5-10	141 SP-101-6-05-10	140 58-101-6-0-05	139 56-101-5-0.5-110	138 188 188-10-8-0-0X	Sampl	Sampled By: Mark Willery	Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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								+									X	% Mois	ture					



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# Environmental Inc

# Chain of Custody

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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished JULY Musi	Signature		164 SB-DUD-11	163 55-101-10-20-25	162 38-101-16-0-05	161 56-101-15-0.5-1,5	160 56-101-15-0-0.5	159 SB-101-14-1:0-1:5	158 56-101-14-0-0-5	Lab ID Sample Identification		Josh Gravenmier	USCG Burrows Island	B0003010.0006	Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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					X	The Min	ure					EB-04012019	12	٠,	Д		Sample Identification	Wilery	venmier	rows Island	0.0006		14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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June 14, 2019

Josh Gravenmier Arcadis U.S., Inc. 1100 Olive Way, Suite 800 Seattle, WA 98101

Re: Analytical Data for Project B0003010-0006

Laboratory Reference No. 1906-059

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on June 6, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow Project Manager

**Enclosures** 



Date of Report: June 14, 2019 Samples Submitted: June 6, 2019 Laboratory Reference: 1906-059

Project: B0003010-0006

### **Case Narrative**

Samples were collected on April 1, 2019 and received by the laboratory on June 6, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: June 14, 2019 Samples Submitted: June 6, 2019 Laboratory Reference: 1906-059

Project: B0003010-0006

### TOTAL LEAD EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SED-1					
Laboratory ID:	06-059-01					
Lead	ND	5.3	EPA 6010D	6-10-19	6-10-19	
Client ID:	SED-2					
Laboratory ID:	06-059-02					
Lead	ND	5.9	EPA 6010D	6-10-19	6-10-19	

Date of Report: June 14, 2019 Samples Submitted: June 6, 2019 Laboratory Reference: 1906-059

Project: B0003010-0006

### TOTAL LEAD EPA 6010D QUALITY CONTROL

Matrix: Solid

Units: mg/Kg (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						·
Laboratory ID:	MB0610SM1					
Lead	ND	5.0	EPA 6010D	6-10-19	6-10-19	

Analyte	Res	sult	Spike	Level	Source Result		rcent	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	06-01	13-03									
	ORIG	DUP									
Lead	ND	ND	NA	NA			NA	NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	06-01	13-03									
	MS	MSD	MS	MSD		MS	MSD				
Lead	235	238	250	250	ND	94	95	75-125	1	20	

Date of Report: June 14, 2019 Samples Submitted: June 6, 2019 Laboratory Reference: 1906-059 Project: B0003010-0006

### % MOISTURE

			Date
Client ID	Lab ID	% Moisture	Analyzed
SED-1	06-059-01	5	6-12-19
SED-2	06-059-02	15	6-12-19



### **Data Qualifiers and Abbreviations**

- A Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B The analyte indicated was also found in the blank sample.
- C The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E The value reported exceeds the quantitation range and is an estimate.
- F Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I Compound recovery is outside of the control limits.
- J The value reported was below the practical quantitation limit. The value is an estimate.
- K Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L The RPD is outside of the control limits.
- M Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 Hydrocarbons in diesel range are impacting lube oil range results.
- O Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P The RPD of the detected concentrations between the two columns is greater than 40.
- Q Surrogate recovery is outside of the control limits.
- S Surrogate recovery data is not available due to the necessary dilution of the sample.
- T The sample chromatogram is not similar to a typical \_\_\_\_\_\_.
- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 The practical quantitation limit is elevated due to interferences present in the sample.
- V Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X Sample extract treated with a mercury cleanup procedure.
- X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

7 -

ND - Not Detected at PQL

PQL - Practical Quantitation Limit

RPD - Relative Percent Difference



Lab ID

NOS

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Reviewed/Date

Chromatograms with final report

Electronic Data Deliverables

s (EDDs)

Data Package: Standard

Level

= 

Level IV

Relinquished

Received

Relinquished

Environmental Inc.	Clialli	Cildili oi custouy	Page of
Analytical Laboratory Testing Services 14548 NE 95th Street • Redmond, WA 98052	(in working days)	Laboratory Number: 06 - 059	
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ak III Sample Identification	Date Time Samular Sampled Matrix	Number NWTPI NWTPI NWTPI NWTPI NWTPI NWTPI NWTPI Ovalities EDB E EDB E EDB E Organe Organe Chlorir	Total N Total N TCLP I

### **APPENDIX E**

**Data Validation Reports** 



### **United States Coast Guard**

### **DATA REVIEW**

### Burrows Island Light Station Skagit County, Washington

Metal (Lead) Analysis

SDG # 1903-283

Analyses Performed By: Onsite Environmental Inc. Redmond, Washington

Report #: 32567R Review Level: Tier II Project: B0003010.0006

### **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Groups (SDG) # 1903-283 for samples collected in association with the United States Coast Guard, Burrows Island Light Station, Skagit County, Washington. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

			Sample		Ana	lysis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	Lead	TCLP Lead
EB-032519	03-283-147	Water	3-25-2019		Х	
EB-032619	03-283-146	Water	3-26-2019		X	
EB-032719	03-283-145	Water	3-27-2019		X	
EB-032819	03-283-144	Water	3-28-2019		Х	
ISM-01-A-0.5-1.0	03-283-06	Soil	3-26-2019		Х	
ISM-01-A-0-0.5	03-283-01	Soil	3-25-2019		X	
ISM-01-A-1.0-1.5	03-283-11	Soil	3-27-2019		X	
ISM-02-A-0.5-1.0	03-283-20	Soil	3-26-2019		Х	
ISM-02-A-0-0.5	03-283-16	Soil	3-25-2019		Х	
ISM-02-B-0-0.5	03-283-24	Soil	3-27-2019		X	
ISM-02-C-0-0.5	03-283-25	Soil	3-27-2019		X	
ISM-03-A-0.5-1.0	03-283-31	Soil	3-25-2019		X	
ISM-03-A-0-0.5	03-283-26	Soil	3-27-2019		X	
ISM-04-A-0.5-1.0	03-283-41	Soil	3-27-2019		Х	
ISM-04-A-0-0.5	03-283-36	Soil	3-27-2019		X	X
ISM-05-A-0.5-1.0	03-283-55	Soil	3-28-2019		X	
ISM-05-A-0-0.5	03-283-50	Soil	3-28-2019		X	
ISM-06-A-0.5-1.0	03-283-67	Soil	3-26-2019		X	X
ISM-06-A-0-0.5	03-283-60	Soil	3-25-2019		X	X
ISM-06-A-1.0-1.5	03-283-72	Soil	3-27-2019		X	X
ISM-06-A-1.5-2.0	03-283-77	Soil	3-27-2019		X	X
ISM-06-B-0-0.5	03-283-65	Soil	3-27-2019		X	Х
ISM-06-C-0-0.5	03-283-66	Soil	3-27-2019		X	X
ISM-07-A-0.5-1.0	03-283-86	Soil	3-26-2019		Х	
ISM-07-A-0-0.5	03-283-82	Soil	3-26-2019		X	Х
ISM-08-A-0.5-1.0	03-283-97	Soil	3-26-2019		X	
ISM-08-A-0-0.5	03-283-90	Soil	3-26-2019		X	Х
ISM-08-A-1.0-1.5	03-283-102	Soil	3-27-2019		X	Х
ISM-08-B-0-0.5	03-283-95	Soil	3-27-2019		Х	Χ

arcadis.com

			Sample		Ana	llysis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	Lead	TCLP Lead
ISM-08-C-0-0.5	03-283-96	Soil	3-27-2019		Х	X
ISM-09-A-0.5-1.0	03-283-112	Soil	3-28-2019		Х	
ISM-09-A-0-0.5	03-283-107	Soil	3-28-2019		Х	
ISM-10-A-0.5-1.0	03-283-122	Soil	3-27-2019		X	
ISM-10-A-0-0.5	03-283-117	Soil	3-27-2019		X	
ISM-11-A-0.5-1.0	03-283-132	Soil	3-26-2019		X	
ISM-11-A-0-0.5	03-283-127	Soil	3-27-2019		X	Х
ISM-12-A-0.5-1.0	03-283-148	Soil	3-28-2019		X	
ISM-12-A-0-0.5	03-283-137	Soil	3-28-2019		X	X
ISM-13-A-0-0.5	03-283-153	Soil	3-28-2019		X	
SB-06-10-2.0-2.5	03-283-142	Soil	3-27-2019		X	
SB-06-22-3.0-3.5	03-283-143	Soil	3-27-2019		Х	

Note:

TCLP - Toxicity Characteristic Leaching Procedure

### **ANALYTICAL DATA PACKAGE DOCUMENTATION**

The table below is the evaluation of the data package completeness.

	Rep	orted		mance ptable	Not
Items Reviewed	No	Yes	No	Yes	Required
Sample receipt condition		Х		Х	
Requested analyses and sample results		Х		Х	
Master tracking list		Х		Х	
4. Methods of analysis		Х		Х	
5. Reporting limits		Х		Х	
6. Sample collection date		Х		Х	
7. Laboratory sample received date		Х		Х	
8. Sample preservation verification (as applicable)		Х		Х	
Sample preparation/extraction/analysis dates		Х		Х	
10. Fully executed Chain-of-Custody (COC) form		Х		Х	
Narrative summary of Quality Assurance (QA) or sample problems provided		х		Х	
12. Data Package Completeness and Compliance		Х		Х	

### **INORGANIC ANALYSIS INTRODUCTION**

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D and EPA 200.8. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review* (EPA 540-R-2017-001, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington* (March 2019).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

### Concentration (C) Qualifiers

- U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
- J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

### Quantitation (Q) Qualifiers

- E The reported value is estimated due to the presence of interference.
- N Spiked sample recovery is not within the control limits.
- Duplicate analysis is not within the control limits.

### Validation Qualifiers

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- UB Analyte considered non-detect at the listed value due to associated blank contamination.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

### **METALS ANALYSES**

### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Soil	180 days from collection to analysis	Cool to < 6°C
EPA 200.8	Water	180 days from collection to analysis	Cool to < 6 °C; pH < 2 with HNO₃

All samples were analyzed within the specified holding time criteria.

### 2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the RL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

### 3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

### 3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD recovery control limits do not apply for MS performed on samples where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis performed for lead on samples ISM-01-A-0-0.5, ISM-07-A-0.5-1.0 and for TCLP lead on sample ISM-06-A-0.5-1.0 exhibited recoveries and RPDs within the control limits.

### 3.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for soil matrices.

MS/MSD analysis was performed in addition to the laboratory duplicate analysis on samples ISM-01-A-0-0.5, ISM-07-A-0.5-1.0 and ISM-06-A-0.5-1.0. The MS/MSD recoveries and laboratory duplicate analysis exhibited acceptable RPDs.

### 4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

The LCS analysis was not performed and reported by the laboratory within this SDG.

### 5. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL for soil matrices is applied to the difference between the results.

A field duplicate sample was not collected within this SDG.

### 6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR METALS**

METALS: SW-846 6010D and EPA 200.8	Rep	orted		mance ptable	Not Boguired
	No	Yes	No	Yes	Required
Inductively Coupled Plasma - Atomic Emission Spectr Inductively Coupled Plasma - Mass Spectrometry (ICP		CP-AES)			
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		Х	
B. Equipment/Field Blanks		Х		Х	
Laboratory Control Sample (LCS) %R	Х				X
Laboratory Control Sample Duplicate (LCSD) %R	Х				X
LCS/LCSD Precision (RPD)	Х				X
Matrix Spike (MS) %R		Х		Х	
Matrix Spike Duplicate (MSD) %R		Х		Х	
MS/MSD Precision (RPD)		Х		Х	
Laboratory Duplicate Sample (RPD)		Х		Х	
Field Duplicate Sample (RPD)	Х				X
ICP Serial Dilution %D	Х				Х
Reporting Limit Verification		Х		Х	

Notes:

%R = Percent recovery

RPD = Relative percent difference

%D = Percent difference

Validation Performed By: Suresh PR

Signature: N SW

Date: April 23, 2019

Peer Review: Dennis Dyke

Date: May 10, 2019

arcadis.com

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### CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



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of
1

Reviewed/Date	Received	Relinquished	Received	Relinquished	Received PEHELY 1500M	Relinquished 4 C	Signature	10 Ism-01-4-8.5-10	9 JSM-01-3-25-10	8 JSM-01-2-05-10	J JSM-01-1-0.5-1.0	6 ISM-01-A-05-10	S ISM-01-4-0-0X	4 JSM-01-3-0-25	3 ISM-01-2-0-0.5	5.0-0-1-10-MSI &	15M-01-A-0-05	0)	Sampled by: Mark Whery	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental Inc.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					200	Arcadis	Company	V (452 V	1431	1430	1429	3/16/K 1428	Sohi	1404	1463	1402	3/25/14/1401 50:1	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)	П	Same Day 1 Day	Turnaround Request (In working days)
				-	3/36/19 1723	3/28/19 1723	Date Time	- X Carhold	X On Hold	X ON HOW	1 X On Hold	- ×	1 X On How	- X on Hold	1 X On Hold	1 X On Holls	×	Lead (	er of Co USEPA Lead (U	Method	6010)	1311/60	10*)	Laboratory Number:
Chromatograms with final report				ON Added 4/9/19 STA SO	on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions					×					×	9/6		nic	970			03-283



Review	Received	Reling	Received	Reling	Received	Reling		>	2	8	こ	6	5	14	W	4	=	Lab ID	Sample	Project	Project	Project	Company:	
Reviewed/Date	ved	Relinquished	ved	Relinquished	Without Charles	Relinquished Que VI	Signature	JAN 02-4-5-05	ISM-02-3-6-0.5	tsm-02-2-0-0.5	25W-05-1-0-02	ISM-02-A-80-0.5	ISM-01-4-6,0-1.x	22m-81-3-10-12	Ism-01-2-110-115	75m-01-1-10-15	THOMPS MAN ISM-01-H-1.0-	Sample Identification	Mark Ullery	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					OST	Accdis	Company	A gasay A	1625	1624	1623	3/25/M 1622	1 1529	1528	4251	1526	1:08 5251 41/21/2	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)		Same Day 1 Day	Turnaround Request (in working days)
					3/36/19 1733	3/28/14 1723	Date Time	A K On Male	1 X ON Hold	1 X On Hold	1 X On Hold	- ×	CX On World	- X 02 Follo	- X On Usid	1 X On Moil	7 *	Lead (	USEPA Lead (U	Method	6010)		10*)	Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010).		Comments/Special Instructions											%			0.40			er: 03-283



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					MOON LYNN	Lan W Oh	Signature	5.0-5-0-80	5.0-0-5	03-1-0-0.8	03-A-0-05	ISM-02-C-2-0.5	02-8-0-0.5	02-3-05-1.0	01-2-05-10	07-1-02-110	ISM-02-A-0.5-1.0	Sample Identification	Wilesy	sh Gravenmier	USCG Burrows Island	Project Number: B0003010.0006	lis	ENVIPORMENTAL INC.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
					ceel	1	Co	3/28/11/301	41/52K	3/25/14	3/18/19	3/27/16	12/12/12	*			3/26/19	Date Sampled			X Stan	☐ 2 Days	Sam	Turn (in
Reviewed/Date					80	Arcadis	Company	1301	1300	1259	1258	9116	216	low	1043	1042	1041 Soil	Time Sampled Ma	(other)		Standard (7 Days)	П	(Check One) Same Day	Turnaround Request (in working days)
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					336/19	3/28/19	Date	0,	Q	g				0	8	S.		TCLP	Lead (U	SEPA N	Method 1	311/60	10*)	aborator
					1723	1723	Time	How	T	How				n Hold	N. F.	META								Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions				×	\\ \tag{\tau}	*				\ \ \	66	W		NO.			03-283



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Chromatograms with final report			Date	Reviewed/Date		a	Reviewed/Date
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Comments/Special Instructions	Date Time			Company	,	Signature	
	On Hold	~	4	A HOLE		7-04-3-0-0.5	39 Jsm-
	On Hold	X	4	The state of the s		x0-0-1-40-M	36 Ism-
	on Hold	~ *	A.	The Real		1-04-1-0-0.5	37 Jan-
	8	X		129/10 1300	3/	M-04-A-0-0.5	36 Jsm-
	on Upla	×		2M51 4		Ism-03-4-05-10	35 550
	on Hote	<b>一</b> メ		14.41		n-03-3-0.5-1.0	-WS 12
	on Hold	×	0	1840		1-03-2-05-10	33 Ism-
	On Hold	×		1539	un	1-03-1-25-10	-WEST PS
		<b>一</b> メ	-	125/14 1538	3/	ISM-03-A-0.5-1.0	31 tsn
	On Hold	×	1.08	3/25/1302	w	M-03-4-0-05	30 Ism-
6%	TCLPL	Number Lead (U	Matrix	Date Time Sampled Sampled	Sa	Sample Identification	Lab ID
	ead (U			(other)			Sampled by:
	SEPA M	ntaine Method				Josh Gravenmier	Project Manager:
NU/	Method 1			Standard (7 Days)		USCG Burrows Island	Project Name:
	311/60		☐ 3 Days	2 Days		Project Number: B0003010,0006	Project Number:
	10*)		ne)	(Check One)		Arcadis	Company: Ar
03-283	Laboratory Number:	<u></u>	days)	(in working days)		14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsile-env.com	
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Environmental inc.  14648 NE 95th Street - Rodmond, WA 98052 Phone: (425) 883-5881 • www.onsile-env.com  Arcadis  1 Name: USCG Burrows Island  1 Name: USCG Burrows Island  1 Name: Josh Gravenmier  ed by:  2 Sample Identification  2 Sample Identification  3 124/16   1248   1   1   1   1   1   1   1   1   1	010
Environmental Inc.  14848 NE 95th Street - Redmond, WA 99052 Phone: (425) 883-8891 * www.onsile-env.com  1584 Check One)  1 Number: B0003010.0006  1 Name: USCG Burrows Island  1 Manager: Josh Gravenmier  1 Manager: Josh Gravenmier  1 Manager: Sample Identification  1 Sampled Sampled Matrix  1 Sampled Sample	200
Environmental Inc.    Turnaround Request   14648 NE 95th Street   Redmond, WA 99052   (in working days)   (Check One)	
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Iternaround Request (in working days)  ## Street - Redmond, VA 98052 ## Check One)    Same Day	
IIC.  Turnaround Request (In working days)  Check One)  Same Day  Topy	
Environmental inc.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com  (Check One)	
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Chromatograms with final report			Reviewed/Date	Reviewed/Date
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Comments/Special Instructions	Time	Date	Company	Signature
	and HOLD	×	03/28/19 12:32	59 ISM-05-4-0.5-1.0 &
	ON HOLD	X	0428/19 12:31	58 ISM-05-3-0.5-1.0 a
	ATOH NO	×	03/28/19 12:30	ISM-05-2-0.51.0
	DNO HOLD	×	03/28/17 12:29	S6 ISM-05-1-0.5-10
~		×	23/28/19 12:28	ISM-05- A-0.5-1.0
	Chap NO	×	03/28/19 11:10	SH ISM-05-4-0-0.5
	ON FOLD	×	03/18/17 11:09	SS ISM -05-3-0-0.5
	Crost &	×	03/28/19 11:08	ISM-05-2-0-0.5
	ATOH SO	*	40:11 61/82/20	ISM-05-1-0-0.5
~		×	03/18/19 11:06 80:11	5075M-05-A-0-0.5
0/2		Lead (I	Date Time Sampled Sampled Matrix	Lab ID Sample Identification
		USEPA Lead (U	(other)	Mark Wheely
o is		Method		Josh Gravenmier
Hero			Standard (7 Days)	Project Name: USCG Burrows Island
		311/60	2 Days	Project Number: B0003010.0006
		10*)	(Check One)	Company: Arcadis
03-283	Laboratory Number:	Lab	Turnaround Request (in working days)	14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com



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			Reviewed/Date	Reviewed/Date
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parent sample results (Lead Method 6010).			120 SE	Received Wholey LEER
* Hold samples for this analysis; running this compound is contingent			Arcadis	Relinquished
Comments/Special Instructions	Date Time Com		Company	Signature
	ON Hold		1 1148 1	(A) ISM-04-2-0.5-1.0
	ON told		FhII -	68 ISM-06-1-0.5-1,0
×	8		03/26/19 11460	67 ISM-06-A- 0.5-1.0
×	8		03/27/19 1840	66 ISM-06-C-0-0.5
×	8		03/27/19 1805	65 ISM-06-B-0-0.5
	DN HOLD		441	64 ISM-06- 4-0-0.5
	ON HOLD		17/6	63 ISM-04-3-0-0.5
	ATOH NO		2141	(0) TSM-010- 2-0-0.5
	QUOH NO		1 1/1/1	(0) JSM-06-1-0-0.5
~	8	1	03/12/19 05/363 50;	60 ISM-20-A-0-0.5
0/0	1000	Numbe	Date Time Sampled Sampled Matrix	Lab ID Sample Identification
, m			(other)	Sampled by:
nis	Method SEPA M	ontaine		Project Manager: Josh Gravenmier
Hora	Method 1		Standard (7 Days)	Project Name: USCG Burrows Island
2	311/60	ys		Project Number: B0003010.0006
	10*)	<	(Check One)	Company: Arcadis
03-283	Laboratory Number:		Turnaround Request (in working days)	ENVIRONMENTAL INC.  14648 NE 5th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



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Chromatograms with final report	Chromatograms v	0				Date	Reviewed/Date			Reviewed/Date
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npie resuits (Lead Method 6010).	on parent san	783	1984	CH		K	0		Thata Otsew	Received
* Hold samples for this analysis; running this compound is contingent	* Hold sample	1723	128/18			105	Arcon		Chan Wall	Relinquished
Comments/Special Instructions	Comments/Spe	Time	Date	0			Company		Signature	NAC AND THE SECOND
		(1-10-1-1)	07	4	<b>(</b>	4	1154	<u>_</u>	1-2-1.5-2.0	19 ISM-06
		404D	20	-	-		1153		0-1-1.5-2.0	76 ISM-06-
			(8)	5		5	1146		2-0-15-20	77 ISM-010-
		FOLD	2				8111		7-4-1.0-1.5	76 75M-06
		HOLD.	NO	-			= 14		0-3-1.0-1.5	15 ISM-06-
		HOLD	2				1110		6-2-1.0-1.5	74 ISM-06
		HOLD	5				<u>C</u>	_	0-1-1.0-1.5	73 JSM-06-
*			8	6			03/27/19/056	03/24	0-A-1.0-1.5	72 ISM-010-A
		HOLD	20	-			1 1150	03/26/19	0-4-0.5-1.0	71 ISM-06-
		4010	2	*	-	So.	9 1149	03/26/19	ISM-06-3-0.5-1.0	70 ISM-OL
6/0			ICLP			d Matrix	Time d Sampled	Date Sampled	Sample Identification	Lab ID
m			ead (U		er of C	er)	(other)	[		Sampled by:
318			ISEPA I	Method	ontaine				h Gravenmier	Project Manager: Josh
At N			/lethod		rs	ays)	Standard (7 Days)		Project Name: USCG Burrows Island	Project Name: USC
0			1311/60		ays	☐ 3 Days	2 Days		03010.0006	Project Number: B0003010.0006
			10")		ay	ne)	Same Day		S	Company: Arcadis
3-283	03-	Laboratory Number:	boratory	La		equest days)	Turnaround Request (in working days)		Environmental Inc. 14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	3



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Chromatograms with final report	Ch			6	Reviewed/Date			Reviewed/Date
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Comments/Special Instructions	Time Co	Date			Company	Co	Signature	
	DN HOLD		12	_	1349	_	1-0.5-1.0	40-WSI 19
			H ×		1348		-A-0.5-1.0	-40-WSI 08
	ON HOLD		X		1241		-3-0-0.5	40-WST 58
	ON HOLD		7		1240		-2-0-0.5	-40-WST 179
	ON HOTD		1		1239	-	11-0-0.5	83 ISM-07-
		Š	14 ×		1238	03/24/19	-A-0-0.5	- 40 - MST PG
							A-83	5B-010
				_			4	TSM-ob-
	COOL NO		4		1156	03/23/19	06-4-1.5-2.0	20 - MST 18
	979H NO	_	×	Soil	1155	03/27/19	3-1.5-2.0	60 ISM-06-3-
			PLANT I	Matrix	Time Sampled	Date Sampled	Sample Identification	Lab ID S
			Mar. 14		(other)	[		Sampled by:
			ontaine			]	Gravenmier	Josh
				0	Standard (7 Days)	Stan	Project Name: USCG Burrows Island	Project Name: USCG
		1311/60		3 Days	ays	2 Days	3010.0006	Project Number: B0003010.0006
		10*)		1 Day	(Check One) Same Dav	Sam	******	Company: Arcadis
03-283	Laboratory Number:	Labora		ys)	(in working days)	Turn (in	14648 NE. 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	14648 NE. 9 Phone: (422



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received MARY LIVERY	Relinquished Chypnell	Signature	9) ISM-08-A-0.5-1.0	96 ISM-08-C-0-0.5	95 ISM-08-B-0-0.5	94 ISM-08-4-0-0.5	93 #5M -8-3-0-0.5	97 ISM-18-2-0-0.5	9.0-0-1-80-MST 1D	90 ISM-08-A-0-0.5	B9 ISM-07-3-0.5-1.0	88 75M-07-2-0.5-1.0	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental Inc. 14648 NE 56th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					980	Arcadis	Company	104119118	03/17/19/1502	03/29/19 1220	1 1619	8 91	1617	11010	1602		03/26/19 1350 Soil	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)		Same Day 1 Day	Turnaround Request (in working days)
				-	38/h 1783	5/28/19 1723	Date Time	1-x	12 X 8	× 8	1X ON HOLD	1 X ON HOLD	1X ON HOLD	1 × ON HOLD	× × ⊗	1X ON HOLD	1 × ON HOLD	Lead (l		Method	S	1311/60	110*)	Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions		X	*					×			0/0		2)(4)	ne			. 03-283



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Laboratory Number:   03-28-3     Context Onto   C	on parent sample results (Lead Method 6010).	128/19 17	Cha	SAM	Received TYPEN TYPEN
Laboratory Number:   103 - 28 3   Control of State   Control of Stat	* Hold samples for this analysis; running this compound is contingent	128/19 17		Arcadis	Relinquished Charles
Table   Tabl	Comments/Special Instructions			Company	Signature
Control Cont	×			03/28/19 0921	1 ISM-09-A-0-
Table   Tabl		HOL	-	1049	ISM-08-4-1.0-1.
Transport   1-466   Tran		C	1	1048	ISM-08-
Table		+	X	FH0(	ISM-08-
Table		2	1 ×	1046	/
The provided by the provided		8	×		TSM-08-A
Check One)   Che		2		1 1736	ISM-08-4-0,5-1.
Timenom Request   Haboratory Number:   193 - 28 3   Timenom Magnest   193 - 28 3   Timenom Magn		10	7 ×	1735	ISM-08-3-0.5-1.
Table Tolling Calling.    Control of Name   Cont		HOZ	1	1734	ISM-08-2-0.5-
Timeround Request 1448 NE 59th Street - Redmond, WA 98052 Phone: (425) 883-3881 * www.orishe-env.com  Arcadis  Arcadis  USCG Burrows Island  I Name: USCG Burrows Island  I Namager: Josh Gravenmier  ed by:  Sample Identification  Sampled Sampled Sampled Matrix  Number:  I Laboratory Number:  (Check One)    Same Day		H01	-		ISM-08-1-0.5-1.
Check One)   Check One)   Same Day   1 Day   2 Days   3 Days   Sland   Standard (7 Days)   SEPA Method 6010)   ead (USEPA Method 1311/6010*)   ead (USEPA Method 1311/6010*)		TCLPL	Lead (U	Time Sampled	
Check One)   Check One)   Same Day   1 Day   2 Days   3 Days   Sland   Standard (7 Days)   SEPA Method 1311/6010*)   SEPA Method 1311/6010*)		ead (U	ISEPA	(other)	Sampled by:
Check One)   Same Day   1 Day   2 Days   2 Day		SEPA M	Method	]	Josh
N9052 (In working days)  Check One)  Same Day  2 Days  311/6010*)  Laboratory Number: 03-283		lethod 1	6010)	Standard (7 Days)	Project Name: USCG Burrows Island
195.  Turnaround Request (in working days)  (Check One)  Same Day  1 Day  2 Day  1 Day  3 Day  3 Day  3 Day  3 Day  3 Day  4 Day  5 Day  6 Day  7 Day  7 Day  7 Day  7 Day  8 Day  8 Day  8 Day  9 Day  1 Day  9 Day  1 Day		311/60		2 Days	Project Number: B0003010.0006
Turnaround Request (in working days) Laboratory Number:		10*)		(Check One) Same Dav	Company: Arcadis
	03-283	aboratory Number		Turnaround Request (in working days)	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



Chromatograms with final report			Reviewed/Date	Reviewed/Date
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on parent sample results (Lead Method 6010).	3/36/11/733		0A	Received World Cally
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*		1 ×	08/28/10/13 1 1	11) ISM-10-A-0.0-0.5 R
	10+ NO	X	0948	116 ISM-07-4-0.5-1.0
	ON HOL	X	F460	115 TSM-09-3-0.5-1.0
	DAY HOLD	X	ONHO	114 ISM-09-2-0.5-1.0
	DAY HOL	X	0945	113 TSM-09-1-0.5-1.0
×		X	0944 1	118 ISM-09-A-0.5-1.0
	EN HOLI	X	0925	11 ISM-09-4-0-05
	CLAST ING	X	0924	110 ISM-09-3-0-0.5
	07 400	14 ×	0923	109 ISM-09-2-0-0.5
	STOFF NO	X	03/28/19 0922 Soil	ISM-09-1-0-0.5
0/0	TCLPL		Date Time Sampled Sampled Matrix	Lab ID Sample Identification S
	ead (U		(other)	Sampled by:
oisi	SEPA N	ntaine Method		Project Manager: Josh Gravenmier
070	flethod 1		rd (7 Days)	Project Name: USCG Burrows Island
	311/60			Project Number: B0003010.0006
	10*)	T	(Check One)	Company: Arcadis
03-280	Laboratory Number:	F	(in working days)	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
>> >>>			Townsend Dames	Environmental Inc



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received PARU SEON	Relinquished American	Signature	13 ±SM-11-A-0-0.5	136TSM-10-4-0,5-1.0	135 ISM -10-3-0.5-1.0	134 ISM-10-2-0.5-1.0	135 TSM-10-1-0.5-1.0	123 ISM-10-A-0.5-1.0	181 ISM-10-4-0-0.5	30 ISM-10-3-0-05	119 ISM-10-2-0-0.5	118 ISM-10-1-0-0.5	Lab ID Sample Identification	Sampled by:	Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					380	Arcadis	A Company	1 8460 1	1181	018	1809	1808	408/	1/017	1616	1615	03/27/19 16/14 Soil	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)		(Check One)	Turnaround Request (in working days)
c					3/38/19 1723		Date Time (	8	1704 NO	01V +02	6N HOUD	S #5.0		ON HOL	ON HOL	1 ON HOLL	1X ON HOL	Lead (L	JSEPA	Method SEPA M		311/60	10*)	Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions	×									5	6/			970-			03-283



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Data Package: Level III 

Level IV 

Electronic Data Deliverables (EDDs) 

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			Kara Cha	Shan NOW	Signature				SB-06-22-3,0-3.	B-06-10-2.0-2.5	SM-12-4-0-0.5	15M-12-3-0-0.5	15M-12-2-0-05	ZSM-12-1-0-0.5	ISM-12-A-0-0.5	Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Arcadis	Environmental Inc. 14648 NE 58th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
		•	130 OSE	Arcedis	Company				5 63/24/9 1242 1	5 18/27/19 1240	JOEN	1308	1 1307	03/28/19 1304	03/18/19 (305 Soil )	Date Time Sampled Sampled Matrix	(other)		Standard (7 Days)		x One)	Turnaround Request (in working days)
		-									TTREFT NO.	ON HOLI	ON HOLD	1.1	8	Lead (U	JSEPA	Method	6010)	311/60	10*)	Laboratory Number:
1	Successiva.	A You wit Nample	on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is continge	omments/Special Instructions																	03-283
		Justasius.	*	DRIM 1733	3/28/15 (723 · Hold sam 5/28/15) (723 on parent s	Company Date Time  Arcsd 5 3/28/15 (723  CM (723) 5 3/8/19 1733	Company Date Time  Arcsd; 3/28/15 (723  CU 17600 OSE 3/8/19 (723	Company Date Time  Arcsd 5 3/28/15 (723  CU 17600 OSE 3/08/19 1733	Company Date Time  Arced 5 3/28/15 (723  CU 1700 055 3/8/11 1733	-3,0-3,5 83/27/9 1242 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-2.0-2.5 63/24/9 1242  -3.0-3.5 63/24/9 1242  Company  Date  Time  3/28/15 (723)  Date  Time	0-0.5  -2.0-2.5  83/27/9 1240  -3.0-3.5  83/27/9 1247  Company  Date  Time  Avcsols  3/28/15 (723)  CM (XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	0-0.5 0-0.5	0-0.5 0-0.5 1307 0-0.5 1308 0-0.5 0-0.5 1308 0-0.5 1308 0-0.5 1308 0-0.5 1308 0-0.5 1308 0-0.5 1308 0-0.5 1308 0-0.5 1308 0-0.5 1308 0-0.5 1308 0-0.5 1308 0-0.5 1308 1308 1308 1308 1308 1308 1308 1308	0-0.5 03/8/9 1306 1 00 HOLI 0-0.5 1 1307 00 HOLI 0-0.5 1 1307 00 HOLI 0-0.5 23/24/9 1240 1 00 HOLI -3.0-3.5 03/24/9 1247 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0-0.5 03/28/6/1304 1 1 XXX 00 440L1 00 0-0.5 03/28/6/1304 1 1308 00 1 100 140L1 00 440L1 00 140L1 00 1	Sampled   Sampled   Sampled   Matrix	Company   Date   Time   Marity   Date   Da	Date Time Marix Number of Containes  Sampled S	Standard (7 Days)   Standard (7 Days)   Standard (7 Days)   O3/28/ft   (3.0 S So.i   1 X Number of Containers   Lead (USEPA Method 6010)   TCLP Lead (USEPA	Sampled Sampled Sampled Market Special Instructions   Sampled Sample	Same Day   1 Day   2 Days   3 Days

Data Package: Level III 

Level IV 

Electronic Data Deliverables (EDDs)



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received MARI UTION	Relinquished & Syan War	Signature			147 EB-032519	146 EB-032419	45 EB-032719	144 EB-032819	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010,0006	Company: Arcadis	Environmental Inc. 14648 NE 95th Street - Redmond, WA 99052 Phone: (425) 883-8881 - www.onsite-env.com
Reviewed/Date					9A	Arcad 15	Company			3/25/19 1722 4	3/26/19/18/24	3/27/1/1838	3/28/19 1357 Water	Date Time Sampled Sampled Matrix	(other)	]	Standard (7 Days)	П	Same Day 1 Day	Turnaround Request (in working days)
					30% M 1733	3/28/15 1723	Date Time				X	×	×	Lead (L		Method	Y	1311/60	110*)	Laboratory Number:
Chromatograms with final report				whiter Samples preserved with thing-	on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions				*			-0/6	5-N	261	Slo			n 03-283

Data Package: Level III 

Level IV 

Electronic Data Deliverables (EDDs) 

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Chromatograms with final report	0		Reviewed/Date	Reviewed/Date
				Received
				Relinquished
				Received
				Relinquished
on parent sample results (Lead Method 6010).	-		380	Received Marcu Spaw
* Hold samples for this analysis; running this compound is contingent	3/28/19 1723		Arcadis	Relinquished
Comments/Special Instructions	Date Time		Company	Signature
	CHIEF LAD	-	134	ISM 13-4-0-0.5 5-8
	CTOH NO		1347	156ISM-13-3-0-0.5
	0794 No		1346	15915M-13-2-0-0,5
	en Hald		1345	154 ISM-13-1-0-0.5
			1344	153 ISM-13-A-0-0.5
	CN HOLD		1330	15d ISM-12-4-0,5-1.0
	27 FR		1329	S TSM-12-3-0.5-1.0
	CV HOLD		1328	SO ISM-12-2-0.5-1.0
	ONHOLD		1327	49 ISM-12-1-0.5-1.0
*	×	50:11 2	03/28/19 1326 S	148 ISM-12-A-0.5-1.0
%	Lead (U		Date Time Sampled Sampled Ma	Lab ID Sample Identification
·mo			(other)	Sampled by:
0154	Method SEPA M	ontaine		Project Manager: Josh Gravenmier
H) (Q			Standard (7 Days)	Project Name: USCG Burrows Island
,	311/60	3 Days		Project Number: B0003010.0006
	10*)	1 Day	(Check One)	Company: Arcadis
03-283	Laboratory Number:		Turnaround Request (in working days)	LIVIPORIMENTA INC.  14648 NE 56th Street • Fledmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com

Data Package: Level III 
Level IV 
Electronic Data Deliverables (EDDs)

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-01-A-0-0.5					
Laboratory ID:	03-283-01					
Lead	190	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-01-A-0.5-1.0					
Laboratory ID:	03-283-06					
Lead	110	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-01-A-1.0-1.5					
Laboratory ID:	03-283-11					
Lead	43	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-02-A-0-0.5					
Laboratory ID:	03-283-16					
Lead	61	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-02-A-0.5-1.0					
Laboratory ID:	03-283-20					
Lead	35	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-02-B-0-0.5					
Laboratory ID:	03-283-24		ED 1 22/25	40.15	4.0.15	
Lead	50	5.6	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-02-C-0-0.5					
Laboratory ID:	03-283-25					
	<u> </u>	5.6	EPA 6010D	4-3-19	4-3-19	
Lead	65	ა.ნ	EFA OUTUD	4-3-19	4-3-18	
Client ID:	ISM-03-A-0-0.5					
Laboratory ID:	03-283-26					
Lead	68	5.6	EPA 6010D	4-3-19	4-3-19	

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D

Matrix: Soil

			Date	Date	
Result	PQL	Method	Prepared	Analyzed	Flags
ISM-03-A-0.5-1.0					
03-283-31					
30	5.4	EPA 6010D	4-3-19	4-3-19	
ISM-04-A-0-0.5					
03-283-36					
280	5.7	EPA 6010D	4-3-19	4-3-19	
ISM-04-A-0.5-1.0					
03-283-41					
74	5.3	EPA 6010D	4-3-19	4-3-19	
ISM-05-A-0-0.5					
03-283-50					
64	5.4	EPA 6010D	4-3-19	4-3-19	
ISM-05-A-0.5-1.0					
03-283-55					
56	5.3	EPA 6010D	4-3-19	4-3-19	
1300	5.8	EPA 6010D	4-3-19	4-3-19	
ISM OF BOOF					
	5.7	EDA 6010D	4 2 10	4 2 10	
2000	5.7	EPA 0010D	4-3-19	4-3-19	
ISM-06-C-0-0.5					
03-283-66					
	ISM-03-A-0.5-1.0 03-283-31 30  ISM-04-A-0-0.5 03-283-36 280  ISM-04-A-0.5-1.0 03-283-41 74  ISM-05-A-0-0.5 03-283-50 64  ISM-06-A-0-0.5 03-283-60 1300  ISM-06-B-0-0.5 03-283-65 2000	ISM-03-A-0.5-1.0 03-283-31 30 5.4  ISM-04-A-0-0.5 03-283-36 280 5.7  ISM-04-A-0.5-1.0 03-283-41 74 5.3  ISM-05-A-0-0.5 03-283-50 64 5.4  ISM-05-A-0.5-1.0 03-283-55 56 5.3  ISM-06-A-0-0.5 03-283-60 1300 5.8  ISM-06-B-0-0.5 03-283-65 2000 5.7	ISM-03-A-0.5-1.0 03-283-31 30 5.4 EPA 6010D  ISM-04-A-0-0.5 03-283-36 280 5.7 EPA 6010D  ISM-04-A-0.5-1.0 03-283-41 74 5.3 EPA 6010D  ISM-05-A-0-0.5 03-283-50 64 5.4 EPA 6010D  ISM-05-A-0.5-1.0 03-283-55 56 5.3 EPA 6010D  ISM-06-A-0-0.5 03-283-60 1300 5.8 EPA 6010D	Result   PQL   Method   Prepared   ISM-03-A-0.5-1.0	Result   PQL   Method   Prepared   Analyzed   ISM-03-A-0.5-1.0

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-06-A-0.5-1.0					
Laboratory ID:	03-283-67					
Lead	630	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-06-A-1.0-1.5					
Laboratory ID:	03-283-72					
Lead	390	5.6	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-06-A-1.5-2.0					
Laboratory ID:	03-283-77					
Lead	400	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-07-A-0-0.5					
Laboratory ID:	03-283-82					
Lead	470	6.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-07-A-0.5-1.0					
Laboratory ID:	03-283-86					
	62	5.4	EPA 6010D	4-3-19	4-3-19	
Lead	02	5.4	EPA 0010D	4-3-19	4-3-19	
Client ID:	ISM-08-A-0-0.5					
Laboratory ID:	03-283-90					
Lead	1300	5.7	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-08-B-0-0.5					
Laboratory ID:	03-283-95					
Lead	1100	5.7	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-08-C-0-0.5					
Laboratory ID:	03-283-96					
Lead	1300	5.6	EPA 6010D	4-3-19	4-3-19	

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-08-A-0.5-1.0					
Laboratory ID:	03-283-97					
Lead	160	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-08-A-1.0-1.5					
Laboratory ID:	03-283-102					
Lead	540	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-09-A-0-0.5					
Laboratory ID:	03-283-107					
Lead	150	5.8	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-09-A-0.5-1.0					
Laboratory ID:	03-283-112					
Lead	75	5.1	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-10-A-0-0.5					
Laboratory ID:	03-283-117					
Lead	57	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-10-A-0.5-1.0					
Laboratory ID:	03-283-122					
Lead	19	5.1	EPA 6010D	4-3-19	4-3-19	
Client ID:	ISM-11-A-0-0.5					
Laboratory ID:	03-283-127					
Lead	450	5.8	EPA 6010D	4-8-19	4-8-19	
Loud	+30	5.0	LI A 00 10D	<del>-</del> 7-0-1∂	<del>-</del> 7-13	
Client ID:	ISM-11-A-0.5-1.0					
Laboratory ID:	03-283-132					
Lead	120	5.4	EPA 6010D	4-8-19	4-8-19	

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-12-A-0-0.5					
Laboratory ID:	03-283-137					
Lead	280	5.5	EPA 6010D	4-8-19	4-8-19	
Client ID:	ISM-12-A-0.5-1.0					
Laboratory ID:	03-283-148					
Lead	68	5.4	EPA 6010D	4-8-19	4-8-19	
Client ID:	ISM-13-A-0-0.5					
Laboratory ID:	03-283-153					
Lead	170	5.7	EPA 6010D	4-8-19	4-8-19	•

Project: B0003010.0006

#### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-06-10-2.0-2.5					
Laboratory ID:	03-283-142					
Lead	1800	6.4	EPA 6010D	4-2-19	4-2-19	
Client ID:	SB-06-22-3.0-3.5					
Laboratory ID:	03-283-143					
Lead	9.7	5.9	EPA 6010D	4-2-19	4-2-19	•

Project: B0003010.0006

#### TOTAL LEAD EPA 200.8

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	EB-032819					
Laboratory ID:	03-283-144					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	EB-032719					
Laboratory ID:	03-283-145					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	EB-032619					
Laboratory ID:	03-283-146					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	EB-032519					
Laboratory ID:	03-283-147					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	

Project: B0003010.0006

#### **TCLP LEAD** EPA 1311/6010D

TCLP Extract Matrix: Units: mg/L (ppm)

Result ISM-04-A-0-0.5 03-283-36 ND ISM-06-A-0-0.5 03-283-60 0.33 ISM-06-B-0-0.5 03-283-65 0.97	0.20 0.20	Method  EPA 6010D  EPA 6010D	4-17-19 4-17-19	4-17-19 4-17-19	Flags
03-283-36 ND ISM-06-A-0-0.5 03-283-60 0.33 ISM-06-B-0-0.5 03-283-65	0.20	EPA 6010D	4-17-19		
ND ISM-06-A-0-0.5 03-283-60 0.33 ISM-06-B-0-0.5 03-283-65	0.20	EPA 6010D	4-17-19		
ISM-06-A-0-0.5 03-283-60 0.33 ISM-06-B-0-0.5 03-283-65	0.20	EPA 6010D	4-17-19		
03-283-60 0.33 ISM-06-B-0-0.5 03-283-65				4-17-19	
03-283-60 0.33 ISM-06-B-0-0.5 03-283-65				4-17-19	
0.33 ISM-06-B-0-0.5 03-283-65				4-17-19	
ISM-06-B-0-0.5 03-283-65				4-17-19	
03-283-65	0.20	EPA 6010D			
03-283-65	0.20	EPA 6010D			
	0.20	EPA 6010D			
0.97	0.20	EPA 6010D			
			4-17-19	4-17-19	
ISM-06-C-0-0.5					
03-283-66					
0.70	0.20	EPA 6010D	4-17-19	4-17-19	
ISM-06-A-0.5-1.0					
03-283-67					
0.26	0.20	EPA 6010D	4-17-19	4-17-19	
0.21	0.20	EPA 6010D	4-17-19	4-17-19	
ISM_06_A_4 5_2 0					
	0.00	EDA 0040D	4 17 10	4 47 40	
U.34	0.20	EPA 6010D	4-17-19	4-17-19	
ISM-07-A-0-0.5					
	0.20	EPA 6010D	4-17-19	4-17-19	
1	03-283-66 0.70  SM-06-A-0.5-1.0 03-283-67 0.26  SM-06-A-1.0-1.5 03-283-72 0.21  SM-06-A-1.5-2.0 03-283-77 0.34	03-283-66  0.70  0.20  SM-06-A-0.5-1.0  03-283-67  0.26  0.20  SM-06-A-1.0-1.5  03-283-72  0.21  0.20  SM-06-A-1.5-2.0  03-283-77  0.34  0.20  ISM-07-A-0-0.5  03-283-82	03-283-66  0.70  0.20  EPA 6010D  SM-06-A-0.5-1.0  03-283-67  0.26  0.20  EPA 6010D  SM-06-A-1.0-1.5  03-283-72  0.21  0.20  EPA 6010D  SM-06-A-1.5-2.0  03-283-77  0.34  0.20  EPA 6010D	03-283-66  0.70  0.20  EPA 6010D  4-17-19  SM-06-A-0.5-1.0  03-283-67  0.26  0.20  EPA 6010D  4-17-19  SM-06-A-1.0-1.5  03-283-72  0.21  0.20  EPA 6010D  4-17-19  SM-06-A-1.5-2.0  03-283-77  0.34  0.20  EPA 6010D  4-17-19	03-283-66  0.70  0.20  EPA 6010D  4-17-19  4-17-19  SM-06-A-0.5-1.0  03-283-67  0.26  0.20  EPA 6010D  4-17-19  4-17-19  SM-06-A-1.0-1.5  03-283-72  0.21  0.20  EPA 6010D  4-17-19  4-17-19  ISM-06-A-1.5-2.0  03-283-77  0.34  0.20  EPA 6010D  4-17-19  4-17-19  ISM-07-A-0-0.5  03-283-82

Project: B0003010.0006

#### TCLP LEAD EPA 1311/6010D

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-08-A-0-0.5					
Laboratory ID:	03-283-90					
Lead	0.33	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	ISM-08-B-0-0.5					
Laboratory ID:	03-283-95					
Lead	ND	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	ISM-08-C-0-0.5					
Laboratory ID:	03-283-96					
Lead	ND	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	ISM-08-A-1.0-1.5					
Laboratory ID:	03-283-102					
Lead	ND	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	ISM-11-A-0-0.5					
Laboratory ID:	03-283-127					
Lead	0.24	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	ISM-12-A-0-0.5					
Laboratory ID:	03-283-137					
Lead	ND	0.20	EPA 6010D	4-17-19	4-17-19	



# **United States Coast Guard**

# **DATA REVIEW**

# Burrows Island Light Station Skagit County, Washington

Metal (Lead) Analysis

SDG # 1904-015

Analyses Performed By: Onsite Environmental Inc. Redmond, Washington

Report #: 32568R Review Level: Tier II Project: B0003010.0006

# **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Groups (SDG) # 1904-015 for samples collected in association with the United States Coast Guard, Burrows Island Light Station, Skagit County, Washington. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Occupie ID	Lability	Sample		Dovent Comple			Ana	lysis		
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	voc	РАН	РСВ	ТРН	TCLP Lead	Metals
EB-032919	04-015-166	Water	3/29/2019							X
EB-033019	04-015-167	Water	3/30/2019							X
EB-03312019	04-015-168	Water	4/01/2019			X		X		X
EB-04012019	04-015-169	Water	4/01/2019			X	X	X		
ISM-13-A-0.5-1.0	04-015-01	Soil	3/29/2019							X
ISM-13-B-0-0.5	04-015-05	Soil	3/29/2019							X
ISM-13-C-0-0.5	04-015-06	Soil	3/29/2019							X
ISM-14-A-0.5-1.0	04-015-11	Soil	3/29/2019							X
ISM-14-A-0-0.5	04-015-07	Soil	3/29/2019						X	X
ISM-15-A-0.5-1.0	04-015-19	Soil	3/29/2019						X	X
ISM-15-A-0-0.5	04-015-14	Soil	3/29/2019							X
ISM-15-A-1.0-1.5	04-015-24	Soil	3/30/2019							X
ISM-16-A-0.5-1.0	04-015-32	Soil	3/30/2019							X
ISM-16-A-0-0.5	04-015-29	Soil	3/30/2019							X
ISM-17-A-0.5-1.0	04-015-40	Soil	3/30/2019							Х
ISM-17-A-0-0.5	04-015-35	Soil	3/30/2019							X
ISM-18-A-0.5-1.0	04-015-50	Soil	3/30/2019							X
ISM-18-A-0-0.5	04-015-45	Soil	3/30/2019							X
PW-040119	04-015-165	Water	4/01/2019		Х		Х			X
SB-101-1-0-0.5	04-015-103	Soil	3/31/2019					X		
SB-101-10-0.5-1.0	04-015-150	Soil	4/01/2019				X	X		
SB-101-10-0-0.5	04-015-149	Soil	3/29/2019				Х	X		
SB-101-11-0.5-1.0	04-015-152	Soil	4/01/2019				X	X		
SB-101-11-0-0.5	04-015-151	Soil	4/01/2019				X	X		
SB-101-12-0-0.5	04-015-153	Soil	4/01/2019				Х	X		
SB-101-12-1.0-1.5	04-015-154	Soil	4/01/2019				Х	Х		
SB-101-1-2-2.5	04-015-104	Soil	3/31/2019					Х		
SB-101-13-0-0.5	04-015-155	Soil	4/01/2019				Х	Х		

			Sample				Ana	lysis		
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	voc	РАН	РСВ	ТРН	TCLP Lead	Metals
SB-101-13-1.0-1.5	04-015-156	Soil	4/01/2019				Х	Х		
SB-101-14-0-0.5	04-015-158	Soil	4/01/2019				Х	X		
SB-101-14-1.0-1.5	04-015-159	Soil	4/01/2019				Х	Х		
SB-101-15-0.5-1.0	04-015-161	Soil	4/01/2019				X	Х		
SB-101-15-0-0.5	04-015-160	Soil	4/01/2019				X	Х		
SB-101-16-0-0.5	04-015-162	Soil	4/01/2019				X	Х		
SB-101-16-2.0-2.5	04-015-163	Soil	4/01/2019				X	Х		
SB-101-2-0-0.5	04-015-105	Soil	3/31/2019					Х		
SB-101-2-2-2.5	04-015-107	Soil	3/31/2019					X		
SB-101-3-0-0.5	04-015-108	Soil	3/31/2019					Х		
SB-101-3-2-2.5	04-015-109	Soil	3/31/2019					Х		
SB-101-4-0-0.5	04-015-135	Soil	4/01/2019				X	Х		
SB-101-4-2.0-2.5	04-015-136	Soil	4/01/2019				Х	Х		
SB-101-5-0.5-1.0	04-015-139	Soil	4/01/2019				Х	Х		
SB-101-5-0-0.5	04-015-138	Soil	4/01/2019				Х	Х		
SB-101-6-0.5-1.0	04-015-141	Soil	4/01/2019				Х	Х		
SB-101-6-0-0.5	04-015-140	Soil	4/01/2019				Х	Х		
SB-101-7-0.5-1.0	04-015-142	Soil	4/01/2019				Х	Х		
SB-101-7-1.5-2.0	04-015-143	Soil	4/01/2019				Х	Х		
SB-101-8-0-0.5	04-015-144	Soil	4/01/2019				Х	Х		
SB-101-8-1.0-1.5	04-015-145	Soil	4/01/2019				Х	Х		
SB-101-9-0-0.5	04-015-146	Soil	4/01/2019				Х	Х		
SB-101-9-1.5-2.0	04-015-148	Soil	4/01/2019				Х	Х		
SB-102-1-0-0.5	04-015-129	Soil	4/01/2019					Х		
SB-102-1-1.5-2.0	04-015-130	Soil	4/01/2019					Х		
SB-102-2-0-0.5	04-015-132	Soil	4/01/2019					Х		
SB-102-3-0.5-1.0	04-015-134	Soil	4/01/2019					Х		
SB-102-3-0-0.5	04-015-133	Soil	4/01/2019					Х		
SB-104-1-0-0.5	04-015-123	Soil	3/31/2019					Х		
SB-104-1-2.5-3	04-015-124	Soil	3/31/2019					Х		
SB-104-2-0-0.5	04-015-125	Soil	3/31/2019					Х		
SB-104-2-4-4.5	04-015-126	Soil	3/31/2019					Х		
SB-104-3-0-0.5	04-015-127	Soil	3/31/2019					Х		
SB-104-3-2.5-3	04-015-128	Soil	3/31/2019					Х		
SB-106-1-0-0.5	04-015-55	Soil	3/31/2019							Х
SB-106-1-2-2.3	04-015-56	Soil	3/31/2019							Х
SB-106-2-0-0.5	04-015-58	Soil	3/31/2019							Х
SB-106-2-2.0-2.5	04-015-59	Soil	3/31/2019							Х

			Sample				Ana	lysis		
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	VOC	РАН	РСВ	ТРН	TCLP Lead	Metals
SB-106-3-0-0.5	04-015-60	Soil	3/31/2019							Х
SB-106-3-2-2.5	04-015-61	Soil	3/31/2019							X
SB-107-1-0-0.5	04-015-110	Soil	3/31/2019					Х		
SB-107-1-1.5	04-015-111	Soil	3/31/2019					Х		
SB-107-2-0.5-1	04-015-113	Soil	3/31/2019					Х		
SB-107-2-0-0.5	04-015-112	Soil	3/31/2019					Х		
SB-107-3-0.5-1	04-015-115	Soil	3/31/2019			Х	Х	Х		
SB-107-3-0-0.5	04-015-114	Soil	3/31/2019		Х	X	Х	Х		
SB-107-4-0.5-1	04-015-118	Soil	3/31/2019					Х		
SB-107-4-0-0.5	04-015-116	Soil	3/31/2019					Х		
SB-107-5-0.5-1	04-015-120	Soil	3/31/2019					Х		
SB-107-5-0-0.5	04-015-119	Soil	3/31/2019					Х		
SB-107-6-0.5-1	04-015-122	Soil	3/31/2019					Х		
SB-107-6-0-0.5	04-015-121	Soil	3/31/2019					Х		
SB-112-08-0-0.5	04-015-77	Soil	3/31/2019					Х		
SB-112-08-1-1.5	04-015-79	Soil	3/31/2019					Х		
SB-112-1-0.5-0.7	04-015-63	Soil	3/31/2019					Х		
SB-112-1-0-0.5	04-015-62	Soil	3/31/2019					Х		
SB-112-10-0.5-1	04-015-83	Soil	3/31/2019					Х		
SB-112-10-0-0.5	04-015-82	Soil	3/31/2019					Х		
SB-112-11-0-0.5	04-015-84	Soil	3/31/2019					Х		
SB-112-11-1.5-2	04-015-85	Soil	3/31/2019					Х		
SB-112-12-0-0.5	04-015-86	Soil	3/31/2019					Х		
SB-112-12-1-1.5	04-015-87	Soil	3/31/2019					Х		
SB-112-2-0-0.5	04-015-64	Soil	3/31/2019					Х		
SB-112-2-1-1.5	04-015-65	Soil	3/31/2019					Х		
SB-112-3-0-0.5	04-015-66	Soil	3/31/2019					Х		
SB-112-3-1-1.3	04-015-67	Soil	3/31/2019					Х		
SB-112-4-0.5-1	04-015-70	Soil	3/31/2019					Х		
SB-112-4-0-0.5	04-015-68	Soil	3/31/2019					Х		
SB-112-5-0.5-0.9	04-015-72	Soil	3/31/2019					Х		
SB-112-5-0-0.5	04-015-71	Soil	3/31/2019					Х		
SB-112-6-0-0.5	04-015-73	Soil	3/31/2019		Х	X	Х	Х		
SB-112-6-1-1.5	04-015-74	Soil	3/31/2019					Х		
SB-112-7-0.5-0.8	04-015-76	Soil	3/31/2019					X		
SB-112-7-0-0.5	04-015-75	Soil	3/31/2019					Х		
SB-112-9-0.5-1	04-015-81	Soil	3/31/2019					Х		
SB-112-9-0-0.5	04-015-80	Soil	3/31/2019					X		

Sample ID	Lab ID	Matrix	Sample Collection	Parent Sample			Ana	lysis		
Sample ID	Lab ID	Matrix	Date	Parent Sample	voc	РАН	РСВ	ТРН	TCLP Lead	Metals
SB-DUP-1	04-015-57	Soil	3/31/2019	SB-106-2-2.0-2.5						Х
SB-DUP-10	04-015-157	Soil	4/01/2019	SB-101-14-0-0.5			X	Х		
SB-DUP-11	04-015-164	Soil	4/01/2019	SB-101-16-0-0.5			X	X		
SB-DUP-2	04-015-69	Soil	3/31/2019	SB-112-4-0.5-1				Х		
SB-DUP-3	04-015-78	Soil	3/31/2019	SB-112-08-0-0.5				Х		
SB-DUP-4	04-015-94	Soil	3/31/2019	SB-PL-6-1-1.5				Х		
SB-DUP-5	04-015-106	Soil	3/31/2019	SB-101-2-0-0.5				Х		
SB-DUP-6	04-015-117	Soil	3/31/2019	SB-107-4-0-0.5				Х		
SB-DUP-7	04-015-131	Soil	4/01/2019	SB-102-1-0-0.5				X		
SB-DUP-8	04-015-137	Soil	4/01/2019	SB-101-4-2.0-2.5			Х	X		
SB-DUP-9	04-015-147	Soil	4/01/2019	SB-101-9-0-0.5			Х	Х		
SB-PL-1-0-0.5	04-015-89	Soil	3/31/2019					X		
SB-PL-10-2-2.5	04-015-98	Soil	3/31/2019					Х		
SB-PL-11-0.5-1	04-015-99	Soil	3/31/2019					X		
SB-PL-12-1-1.5	04-015-100	Soil	3/31/2019					X		
SB-PL-13-1-1.5	04-015-101	Soil	3/31/2019					X		
SB-PL-14-1-1.5	04-015-102	Soil	3/31/2019					X		
SB-PL-2-1-1.5	04-015-89	Soil	3/31/2019					Х		
SB-PL-3-0-0.5	04-015-90	Soil	3/31/2019					Х		
SB-PL-4-1-1.5	04-015-91	Soil	3/31/2019					Х		
SB-PL-5-0-0.5	04-015-92	Soil	3/31/2019					Х		
SB-PL-6-1-1.5	04-015-93	Soil	3/31/2019					Х		
SB-PL-7-0-0.5	04-015-95	Soil	3/31/2019					Х		
SB-PL-8-1-1.5	04-015-96	Soil	3/31/2019					Х		
SB-PL-9-0-0.5	04-015-97	Soil	3/31/2019					Х		

## Notes:

VOC - Volatile Organic Compounds.

PAH – Polycyclic Aromatic Hydrocarbons.

PCB – Polychlorinated Biphenyls.

TPH – Total Petroleum Hydrocarbons.

TCLP- Toxicity Characteristic Leaching Procedure.

## **ANALYTICAL DATA PACKAGE DOCUMENTATION**

The table below is the evaluation of the data package completeness.

	Rep	orted	Performance Acceptable		Not
Items Reviewed	No	Yes	No	Yes	Required
Sample receipt condition		Х		X	
2. Requested analyses and sample results		Х		X	
Master tracking list		Х		Х	
4. Methods of analysis		Х		Х	
5. Reporting limits		Х		Х	
6. Sample collection date		Х		Х	
7. Laboratory sample received date		Х		Х	
8. Sample preservation verification (as applicable)		Х	Х		
Sample preparation/extraction/analysis dates		Х		Х	
10. Fully executed Chain-of-Custody (COC) form		Х		Х	
Narrative summary of Quality Assurance (QA) or sample problems provided		Х		Х	
12. Data Package Completeness and Compliance		Х		Х	

Note:

QA - Quality Assurance

9. Samples SB-112-6-0-0.5 and SB-107-3-0-0.5 were not collected in VOA vials. The samples were extracted from an eight-ounce jar and analyzed.

#### ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260C, 8270D-SIM, 8082A, NWTPH-Gx, and NWTPH-Dx. Data were reviewed in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (EPA 540-R-2017-002, January 2017) and Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington (March 2019).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected as unusable. The compound may or may not be present in the sample.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and

provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

#### **VOLATILE ORGANIC COMPOUND (VOC) ANALYSES**

# 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	14 days from collection to analysis	Cool to <6 °C.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria with exception of samples SB-112-6-0-0.5 and SB-107-3-0-0.5. The samples were extracted from an eight-ounce jar on tenth day from sample collection. The sample results were qualified as estimated.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and field blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field blanks also measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected at concentrations greater than the PQL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample ID	Surrogate	Recovery
SB-107-3-0-0.5	4-Bromofluorobenzene	< LL but > 10%

Note:

LL – Lower control limit

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
> OL	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
10%	Detect	J
Surrogates diluted below the calibration curve due to the high	Non-detect	UJ <sup>1</sup>
concentration of a target compounds	Detect	J <sup>1</sup>

#### Note:

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD analysis was not performed samples associated with this SDG.

## 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The RPD between the LCS and LCSD results must be within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of two times the RL is applied to the difference between the results for soil matrices.

A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

VOC analysis was not designated for the field duplicate samples.

# 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

# **DATA VALIDATION CHECKLIST FOR VOCS**

VOCs: SW-846 8260B	Rep	Reported		rmance ptable	Not	
	No	Yes	No	Yes	Required	
Gas Chromatography/Mass Spectrometry (GC/MS)						
Tier II Validation						
Holding Times		X	X			
Reporting limits (units)		X		X		
Blanks						
A. Method blanks		Х		Х		
B. Equipment/Field blanks	Х				Х	
C. Trip blanks	Х				Х	
Surrogates Accuracy (%R)		Х	Х			
Matrix Spike (MS) %R	Х				Х	
Matrix Spike Duplicate (MSD) %R	Х				Х	
MS/MSD Precision (RPD)	Х				Х	
Laboratory Control Sample (LCS) %R		Х		х		
Laboratory Control Sample Duplicate (LCSD) %R		Х		х		
LCS/LCSD RPD		Х		х		
Laboratory Duplicate Sample RPD	Х				Х	
Field Duplicate Sample RPD	Х				Х	
Dilution Factor	Х				Х	

%R = Percent recovery RPD = Relative percent difference

#### POLYCYCLIC AROMATIC HYDROCARBON (PAHs) ANALYSES

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
SIM	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and field blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field blanks also measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected at concentrations greater than the PQL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PAH analysis requires that two of the three base/neutral surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the control limits.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD analysis was not performed samples associated with this SDG.

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The RPD between the LCS and LCSD results must be within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

#### 6. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of two times the RL is applied to the difference between the results for soil matrices.

PAH analysis was not designated for the field duplicate samples.

#### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

# **DATA VALIDATION CHECKLIST FOR PAHs**

VOCs: SW-846 8270D SIM	Rep	Reported		rmance ptable	Not	
	No	Yes	No	Yes	Required	
Gas Chromatography/Mass Spectrometry (GC/MS)						
Tier II Validation						
Holding Times		X		X		
Reporting limits (units)		X		X		
Blanks						
A. Method blanks		Х		X		
B. Equipment/Field blanks		Х		X		
C. Trip blanks	Х				Х	
Surrogates Accuracy (%R)		Х		х		
Matrix Spike (MS) %R	Х				Х	
Matrix Spike Duplicate (MSD) %R	Х				Χ	
MS/MSD Precision (RPD)	Х				Χ	
Laboratory Control Sample (LCS) %R		Х		Х		
Laboratory Control Sample Duplicate (LCSD) %R		Х		Х		
LCS/LCSD RPD		Х		Х		
Laboratory Duplicate Sample RPD	X				Х	
Field Duplicate Sample RPD	Х				Х	
Dilution Factor	X				Χ	

#### POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and field blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field blanks also measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected at concentrations greater than the PQL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that at least one of the two surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample ID	Surrogate	Recovery
SB-101-4-0-0.5	Decachlorobiphenyl	< 10%
SB-101-5-0-0.5	Decachlorobiphenyl	< 10%
SB-101-12-0-0.5	Decachlorobiphenyl	< 10%
SB-101-13-0-0.5	Decachlorobiphenyl	< 10%
SB-101-13-1.0-1.5	Decachlorobiphenyl	< 10%
SB-101-16-2.0-2.5	Decachlorobiphenyl	< 10%

Sample ID	Surrogate	Recovery	
PW-040119	Decachlorobiphenyl	< 10%	

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification	
	Non-detect	No Action	
> UL	Detect	J	
11.1.4.4.4004	Non-detect	UJ	
< LL but > 10%	Detect		
4007	Non-detect	R	
< 10%	Detect	J	
Surrogates diluted below the calibration curve due to the high	Non-detect	UJ <sup>1</sup>	
concentration of a target compounds	Detect	J <sup>1</sup>	

#### Note:

### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

MS/MSD analysis performed on samples SB-101-16-2.0-2.5, SB-101-8-0-0.5 and SB-107-3-0-0.5 for Aroclor 1260. The MS/MSD recoveries and RPDs within the control limits.

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The RPD between the LCS and LCSD results must be within the laboratory-established acceptance limits.

The compound Aroclor 1260 associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

#### 6. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of two times the RL is applied to the difference between the results for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-101-4-2.0-2.5 / SB-DUP-8	Aroclor 1260	0.37	0.52	33.7%
SB-101-9-0-0.5 / SB-DUP-9	Aroclor 1260	0.64	1.3	68.0%
SB-101-14-0-0.5 / SB-DUP-10	Aroclor 1260	1.7	1.2	34.5%
SB-101-16-0-0.5 / SB-DUP-11	Aroclor 1260	0.40	0.51	24.1%

The compound Aroclor 1260 associated with sample SB-101-9-0-0.5 / SB-DUP-9 exhibited a field duplicate RPD greater than the control limit. The associated sample results were qualified as estimated.

#### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

# **DATA VALIDATION CHECKLIST FOR PCBs**

Pesticides: SW-846 8082A		orted		mance ptable	Not
	No	Yes	No	Yes	Required
Gas Chromatography/Electron Capture Detector (G	C/ECD)				
Tier II Validation					
Holding times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks					
A. Method blanks		Х		Х	
B. Equipment and/or Field blanks		Х		Х	
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate (LCSD) %R		Х		Х	
LCS/LCSD Precision (RPD)		Х		Х	
Matrix Spike (MS) %R		Х		Х	
Matrix Spike Duplicate (MSD) %R		Х		Х	
MS/MSD RPD		Х		Х	
Field Duplicate Sample RPD		Х	Х		
Surrogate Spike Recoveries		Х	Х		
Column %D ≤ 40% (If dual column is performed for reporting - not confirmation)	Х				Х
Dilution Factor	Х				X
Moisture Content	Х				Х

# Notes:

%R = Percent recovery
RPD = Relative percent difference
%D = Percent difference

#### GASOLINE RANGE ORGANICS AND DIESEL RANGE ORGANICS ANALYSES

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH-Gx	Water	14 days from collection to analysis	Cool to <6 °C
		14 days from collection to analysis	Cool to <6 °C
	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
NWTPH-Dx	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

#### 2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and field blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field blanks also measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected at concentrations greater than the PQL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

#### 3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds within exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the control limits.

#### 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

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Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD analysis was not performed samples associated with this SDG.

#### 5. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 50% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL for soil matrices.

The laboratory duplicate analysis performed on sample SB-102-1-1.5-2.0 for gasoline range organics and samples SB-112-1-0-0.5, SB-112-5-0-0.5, SB-112-10-0-0.5, SB-PL-4-1-1.5, SB-PL-10-2-2.5, SB-PL-14-1-1.5, SB-107-6-0-0.5, SB-107-6-0.5-1, SB-102-1-1.5-2.0, SB-101-8-0-0.5, SB-101-11-0-0.5 and SB-101-16-2.0-2.5 for diesel range organics.

The detected results between parent and laboratory duplicate samples exhibited RPDs within the control limit.

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The RPD between the LCS and LCSD results must be within the laboratory-established acceptance limits.

The LCS/LCSD analysis was not reported by the laboratory in this SDG.

#### 6. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of two times the RL is applied to the difference between the results for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-112-4-0.5-1 / SB-DUP-2	Lube Oil Range Organics	67	60 U	AC
CD 112 00 0 0 5 / CD DUD 2	Diesel Range Organics	280	310	10.2%
SB-112-08-0-0.5 / SB-DUP-3	Lube Oil Range Organics	380	460	19.0%
SB-PL-6-1-1.5 / SB-DUP-4	Diesel Range Organics	33	33 U	AC
	Lube Oil Range Organics	120	120	AC
SB-101-2-0-0.5 / SB-DUP-5	Diesel Range Organics	79	87	AC
	Lube Oil Range Organics	220	210	4.7%
OD 407 4 0 0 5 / OD DUD 0	Diesel Range Organics	1300	1000	26.1%
SB-107-4-0-0.5 / SB-DUP-6	Lube Oil Range Organics	1300	1100	16.7%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-102-1-0-0.5 / SB-DUP-7	Diesel Range Organics	36	88	AC
3B-102-1-0-0.3 / 3B-D0P-7	Lube Oil Range Organics	330	440	28.6%
CD 404 4 2 0 2 5 / CD DUD 9	Mineral Oil	460	380	19.0%
SB-101-4-2.0-2.5 / SB-DUP-8	Lube Oil Range Organics	270	240	11.8%
SB-101-9-0-0.5 / SB-DUP-9	Mineral Oil	190	65	NC
	Lube Oil Range Organics	180	240	28.6%
SB-101-14-0-0.5 / SB-DUP-10	Diesel Range Organics	35 U	37	AC
SB-101-14-0-0.57 SB-DOP-10	Lube Oil Range Organics	130	120	AC
SB-101-16-0-0.5 / SB-DUP-11	Lube Oil Range Organics	87	73	AC

Notes:

AC - Acceptable

NC - Non compliant

The difference in mineral oil result between the parent sample SB-101-9-0-0.5 and field duplicate sample SB-DUP-9 were not in agreement. The associated results were qualified as estimated.

# 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

# **DATA VALIDATION CHECKLIST FOR TPHs**

TPHs: NWTPH-Dx, NWTPH-Gx		Reported		rmance ptable	Not		
	No	Yes	No	Yes	Required		
Gas Chromatography/Flame Ionization Detector (GC/FID)							
Tier II Validation							
Holding Times		X		X			
Reporting limits (units)		X		X			
Blanks							
A. Method blanks		Х		X			
B. Equipment/Field blanks		X		X			
C. Trip blanks	Х				Х		
Surrogates Accuracy (%R)		X		X			
Matrix Spike (MS) %R	Х				Х		
Matrix Spike Duplicate (MSD) %R	Х				Х		
MS/MSD Precision (RPD)	Х				Х		
Laboratory Control Sample (LCS) %R	Х				Х		
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х		
LCS/LCSD RPD					Х		
Laboratory Duplicate Sample RPD		Х		Х			
Field Duplicate Sample RPD		Х	Х				
Dilution Factor	Х				Х		

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### INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, TCLP Lead, and EPA 200.8. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review* (EPA 540-R-2017-001, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington* (March 2019).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within the control limits.
  - \* Duplicate analysis is not within the control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

### **METALS ANALYSES**

### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.8	Water	180 days from collection to analysis	Cool to < 6 °C; pH < 2 with HNO3
SW-846 6010D	Soil	180 days from collection to analysis	Cool to < 6°C

All samples were analyzed within the specified holding time criteria.

### 2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the PQL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

### 3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

### 3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD recovery control limits do not apply for MS performed on samples where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis was not performed for samples associated with this SDG.

### 3.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for soil matrices.

A laboratory duplicate analysis was not performed for samples associated with this SDG.

### 4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

The LCS analysis was not performed and reported by the laboratory within this SDG.

### 5. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL for soil matrices is applied to the difference between the results.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-106-2-2.0-2.5 / SB-DUP-1	Lead	13	9.2	34.2%

Note:

AC - Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

### 6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR METALS**

METALS: SW-846 6010D and EPA 200.8	Rep	orted		rmance ptable	Not Boguired
	No	Yes	No	Yes	Required
Inductively Coupled Plasma - Atomic Emission Spec Inductively Coupled Plasma - Mass Spectrometry (IC		CP-AES)			
Tier II Validation					
Holding Times		Х		Х	
Reporting limits (units)		Х		Х	
Blanks					
A. Method Blanks		Х		Х	
B. Equipment/Field Blanks		Х		Х	
Laboratory Control Sample (LCS) %R	Х				X
Laboratory Control Sample Duplicate (LCSD) %R	Х				X
LCS/LCSD Precision (RPD)	Х				X
Matrix Spike (MS) %R	Х				X
Matrix Spike Duplicate (MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				X
Laboratory Duplicate Sample (RPD)		Х		Х	
Field Duplicate Sample (RPD)		Х		Х	
ICP Serial Dilution %D		Х		Х	
Reporting Limit Verification		Х		Х	

Notes:

%R = Percent recovery

RPD = Relative percent difference

%D = Percent difference

Validation Performed By: Suresh PR

Signature: R N SW

Date: April 26, 2019

Peer Review: Dennis Dyke

Date: May 10, 2019

### CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



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1	of .
	8

Received Received	Relinquished	Received	Relinquished	Received Will DAC Halis 1150	Relinquished (1000) 11/2/19 1150	Signature Company Date Time	THE PROPERTY OF THE PROPERTY O	9 ISM-14-2-0-0,5 1 0952 1 1X OM HO	-X on H	7 ISM -14-A-0-0,5 0950 1X	6 ISM-13-C-0-0.5 1 1137 1 X	S ISM-13-B-0-0.5 1115 11X	4 ISM -13-3-0.5 -1.0 10251 1 X On Ad1	3 ISM-13-2-0-5-10 0730 1 X On Hold	2 ISM-13-1-0.5-1.0 1029 11X Du Hol.	V	Lead (U GRO (I DRO/H PCBs ( Benze cPAHs	Sampled by:  (other)  O/Mine  USEPA  O/Mine  USEPA  O/Mine  USEPA  O/Mine  USEPA  O/Mine  O/Mi	Josh Gravenmier  Ontaine  Method  Gx)  ral Oil (i)  Method 8  EPA Method  A Method	Burrows Island  Standard (7 Days)  Standard (7 Days)  Standard (7 Days)	2 Days 3 Days	Sam	Phone: (425) 883-3881 • www.onsite-env.com	Turnaround Request (in working days)  Laboratory Num
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LAVIPONMENTAL INC.  14848 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com  Arcadis  Project Number: B0003010.0006	Turnaround Request (in working days)  (Check One)  Same Day 1 Day  2 Days 3 Days	Laboratory Num	ry Number:	od 6010)
Project Name: USCG Burrows Island	rd (7 Days	6010) IWTPH-	hod 826	1 8082)
Project Manager: Josh Gravenmier	]	Gx)	PA Metho	Method
Sampled by:	(other)	ISEPA MINTPH-	ne (USE	B Metals USEPA
Lab ID Sample Identification	Date Time Sampled Sampled Matrix	Lead (U GRO (N DRO/H	Benzer cPAHs EPH (N	PCBs (
11 ISM-14-4-0.5-1.0	5201	×		
12 ISM -14 -1 -0.5-1.0	1036	- ×	I Hala	
13 ISM-14-7-012-10	1 2801 1	_ ×	7	8
14 ISM-15-A-0-0.5	7/29/19 1330	~ ×		
5'0-0-1-51-WST SI	(73)	X	on Hola	8
16 ISM-15-2-0-0.5	1332	_ 	an Hold	9
1) ISM -15 - 3 - 0 - 0,5	1333	×	an Hole	4
18 ISM -15-4-0-0,5	1334	<i>-</i>	ON Hole	
19 ISM -15-A-0.5-1.0	1353			
15M-15-1-6.5-10	1 1381 1	×	JOH NO	A
Signature	Company	Date	Time Co	Comments/Special Instructions
Relinquished Aug Aug	Arcadi	8/2/18	05,	* Hold for these samples; running these compounds is contingent on
Received	- 108E	4/2/15	0001	parent sample results. Benzene, cPAHs, EPH, and VF contingent on the results of the GRO/DRO/HO results.
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date	Reviewed/Date		Ch	Chromatograms with final report



Page 3 18

14648 NE 95th Street • Redmond, WA 98052	Turnaround Request (in working days)	Laboratory Number:	04-015
Company: Arcadic	(Check One)	-	
Project Number: B0003010.0006	Same Day 1 Day	0)*	od 6010)
Project Name: USCG Burrows Island	rd (7 Days)	6010) IWTPH-	1 8082)
Project Manager: Josh Gravenmier	]	Method Gx) al Oil (Nethod 86 PA Method	(USEP Method Method
Sampled by:	(other)	JSEPAM ne (USE	USEPA
Lab ID Sample Identification	Date Time Sampled Sampled Matrix	Lead (L GRO (N DRO/H PCBs (L Benzer	PCBs (BTEX (
21 ISM -15-2-0.5-1.0	10		
22 ISM -15-3-0,5-1.0	1356	X ON HOLD	9
23 TSM-15-4-015-10	1 1357	X on Hald	
31-01-4-11- NSI he	3/30/19 1325	×	
25 ISM -12-1-10-1.5	1336	X On Hold	
5 7-01- E-51- WSI 96	7,451	X SI HOR	
S1-01-8-51- NSI	1328	X on told	
38 ISM -12-4-10-18	1529	X en Role	
29 ISM-16-A-0-0.5	8501	X	
30 ISM-16-1-0-0,5	1 1034 1	1 X on Hol	
Signature	Company	Date Time	Comments/Special Instructions
Relinquished All Hills	Arcadis	4/2/19 1150	* Hold for these samples; running these compounds is contingent on
Received	380	4/2/18/1/80	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.
Relinquished	(		
Received			
Relinquished			
Received			
Reviewed/Date	Reviewed/Date		Chromatograms with final report



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LIVIPORMENTALING	Turnaround Request (in working days)	Laboratory Number:	04-015
Company: Arcadis	k One)		
Project Number: B0003010.0006	□ 2 Days □ 3 Days	0)*	ed 6010)
Project Name: USCG Burrows Island	rd (7 Days)	IWTPH-	1 8082)
Project Manager: Josh Gravenmier	]	Gx) al Oil (N lethod 80 PA Metho	VPH)* (USEP) Method
Sampled by:	(other)	JSEPA M	WTPH-
Lab ID Sample Identification	Date Time Sampled Matrix	GRO (N DRO/HO PCBs (L Benzen cPAHs	VPH (N RCRA 8 PCBs (I BTEX (I
31 ISM -16-2-0-0,5	1040 50:1		
32 ISM-16-A-0.5-1.0	112/ 1	X	×
	= 22	X 00 +101	
211-5:0- 2-91- WSI NE	11123 1	X On Hol	
35 ISM-17-A-0-0.5	12/9	X	
36 ISM-17-1-0-0.5	1220	X Ox To	
JEW-17-2-0-0.5	1461	X Du Ho	
38 ISM-17-3-0-05	1222	X on the	8
30-0- H-21- MSI 62	1 1283 1 1	X on the	
40 ISM-17-A-0.5-1.0	1 1350 1 1	+	
Signature	Company	Date Time	Comments/Special Instructions
Relinquished May Ning	1-readis	4/2/19 1150	* Hold for these samples; running these compounds is contingent on
Received	386	OS11 51/7/H	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.
Relinquished	9		
Received			
Relinquished			
Received			
Reviewed/Date	Reviewed/Date		Chromatograms with final report



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	Chromatograms with final report				Reviewed/Date		Reviewed/Date	Rev
							Received	Rec
							Relinquished	Reli
							Received	Rec
							Relinquished	Rel
	parent sample results. Benzene, CPAHS, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	21120	HZH	111	380	X	Received	Rec
nt on	* Hold for these samples; running these compounds is contingent on	19 1150	4/2/	12	Avenu	la Pik	Relinquished	Rel
	Comments/Special Instructions	Time	Date		Company	Signature	Sig	
×			+	( )	1559	8-4-0,5-1.0	ISM -18	B
	bld I I I I I I I I I I I I I I I I I I I	on to	×		1557	7.0-0-4-	15M-18	52
		on Ho	X	~	1556	-3-0-0.5	ZSM-18	87
		on Ho	7	~	1555	5.0-0-6-	1 ISM-18	S
		on to	X	~	1554	-1 -0-0,5	15M-18	92
X			×	-	1553	-A-0-0.5	81- WST S	5
	<b>B</b>	on Ros	×		1354	-H-05-1.0	21 - WSI	44
		On Hola	7	1	1353	-3-0,5-1.0	11- WSI	2h
		On Hill	7	1	1 1352	-2-0,5-10	15M - 17	3
		on Hold	X	; )	3/30/19 (35) 50	-1-0.5-10 8	154 -17	7
90	RCRA PCBs	Benze	GRO (I	Watrix Numb	Date Time Sampled Sampled M	Sample Identification S		Lab ID
mo	(USEPA		JSEPA NWTPH IO/Mine	er of Co	(other)		Sampled by:	Sam
I ST	s (USE	EPA Me	-Gx)	ontaine		Josh Gravenmier	ager:	Proje
ire	PA Meth d 8082) d 8260)	thod 820 od 8270	6010) NWTPH	-	Standard (7 Days)	USCG Burrows Island	Project Name: USCG BI	Proje
Ε	od 6010		-Dx)	3 Days	П	10.0006	Project Number: B0003010.0006	Proje
	0)			1 Day	(Check One)		Company: Arcadis	Com
	04	Cry Mailinei.	Laborat		(iii working udys)	reet • Redmond, WA 98052 3881 • www.onsite-env.com	14648 NE 95th Str Phone: (425) 883-:	
	01-015	aboratory Number	I ahorat		Turnaround Request	Environmental Inc.	Environ	



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\$8 58-106-2-0-0.5 \$\frac{3}{1}\text{\tin\text{\t	SB-106-2-0-0.5 3/3/1/9 0.900 1 X  SB-106-2-0-0.5 3/3/1/9 0.900 1 X  SB-106-3-0-0.5 3/3/1/9 0.901 1 X  SB-106-3-0-0.5 3/3/1/9 0.901 1 X  Truished  Signature  Signature  Signature  Signature  Signature  Signature  A ccad-5 4/3/19 1150	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	SB-106-1-0-0.5 33/19 0855 8611 31 X  SB-106-1-2-2.3 3/3/19 0911 1 X  SB-106-2-0-0.5 3/3/19 0900 1 X  SB-106-3-0-0.5 3/3/19 0900 1 X  SB-106-3-0-0.5 3/3/19 0901 1 X  Signature Company Date Time	T5M-18-4-0.5-1.0  SB-106-1-0-0.5  SB-106-1-2-2-2-3  SB-106-2-0-0.5  SB-106-3-0-0.5  SB-106-3-0-0.5  Signature  Signature	T5M-18-2-0.5-1.0  T5M-18-3-0.5-1.0  T5M-18-3-0.5-1.0  T5M-18-3-0.5-1.0  T5M-18-3-0.5-1.0  T6D 1 1 X ON Hold  T5M-18-3-0.5-1.0  T6D 1 1 X ON Hold  T6D 1 X ON Hold  T6D 1 1 X ON Hold  T7 1 X ON	T5M-18-1-0.5-1.0 3/30/9 1600 50:1 1 X DM Hold  T5M-18-2-0.5-1.0 1601 1 1 X DM Hold  T5M-18-3-0.5-1.0 1602 1 1 X DM Hold  T5M-18-4-0.5-1.0 1602 1 1 X DM Hold  SB-106-1-0-0.5 3/3/19 09/1 1 X  SB-106-2-0-0.5 3/3/19 09/0 1 X  SB-106-3-0-0.5 3/3/19 09/0 1 X	Time   Sample Identification   Sampled   Sam	Dock Gravenmier   Date   Time   Contract   Date   Time   Contract   Date   Time   Contract   Date	Company   Semple Identification   Sample Identificat	Delays   Company   Date   Time   Company   Date   Time   Company   Date   Company   Date   Company   Date   Company   Date   Time   Company   Date   Company   Company   Date   Company   Company   Date   Company   Company   Date   Company   Company   Date   Co	Sample   S
5B-106-2-0-0.5 \$\frac{3}{3}\frac{1}{9}   \qu	SB-106-2-0-0.5 \$\frac{3}{3}\frac{1}{9} \frac{3}{9} \frac{1}{9} \frac{1}{9} \frac{1}{8} \frac{1}{8} \frac{1}{9} \frac{1}{9} \frac{1}{8} \frac{1}{9} \fr	SB-106-1-2-2.3 3/3/19 09/1 / X  SB-106-2-0-0.5 3/3/19 0900 / X  SB-106-3-0-0.5 3/3/19 0900 / X  SB-106-3-0-0.5 3/3/19 0901 / X  SB-106-3-0-0.5 3/3/19 0901 / X  Date Time	SB-106-1-0-0.5 33/19 0855 Soil 3/1 X  SB-106-1-2-2-3.3 3/3/19 09/1	T5M-18-4-0.5-1.0   1603   1 X px Hold  SB-106-1-0-0.5   33/19 0855 861   31/1 X  SB-106-2-0-0.5   3/3/19 0906   1 X  SB-106-3-0-0.5   3/3/19 0906   1 X	T5M-18-2-0.5-1.0   1601   1 X ON Hold   15M-18-3-0.5-1.0   1602   1 X ON Hold   15M-18-1-0.5-1.0   1602   1 X ON Hold   15M-18-1-0.5-1.0   1602   1 X ON Hold   15M-18-1-0.5-1.5   33/19 0855 861 81 X ON Hold   1602   1 X ON Hold   1 X ON Hol	ISM-18-1-0.5-1.0 3/30/9 1600 50:11   X ON Hold  ISM-18-2-0.5-1.0   1601   1   X ON Hold  ISM-18-3-0.5-1.0   1602   1   X ON Hold  SB-106-1-0.5-1.0   1603   1   X ON Hold  SB-106-2-0.5   3/3/19 0901   1   X  SB-106-3-0-0.5   3/3/19 0906   1   X	TSM-18-1-0.5-1.0   1600 50:1   X	Date   Date   Time   Date   Time   Date   Time   Date   Time   Date   Time   Date	USCG Burrows Island   X   Standard (7 Days)   Date   Time   Date   Time   Date   Time   Date   Time   Date   Dat	Standard (7 Days)   Stan	Sample   S
SB-106-2-0-0.5 3/3/19 SB-106-3-0-0.5 3/3/19	SB-106-2-0-0.5 3/3/19 SB-106-2-0-0.5 3/3/19 SB-106-3-0-0.5 3/3/19	SB-106-1-2-2.3 3/3/19 SB-106-2-0-0.5 3/3/19 SB-106-2-0-0.5 3/3/19 SB-106-3-0-0.5 3/3/19	5B-106-1-0-0.5 33/19 0855 Soil 31 X  5B-106-1-2-2-2.3 3/3/19 09/11   1 X  5B-106-2-0-0.5 3/3/19 0900   1 X  5B-106-3-0-0.5 3/3/19 0900   1 X	5B-106-1-0-0.5 3/3/19 0901 1 X PA H  5B-106-1-0-0.5 3/3/19 0905 501 01 X  5B-106-2-0-0.5 3/3/19 0906 1 X  5B-106-3-0-0.5 3/3/19 0906 1 X  5B-106-3-0-0.5 3/3/19 0906 1 X	T5M-18-2-0.5-1.0   1601   1 X ON HO T5M-18-3-0.5-1.0   1607   1 X ON HO SB-106-1-0-0.5   33/19 0901   1 X ON HO SB-106-2-0-0.5   33/19 0901   1 X ON HO SB-106-3-0-0.5   33/19 0901   1 X	ISM-18-1-0.57.0 3/30/9 1600 50:11 1 X OM HOLL ISM-18-3-0.5-1.0 1607 1 X OM HOLL ISM-106-1-0-0.5 3/31/9 0855 SOI  1 X OM HOLL SB-106-2-0-0.5 3/31/9 0806 1 X SB-106-3-0-0.5 3/31/9 0806 1 X SB-106-3-0-0.5 3/31/9 0806 1 X	Tow-18-1-0.5-1.0   Sampled Sampled Natrix   Mumber   Sampled Sampled Natrix   Mumber   Sampled Sampled Natrix   Sampled Sampled Natrix   Sam	Died by:   Josh Gravenmier   Died by:   Other)   Other)   Other)   Date   Time   Other)	USCG Burrows   Sland	Section   Section   Standard (7 Days)   Stan	Sample   S
58-106-2-0-0.5 3/3/10	SB-106-2-0-0.5 3/3/19 SB-106-2-0-0.5 3/3/19	SB-106-1-2-2.3 3/3/19 SB-106-2-0-0.5 3/3/19 SB-106-2-0-0.5 3/3/19	5B-106-1-0-0.5 33/19 0855 Soil 31 X  5B-106-1-2-2.3 3/3/19 09/1   1 X  5B-106-2-0-0.5 3/3/19 0900   1 X  5B-106-2-2-0-3.5 3/3/19 0900   1 X	5B-106-1-0-0.5 33/19 0855 Soil 81 X  5B-106-1-0-0.5 33/19 0911   X  5B-106-2-0-0.5 33/19 0900   X  5B-106-2-0-0.5 33/19 0900   X  5B-106-2-0-0.5 33/19 0900   X	T5M-18-2-0.5-1.0   1601   1 X ON HO  T5M-18-3-0.5-1.0   1602   1 X ON HO  SB-106-1-0-0.5   33/19 0905   1 X  SB-106-2-0-0.5   33/19 0905   1 X	ISM-18-1-0.57.0 3/3/19 0306   1 X ON Holl SB-106-1-0-0.5 3/3/19 0306   1 X ON Holl SB-106-2-0-0.5 3/3/19 0306   1 X ON Holl SB-106-2-0-0-0.5 3/3/19 0306   1 X ON Hol	TSM - 18 - 1 - 0.5 - 1.0   Sampled Sampled Matrix   Name   Name	Dosh Gravenmier	USCG Burrows Island   Imperior	Set Number:   B0003010.0006   2 Days   3 Days	Sample   Index   Check One
58-106-2-0-0.5 3/3/10	SB-106-2-0-0.5 3/3//19	SB-106-1-2-2.3 3/3/19 SB-106-2-0-0.5 3/3/19	5B-106-1-0-0.5 33/19 0855 Soil 31 X  5B-106-1-2-2.3 3/3/19 09/1   1 X  5B-106-2-0-0.5 3/3/19 0900   1 X	5B-106-1-0-0.5 33/19 0.900 1 X 20 H 5B-106-1-0-0.5 33/19 0.911 1 X 5B-106-1-2-0-0.5 3/3/19 0.900 1 X	T5M-18-2-0.5-1.0   1601   1 X ON HO  T5M-18-3-0.5-1.0   1607   1 X ON HO  T5M-18-4-0.5-1.0   1607   1 X ON HO  SB-106-1-0-0.5   33/19 0911   1 X  SB-106-1-2-0-0.5   33/19 0900   1 X  SB-106-2-0-0.5   33/19 0900   1 X	ISM-18-1-0.5-1.0 3/30/1600 50:11   X ON HOLL  ISM-18-3-0.5-1.0   1600 50:11   X ON HOLL  ISM-18-3-0.5-1.0   1601   1 X ON HOLL  SB-106-1-0-0.5   3/31/19 0.900   1 X  SB-106-1-2-0-0.5   3/31/19 0.900   1 X  SB-106-2-0-0.5   3/31/19 0.900   1 X	TSM-18-1-0.5-1.0   Sampled Sampled Natrix   Number   Sampled Sampled Natrix   Number   Sampled Sampled Natrix   Number   Number   Number   Sampled Natrix   Number   N	Josh Gravenmier	USCG Burrows Island   Standard (7 Days)   Date   Time   Cother)	USCG Burrows Island   2 Days   3 Days	Sample   S
	- DUP-1 31	SB-106-1-2-2.3 3/3/19 SB-DUP-1 3/3/19	SB-106-1-0-0.5 33/19 0855 Soil 31 X SB-106-1-2-2.3 3/3/19 09/1 1 X	5B-106-1-0-0.5 33/1/9 09/1 1 X DA H 5B-106-1-0-0.5 3/3/1/9 09/1 1 X 5B-106-1-2-2.3 3/3/1/9 09/1 1 X	ISM-18-2-0.5-1.0   1601   1 X ON HO ISM-18-3-0.5-1.0   1602   1 X ON HO SB-106-1-0-0.5   33/19 09/1   1 X ON HO SB-106-1-2-2.3   33/19 09/1   1 X ON HO SB-106-1-2-2.3   33/19 09/1   1 X ON HO	ISM-18-1-0.5-1.0 3/30/1600 50:11 1 X ON Holl ISM-18-3-0.5-1.0 1601 1 X ON Holl ISM-18-3-0.5-1.0 1601 1 X ON Holl SB-106-1-0-0.5 3/31/19 0855 SOI 3/1 X ON Holl SB-106-1-0-0.5 3/31/19 0851 1 X ON Holl SB-106-1-2-2-3 3/31/19 0811 1 X ON Holl SB-106-1-2-2-3 3/31/19 0811 1 X ON Holl SB-106-1-2-2-3 3/31/19 0811 1 X ON Holl	TSM-18-1-0.5-1.0   Time   Matrix   Number   Time   Sampled   Sampled   Sampled   Matrix   Number   Sampled   Sampl	Josh Gravenmier  Date Time (other)  Sample Identification  Sample Matrix  Date Time (other)  Number of Container  Date Time (other)  Date Time (ot	USCG Burrows Island  With sample Identification  Indicator  Indic	Dock   Sample Identification   Sample   Sample	Check One   Chec
5B-106-1-0-0.5-1.0   1602   1 X ON HO 5B-106-1-0-0.5 33/19 0855 Soil 31 X ON HO 5B-106-1-0-0.5 33/19 0811   1 X ON HO	ISM-18-3-0.5-1.0   1607   1 X on Ho TSM-18-3-0.5-1.0   1607   1 X on Ho	ISM-18-3-0.5-1.0 1602 1 X on Ho	ISM-18-3-0.5-1.0 1002 1 X			-18-1-05-1.0 3/30/19 1600 50:11 1 X 0.	Sample Identification  Date Time Sampled Matrix Number C C C C C C C C C C C C C C C C C C C	Josh Gravenmier  Josh Gravenmier  Josh Gravenmier  Josh Gravenmier  Josh Gravenmier  Other)  Jos	USCG Burrows Island  I Standard (7 Days)  I Manager:  Josh Gravenmier  Sample Identification  Sampled Sampled Sampled Matrix  Number of Containers  Lead (USEPA Method 6010)  GRO (NWTPH-GX)  DRO/HO/Mineral Oil (NWTPH PCBs (USEPA Method 8082)  Benzene (USEPA Method 8270  EPH (NWTPH-EPH)*  VPH (NWTPH-VPH)*  RCRA 8 Metals (USEPA Method 8270  EPH (NWTPH-VPH)*	t Number: B0003010.0006    2 Days	Arcadis  Arcadis  Arcadis  Arcadis  Check One)  Check
Dobed by:   Oother)   Oo	TSM-18-1-0.5-1.0   Date   Time   Sampled   Matrix   Number of Co.	TSM-18-1-0.5-1.0   Date   Time   Sample Identification   Date   Time   Sampled   Matrix   Number of Co.	TSM-18-3-0.5-1.0  TSM-18-3-0.5	TSM-18-2-0.5-1.0 3/30/19 1600 50:1   X ON HOMETH RCRA 8 Metal	Sample Identification  Sampled Sampled Natrix  Number of Co Lead (USEPA GRO (NWTPH DRO/HO/Mine PCBs (USEPAI Benzene (USE EPH (NWTPH VPH (NWTPH RCRA 8 Metal	(other)  O/Mine  USEPA  (USEP  WWTPH  WWTPH			Burrows Island  Standard (7 Days)  rs  6010)  NWTPH  8082)  od 8270  PA Meth	Burrows Island    2 Days	(Check One)    Same Day



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished		70 513-11:	69 SB- DUI	68 8-112	67 58-112	66 58-112	65 SB-112	CM SB-116	63 58-112	62 58-112	61 58-106	Lab ID	Sampled by:	Project Manager: Josh	Project Name: USC	Project Number: B0003010.0006	Company: Arcadis	14648 NE Phone: (4
			x	(	3	was fling	Signature	2-4-0.5-1	0-2	-4-0-0.5	13-1-1.3	-3-0-0.5	1-2-1-1.5	2-2-0-0.5	1-0.5-0.7	-1-0-0.5	-3-2-2.5	Sample Identification		Gravenmier	USCG Burrows Island	03010.0006		14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					(0)	Arla	Company	1/00	3/31/19	1055	1080/	1046	1/04/	1038	1035	3/31/19 1020	3/31/19 0912 5	Date Time Sampled Sampled	(other)		X Standard (7 Days)		Same Day	(in working days)
					E YOU	Jis 1/2	Date	3 X	3 <b>3</b>	ω ×	<i>w</i>	<i>⟨∪₀</i>	W	<i>iv</i>	(S)	~ ~ ×	Soil 1 X	Lead (I	er of Co JSEPA NWTPH	Method -Gx)	6010)		1 Day	
Ω					13 1120	119 1150	Time / C	XXX	XXX	×	XXX	XXX	×××	X X X	×××	×××		Benze cPAHs EPH (	USEPA I	EPA Me A Metho	thod 82			Laboratory Number:
Chromatograms with final report ☐				* cample bensence from ja	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions											RCRA PCBs BTEX	NWTPH 8 Metals (USEPA	s (USER	d 8082)		0)	04-015
				jar	Ф	ingent on		4								× -	X		mo		RE			



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Chromatograms with final report ☐	Chro			Reviewed/Date	//Date	Reviewed/Date
						Received
					hed	Relinquished
						Received
Cample Genzene from you	*				hed	Relinquished
parient sample results. Benzene, CPAHS, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	1150	4/2/18		(0%)		Received
* Hold for these samples; running these compounds is contingent on	1150 :	1/2/19	J	Arcad-	hed My fluid	Relinquished
Comments/Special Instructions	Time Con	Date	-	Company	Signature	
	XXX	X	W	12/6	8-112-9-0-0.5	8
	XXX	×	w	1306	8-112-08-1-1.5	790
	XXX	$\times$	w	31/19	18-0UP-3 3	78
	XXX	$\times$	W	1300	8-112-18-0-0.5	7
	XXX	×	w	1145	8-1/2-7-0.5-0.8	16
	XXX	×	Cu	11%	6-112-76-0-0.5	15 2
	XXX	×	W	1135	6-112-6-1-1.5	74
	888	XX	S	/13/	B-112-6-0-0.5	73
	× × ×	×	Cu	1139	8-112-5-0.5-0.9	72 5
	×	×	Co	3/19/115 Soil	58-112-5-0-0.5 3	71 0
PCBs	CPAHS	DRO/H		Date Time Sampled Sampled Matrix	Sample Identification S:	Lab ID
(USEP/		USEPA	er of Co	(other)		Sampled by:
A Metho	'A Meth	rel Qil ( Method 8		S DAYS	Josh Gravenmier	Project Manager:
PA Meti- od 8082) od 8260)				Standard (7 Days)	"SCG Burrows Island	Project Name:
		-			Project Number: B0003010.0006	Project N
0)	EX			(Check One)	Arcadis	Company:
-	I Adilibei.	Laboratory Marin		(Chock Oc.)		
14-015	Number:	ahoratory		Turnaround Request	Environmental Inc.	4



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A	Chromatograms with final report					Reviewed/Date		Reviewed/Date	Revie
Company   Comp								eceived	Rece
Participal Biological Information   Check One)   Check								elinquished	Relin
Check One)   Campany   C								eceived	Rece
Sample identification   Samp	Jample Benzene +							elinquished	Relin
Check One)   Che	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	USI	Melis		R	0		eceived	Rece
Sumple   Company   Sumple   Sumbler   Sumple   Sumbler   Sumple   Sumbler	* Hold for these samples; running these compounds is contin	1150	4/2/19	5		Anci		elinquished Mas Minds	Relin
Same   Colored Cone   Colored Colored Cone   Colored	Comments/Special Instructions	Time	Date			mpany	Co	Signature	
Sample   S		X	×	Co	_	1315		(	3
Same   Days   Check One   Ch		XXX	×	00	(,,	1313		1 SB-PL-2-1-1,5	89
Sample   S		XXX	X	3		1310		SB-PL-1-0-0.	8
Arcadis  Arc		X	×	3		638		SB-112-12-1-1	3
Matrix   M		2	2	3		1233		SB-112-1	88
Check One   Chec		X	X	00		1230		513-112-11-11	58
In working days)    Accadis   Accadi		XX	7	33		1335		458-112-11-0-0.5	200
Check One   Arcadis   Addis   Eggs   Same   And   An		XXX	$\times$	00		120		5.0-112-10-0.5	80
Check One   Chec		XXX	×	-		1218	(	156-112-10-0-01	18
Arcadis  Arcadis  Arcadis  Arcadis  Arcadis  Arcadis  Arcadis  Sampled Sampled Sampled Matrix  Number: Josh Gravenmier  Sampled Sampled Sampled Matrix  Number of Containers  Lead (USEPA Method 8082)  Benzene (USEPA Method 8082)		X	×	00		12K		Co	90
Check One   Check One   Check One   Check One   Check One   Standard (7 Days)   Stan	RCRA PCBs	cPAHs	DRO/H			Time Sampled	Date Sampled		Lab ID
Standard (7 Days)  Standard (7 Days)  Standard (7 Days)  Ontainers  Method 6010)  H-Gx)  PA Method 8260)*  PA Method 8270 SIM)*  H-EPH)*  H-VPH)*  Is (USEPA Method 6010)  A Method 8082)  A Method 8082)  A Method 8082)	8 Meta (USEP	(USEF	O/Mine			(other)		impied by:	samp
Standard (7 Days)   Check One)     Same Day   1 Day	s (USEF	A Metho	ral Oil (I	1		SYAC		Josh Gravenmier	Projec
Check One   Check One   Check One   Same Day   1 Day	d 8082)	200				dard (7 Days)	Stan	USCG Burrows Island	Projec
(In working days)  (Same Day    Same Day    Same Day    Laboratory Number:     4 -			l-Dx)		3 Days	ys .	☐ 2 Da	oject Number: B0003010.0006	Projec
14648 NE 95th Street • Redmond, WA 98052 (In working days)  Laboratory Number: [] 4 - [] 1  Phone: (425) 883-3881 • www.onsite-env.com	000			T	1 Day	le Day	Sam	Arcadis	Comp
TOURISH MILLION TO THE PRINCIPLE OF THE	04	y Number	aborator	-		working days	(in		



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Page \_//\_ of \_/ &

Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished May Man	Signature	110 SB-107-00-1-0-0.5	109 56-101 -3-2-2.5	108 58-101-3-0-0.5	107 56-101-2-2-5	106 SB-DUP-5	105 56-101-2-0-0.5	10456-101-1-2-2,5	103 SB- \$101-1-0-0.5	102 5B- PL-14-1-15	101 8-12-13-1-15	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date				(	380	Availis	Company	1525 \ 3	1513 3	1508 3	1, 1204 3	331/0 - 3	1428 3	1452 3	1449 3	1438 (48	3/3/19 1431 Soil 3		(other)	5 DAY			Same Day 1 Day	Turnaround Request (in working days)
					4/2/1511 1150	4/1/19 1150	Date Time	XXX	X	X	XXX	X	\ \ \ \	×		X X X	X	GRO (IDRO/HPCBs (IDRO/HBENZE)	NWTPH HO/Mine (USEPA ene (USEF	eral Oil ( Method & EPA Me	NWTPH 8082) ethod 82	60)*		Laboratory Number:
Chromatograms with final report				* Sample benzere from jar.	parent sample results. Benzene, CPAHS, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions			K >						( MS/MCD		VPH (I	8 Meta (USEP) (USEP)	H-VPH)* Is (USE A Metho			0)	r: 04-015



Page / d of /8

Laboratory Number:   Q4 - 0   5		Received	Relinquished	Received	Received	Relinquished Med	Signature	10 SB-107-5-	119 58-107-5-	513-107	11) SB - DUP-	116 50-107-	115 58-107	401-95 hill	113 513 -107	C	111 SB-107		Sampled by:	Project Manager: Josh	Project Name: USCG	Project Number: B000	Company: Arcadis	14648 NE 95th : Phone: (425) 88
maround Request in working days and a contained a contained and a contained a	Reviewed/Date				1/1	1		0.51	0-0.5	0,5-1	6	4-0-0.5	3-0.57	1-3-0-0,	-2-0.5-	0	-1-1-15	Sample Identification		Gravenmier	Burrows Island	3010.0006		Street • Redmond, WA 98052 3-3881 • www.onsite-env.com
Number of Containers  Lead (USEPA Method 6010)  GRO (NWTPH-Gx)  DRO/HO/Mineral-Gil (NWTPH-Dx)  PCBs (USEPA Method 8082)  PCPAHs (USEPA Method 8270 SIM)*  EPH (NWTPH-EPH)*					000	will Arend	Company	1610	1607	1604	6//	1556	1552	845/ 5	1 1543	1/ 1538	9 1531	Time Sampled	1	۲ م	П	2 Days	K One)	(in working days)
EPH (NWTPH-EPH)*					-	1/3/19/19		3 X	3 X	× ×	ω × ×	ω ×	3 ×8×	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	3 X X	$\beta \times X$	1	Number Lead (U GRO (N DRO/He PCBs (U	USEPA IWTPH O/Mine USEPA I	Method -Gx) ral Oil (N Method 8	6010) NWTPH 082) thod 82	-Dx)	EX	Laboratory Nu
	Chromatograms with final report			DEMPERAL	contingent on the results of the GRO/DRO/HO results.	0	Comments/Special Instructions			×	×	×	8					VPH (N RCRA I PCBs (	WTPH  Metal	-EPH)* -VPH)* s (USEF	PA Meth d 8082)	od 6010	0)	ber: 04 - 01



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Chromatograms with final report	Chromate			-		Reviewed/Date			Reviewed/Date
									Received
									Relinquished
									Received
take benzene from	*								Relinquished
parent sample results. benzene, crans, Ern, and vrn are contingent on the results of the GRO/DRO/HO results.	9	118	Pelis	7	M		1	8	Received
* Hold for these samples; running these compounds is contingent on	PIOH.	113	1/2/10	10	15	Arca	N	Mer Min	Relinquished
Comments/Special Instructions	Comme	Time	ite	Date		Company		Signature	STATE OF THE STATE OF
	2	X	X		W	1650		04-3-2.5-3	128 56/
	X	X	X		w	1647		20-0-8-40	121 88-16
		X	×		N	1645		19-2-4-45	126 SB-10
		X	×		W	1641		104-2-0-0.5	125 56-16
	X	X	X		w	1639		104-01-2,5-3	1-85 hell
	X	X	X		W	1633		104-1-0-0.5	1356-
	X	X	X		Vi	1618	,	1-5.0-9-40	12 JB-/1
	X	X	X	,	Sor/ 3	19 1613 Su	3/3/	107-6-0-0.5	121 58-
	VPH (N		DRO/H		Matrix	Time Sampled	Date Sampled	Sample Identification	Lab ID
	WTPH	-	O/Mine	JSEPA	er of Co	(other)	5		Sampled by:
	I-EPH)*			Method	ontaine	5 PAYS		sh Gravenmier	Project Manager: Josh
od 8082,		od 8270	NWTPH 8082)		rs	Standard (7 Days)		Project Name: USCG Burrows Island	Project Name: USC
	nod 601		I-Dx)		Days			Project Number: B0003010.0006	Project Number: B0
	0)				Day	(Check One)		lis	Company: Arcadis
-015	ber: U4	Num	Laboratory Num	La		(in working days)		14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	14648 Phone
0	)					Turnaround Barupet		Envinonmental Inc	



Environmental Inc.  14648 NE 95th Street - Redmond, VA 98052 Phone 14658 R84581 - www.orsite-env.com	Turnaround Request (In working days)	Laboratory Number:	04-015
Company: Arcadis	(Check One)		
Project Number: B0003010.0006		60)*	
Project Name: USCG Burrows Island	rd (7 Days	6010) NWTPH 8082) thod 8270	PA Method 8082)
Project Manager: Josh Gravenmier	スプとくへ	rel Oil (I Method 8 EPA Me	
Sampled by: Mark 1111ery	(other)	JSEPA NWTPH IO/Mine USEPA I	(USEP/
Lab ID Sample Identification	Date Time Sampled Sampled Matrix	Lead (U GRO (I DRO/H PCBs ( Benze cPAHs	RCRA PCBs BTEX
SB-102	4/1/19 0937 50:1	<u> </u>	X
130 SB-102-1-1.5-2.0	Mille 0950 50:1	XXXX	X NS/NSD
131 SB- DUP- 7	1/1/19 - 50:11	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	X
132 SB-102-2-0-0.5	4/1/19 0959 50:1	XXXXXX	X
133 SB-102-3-0-0,5	4/1/19 1007 50:1	XXXXX	X
134 SB-102-3-0,5-1,0	4/1/19 1048 50:1	XXXX	×
1 28 1 1- Car 1-82 / 1	1-24 08-60 July	** X X X X X X X X X X X X X X X X X X	X XXXXX
135 88-101-4-0-0,5	1/1/18 1109 50:11	X	·×
136 SB-101-4- 2.0-2.5	4/1/19 1113 50:1	XX	
137 SB- DUP-8	4/1/19 - 50:1	×	
	Company	Date Time	Comments/Special Instructions
Relinquished Res Muse	& Arcadis	9/2/19 1150	* Hold for these samples; running these compounds is contingent on
Received	SVE	4/2/19 1150	parent sample results. Benzene, CFAns, EFH, and VFH are contingent on the results of the GRO/DRO/HO results.
Relinquished			
Received			
Relinquished			
Received			
Reviewed/Date	Reviewed/Date		Chromatograms with final report



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished Muse Muse	Signature	147 SB-042-9	MG SB-101-9-0-0.5	145 SB-101-8-1-0-15	14 SB-101-8 - PM 0-0.5	143 53-101-7-1.5-2.0	142 SB-101-7-0.5-110	141 SB-101-6-05-110	140 SB-101-6-0-0x	139 56-101-5-05-110	138 Repres 88-101-8-0-0X	Lab ID Sample Identification	Sampled by: Mart Willery	Josh Gravenmier	USCG Burrows Island	Project Number: B0003010.0006	Arcadis	ENVIPORIMENTAL INC.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					380)	& Arand	Company	1	1143	1141	1139	1136	1129	1126	1123	1121	4/1/19 1119 Soil	Date Time Sampled Sampled Matrix	(other)	X 5 DAYS	Standard (7 Days)		Same Day 1 Day	Turnaround Request (in working days)
					SII 5/12/17	13 4/8/14 1150	Date Time	- _ _	<b>-</b>	- *	- ×		- ×	- ×	- ×	_ ×	~ ×	NWTP NWTP NWTP Volatile	H-Dx es 8260	TEX (M.)	8260B	ocl	)	Laboratory Numb
Chromatograms with final report						0	Comments/Special Instructions		*	*	X (W/s/m/sD)	×		*	×	*	*	(with lot PAHs and PCBs Organic Chlorin Total F	ochlorin ophosph nated Ad	PAHs) SIM (low e Pestic orus Pesticid Herb	v-level) cides 80 sticides 8 sicides 8	3270D/S 3151A		nber: 04-015
								+								_	X	% Moi	sture					



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished Lee Mick	Signature	15) 58-042-10	156 56-101-13-110-15	155 56-101-13-0-2.5	154 5B-101-12-18/10-1.5	153 58-101-12-0-0.5	152 58-10-11-05-1.0	151 53-101-11-0-05	150 513-101-10-05-10	149 SB-101-10-0-0.5	148 SB-101-9-15-2.0	Lab ID Sample Identification	Sampled by: When Ullery	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					280	Arca	Company	1	1213	1200	1215	1207	1206	1151	1203	1(48	11-5 AHII WI/TE	Date Time Sampled Sampled Ma	1	× S DAYS	Standard (7 Days)		Same Day 1 Day	(Check One)
					4/2/19	1.3 48/14	Date			_	^	- ×	<i>-</i>	· · · · · · · · · · · · · · · · · · ·	_	-	7	NWTP	H-HCIE H-Gx/B H-Gx	TEX				
Chro					osi i	1150	Time Con				7			×	*	<i>/</i> s		Volatile Haloge Semive (with lo	es 8260 enated \ olatiles ow-level	B /olatiles 8270D/5	8260B SIM	alc	210	
Chromatograms with final report							Comments/Special Instructions	*	X	*	_	×	*	*	~	*	_	Organo Chlorin Total R	ochlorin ophosph nated Ad ICRA / I	orus Pes	icides 8 letals (c	3270D/S		



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Environmental Inc.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	Turnaround Request (in working days)	days)		La	Laboratory Number:	tor	Z	3	oer:	0	4	1	01	U									
Company: Arcadis	(Check One)												М		)				-				
Project Number: B0003010,0006	2 Days	3 Days				0:1	,					31A	270D/SI	151A	ircle one								
Project Name: USCG Burrows Island	Standard (7 Days)		S			neal		8260B	IM	level)		des 808	ticides 8	cides 8	etals (c		664						
Project Manager: Josh Gravenmier	SPACE	^	ntainer	FX		(mi		olatiles				Pestici	rus Pes	d Herbi	TCA M		ease)	_					
Sampled by:	(other)	er)						nated V			082	chlorine	hospho	ated Aci	CRA/N	letals	il and g						ture
Lab ID Sample Identification	Date Time Sampled Sampled	d Matrix	Numbe	NWTPH	NWTPH	NWTPH	Volatile	Halogei	Semivo (with lov	PAHs 8	PCBs 8	Organo	Organo	Chlorina	Total R	TCLP	HEM (o						% Mois
158 SB-101-14-0-0-5	W1/19 1218	35/1	_			×					X												X
159 SB-101-14-10-15	1 1223	3				×					X												
160 56-101-15-0-05	1240					X					×												
161 58-101-15-0.5-1,5	1241					Y	<u></u>				X							-					
162 38-101-16-0-0.5	1235	-				X	/ \				X												
163 56-101-16-20-25	12508	oc				*					×							_	2	8	M	50	
164 SB-DW-11	<	4	-			X					F												1
													10 10										
Signature	Company		17	Date	te		Time			Cor	Comments/Special Instructions	ts/Sp	ecial	Instr	uctio	38				14			
Relinquished Relinquished	N Ar	Chel	00	1	2	1		1150	C.														
Received	9	R		2	12	83/	11	5	0														
Relinquished	(																						
Received																							
Relinquished																							
Received																					1		
Reviewed/Date	Reviewed/Date	Date								Chr	Chromatograms with final report	grams	with	final r									

### A OnSite

### **Chain of Custody**

Faye	0
0	0
2	2
0	2

Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished						169 688.03	168 EB-033	EB-	166 88-032	165 PW-04919		Sampled by: Mark	Josh Gravenmier	Project Name: USCG	Project Number: B0003010.0006	Arcadis	
					BX A	Mer Min	Signature					FB-04012019	3312019	033019	032419	717	Sample Identification	Ullery	Gravenmier	Project Name: USCG Burrows Island	3010.0006		14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
					V	N	00					4/1/1	4/1/12	3/30/M	3/20/16	4/1/16	Date Sampled	]		X Star	2 Days	San	Tur (ii
Reviewed/Date				(	(8)	Arc	Company					1306	2160	0820	1700	1403	Time Sampled	(other)		Standard (7 Days)	ays	Same Day	Turnaround Request (in working days)
					M	afix						-	00		_	Water (	Matrix		5223		] 3 Days	] 1 Day	est s)
						11	1		-	+		NO.	.00	_	/	6	1	er of Co	ontaine	rs			
					4	1	Date					X					10000	H-Gx/B	ΓEX			-	Lab
					2	8	-					多版					NWTP	H-Gx					Laboratory Nur
					8	B	1					X	+				NWTPI	H-Dx					tor
					27	11	Time									X	Volatile	s 8260l	1 (3	BTE	(x		Z
					3	n											Haloge	nated V	olatiles	8260B			m m
					0	O					- 1	X	X				Semive (with le	latiles 8 w-level	270D/S PAHs)	e.P	AHS	OV	OPK:
Chron							Com										PAHs 8	270D/S	IM (low-	-level)			0
Chromatograms with final report							Comments/Special Instructions					1				X	PCBs 8	082					-
w sm							/Spec													ides 808			6
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repoi							struct			-							-	~		cides 8			S
							sno		-							X	Total R		ITCA M	etais (ci	rcie one	9)	
							4	-									HEM (o	2000	rassa) t	1664			
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													, -		, .		18	100	cea				
																	% Mois	ture					

Project: B0003010.0006

### TOTAL LEAD EPA 6010D

Matrix: Soil

oring. Hig/Ttg (ppin)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-13-A-0.5-1.0					
Laboratory ID:	04-015-01					
Lead	62	5.4	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-13-B-0-0.5					
Laboratory ID:	04-015-05					
Lead	130	5.5	EPA 6010D	4-15-19	4-15-19	
Leau	130	0.0	LI A 0010D	4-10-19	4-10-19	
Client ID:	ISM-13-C-0-0.5					
Laboratory ID:	04-015-06					
Lead	200	5.9	EPA 6010D	4-15-19	4-15-19	
011						
Client ID:	ISM-14-A-0-0.5					
Laboratory ID:	04-015-07		5DA 0040D	4.45.40	4.45.40	
Lead	350	6.1	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-14-A-0.5-1.0					
Laboratory ID:	04-015-11					
Lead	130	5.9	EPA 6010D	4-15-19	4-15-19	
011						
Client ID:	ISM-15-A-0-0.5					
Laboratory ID:	04-015-14		5DA 0040D	4.45.40	4.45.40	
Lead	160	6.2	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-15-A-0.5-1.0					
Laboratory ID:	04-015-19					
Lead	260	5.4	EPA 6010D	4-15-19	4-15-19	
011 15						
Client ID:	ISM-15-A-1.0-1.5					
Laboratory ID:	04-015-24		EDA 00465	4.45.40	4.45.40	
Lead	72	5.3	EPA 6010D	4-15-19	4-15-19	

Project: B0003010.0006

### TOTAL LEAD EPA 6010D

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-16-A-0-0.5					
Laboratory ID:	04-015-29					
Lead	18	5.6	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-16-A-0.5-1.0					
Laboratory ID:	04-015-32					
Lead	8.6	5.7	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-17-A-0-0.5					
Laboratory ID:	04-015-35					
Lead	91	5.9	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-17-A-0.5-1.0					
Laboratory ID:	04-015-40					
Lead	41	5.2	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-18-A-0-0.5					
Laboratory ID:	04-015-45					
Lead	220	5.3	EPA 6010D	4-15-19	4-15-19	
Client ID:	ISM-18-A-0.5-1.0					
Laboratory ID:	04-015-50					
Lead	180	5.3	EPA 6010D	4-15-19	4-15-19	

Project: B0003010.0006

### TOTAL LEAD EPA 6010D

Matrix: Soil

3 3 41 7				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-106-1-0-0.5					
Laboratory ID:	04-015-55					
Lead	44	5.8	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-106-1-2-2.3					
Laboratory ID:	04-015-56					
Lead	ND	6.2	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-DUP-1					
Laboratory ID:	04-015-57					
Lead	9.2	6.5	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-106-2-0-0.5					
Laboratory ID:	04-015-58					
Lead	110	11	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-106-2-2.0-2.5					
Laboratory ID:	04-015-59					
Lead	13	6.8	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-106-3-0-0.5					
Laboratory ID:	04-015-60					
Lead	7.3	5.6	EPA 6010D	4-9-19	4-9-19	
Client ID:	SB-106-3-2-2.5					
Laboratory ID:	04-015-61					
Lead	ND	6.0	EPA 6010D	4-9-19	4-9-19	

Project: B0003010.0006

### GASOLINE RANGE ORGANICS NWTPH-Gx

Matrix: Soil

3. 3 (r) /				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-102-1-0-0.5					
Laboratory ID:	04-015-129					
Gasoline	ND	11	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	97	57-129				
Client ID:	SB-102-1-1.5-2.0					
Laboratory ID:	04-015-130					
Gasoline	9.7	9.5	NWTPH-Gx	4-4-19	4-4-19	<del></del>
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	120	57-129				
Client ID:	SB-DUP-7					
Laboratory ID:	04-015-131					
Gasoline	ND	10	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	100	57-129				
Client ID:	SB-102-2-0-0.5					
Laboratory ID:	04-015-132					
Gasoline	18	16	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	101	57-129				
Client ID:	SB-102-3-0-0.5					
Laboratory ID:	04-015-133					
Gasoline	ND	14	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	108	57-129				
Client ID:	SB-102-3-0.5-1.0					
Laboratory ID:	04-015-134					
Gasoline	ND	13	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	98	57-129				

Project: B0003010.0006

### **GASOLINE RANGE ORGANICS NWTPH-Gx QUALITY CONTROL**

Matrix: Soil

Units: mg/kg (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0404S1					
Gasoline	ND	5.0	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	98	57-129				

				Source	Percent	Recovery		RPD	
Analyte	Res	sult	Spike Le	vel Result	Recovery	Limits	RPD	Limit	Flags
DUPLICATE									
Laboratory ID:	04-01	5-130							
	ORIG	DUP							
Gasoline	6.98	7.05	NA N	NΑ	NA	NA	1	30	0,0
Surrogate:									

Surrogate:

Fluorobenzene 120 117 57-129

Project: B0003010.0006

### GASOLINE RANGE ORGANICS/BTEX NWTPH-Gx/EPA 8021B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-04012019			<u> </u>		
Laboratory ID:	04-015-169					
Benzene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
Toluene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
Ethyl Benzene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
m,p-Xylene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
o-Xylene	ND	1.0	EPA 8021B	4-4-19	4-4-19	
Gasoline	ND	100	NWTPH-Gx	4-4-19	4-4-19	

Surrogate: Percent Recovery Control Limits Fluorobenzene 82 66-117

Project: B0003010.0006

### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-112-1-0-0.5			-	_	
Laboratory ID:	04-015-62					
Diesel Range Organics	100	37	NWTPH-Dx	4-3-19	4-3-19	1
Lube Oil Range Organics	910	75	NWTPH-Dx	4-3-19	4-3-19	J
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	81	50-150				
Client ID:	SB-112-1-0.5-0.7					
Laboratory ID:	04-015-63					
Diesel Range Organics	150	38	NWTPH-Dx	4-3-19	4-3-19	<del>N</del>
Lube Oil Range Organics	1000	76	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits		-	-	
o-Terphenyl	76	50-150				
Client ID:	SB-112-2-0-0.5					
Laboratory ID:	04-015-64					
Diesel Range Organics	36	32	NWTPH-Dx	4-3-19	4-3-19	₩-
Lube Oil Range Organics	280	64	NWTPH-Dx	4-3-19	4-3-19	• •
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-112-2-1-1.5					
Laboratory ID:	04-015-65					
Diesel Range Organics	230	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	150	66	NWTPH-Dx	4-3-19	4-3-19	<del>-N1</del>
Surrogate:	Percent Recovery	Control Limits	INVVIIII-DX	7-0-19	<del>1</del> -0-10	711
o-Terphenyl	80	50-150				
о-тегрпенут	00	30-130				
Client ID:	SB-112-3-0-0.5					
Laboratory ID:	04-015-66					
Diesel Range Organics	40	34	NWTPH-Dx	4-3-19	4-3-19	<del>-N-</del>
Lube Oil Range Organics	340	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	94	50-150				
Client ID:	SB-112-3-1-1.3					
Laboratory ID:	04-015-67					
Diesel Range Organics	ND	30	NWTPH-Dx	4-3-19	4-3-19	
		<b>50</b>	NIMTOH DV	4 2 40	4 2 40	
Lube Oil Range Organics	79	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits	NVV I PH-DX	4-3-19	4-3-19	

Project: B0003010.0006

### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-112-4-0-0.5					
Laboratory ID:	04-015-68					
Diesel Range Organics	110	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	340	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-DUP-2					
Laboratory ID:	04-015-69					
Diesel Range Organics	ND	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	84	50-150				
Client ID:	SB-112-4-0.5-1					
Laboratory ID:	04-015-70					
Diesel Range Organics	ND	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	67	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Oli t ID-	OD 440 5 0 0 5					
Client ID:	SB-112-5-0-0.5					
Laboratory ID:	04-015-71		NIM/TOLL D	1010	1010	
Diesel Range Organics	350	37	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	850	75	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	87	50-150				
Client ID:	SB-112-5-0.5-0.9					
	04-015-72					
Laboratory ID:		0.5	NW/TDLL Dec	4.0.40	4.0.40	
Diesel Range Organics Lube Oil Range Organics	270 260	35 69	NWTPH-Dx NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	-N1-
		Control Limits	INVV I PIT-DX	4-3-19	4-3-19	-14-1-
Surrogate: o-Terphenyl	Percent Recovery 81	50-150				
0-Terprierryi	01	30-130				
Client ID:	SB-112-6-0-0.5					
Laboratory ID:	04-015-73					
Diesel Range Organics	2000	210	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	2700	430	NWTPH-Dx	4-3-19	4-3-19	<del>-N1-</del>
Surrogate:	Percent Recovery	Control Limits	INVVIIII	<del>-</del> -∪-13	<del>-</del> -∪-13	INI
o-Terphenyl	72	50-150				
o respiretly:	12	00 100				



Project: B0003010.0006

### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-112-6-1-1.5			•	•	
Laboratory ID:	04-015-74					
Diesel Range Organics	240	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	150	68	NWTPH-Dx	4-3-19	4-3-19	<del>-N1</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	78	50-150				
Client ID:	SB-112-7-0-0.5					
Laboratory ID:	04-015-75					
Diesel Range Organics	120	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	520	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	68	50-150				
Client ID:	SB-112-7-0.5-0.8					
Laboratory ID:	04-015-76					
Diesel Range Organics	130	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	130	64	NWTPH-Dx	4-3-19	4-3-19	<del>N1</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	53	50-150				
Client ID:	SB-112-08-0-0.5					
Laboratory ID:	04-015-77					
Diesel Range Organics	280	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	380	68	NWTPH-Dx	4-3-19	4-3-19	<del>- N1-</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	75	50-150				
Client ID:	SB-DUP-3					
Laboratory ID:	04-015-78					
Diesel Range Organics	310	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	460	68	NWTPH-Dx	4-3-19 4-3-19	4-3-19	<del>-N1</del>
Surrogate:	Percent Recovery		IWIII DX	1010	1010	
o-Terphenyl	83	50-150				
Client ID:	SB-112-08-1-1.5					
Laboratory ID:	04-015-79					
Diesel Range Organics	64	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	78	50-150				
	, ,	55 755				

Project: B0003010.0006

### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-112-9-0-0.5					
Laboratory ID:	04-015-80					
Diesel Range Organics	52	36	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	340	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	88	50-150				
Client ID:	SB-112-9-0.5-1					
Laboratory ID:	04-015-81					
Diesel Range Organics	89	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	190	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	87	50-150				
Client ID:	SB-112-10-0-0.5					
Laboratory ID:	04-015-82					
Diesel Range Organics	81	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	120	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits	144V II II BX	1010	1010	
o-Terphenyl	77	50-150				
Client ID:	SB-112-10-0.5-1					
Client ID: Laboratory ID:	<b>SB-112-10-0.5-1</b> 04-015-83					
		34	NWTPH-Dx	4-3-19	4-3-19	
Laboratory ID: Diesel Range Organics Lube Oil Range Organics	04-015-83 93 390	69	NWTPH-Dx NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate:	04-015-83 93 390 Percent Recovery	69 Control Limits				
Laboratory ID: Diesel Range Organics Lube Oil Range Organics	04-015-83 93 390	69				
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate:	04-015-83 93 390 Percent Recovery	69 Control Limits				
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl	04-015-83 93 390 Percent Recovery 76	69 Control Limits				
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID:	93 390 Percent Recovery 76 SB-112-11-0-0.5	69 Control Limits				
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID:	04-015-83  93  390  Percent Recovery 76  SB-112-11-0-0.5 04-015-84	69 Control Limits 50-150	NWTPH-Dx	4-3-19	4-3-19	
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics	04-015-83  93  390  Percent Recovery 76  SB-112-11-0-0.5 04-015-84  390	69 Control Limits 50-150	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	_N+-
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics	04-015-83  93  390  Percent Recovery 76  SB-112-11-0-0.5 04-015-84 390 240	69 Control Limits 50-150 29 59	NWTPH-Dx	4-3-19	4-3-19	-N1
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate:	04-015-83  93  390  Percent Recovery 76  SB-112-11-0-0.5 04-015-84  390 240  Percent Recovery	69 Control Limits 50-150  29 59 Control Limits	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	<del>-N1</del>
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics	04-015-83  93  390  Percent Recovery 76  SB-112-11-0-0.5 04-015-84 390 240	69 Control Limits 50-150 29 59	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	<del>-N1</del>
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate:	04-015-83  93  390  Percent Recovery 76  SB-112-11-0-0.5 04-015-84  390 240  Percent Recovery	69 Control Limits 50-150  29 59 Control Limits	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	-N1
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate:	04-015-83  93  390  Percent Recovery 76  SB-112-11-0-0.5 04-015-84  390 240  Percent Recovery	69 Control Limits 50-150  29 59 Control Limits	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	-N1
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl	93 390  Percent Recovery 76  SB-112-11-0-0.5 04-015-84 390 240  Percent Recovery 66	69 Control Limits 50-150  29 59 Control Limits	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	-N1
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID:	93 390 Percent Recovery 76  SB-112-11-0-0.5 04-015-84 390 240 Percent Recovery 66  SB-112-11-1.5-2	69 Control Limits 50-150  29 59 Control Limits	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	<del>-N1</del>
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID:	93 390  Percent Recovery 76  SB-112-11-0-0.5 04-015-84 390 240  Percent Recovery 66  SB-112-11-1.5-2 04-015-85 100 180	69 Control Limits 50-150  29 59 Control Limits 50-150	NWTPH-Dx NWTPH-Dx NWTPH-Dx	4-3-19 4-3-19 4-3-19	4-3-19 4-3-19 4-3-19	<del>-N1</del>
Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: Laboratory ID: Diesel Range Organics	93 390 Percent Recovery 76  SB-112-11-0-0.5 04-015-84 390 240 Percent Recovery 66  SB-112-11-1.5-2 04-015-85 100	69 Control Limits 50-150  29 59 Control Limits 50-150	NWTPH-Dx NWTPH-Dx NWTPH-Dx	4-3-19 4-3-19 4-3-19	4-3-19 4-3-19 4-3-19	<del>-N1</del>

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### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-112-12-0-0.5			-	-	
Laboratory ID:	04-015-86					
Diesel Range Organics	170	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	520	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	82	50-150				
Client ID:	SB-112-12-1-1.5					
Laboratory ID:	04-015-87					
Diesel Range Organics	48	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	83	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	69	50-150				
Client ID:	SB-PL-1-0-0.5					
Laboratory ID:	04-015-88					
Diesel Range Organics	38	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	87	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	79	50-150				
Client ID:	SB-PL-2-1-1.5					
Laboratory ID:	04-015-89					
Diesel Range Organics	46	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	120	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	73	50-150				
Olicant ID:	OD DI					
Client ID:	SB-PL-3-0-0.5					
Laboratory ID:	04-015-90	0.4	NIA/TOUR	4.0.40	4.0.40	
Diesel Range Organics	32	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	170	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	81	50-150				
Client ID:	SB-PL-4-1-1.5					
Laboratory ID:	04-015-91					
Diesel Range Organics	ND	32	NWTPH-Dx	4-3-19	4-5-19	
Lube Oil Range Organics	210	64	NWTPH-Dx	4-3-19	4-5-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	89	50-150				

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### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte         Result           Client ID:         SB-PL-5-0-1           Laboratory ID:         04-015-9           Diesel Range Organics         56           Lube Oil Range Organics         210           Surrogate:         Percent Reconstruct           o-Terphenyl         74           Client ID:         SB-PL-6-1-1           Laboratory ID:         04-015-9           Diesel Range Organics         33           Lube Oil Range Organics         120           Surrogate:         Percent Reconstruct           o-Terphenyl         82           Client ID:         SB-DUP			Date	Date	
Laboratory ID:         04-015-9           Diesel Range Organics         56           Lube Oil Range Organics         210           Surrogate:         Percent Reconstruction           o-Terphenyl         74           Client ID:         SB-PL-6-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-		Method	Prepared	Analyzed	Flags
Diesel Range Organics  Lube Oil Range Organics  Surrogate:  o-Terphenyl  Client ID:  Laboratory ID:  Diesel Range Organics  Lube Oil Range Organics  Lube Oil Range Organics  Surrogate:  o-Terphenyl  Surrogate:  o-Terphenyl  SB-DUP					
Lube Oil Range Organics210Surrogate: o-TerphenylPercent Rec 74Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl33 120Surrogate: o-TerphenylPercent Rec 82Client ID:SB-DUP					
Surrogate: o-Terphenyl 74  Client ID: SB-PL-6-1-Laboratory ID: 04-015-9 Diesel Range Organics 120 Surrogate: o-Terphenyl 82  Client ID: SB-DUP	32	NWTPH-Dx	4-3-19	4-3-19	
o-Terphenyl 74  Client ID: SB-PL-6-1- Laboratory ID: 04-015-9 Diesel Range Organics 33 Lube Oil Range Organics 120  Surrogate: Percent Recoorders 82  Client ID: SB-DUP	63	NWTPH-Dx	4-3-19	4-3-19	
Client ID: Laboratory ID: Diesel Range Organics Lube Oil Range Organics Surrogate: o-Terphenyl  Client ID: SB-PL-6-1- 04-015-9 120 Percent Reco	•	ts			
Laboratory ID:04-015-9Diesel Range Organics33Lube Oil Range Organics120Surrogate:Percent Reconstructiono-Terphenyl82 Client ID: SB-DUP	50-150				
Laboratory ID:04-015-9Diesel Range Organics33Lube Oil Range Organics120Surrogate:Percent Reconstructiono-Terphenyl82 Client ID: SB-DUP	1.5				
Diesel Range Organics  Lube Oil Range Organics  Surrogate:  o-Terphenyl  Client ID:  33  Percent Reconstruction  82  Client ID:  SB-DUP					
Lube Oil Range Organics120Surrogate: o-TerphenylPercent Rec 82Client ID:SB-DUP	32	NWTPH-Dx	4-3-19	4-3-19	
Surrogate: Percent Reconstruction of the surrogate: Percent Reconstruction of	64	NWTPH-Dx	4-3-19	4-3-19	
o-Terphenyl 82  Client ID: SB-DUP			+ 0 10	+ 0 10	
Client ID: SB-DUP	50-150				
	00 700				
	-4				
Laboratory ID: 04-015-9	94				
Diesel Range Organics ND	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics 120	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate: Percent Rec	,	its			
o-Terphenyl 91	50-150				
011 - 4 ID					
Client ID: SB-PL-7-0-					
Laboratory ID: 04-015-9		ADA/TOLL D	1010	1.0.10	
Diesel Range Organics 71	42	NWTPH-Dx	4-3-19	4-3-19	<del>-N-</del>
Lube Oil Range Organics 360	83	NWTPH-Dx	4-3-19	4-3-19	
Surrogate: Percent Rec		ts			
o-Terphenyl 79	50-150				
Client ID: SB-PL-8-1-	1.5				
Laboratory ID: 04-015-9					
Diesel Range Organics 30	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics ND	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate: Percent Rec				. 5 10	
o-Terphenyl 84	50-150				
	33 .30				
Client ID: SB-PL-9-0-0	0.5				
Laboratory ID: 04-015-9	97				
Diesel Range Organics ND	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics 290	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate: Percent Rec					
o-Terphenyl 79		ts			
Diesel Range Organics ND Lube Oil Range Organics 290	34	NWTPH-Dx			

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# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-PL-10-2-2.5					
Laboratory ID:	04-015-98					
Diesel Range Organics	ND	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	70	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	97	50-150				
Client ID:	SB-PL-11-0.5-1					
Laboratory ID:	04-015-99					
Diesel Range Organics	ND	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits	IWITTE	+010	+ 0 10	
o-Terphenyl	87	50-150				
o respiration.	0,	00 700				
Client ID:	SB-PL-12-1-1.5					
Laboratory ID:	04-015-100					
Diesel Range Organics	ND	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	87	50-150				
Client ID.	CD DI 42 4 4 5					
Client ID:	SB-PL-13-1-1.5					
Laboratory ID:	04-015-101	20	NWTPH-Dx	4.2.40	4 2 40	
Diesel Range Organics	ND ND	29 58		4-3-19	4-3-19	
Lube Oil Range Organics		Control Limits	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery 90	50-150				
o-Terphenyl	90	50-150				
Client ID:	SB-PL-14-1-1.5					
Laboratory ID:	04-015-102					
Diesel Range Organics	46	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	55	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	91	50-150				
• •						
Client ID:	SB-101-1-0-0.5					
Laboratory ID:	04-015-103					
Diesel Range Organics	160	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	620	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	95	50-150				

Project: B0003010.0006

# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-101-1-2-2.5			-	-	
Laboratory ID:	04-015-104					
Diesel Range Organics	650	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	220	59	NWTPH-Dx	4-3-19	4-3-19	<del>-N1</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	81	50-150				
Client ID:	SB-101-2-0-0.5					
Laboratory ID:	04-015-105					
Diesel Range Organics	79	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	220	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-DUP-5					
Laboratory ID:	04-015-106					
Diesel Range Organics	87	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	210	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	81	50-150				
Client ID:	SB-101-2-2-2.5					
Laboratory ID:	04-015-107					
Diesel Range Organics	260	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	110	58	NWTPH-Dx	4-3-19 4-3-19	4-3-19	<del>-N1-</del>
Surrogate:	Percent Recovery	Control Limits	INVVIIII-DX	4-3-19	4-0-19	INI
o-Terphenyl	88	50-150				
о-тегрпенуі	00	30-130				
Client ID:	SB-101-3-0-0.5					
Laboratory ID:	04-015-108					
Diesel Range Organics	57	31	NWTPH-Dx	4-3-19	4-3-19	<del>-N</del>
Lube Oil Range Organics	360	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	82	50-150				
Client ID:	SB-101-3-2-2.5					
Laboratory ID:	04-015-109					
Laboratory ID: Diesel Range Organics	04-015-109 <b>73</b>	29	NWTPH-Dx	4-3-19	4-3-19	
		29 58	NWTPH-Dx NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	
Diesel Range Organics	73					

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### **DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx**

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-107-1-0-0.5					1 11 9 2
Laboratory ID:	04-015-110					
Diesel Range Organics	530	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	760	60	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	83	50-150				
Client ID:	SB-107-1-1-1.5					
Laboratory ID:	04-015-111					
Diesel Range Organics	710	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	720	60	NWTPH-Dx	4-3-19	4-3-19	<del>-N1-</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	87	50-150				
Client ID:	SB-107-2-0-0.5					
Laboratory ID:	04-015-112					
Diesel Range Organics	420	38	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	890	75	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits	140V II II DX	4010	+ 0 10	
o-Terphenyl	79	50-150				
σ . σ. μσy.	. •	00 /00				
Client ID:	SB-107-2-0.5-1					
Laboratory ID:	04-015-113					
Diesel Range Organics	270	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	500	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	87	50-150				
Client ID:	SB-107-3-0-0.5					
Laboratory ID:	04-015-114					
Diesel Range Organics	2700	170	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	2900	340	NWTPH-Dx	4-3-19	4-3-19	<del>- N1</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	91	50-150				
Client ID:	SB-107-3-0.5-1					
Laboratory ID:	04-015-115					
Diesel Range Organics	1600	160	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	2300	320	NWTPH-Dx	4-3-19	4-3-19	<del>- N1</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	89	50-150				
5 . 5. p. 15.13.	55	00 100				

Project: B0003010.0006

### **DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx**

Matrix: Soil

3 3 41 7				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-107-4-0-0.5					
Laboratory ID:	04-015-116					
Diesel Range Organics	1300	170	NWTPH-Dx	4-3-19	4-5-19	
Lube Oil Range Organics	1300	340	NWTPH-Dx	4-3-19	4-5-19	<del>-N1</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	102	50-150				
Client ID:	SB-DUP-6					
Laboratory ID:	04-015-117					
Diesel Range Organics	1000	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	1100	68	NWTPH-Dx	4-3-19	4-3-19	<del>-N1-</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	104	50-150				
Client ID:	SB-107-4-0.5-1					
Laboratory ID:	04-015-118					
Diesel Range Organics	370	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	350	57	NWTPH-Dx	4-3-19	4-3-19	<del>N1</del>
Surrogate:	Percent Recovery	Control Limits 50-150				
o-Terphenyl	98	50-150				
Client ID:	SB-107-5-0-0.5					
Laboratory ID:	04-015-119					
Diesel Range Organics	140	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	400	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	95	50-150				
Client ID:	SB-107-5-0.5-1					
Laboratory ID:	04-015-120					
Diesel Range Organics	130	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	300	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	94	50-150				
Client ID:	SB-107-6-0-0.5					
Laboratory ID:	04-015-121					
Diesel Range Organics	920	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	1200	69	NWTPH-Dx	4-3-19	4-3-19	<del>-N1-</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	101	50-150				

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# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-107-6-0.5-1					
Laboratory ID:	04-015-122					
Diesel Range Organics	580	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	810	72	NWTPH-Dx	4-3-19	4-3-19	<del>-N1-</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	101	50-150				
Client ID:	SB-104-1-0-0.5					
Laboratory ID:	04-015-123					
Diesel Range Organics	56	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	400	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	96	50-150				
Client ID:	SB-104-1-2.5-3					
Laboratory ID:	04-015-124					
Diesel Range Organics	ND	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	100	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	96	50-150				
OU	00 404 0 0 0					
Client ID:	SB-104-2-0-0.5					
Laboratory ID:	04-015-125					
Diesel Range Organics	120	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	290	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	97	50-150				
Client ID:	CD 404 0 4 4 5					
Client ID:	SB-104-2-4-4.5					
Laboratory ID:	04-015-126		NIM/TOLL D	4.0.40	1 0 10	
Diesel Range Organics	74	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	96	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	97	50-150				
Client ID:	SB-104-3-0-0.5					
Laboratory ID:	04-015-127					
Diesel Range Organics	36	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	36 190	60	NWTPH-Dx			
		Control Limits	INVV I PID-DX	4-3-19	4-3-19	
Surrogate:	Percent Recovery					
o-Terphenyl	98	50-150				

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## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-104-3-2.5-3				7uy_0u	
Laboratory ID:	04-015-128					
Diesel Range Organics	ND	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	69	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	83	50-150				
Client ID:	SB-102-1-0-0.5					
Laboratory ID:	04-015-129					
Diesel Range Organics	36	35	NWTPH-Dx	4-3-19	4-3-19	<del>-N</del> -
Lube Oil Range Organics	330	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	93	50-150				
Client ID:	SB-102-1-1.5-2.0					
Laboratory ID:	04-015-130					
Diesel Range Organics	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	100	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	88	50-150				
Client ID:	SB-DUP-7					
Laboratory ID:	04-015-131					
Diesel Range Organics	88	34	NWTPH-Dx	4-3-19	4-3-19	<u>-N</u> _
Lube Oil Range Organics	440	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-102-2-0-0.5					
Laboratory ID:	04-015-132					
Diesel Range Organics	140	40	NWTPH-Dx	4-3-19	4-3-19	<del>-N-</del>
Lube Oil Range Organics	690	80	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-102-3-0-0.5					
Laboratory ID:	04-015-133					
Diesel Range Organics	150	44	NWTPH-Dx	4-3-19	4-3-19	<del>-N</del>
Lube Oil Range Organics	860	89	NWTPH-Dx	4-3-19	4-3-19	• •
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	87	50-150				
	<b>.</b> .	00 100				

Project: B0003010.0006

# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

A 1 4 .	D 14	<b>501</b>	B	Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-102-3-0.5-1.0					
Laboratory ID:	04-015-134		ANACTOLLO	1010	1 0 10	
Diesel Range Organics	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	220	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	102	50-150				
Client ID:	SB-101-4-0-0.5					
Laboratory ID:	04-015-135					
Diesel Range Organics	ND	100	NWTPH-Dx	4-3-19	4-3-19	<del>-U1-</del> U
Mineral Oil	110	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	330	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	82	50-150				
Client ID:	SB-101-4-2.0-2.5					
Laboratory ID:	04-015-136					
Diesel Range Organics	ND	440	NWTPH-Dx	4-3-19	4-3-19	<del>-U1</del> U
Mineral Oil	460	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	270	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	89	50-150				
Client ID:	SB-DUP-8					
Laboratory ID:	04-015-137					
	ND	370	NWTPH-Dx	4-3-19	4-3-19	<del>- U1</del> U
Diesel Range Organics Mineral Oil	380	370 32	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	<del>-01</del> 0
Lube Oil Range Organics	240	63	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	
Surrogate:	Percent Recovery	Control Limits	INVV I F II-DX	4-3-19	4-3-19	
o-Terphenyl	95	50-150				
0-Terprierryi	95	50-150				
Client ID:	SB-101-5-0-0.5					
Laboratory ID:	04-015-138					
Diesel Range Organics	ND	94	NWTPH-Dx	4-3-19	4-3-19	<del>U1</del> U
Mineral Oil	110	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	360	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	<i>7</i> 5	50-150				

Project: B0003010.0006

# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-101-5-0.5-1.0			- 1		
Laboratory ID:	04-015-139					
Diesel Range Organics	ND	68	NWTPH-Dx	4-3-19	4-3-19	<del>U1</del> U
Mineral Oil	77	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	140	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	91	50-150				
Client ID:	SB-101-6-0-0.5					
Laboratory ID:	04-015-140					
Diesel Range Organics	ND	32	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	190	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	92	50-150				
Client ID:	SB-101-6-0.5-1.0					
Laboratory ID:	04-015-141					
Diesel Range Organics	ND	83	NWTPH-Dx	4-3-19	4-3-19	<del>U1</del> U
Mineral Oil	78	30	NWTPH-Dx	4-3-19	4-3-19	0.
Lube Oil Range Organics	ND	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	86	50-150				
Client ID:	SB-101-7-0.5-1.0					
Laboratory ID:	04-015-142					
Diesel Range Organics	48	45	NWTPH-Dx	4-3-19	4-3-19	₩
Mineral Oil	ND	47	NWTPH-Dx	4-3-19	4-3-19	-1. 1J1- U
Lube Oil Range Organics	290	90	NWTPH-Dx	4-3-19	4-3-19	<b>2</b> 10
Surrogate:	Percent Recovery	Control Limits	TWW TITES	1010	1 0 10	
o-Terphenyl	79	50-150				
Client ID.	CD 404 7 4 5 0 0					
Client ID:	SB-101-7-1.5-2.0					
Laboratory ID:	04-015-143	24	NIM/TOURS	4 2 42	4.0.40	414 11
Diesel Range Organics	ND	34	NWTPH-Dx	4-3-19	4-3-19	<del>U1</del> U
Mineral Oil	44 ND	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	77	50-150				

Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-101-8-0-0.5			-		
Laboratory ID:	04-015-144					
Diesel Range Organics	ND	860	NWTPH-Dx	4-3-19	4-3-19	<del>U1-</del> U
Mineral Oil	930	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	900	68	NWTPH-Dx	4-3-19	4-3-19	<del>N1</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	90	50-150				
Client ID:	SB-101-8-1.0-1.5					
Laboratory ID:	04-015-145					
Diesel Range Organics	ND	140	NWTPH-Dx	4-3-19	4-3-19	<del>-U1</del> U
Mineral Oil	140	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	150	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	74	50-150				
Client ID:	SB-101-9-0-0.5					
Laboratory ID:	04-015-146					
Diesel Range Organics	ND	200	NWTPH-Dx	4-3-19	4-3-19	<del>U1</del> ∪
Mineral Oil	190 🤳	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	180	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	103	50-150				
Client ID:	SB-DUP-9					
Laboratory ID:	04-015-147					
Diesel Range Organics	ND	62	NWTPH-Dx	4-3-19	4-3-19	Ų1 <mark>U</mark>
Mineral Oil	65 J	34	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	240	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	80	50-150				
Client ID:	SB-101-9-1.5-2.0					
Laboratory ID:	04-015-148					
Diesel Range Organics	ND	160	NWTPH-Dx	4-3-19	4-3-19	₩ <sup>U</sup>
Mineral Oil	170	29	NWTPH-Dx	4-3-19	4-3-19	<b>J</b> 1
Lube Oil Range Organics	66	59	NWTPH-Dx	4-3-19	4-3-19	<del>-N1</del>
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	85	50-150				
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Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-101-10-0-0.5			-		_
Laboratory ID:	04-015-149					
Diesel Range Organics	ND	88	NWTPH-Dx	4-3-19	4-3-19	<del>-U1</del> U
Mineral Oil	94	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	240	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	94	50-150				
Client ID:	SB-101-10-0.5-1.0					
Laboratory ID:	04-015-150					
Diesel Range Organics	ND	48	NWTPH-Dx	4-3-19	4-3-19	U1 U
Mineral Oil	56	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	96	50-150				
Client ID:	SB-101-11-0-0.5					
Laboratory ID:	04-015-151					
Diesel Range Organics	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	210	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	85	50-150				
Client ID:	SB-101-11-0.5-1.0					
Laboratory ID:	04-015-152					
Diesel Range Organics	ND	31	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	150	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	85	50-150				
Client ID:	SB-101-12-0-0.5					
Laboratory ID:	04-015-153					
Diesel Range Organics	ND	39	NWTPH-Dx	4-3-19	4-3-19	<del>U</del> 1 U
Mineral Oil	47	31	NWTPH-Dx	4-3-19	4-3-19	<del>0 1</del> 0
Lube Oil Range Organics	220	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits			1010	
o-Terphenyl	95	50-150				
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### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Offits. Hig/Rg (ppH)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-12-1.0-1.5					
Laboratory ID:	04-015-154					
Diesel Range Organics	ND	29	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	120	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	92	50-150				
Client ID:	SB-101-13-0-0.5					
Laboratory ID:	04-015-155					
Diesel Range Organics	37	34	NWTPH-Dx	4-3-19	4-3-19	NI
Mineral Oil	ND	39	NWTPH-Dx	4-3-19	4-3-19	N U1 U
Lube Oil Range Organics	290	67	NWTPH-Dx	4-3-19	4-3-19	qı •
Surrogate:	Percent Recovery	Control Limits	NWITTEX	+010	+ 0 10	
o-Terphenyl	87	50-150				
o respiration	01	00 700				
Client ID:	SB-101-13-1.0-1.5					
Laboratory ID:	04-015-156					
Diesel Range Organics	ND	30	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	160	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	85	50-150				
Client ID:	SB-DUP-10					
Laboratory ID:	04-015-157					
Diesel Range Organics	37	33	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	120	66	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits	TWV II II BX	1010	1010	
o-Terphenyl	98	50-150				
o respiration		00 700				
Client ID:	SB-101-14-0-0.5					
Laboratory ID:	04-015-158					
Diesel Range Organics	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	130	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	96	50-150				

Project: B0003010.0006

# DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SB-101-14-1.0-1.5					
Laboratory ID:	04-015-159					
Diesel Range Organics	ND	31	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	82	50-150				
Client ID:	SB-101-15-0-0.5					
Laboratory ID:	04-015-160					
Diesel Range Organics	ND	36	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	140	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	81	50-150				
Client ID:	SB-101-15-0.5-1.0					
Laboratory ID:	04-015-161					
Diesel Range Organics	ND	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND ND	35 35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	140	70	NWTPH-Dx	4-3-19 4-3-19	4-3-19 4-3-19	
Surrogate:	Percent Recovery	Control Limits	INVVIIII-DX	4-3-19	4-3-19	
o-Terphenyl	89	50-150				
о-тегрпенуі	09	30-130				
Client ID:	SB-101-16-0-0.5					
Laboratory ID:	04-015-162					
Diesel Range Organics	ND	34	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	87	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	109	50-150				
Client ID.	SB 404 46 2 0 2 5					
Client ID:	SB-101-16-2.0-2.5					
Laboratory ID:	04-015-163		NIA/TOLL C	1010	1010	
Diesel Range Organics	ND	28	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	ND	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	95	50-150				

Project: B0003010.0006

## DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-DUP-11					
Laboratory ID:	04-015-164					
Diesel Range Organics	ND	33	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	ND	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	73	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenvl	93	50-150				

Project: B0003010.0006

### DIESEL AND HEAVY OIL RANGE ORGANICS NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	EB-03312019					_
Laboratory ID:	04-015-168					_
Diesel Range Organics	ND	0.26	NWTPH-Dx	4-4-19	4-5-19	_
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	4-4-19	4-5-19	_
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	98	50-150				
Client ID:	EB-04012019					
Laboratory ID:	04-015-169					
Diesel Range Organics	ND	0.26	NWTPH-Dx	4-4-19	4-5-19	
Lube Oil Range Organics	ND	0.42	NWTPH-Dx	4-4-19	4-5-19	_
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	101	50-150				

Project: B0003010.0006

### **VOLATILE ORGANICS EPA 8260C**

Matrix: Water Units: ug/L

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	PW-040119					
Laboratory ID:	04-015-165					
Benzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Toluene	ND	1.0	EPA 8260C	4-3-19	4-3-19	
Ethylbenzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
m,p-Xylene	ND	0.40	EPA 8260C	4-3-19	4-3-19	
o-Xylene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
Dibromofluoromethane	93	75-127				
Toluene-d8	99	80-127				
4-Bromofluorobenzene	99	78-125				

Date of Report: April 16, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

#### cPAHs EPA 8270D/SIM

Matrix: Water Units: ug/L

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	EB-03312019					
Laboratory ID:	04-015-168					
Benzo[a]anthracene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	_
Chrysene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[b]fluoranthene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo(j,k)fluoranthene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[a]pyrene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Indeno[1,2,3-cd]pyrene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Dibenz[a,h]anthracene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorophenol	35	12 - 80				
Phenol-d6	29	10 - 82				
Nitrobenzene-d5	52	30 - 103				
2-Fluorobiphenyl	63	33 - 103				
2,4,6-Tribromophenol	<i>7</i> 5	20 - 121				
Terphenyl-d14	78	32 - 113				

Date of Report: April 16, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

#### cPAHs EPA 8270D/SIM

Matrix: Water Units: ug/L

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	EB-04012019					
Laboratory ID:	04-015-169					
Benzo[a]anthracene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Chrysene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[b]fluoranthene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo(j,k)fluoranthene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[a]pyrene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Indeno[1,2,3-cd]pyrene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Dibenz[a,h]anthracene	ND	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorophenol	45	12 - 80				
Phenol-d6	37	10 - 82				
Nitrobenzene-d5	65	30 - 103				
2-Fluorobiphenyl	73	33 - 103				
2,4,6-Tribromophenol	87	20 - 121				
Terphenyl-d14	85	32 - 113				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

5 5 41 7				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-4-0-0.5					
Laboratory ID:	04-015-135					
Aroclor 1016	ND	0.61 <mark>UJ</mark>	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.61 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.61 <mark>UJ</mark>	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.61 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.61 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.61 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	2.9 J	0.61	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	SB-101-4-2.0-2.5					
Laboratory ID:	04-015-136					
Aroclor 1016	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	ND	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	0.37	0.063	EPA 8082A	4-9-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	85	39-130				
Client ID:	SB-DUP-8					
Laboratory ID:	04-015-137					
Aroclor 1016	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	0.52	0.063	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	81	39-130				

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#### PCBs EPA 8082A

Matrix: Soil

onits. Hig/Ttg (ppin)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-5-0-0.5					
Laboratory ID:	04-015-138					
Aroclor 1016	ND	6.4 <mark>UJ</mark>	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	45 J	6.4	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	SB-101-5-0.5-1.0					
Laboratory ID:	04-015-139					
Aroclor 1016	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	ND	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	0.95	0.059	EPA 8082A	4-9-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	84	39-130				
Client ID:	SB-101-6-0-0.5					
Laboratory ID:	04-015-140					
Aroclor 1016	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	0.58	0.065	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits		-		
DCB	91	39-130				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

5 5 41 7				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-6-0.5-1.0					
Laboratory ID:	04-015-141					
Aroclor 1016	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	68	39-130				
Client ID:	SB-101-7-0.5-1.0					
Laboratory ID:	04-015-142					
Aroclor 1016	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	1.2	0.090	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	74	39-130				
Client ID:	SB-101-7-1.5-2.0					
Laboratory ID:	04-015-143					
Aroclor 1016	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	0.11	0.065	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	79	39-130				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-8-0-0.5					
Laboratory ID:	04-015-144					
Aroclor 1016	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	ND	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	0.28	0.068	EPA 8082A	4-9-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	62	39-130				
Client ID:	SB-101-8-1.0-1.5					
Laboratory ID:	04-015-145					
Aroclor 1016	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	0.26	0.063	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	72	39-130				
Client ID:	SB-101-9-0-0.5					
Laboratory ID:	04-015-146					
Aroclor 1016	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	0.64 J	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	77	39-130				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-DUP-9					
Laboratory ID:	04-015-147					
Aroclor 1016	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	1.3 J	0.068	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	76	39-130				
Client ID:	SB-101-9-1.5-2.0					
Laboratory ID:	04-015-148					
Aroclor 1016	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	ND	0.059	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	81	39-130				
Client ID:	SB-101-10-0-0.5					
Laboratory ID:	04-015-149					
Aroclor 1016	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	1.4	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits	2	- · · <del>·</del>		
DCB	87	39-130				

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

3 3 41 7				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-10-0.5-1.0					
Laboratory ID:	04-015-150					
Aroclor 1016	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	ND	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	0.32	0.057	EPA 8082A	4-9-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	70	39-130				
Client ID:	SB-101-11-0-0.5					
Laboratory ID:	04-015-151					
Aroclor 1016	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.68	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	71	39-130				
Client ID:	SB-101-11-0.5-1.0					
Laboratory ID:	04-015-152					
Aroclor 1016	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.28	0.063	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	77	39-130				

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#### PCBs EPA 8082A

Matrix: Soil

onits. Hig/Rg (ppin)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-12-0-0.5					
Laboratory ID:	04-015-153					
Aroclor 1016	ND	1.2 <mark>UJ</mark>	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	ND	1.2 <mark>UJ</mark>	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	ND	1.2 <mark>UJ</mark>	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	ND	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	ND	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	ND	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	4.3 <sup>J</sup>	1.2	EPA 8082A	4-8-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	SB-101-12-1.0-1.5					
Laboratory ID:	04-015-154					
Aroclor 1016	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	1.2	0.057	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	79	39-130				
Client ID:	SB-101-13-0-0.5					
Laboratory ID:	04-015-155					
Aroclor 1016	ND	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	ND	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	ND	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	ND	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	ND	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	ND	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	6.4 J	1.3	EPA 8082A	4-8-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S

Project: B0003010.0006

#### PCBs EPA 8082A

Matrix: Soil

3 3 (17 )				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-13-1.0-1.5					
Laboratory ID:	04-015-156					
Aroclor 1016	ND	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	ND	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	ND	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	ND	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	ND	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	ND	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	4.9 J	1.2	EPA 8082A	4-8-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	SB-DUP-10					
Laboratory ID:	04-015-157					
Aroclor 1016	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	1.2	0.066	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	74	39-130				
Client ID:	SB-101-14-0-0.5					
Laboratory ID:	04-015-158					
Aroclor 1016	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	1.7	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits		-	-	
DCB	81	39-130				

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#### PCBs EPA 8082A

Matrix: Soil

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-14-1.0-1.5					
Laboratory ID:	04-015-159					
Aroclor 1016	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	1.2	0.061	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	83	39-130				
Client ID:	SB-101-15-0-0.5					
Laboratory ID:	04-015-160					
Aroclor 1016	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.32	0.072	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	71	39-130				
Client ID:	SB-101-15-0.5-1.0					
Laboratory ID:	04-015-161					
Aroclor 1016	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.28	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	74	39-130				

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#### PCBs EPA 8082A

Matrix: Soil

onits. Hig/Ng (ppin)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-101-16-0-0.5					
Laboratory ID:	04-015-162					
Aroclor 1016	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.40	0.068	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	69	39-130				
Client ID:	SB-101-16-2.0-2.5					
Laboratory ID:	04-015-163					
Aroclor 1016	ND	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	ND	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	ND	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	ND	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	ND	1.1 <mark>UJ</mark>	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	ND	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	3.8 J	1.1	EPA 8082A	4-8-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		39-130				S
Client ID:	SB-DUP-11					
Laboratory ID:	04-015-164					
Aroclor 1016	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	ND	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	0.51	0.067	EPA 8082A	4-8-19	4-9-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	77	39-130				

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#### PCBs EPA 8082A

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	PW-040119					
Laboratory ID:	04-015-165					
Aroclor 1016	ND	0.51 <mark>UJ</mark>	EPA 8082A	4-5-19	4-10-19	
Aroclor 1221	ND	0.51 <mark>UJ</mark>	EPA 8082A	4-5-19	4-10-19	
Aroclor 1232	ND	0.51 <mark>UJ</mark>	EPA 8082A	4-5-19	4-10-19	
Aroclor 1242	ND	0.51 <mark>UJ</mark>	EPA 8082A	4-5-19	4-10-19	
Aroclor 1248	ND	0.51 <mark>UJ</mark>	EPA 8082A	4-5-19	4-10-19	
Aroclor 1254	ND	0.51 UJ	EPA 8082A	4-5-19	4-10-19	
Aroclor 1260	2.8 J	0.51	EPA 8082A	4-5-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
DCB		44-144				S
Client ID:	EB-04012019					
Laboratory ID:	04-015-169					
Aroclor 1016	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1221	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1232	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1242	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1248	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1254	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1260	ND	0.050	EPA 8082A	4-5-19	4-8-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	99	44-144				

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### TOTAL METALS EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	PW-040119					
Laboratory ID:	04-015-165					
Arsenic	280	6.7	EPA 200.8	4-5-19	4-5-19	
Barium	870	56	EPA 200.8	4-5-19	4-5-19	
Cadmium	ND	4.4	EPA 200.8	4-5-19	4-5-19	
Chromium	1000	22	EPA 200.8	4-5-19	4-5-19	
Lead	1000	2.2	EPA 200.8	4-5-19	4-5-19	
Mercury	ND	0.50	EPA 7470A	4-8-19	4-8-19	
Selenium	ND	5.6	EPA 200.8	4-5-19	4-5-19	
Silver	ND	11	EPA 200.8	4-5-19	4-5-19	
Client ID: Laboratory ID:	<b>EB-032919</b> 04-015-166					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID: Laboratory ID:	<b>EB-033019</b> 04-015-167					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID: Laboratory ID:	<b>EB-03312019</b> 04-015-168					
Lead	ND	1.1	EPA 200.8	4-5-19	4-5-19	
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### **VOLATILE ORGANICS EPA 8260C**

Matrix: Soil Units: mg/kg

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-112-6-0-0.5					
Laboratory ID:	04-015-73					
Benzene	ND	0.0018 <mark>UJ</mark>	EPA 8260C	4-10-19	4-10-19	
Toluene	ND	0.0091 <mark>UJ</mark>	EPA 8260C	4-10-19	4-10-19	
Ethylbenzene	ND	0.0018 <mark>UJ</mark>	EPA 8260C	4-10-19	4-10-19	
m,p-Xylene	ND	0.0036 <sup>UJ</sup>	EPA 8260C	4-10-19	4-10-19	
o-Xylene	ND	0.0018 <sup>UJ</sup>	EPA 8260C	4-10-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
Dibromofluoromethane	107	68-139				
Toluene-d8	101	79-128				
4-Bromofluorobenzene	83	71-132				

Date of Report: April 16, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

### **VOLATILE ORGANICS EPA 8260C**

Matrix: Soil Units: mg/kg

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-107-3-0-0.5					
Laboratory ID:	04-015-114					
Benzene	ND	0.0015 UJ	EPA 8260C	4-10-19	4-10-19	
Toluene	ND	0.0074 <mark>UJ</mark>	EPA 8260C	4-10-19	4-10-19	
Ethylbenzene	ND	0.0015 <mark>UJ</mark>	EPA 8260C	4-10-19	4-10-19	
m,p-Xylene	ND	0.0030 <mark>UJ</mark>	EPA 8260C	4-10-19	4-10-19	
o-Xylene	ND	0.0015 <mark>UJ</mark>	EPA 8260C	4-10-19	4-10-19	
Surrogate:	Percent Recovery	Control Limits				
Dibromofluoromethane	108	68-139				
Toluene-d8	95	79-128				
4-Bromofluorobenzene	70	71-132				Q

Project: B0003010.0006

### PAHs EPA 8270D/SIM

Matrix: Soil Units: mg/Kg

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-112-6-0-0.5					
Laboratory ID:	04-015-73					
Benzo[a]anthracene	ND	0.014	EPA 8270D/SIM	4-10-19	4-12-19	U1
Chrysene	ND	0.023	EPA 8270D/SIM	4-10-19	4-12-19	U1
Benzo[b]fluoranthene	ND	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo(j,k)fluoranthene	ND	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[a]pyrene	ND	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Indeno(1,2,3-c,d)pyrene	ND	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Dibenz[a,h]anthracene	ND	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	73	40 - 117				
Pyrene-d10	88	38 - 119				
Terphenyl-d14	116	47 - 135				
Pyrene-d10	88	38 - 119				

Project: B0003010.0006

### PAHs EPA 8270D/SIM

Matrix: Soil Units: mg/Kg

			Date	Date	
Result	PQL	Method	Prepared	Analyzed	Flags
SB-107-3-0-0.5					
04-015-114					
ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.012	EPA 8270D/SIM	4-10-19	4-12-19	U1 U
ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
ND	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Percent Recovery	Control Limits				
61	40 - 117				
94	38 - 119				
109	47 - 135				
	SB-107-3-0-0.5  04-015-114  ND  ND  ND  ND  ND  ND  ND  Percent Recovery  61  94	SB-107-3-0-0.5         04-015-114       0.0089         ND       0.012         ND       0.0089         ND       0.0089         ND       0.0089         ND       0.0089         ND       0.0089         Percent Recovery       Control Limits         61       40 - 117         94       38 - 119	SB-107-3-0-0.5         04-015-114         ND       0.0089       EPA 8270D/SIM         ND       0.012       EPA 8270D/SIM         ND       0.0089       EPA 8270D/SIM         Percent Recovery       Control Limits         61       40 - 117         94       38 - 119	Result         PQL         Method         Prepared           SB-107-3-0-0.5         504-015-114         4-10-19         4-10-19           ND         0.0089         EPA 8270D/SIM         4-10-19           Percent Recovery         Control Limits           61         40 - 117           94         38 - 119	Result         PQL         Method         Prepared         Analyzed           SB-107-3-0-0.5 04-015-114         SB-107-3-0-0.5         SB-107-3-0-0.5         SB-107-3-0-0.5         SB-107-3-0-0.5         SB-107-3-0-0.5         SB-107-3-0-0.5         SB-107-3-0-0.5         SB-107-3-0-0.5         SB-107-3-0-0.5         SB-10-10-19         4-12-19         SB-10-19         4-12-19         A-12-19         <

Date of Report: April 16, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015 Project: B0003010.0006

### PAHs EPA 8270D/SIM

Matrix: Soil Units: mg/Kg

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SB-107-3-0.5-1					_
Laboratory ID:	04-015-115					
Benzo[a]anthracene	ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Chrysene	ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[b]fluoranthene	ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo(j,k)fluoranthene	ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[a]pyrene	ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Dibenz[a,h]anthracene	ND	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Surrogate:	Percent Recovery	Control Limits				
2-Fluorobiphenyl	54	40 - 117				
Pyrene-d10	78	38 - 119				
Terphenyl-d14	112	47 - 135				

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#### PCBs EPA 8082A

Matrix: Soil

Analyte   Result   PQL   Method   Prepared   Analyzed   Flags	3 3 (T)				Date	Date	
Laboratory ID: 04-015-73  Aroclor 1016 ND 0.085 EPA 8082A 4-10-19 4-10-19  Aroclor 1221 ND 0.085 EPA 8082A 4-10-19 4-10-19  Aroclor 1232 ND 0.085 EPA 8082A 4-10-19 4-10-19  Aroclor 1242 ND 0.085 EPA 8082A 4-10-19 4-10-19  Aroclor 1242 ND 0.085 EPA 8082A 4-10-19 4-10-19  Aroclor 1248 ND 0.085 EPA 8082A 4-10-19 4-10-19  Aroclor 1254 0.20 0.085 EPA 8082A 4-10-19 4-10-19  Aroclor 1260 0.15 0.085 EPA 8082A 4-10-19 4-10-19  Aroclor 1260 0.15 0.085 EPA 8082A 4-10-19 4-10-19  Aroclor 1260 0.15 0.085 EPA 8082A 4-10-19 4-10-19  Aroclor 1260 0.05 EPA 8082A 4-10-19 4-10-19  Aroclor 1260 0.05 EPA 8082A 4-10-19 4-10-19  Aroclor 1260 0.067 EPA 8082A 4-10-19 4-10-19  Aroclor 1221 ND 0.067 EPA 8082A 4-10-19 4-10-19  Aroclor 1242 ND 0.067 EPA 8082A 4-10-19 4-10-19  Aroclor 1242 ND 0.067 EPA 8082A 4-10-19 4-10-19  Aroclor 1248 ND 0.067 EPA 8082A 4-10-19 4-10-19  Aroclor 1248 ND 0.067 EPA 8082A 4-10-19 4-10-19  Aroclor 1254 ND 0.067 EPA 8082A 4-10-19 4-10-19  Aroclor 1260 ND 0.065 EPA 8082A 4-10-19 4-10-19  Aroclor 1272 ND 0.065 EPA 8082A 4-10-19 4-10-19  Aroclor 1284 ND 0.065 EPA 8082A 4-10-19 4-10-19  Aroclor 1286 ND 0.065 EPA 8082A 4-10-19 4-10-19	Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Aroclor 1016         ND         0.085         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.085         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.085         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.085         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.085         EPA 8082A         4-10-19         4-10-19           Aroclor 1250         0.20         0.085         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         0.15         0.085         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits         60         39-130         39-130           Client ID:         SB-107-3-0-0.5           Laboratory ID:         04-015-114         Aroclor 1016         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.067         EPA 8082A         4-10-19         4-10-19         Aroclor 19         4-10-19         Aroclor 19         4-10-19         Aroclor 19         4-10-19         Aroclor 19 <t< td=""><td>Client ID:</td><td>SB-112-6-0-0.5</td><td></td><td></td><td></td><td></td><td></td></t<>	Client ID:	SB-112-6-0-0.5					
Aroclor 1221 ND 0.085 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.085 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.085 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.085 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.085 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 0.20 0.085 EPA 8082A 4-10-19 4-10-19 Aroclor 1250 0.15 0.085 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 0.15 0.085 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 0.15 0.085 EPA 8082A 4-10-19 4-10-19 Brurogate: Percent Recovery Control Limits Control Limits Control Limits Control Limits Percent Recovery Control Limits	Laboratory ID:	04-015-73					
Aroclor 1232	Aroclor 1016	ND	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	Aroclor 1221	ND	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	Aroclor 1232	ND	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254 Aroclor 1260         0.20 0.15         0.085 0.085         EPA 8082A EPA 8082A         4-10-19 4-10-19         4-10-19 4-10-19           Surrogate: DCB         Percent Recovery 60         Control Limits 39-130           Client ID: Laboratory ID: O4-015-114         SB-107-3-0-0.5 Laboratory ID: O4-015-114         Variable Variab	Aroclor 1242	ND	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260         0.15         0.085         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery 60         Control Limits         4-10-19         4-10-19           Client ID:         SB-107-3-0-0.5         SB-107-3-0-0.5         SB-107-3-0-0.5         SB-107-3-0-0.5           Laboratory ID:         04-015-114         Aroclor 1016         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.067         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits           DCB         61         39-130         39-130           Client ID:         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5	Aroclor 1248	ND	0.085	EPA 8082A	4-10-19	4-10-19	
Surrogate:         Percent Recovery         Control Limits           DCB         60         39-130           Client ID:         SB-107-3-0-0.5           Laboratory ID:         04-015-114           Aroclor 1016         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.067         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits         5         5         5           DCB         61         39-130         5         5         5         5           Client ID:         SB-107-3-0.5-1         5         5         5         5         5	Aroclor 1254	0.20	0.085	EPA 8082A	4-10-19	4-10-19	
Client ID:   SB-107-3-0-0.5	Aroclor 1260	0.15	0.085	EPA 8082A	4-10-19	4-10-19	
Client ID: 04-015-114  Aroclor 1016 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1221 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1256 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 ND 0.067 EPA 8082A 4-10-19 4-10-19  Surrogate: Percent Recovery Control Limits DCB 61 39-130  Client ID: SB-107-3-0.5-1 Laboratory ID: 04-015-115  Aroclor 1221 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1244 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1256 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1256 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 ND 0.065 EPA 8082A 4-10-19 4-10-19	Surrogate:	Percent Recovery	Control Limits				
Laboratory ID:         04-015-114           Aroclor 1016         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.067         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits         39-130         4-10-19         4-10-19           Client ID:         SB-107-3-0.5-1         Laboratory ID:         4-10-19         4-10-19         4-10-19           Aroclor 1016         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND	DCB	60	39-130				
Aroclor 1016         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.067         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits         0.067         EPA 8082A         4-10-19         4-10-19           DCB         61         39-130         39-130         39-130         4-10-19         4-10-19           Client ID:         SB-107-3-0.5-1         4-10-19         4-10-19         4-10-19         4-10-19           Aroclor 1216         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.065         EPA 8082A         <	Client ID:	SB-107-3-0-0.5					
Aroclor 1221 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 ND 0.067 EPA 8082A 4-10-19 4-10-19  Surrogate: Percent Recovery Control Limits DCB 61 39-130  Client ID: SB-107-3-0.5-1 Laboratory ID: 04-015-115  Aroclor 1221 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1244 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1256 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1256 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1256 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 ND 0.065 EPA 8082A 4-10-19 4-10-19	Laboratory ID:	04-015-114					
Aroclor 1221 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 ND 0.067 EPA 8082A 4-10-19 4-10-19  Surrogate: Percent Recovery Control Limits DCB 61 39-130  Client ID: SB-107-3-0.5-1 Laboratory ID: 04-015-115  Aroclor 1221 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1256 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 ND 0.065 EPA 8082A 4-10-19 4-10-19	Aroclor 1016	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.067 EPA 8082A 4-10-19 4-10-19 Aroclor 1250 ND 0.067 EPA 8082A 4-10-19 4-10-19  Aroclor 1260 ND 0.067 EPA 8082A 4-10-19 4-10-19  Surrogate: Percent Recovery Control Limits DCB 61 39-130  Client ID: SB-107-3-0.5-1 Laboratory ID: 04-015-115  Aroclor 1016 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1221 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 ND 0.065 EPA 8082A 4-10-19 4-10-19  Surrogate: Percent Recovery Control Limits	Aroclor 1221	ND	0.067		4-10-19	4-10-19	
Aroclor 1248		ND					
Aroclor 1254         ND         0.067         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.067         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits         DCB         61         39-130           Client ID:         SB-107-3-0.5-1         Laboratory ID:         04-015-115           Aroclor 1016         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1242	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260         ND         0.067         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery 61         Control Limits 39-130         Control Limits 39-130         Control Limits 39-130           Client ID:         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1         SB-107-3-0.5-1           Laboratory ID:         04-015-115         Aroclor 1016         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1248	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Surrogate:         Percent Recovery         Control Limits           DCB         61         39-130           Client ID:         SB-107-3-0.5-1           Laboratory ID:         04-015-115           Aroclor 1016         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1254	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Client ID: SB-107-3-0.5-1 Laboratory ID: 04-015-115  Aroclor 1016 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1221 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 ND 0.065 EPA 8082A 4-10-19 4-10-19 Surrogate: Percent Recovery Control Limits	Aroclor 1260	ND	0.067	EPA 8082A	4-10-19	4-10-19	
Client ID: SB-107-3-0.5-1 Laboratory ID: 04-015-115  Aroclor 1016 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1221 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1232 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1242 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1248 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1254 ND 0.065 EPA 8082A 4-10-19 4-10-19 Aroclor 1260 ND 0.065 EPA 8082A 4-10-19 4-10-19 Surrogate: Percent Recovery Control Limits	Surrogate:	Percent Recovery	Control Limits				
Laboratory ID:         04-015-115           Aroclor 1016         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	DCB	61	39-130				
Aroclor 1016         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Client ID:	SB-107-3-0.5-1					
Aroclor 1016         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1221         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Laboratory ID:	04-015-115					
Aroclor 1221         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1232         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits			0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1242         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1221	ND				4-10-19	
Aroclor 1242         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1248         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1232						
Aroclor 1248         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1254         ND         0.065         EPA 8082A         4-10-19         4-10-19           Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits		ND					
Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1248	ND	0.065		4-10-19	4-10-19	
Aroclor 1260         ND         0.065         EPA 8082A         4-10-19         4-10-19           Surrogate:         Percent Recovery         Control Limits	Aroclor 1254	ND			4-10-19	4-10-19	
Surrogate: Percent Recovery Control Limits	Aroclor 1260	ND					
, ,		Percent Recovery					
	_	-	39-130				

Date of Report: April 26, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015

Project: B0003010.0006

### TCLP LEAD EPA 1311/6010D

Matrix: TCLP Extract Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	ISM-14-A-0-0.5			•	-	
Laboratory ID:	04-015-07					
Lead	ND	0.20	EPA 6010D	4-24-19	4-24-19	
Client ID:	ISM-15-A-0.5-1.0					
Laboratory ID:	04-015-19					
Lead	ND	0.20	EPA 6010D	4-24-19	4-24-19	



### **CERTIFICATE OF ANALYSIS**

CLIENT: OnSite Environmental, Inc. DATE: 4/18/2019

14648 NE 95th Street ALS JOB#: EV19040073
Redmond, WA 98052 ALS SAMPLE#: EV19040073-01

CLIENT CONTACT: David Baumeister DATE RECEIVED: 04/10/2019

CLIENT PROJECT: Lab Ref 04-015 Proj B0003010.0006 COLLECTION DATE: 3/31/2019 11:31:00 AM

CLIENT SAMPLE ID SB-112-6-0-0.5 WDOE ACCREDITATION: C601

### SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	14	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	190	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	79	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	20	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	20	5.0	1	MG/KG	04/12/2019	EBS

			ANALISIS	AIVAL I SIS	
SURROGATE	METHOD	%REC	DATE	BY	
C25	NWEPH	116	04/12/2019	EBS	
p-Terphenyl	NWEPH	106	04/12/2019	EBS	

U - Analyte analyzed for but not detected at level above reporting limit.



### **CERTIFICATE OF ANALYSIS**

CLIENT: OnSite Environmental, Inc. DATE: 4/18/2019

14648 NE 95th Street ALS JOB#: EV19040073 Redmond, WA 98052 ALS SAMPLE#: EV19040073-02

CLIENT CONTACT: **David Baumeister** DATE RECEIVED: 04/10/2019

**CLIENT PROJECT:** Lab Ref 04-015 Proj B0003010.0006 **COLLECTION DATE:** 3/31/2019 3:48:00 PM

**CLIENT SAMPLE ID** SB-107-3-0-0.5 WDOE ACCREDITATION: C601

CLILINI SAMI LL ID	3D-107-3-0-0.3		WDOLA	CILDITATION.	C00 i		
		SAMPLE	DATA RESULTS				
ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS A	ANALYSIS By
>C8-C10 Aliphatics	NWEPH	280	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	8.0	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	89	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	740	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	310	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	33	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	9.2	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	93	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	93	5.0	1	MG/KG	04/12/2019	EBS
						ANALYSIS	
SURROGATE	METHOD	%REC				DATE	BY
C25	NWEPH	123				04/12/2019	EBS
p-Terphenyl	NWEPH	104				04/12/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.



### **CERTIFICATE OF ANALYSIS**

CLIENT: OnSite Environmental, Inc. DATE: 4/18/2019

14648 NE 95th Street ALS JOB#: EV19040073 Redmond, WA 98052 ALS SAMPLE#: EV19040073-03

CLIENT CONTACT: **David Baumeister** DATE RECEIVED: 04/10/2019

**CLIENT PROJECT:** Lab Ref 04-015 Proj B0003010.0006 **COLLECTION DATE:** 3/31/2019 3:52:00 PM

**CLIENT SAMPLE ID** WDOE ACCREDITATION: SB-107-3-0.5-1 C601

CLILINI SAMI LL ID	3D-101-3-0.3-1		WDOLA	SCINEDITATION.	0001		
		SAMPLE	DATA RESULTS				
ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS A	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	51	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	6.6	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	100	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	500	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	200	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	6.1	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	52	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	59	5.0	1	MG/KG	04/12/2019	EBS
						ANALYSIS	ANALYSIS
SURROGATE	METHOD	%REC				DATE	BY
C25	NWEPH	119				04/12/2019	EBS
p-Terphenyl	NWEPH	101				04/12/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.



### **United States Coast Guard**

### **DATA REVIEW**

### Burrows Island Light Station Skagit County, Washington

Metal (Lead) Analysis

SDGs # 1903-283B and 1903-283C

Analyses Performed By: Onsite Environmental Inc. Redmond, Washington

Report #: 32869R Review Level: Tier II Project: B0003010.0006

### **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # 1903-283B and 1903-283C for samples collected in association with the United States Coast Guard, Burrows Island Light Station, Skagit County, Washington. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

			Sample		Ana	llysis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	Lead	TCLP Lead
ISM-04-1-0-0.5	03-283-37	Soil	3/27/2019		X	
ISM-04-2-0-0.5	03-283-38	Soil	3/27/2019		X	
ISM-04-3-0-0.5	03-283-39	Soil	3/27/2019		Х	
ISM-04-4-0-0.5	03-283-40	Soil	3/27/2019		Х	
ISM-06-1-1.0-1.5	03-283-73	Soil	3/27/2019		X	
ISM-06-2-1.0-1.5	03-283-74	Soil	3/27/2019		X	
ISM-06-3-1.0-1.5	03-283-75	Soil	3/27/2019		X	
ISM-06-4-1.0-1.5	03-283-76	Soil	3/27/2019		X	Х
ISM-06-1-1.5-2.0	03-283-78	Soil	3/27/2019		X	
ISM-06-2-1.5-2.0	03-283-79	Soil	3/27/2019		X	
ISM-06-3-1.5-2.0	03-283-80	Soil	3/27/2019		X	
ISM-06-4-1.5-2.0	03-283-81	Soil	3/27/2019		X	
ISM-12-1-0-0.5	03-283-138	Soil	3/28/2019		X	
ISM-12-2-0-0.5	03-283-139	Soil	3/28/2019		Х	
ISM-12-3-0-0.5	03-283-140	Soil	3/28/2019		Х	Х
ISM-12-4-0-0.5	03-283-141	Soil	3/28/2019		X	

Note:

TCLP - Toxicity Characteristic Leaching Procedure

### **ANALYTICAL DATA PACKAGE DOCUMENTATION**

The table below is the evaluation of the data package completeness.

	Rep	orted		mance ptable	Not
Items Reviewed	No	Yes	No	Yes	Required
Sample receipt condition		X		X	
2. Requested analyses and sample results		Х		Х	
Master tracking list		Х		Х	
4. Methods of analysis		Х		Х	
5. Reporting limits		Х		Х	
6. Sample collection date		Х		Х	
7. Laboratory sample received date		Х		Х	
Sample preservation verification (as applicable)		Х		Х	
Sample preparation/extraction/analysis dates		Х		Х	
10. Fully executed Chain-of-Custody (COC) form		Х		Х	
Narrative summary of Quality Assurance (QA) or sample problems provided		х		Х	
12. Data Package Completeness and Compliance		Х		Х	

### **INORGANIC ANALYSIS INTRODUCTION**

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D and TCLP Lead. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review* (EPA 540-R-2017-001, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington* (March 2019).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

### Concentration (C) Qualifiers

- U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
- J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

### Quantitation (Q) Qualifiers

- E The reported value is estimated due to the presence of interference.
- N Spiked sample recovery is not within the control limits.
- Duplicate analysis is not within the control limits.

### Validation Qualifiers

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- UB Analyte considered non-detect at the listed value due to associated blank contamination.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

### **METALS ANALYSES**

### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Soil	180 days from collection to analysis	Cool to < 6°C

All samples were analyzed within the specified holding time criteria.

### 2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the RL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

### 3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

### 3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD recovery control limits do not apply for MS performed on samples where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis performed for lead on sample ISM-12-4-0-0.5 exhibited recoveries and RPD within the control limits.

### 3.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for soil matrices.

MS/MSD analysis was performed in addition to the laboratory duplicate analysis on sample ISM-12-4-0-0.5. The MS/MSD recoveries and laboratory duplicate analysis exhibited acceptable RPDs.

### 4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

The LCS analysis was not performed and reported by the laboratory within this SDG.

### 5. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL for soil matrices is applied to the difference between the results.

A field duplicate sample was not collected within this SDG.

### 6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR METALS**

METALS: SW-846 6010D	Rep	orted		rmance ptable	Not
	No	Yes	No	Yes	Required
Inductively Coupled Plasma - Atomic Emission Spe	ctrometry (I	CP-AES)			
Tier II Validation					
Holding Times		Х		X	
Reporting limits (units)		Х		Х	
Blanks					
A. Method Blanks		Х		Х	
B. Equipment/Field Blanks		Х		Х	
Laboratory Control Sample (LCS) %R	Х				Х
Laboratory Control Sample Duplicate (LCSD) %R	X				Х
LCS/LCSD Precision (RPD)	X				Х
Matrix Spike (MS) %R		Х		Х	
Matrix Spike Duplicate (MSD) %R		Х		Х	
MS/MSD Precision (RPD)		Х		Х	
Laboratory Duplicate Sample (RPD)		Х		Х	
Field Duplicate Sample (RPD)	Х				Х
ICP Serial Dilution %D	Х				Х
Reporting Limit Verification		Х		Х	

Notes:

%R = Percent recovery

RPD = Relative percent difference

%D = Percent difference

Validation Performed By: Suresh PR

Signature:

Date: May 28, 2019

Peer Review: Dennis Dyke

Date: July 14, 2019

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### CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



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Revie	Received	Relin	Received	Relin	Received	Relin	-	0	0	8		0	0	F	0	0	-	Lab ID	Samp	Projec	Projec	Projec	Comp	
Reviewed/Date	sived	Relinquished	sived	Relinquished	eived	Relinquished		JSM-01-	JSM-01-	-10-MST	-10-MSE	JSM-01-	TSW-01-	TSM-01-	-10-MST	-10- WSI	15M-01-	Sa	Sampled by: Mack	Project Manager: Josh	ct Name: USCG	Project Number: B0003010.0006	Arcadis	14648 NE 95 Phone: (425)
					Morely Liscon	R. 30	Signature	4-8.5-10	3-05-1.0	2-05-1.0	1-0.5-1.0	A-05-10	X13-0-11-	-3-0-25	2-0-05	1-0-05	A-0-0.5	Sample Identification	Whery	Gravenmier	Project Name: USCG Burrows Island	3010.0006		ENVIPORMENTAL INC. 14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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Reviewed/Date					20	Arca	Company	1432	1431	1430	1429	1428	Sohi	Hay	1463	1402	3/25/14/1401	Time Sampled	(other)		Standard (7 Days)	2 Days	(Check One) Same Day	Turnaround Request (in working days)
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					Or	w	Date	X	×	X		×	*	*	X	*	*		JSEPA Lead (U			1311/60	10*)	Lat
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					1723	1727	Time	hold	Hold	Hold	Hold		Holis	Hold	-	Hold							100	Laboratory Number:
Chromatograms with final report ☐	,	O Ado	>	B Acc	on parent sample res	* Hold samples for thi	Comments/Special Instructions																	03-283
eport	2	O Added Slinky DIA	-	) Added 4/9/19 STA DE	on parent sample results (Lead Method 6010).	s analysis; running this	ructions																	83
		NA K	ATI	STA BE	ļ	* Hold samples for this analysis; running this compound is contingent						\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \						^/						
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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received WALL LESEN	Relinquished Que WAS	Signature	15m 02-4-0-05	19 Ism-02-3-0-0.5	18 tsm-02-2-0-05	17 ISM-02-1-0-05	16 ISM-02-A-88-0.5	15 ISM-01-4-6,0-1.x	14 Som-61-2-110-112	3 ISM-01-2-10-15	,	11 TERRAPHORE TSM-01-H-10-	Lab ID Sample Identification	Sampled by: Mark Wilery	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					OSE 3/08/19	L A. ccdis 3/28/19	Company Date	O X + X BASH A	1625 1 X D	1 × 1 × 0 0 m	1623 1 X Oa	3/25/19 1622 1 X	* 1529 1 (X O	1528 1 X D	VQ X 1 \ 4251	1526 1 1 X On	3/27/10	Sampled Sampled Matrix Numb	(other)	Method		☐ 3 Days	Same Day 1 Day 10*)	ys)
Chromatograms with final report					1735 on parent sample results (Lead Method 6010).	+ Hold samples for this analysis; running this compound is contingent	Time Comments/Special Instructions		> =	HO	a Hold	X	Hold	ROLIO	Usid	Nois	*	%	<i>'</i> WC		0.46			Laboratory Number: 03-283



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received WOUL UZELLO	Relinquished Ham W M	Signature	Da 22-5-0-62	D8 ISM-03-2-0-0.5	D) TSM-03-1-0-0.8	86 Jsm-03-A-0-05	5.0-0-0-0-05	84 Ism-02-8-0-0.5	03 JSM-02-3-05-1,0	2) Ism-01-2-05-1,0	al Ism-02-1-0.5-110	80 ISM-02-A-0.5-1.0	Lab ID Sample Identification	Mark Wilesy	Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental Inc.  1448 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					OSE 3/36/19 170	Arcadis 3/28/19 172	Company Date Time	3/25/10/301 × 1 X On How	310/1 1200 1 X 1 DO 4018	3/18/14 1289 1 X By Hol	3/15/14 1288 11×	X 1 9115 19/42/5	X 1 010 11218	off VO X / NOI NO	1043 1 X ON PLO	1042 1 1 X ON HSI	3/26/14 1041 Soil 1 X	Lead (	(other)	Method		3 Days	Same Day 1 Day	Turnaround Request (in working days) Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions				×	\(\chi_{\chi}\)	*	& I I				66	W		3/O-1			per: 03-283



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	Chromatograms with final report				Date	Reviewed/Date			Reviewed/Date	
									Received	
									Relinquished	18
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ind is contingent	* Hold samples for this analysis; running this compound is contingent	< 1723	3/28/		Sibi	Areac	1	Man WASh	Relinquished	
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ois								Josh Gravenmier	Project Manager: Josh C	Γ
7U/			Method 1		iys)	Standard (7 Days)	S	USCG Burrows Island	Project Name: USCG	
2			311/60		☐ 3 Days	2 Days		010.0006	Project Number: B0003010.0006	
			10*)		□ 1 Day	(Check One) Same Day			Arcadis	
	03-283	Laboratory Number:	Laborato		equest days)	(in working days)		ENVIPORMENTAL INC.  14648 NE 95th Street • Redmond, WA 98052  Phone: (425) 883-3881 • www.onsite-env.com	14648 NE 95th Phone: (425) 88	



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Environmental inc.  14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com  Company:	Turnaround Request (in working days) (Check One)	Laboratory Number:	r: 03-283
Project Number: B0003010.0006	Same Day 1 Day	311/6010	
Project Name: USCG Burrows Island	rd (7 Days)	6010)	
Project Manager: Josh Gravenmier		ntainer Method SEPA M	
Sampled by:	(other)	SEPA N	
Lab ID Sample Identification	Date Time Sampled Sampled Matrix	Lead (U	
10 tsm-04-4-0-05	Apr 1824	1 × On Hark	
41 ISM-04-A-018-110	1 8141 41418	~ *	
19 Ism-04-1-0/8-110	11719	-X DO HOLD	0
43 Ism-04-2-05-10	1720	1 x On Hold	
HY ISM-04-3-0,51.0	1741	1 x On Wolf	0
45 Im-64-4-05-110	V (172)	-	R
150-0-4-0-015	5/28/19 1104		4M/W
F80-05-1-05-08	1407	on Hotel	
Ism 05-2-0-0x	804	1	
45M-05-3-0-05	W Hoot W	**	
Signature	Company	Date Time	Comments/Special Instructions
Relinquished When W	Accedis	13/82	* Hold samples for this analysis; running this
Received John Little	380	3/36/19 1733	on parent sample results (Lead Method 6010).
Relinquished			
Received			
Relinquished			
Received			
Reviewed/Date	Reviewed/Date		Chromatograms with final report



Page 6 of 17

Chromotograms with final report			Reviewed/Date	Reviewed/Date
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				Relinquished
on parent sample results (Lead Method 6010).	3/08/19 1723	(M	0SE	Received Wille Likely
* Hold samples for this analysis; running this compound is contingent	3/28/19 1723		Arcedis	Relinquished Lyper W Coll
Comments/Special Instructions	Date Time		Company	Signature
	an toL)	~ ×	03/28/19 12:32	31 ISM-05-4-0.5-1.0 80
	07 HOLD	X	04%/19 12:31	SB ISM-05-3-0.5-1.0 0
	ON HOLD	×	03/28/19 12:30	ISM-05-2-0.51.0
	DNO HOLD	×	03/28/17 12:29	10 HSM-05-1-0.5-10
×		×	03/18/19 12:28	SISM -05- A-0.5-1.0 2
	Chap No	×	03/28/19 11:10	H ISM-05-4-0-0.5
	ON HOLD	×	03/28/17 11:09	55 ISM -05-3-0-0.5
	A19# A	×	03/28/19 11:08	ISM-05-2-0-0.5
	A FOLA	_ ><	29/28/19 11:07	TSM-05-1-0-0.5
		- ×	03/28/19 11:06 80:1	075M-05-A-0-0.5
0/2	TCLP	Numb	Date Time Sampled Sampled Matrix	Lab ID Sample Identification S
	ead (U	1	(other)	Mark Wiledy
	SEPA M	ontaine Method		Project Manager: Josh Gravenmier
Hura	Method 1		Standard (7 Days)	Project Name: USCG Burrows Island
	311/60			Project Number: B0003010.0006
	10*)		(Check One)	Arcadis
03-283	Laboratory Number:	2	Turnaround Request (in working days)	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
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	Chromatograms with final report			Reviewed/Date	Reviewed/Date
					Received
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					Received
					Relinquished
0).	on parent sample results (Lead Method 6010).	3/38/19 17/33		320	Received Wille LEW
s compound is contingent	* Hold samples for this analysis; running this compound is contingent	3/28/19 1723		Arcadis	Relinquished Machine Company
THE PARTY OF THE	Comments/Special Instructions	Date Time		Company	Signature
	*	Or Hold	_	1 1148 1	(A) ISM-04-2-0.5/1,0
		02 #010		Ehll	68 ISM-00-1-0.5-1.0
×		8		03/26/19 1/460	6) ISM-06-A- 0.5-1.0
×		8		03/27/19 1840	(06 ISM-06-C-0-0.5
×		8		03/27/19 1805	(2) ISM-010-B-0-0.5
		DN HOLD		1141	64 ISM-06- 4-0-0.5
		DN HOUD		17/6	65 ISM-06-3-0-0.5
		GTOH NO		5141	00 TSM-01-2-0-0.5
		QTOH NO		1 1/1/1	15M-06-1-0-0.5
X		8	X	13/2/19 651-363 Soil	60 ISM-00-A-0-0.5
0/0		TCLPL		Date Time Sampled Sampled Matrix	Lab ID Sample Identification
m		ead (U		(other)	pampied by:
ois		SEPA M	ontaine Method		Josh Gravenmier
tore		Method 1		Standard (7 Days)	USCG Burrows Island
2		311/60			Project Number: B0003010,0006
		10*)		(Check One)	Company: Arcadis
	03-283	Laboratory Number:	F	Turnaround Request (in working days)	ENVIRONMENTAL INC.  14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished		19 ISM-06	16 ISM-06	77 ISM -010-	16 15M-06	15 ISM-06-	74 ISM-06	13 ISM-016-	72 ISM-010-A	71 ISM-06-	70 ISM-0	Lab ID	Sampled by:	Project Manager: JOS	Project Name: USC	Project Number: BOC	Arcadis	Phone:
				•	The season	Porch	Signature	-2-1.5-	6-1-1.5-	6-A-15-	0-4-1.0-	6-3-1.0-	-2-1.0	8-1-1.0-1.5	10-A-1.0-	6-4-0.5-	ISM-010-3-0.5-1	Sample Identification		Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	S	Phone: (425) 883-3881 • www.onsite-env.com
					Treew	Jaco J		20	2.0	2.0	1.5	1.5	1.5	1.5	1.5	1.0	1.0			ier	Island	0,		-env.com
Reviewed/Date						Arco	Company	1154	1153	DEIL	8111	117	111100	1115	03/27/19/1056	03/10/19 1150	13/26/19 1149	Date Time Sampled Sampled	(0)	]	Standard (7 Days)	2 Days	Same Day	
d/Date					R	0,5		4	W	6			0		Ь	9	9 Soil 1	e led Matrix Number	(other)	entaine		☐ 3 Days	□ 1 Day	
					CH			<b>&amp;</b>	8		8	8	8	8			×	Lead (L		1000				1
					1985	182/2	Date			(X)		-	0	p	8	C	0	TCLP L	ead (U	SEPA N	lethod 1	1311/60	10*)	1
					2	15/	Time	3	010		*	A	2	7		2	2							
					783	723	ne	HOLL.	For D		100	400	700	4000		40LD	\$0LD							
Chromator					on pare	* Hold s	Commen										V							
Chromatograms with final report					nt sample	amples f	Comments/Special Instructions																	
final repor					eresuits	or this ar	Instructi																	
					(Lead Me	* Hold samples for this analysis; running this compound is contingent	ons																	
					mod bour	nning thi																		
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						ntingent		R	2	>	8	X	R	R	7			%	m	RIC	405	0		
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Chromatograms with final report	0		Reviewed/Date		Reviewed/Date
					Received
					Relinquished
					Received
					Relinquished
on parent sample results (Lead Method 6010).	38/19 1783		OSE	(	Received Mary March
* Hold samples for this analysis; running this compound is contingent	5/28/19 1723		Arcadis		Relinquished Chan W Chan
Comments/Special Instructions	Date Time		Company		Signature
	CJOH NO	7 ×	1 6481	_	8/ISM-07-1-0.5-1.0
		H X	1348		86 ISM-07-A-0.5-1.0
	CHAPP NO	X	1241		85 ISM-07-3-0-0.5
	ON HOLD	7	1240		84 ISM-07-2-0-0.5
	QTOH NO	ドス	(239	_	63 ISM-07-1-0-0.5
	$\otimes$	14	1238	03/26/19	60 ISM-07-A-0-0.5
					88-010-A-88
				4	ISM-06-A-2.07.522
0	00 1 00 D	100	1156	03/27/19	B) ISM-010-4-1.5-2.0
R	0-101D	14	11155 Soil	1/17/20	BO ISM-06-3-1.5-2.0
6/6	TCLPL	Per Carlo	Time Sampled Matrix	Date Sampled	Lab ID Sample Identification
	ead (U	Mary Sales	(other)	[	sampled by:
	SEPA N	ontaine Method			Josh Gravenmier
-()\( \( \) \( \)	Method 1		Standard (7 Days)	္အ	Project Name: USCG Burrows Island
	311/60				Project Number: B0003010.0006
	10*)		(Check One) Same Day		Company: Arcadis
03-283	Laboratory Number:	-	Turnaround Request (in working days)	=	14848 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received Note Little	Relinquished Chymld Chy	Signature	9) ISM-08-A-0.5-1,0	96 ISM-08-C-0-0.5	15 ISM-08-B-0-0.5	94 ISM-08-4-0-0.5	93 ISM 08-3-0-0.5	97 ISM-08-2-0-0.5	91 ISM-08-1-0-0.5	90 ISM-08-A-0-0.5	B9 ISM-07-3-0.5-1.0	88 75M-07-2-0.5-1.0	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental inc.  14648 NE Sth Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsid-env.com
Reviewed/Date					OSE 336/1 173	Arcadis 3/28/19 1723	Company Date Time	3/24/19/1901 1 12x	03/17/19 1502 2XX	12 X X	1 1619 1X ON HOL	1618 1× 0N FOLD	1617 1X ON HOLD	11016 7 × 02 HOL	1602 1XX	03/pully 1351 1 2 X ON HOL	09/2/19 1350 Soil 1 X ON HOL	Lead (L	JSEPA			3 Days	Same Day 1 Day	Turnaround Request (in working days) Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions		*	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \					×			9/0	Ma	) isk	ne			er: 03-283



Check One   Chec	Reviewed/Date	Received	Relinquished	Received	Relinquished	Received FURY TOKEN	Relinquished Charles	Signature	107 ISM-09-A-0-0.5 03/	106 ISM-08-4-1.0-1.5	105 ISM-08-3 -1.0-1.5	164 ISM-08-2-10-15	105 TSM-08-1-1:0-1.5	100 ISM-08-A-1,0-1.5 631	101 ISM-08-4-0.5-1.0	100 ISM-08-3-0.5-1.0	99 ISM-08-2-0.5-1.0	18 ISM-08-1-0.5-1.0 B/	Lab ID Sample Identification San	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
X X X X X X X X X X Lead (USEPA Method 6010)  TCLP Lead (USEPA Method 1311/6010°)  TCLP Lead (USEPA Method 1311/6010°)  TOLY Lead (USEPA Method 1311/6010°)	Reviewed/Date					CHI	Arcadis	Company	03/28/19 0921		1048						1734			(other)		Standard (7 Days)		Che)	(in working days)
						138117	128/19 172		×	Ne X	2	X	×	×	+ No	X ON HO	×	NO HOL	Lead (l	JSEPA	Method	6010)	1311/60	10*)	Laboratory Number



Reviewed/Date	Received	Relinquished	Received	Relinquished	Received Roul Check	Relinquished Myn Wahred	Signature	17 ISM-10-A-0.0-0.5	116 ISM-09-4-0.5-1.0	115 ISM-09-3-0.5-1.0	114 ISM-09-2-0.5-1,0	113 ISM-09-1-0.5-1.0	11d ISM-09-A-0.5-1.0	11 ISM-09-4-0-05	110 TSM-09-3-0-0.5	109 ISM-09-2-0-0.5	108 ISM-09-1-0-0.5	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	Environmental Inc.  14648 NE 95th Street • Redmond, WA 99052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					SA.	1 Arcadis	Company	0/24/10/13/1/2	0948	1440	09410	2460	2 4490	0925 1	0924	0923	03/28/19 0972 Soil	Date Time Sampled Sampled Matrix	(other)	]	Standard (7 Days)		Same Day 1 Day	Turnaround Request (in working days)
				, ,	3/38/11/783	3/28/19 1723	Date Time	*	X ON HOL	10th No X	TOH NO X	TX ON HOL	X	TX DN HOW	1 X DN HOLL	1× oz solo	1 X ON HOLS	Lead (l	JSEPA Lead (U	Method	The same	1311/60	10*)	Laboratory Number:
Chromatograms with final report					on parent sample results (Lead Method 6010).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions	*					*					0/6	on a	oist	10°C			03-283



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Chromatograms with final report	Chroma		Reviewed/Date	Reviewed/Date
				Received
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				Received
				Relinquished
arent sample results (Lead Method 6010).	0 EPLI 11/9	3/26	0%	Received PARU Seen
* Hold samples for this analysis; running this compound is contingent	19 1723	3/28	Arcadis	Relinquished Association
Comments/Special Instructions	Time Comm	Date	2 Company	Signature
×		8	1 8460 1	137 ±5M-11-A-0-0.5
	OTAH NO		1181	196ISM-10-4-0,5-1,0
	01V 40LD		0181	135 ISM -10-3-0.5-1.0
	6N HOLD		1809	124 ISM-10-2-0.5-1.0
	QN #PR D		8081	135 ISM-10-1-0.5-1.0
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			408/	123 ISM-10-A-0.5-1.0
	ON HOLD		11017	BI ISM-10-4-0-0.5
	ON HOLD		1616	30 ISM-10-3-0-0.5
	ON HOLLD		16/07	119 ISM-10-2-0-0.5
	CL19H NO	×	03/27/19 16/14 Soil 1	JSM-10-1-0-0.5
6/6		Lead (L	Date Time Sampled Sampled Sampled Matrix	Lab ID Sample Identification
m		JSEPA	(other)	Sampled by:
oist		Method	ontaine	Josh Gravenmier
Ure		1	rd (7 Days)	Project Name: USCG Burrows Island
		311/60		Project Number: B0003010.0006
		10*)	(Check One)	Company: Arcadis
03-283	Laboratory Number:	Labora	Turnaround Request (in working days)	ENVIPORMENTAL INC.  1448 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



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Same Day   Check One)   Same Day   2 Days   Standard (7 Days   Stand	Same Day   1 Day   1 Day   1 Day   2 Days   3 Days   3 Days   3 Days   3 Days   1 Day   1 Days   1 Days	Same Day   1 Day   1 Day   1 Day   2 Days   3	Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished	Si	136 JSM-11-	135 ISM-11-	134 TSM-11-	11-WST 583	130 ISM-11-	ISM-11-	130 ISM - 11 -	139 ISM-11-2	138 ISM-11-1	THERET	Lab ID Samp	Sampled by:	Project Manager: Josh G	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	
(Check One) Same Day 2 Days 2 Days Standard (7 Days Standard (7 Days (other) 1/9 09 49 1/9 0957 1/9 1808 1/8 1809 1/8 1809 1/8 1809 1/8 172 Company Company	Same Day	Company						RIPER LYBBU	Jam John	gnature	1-50	-0.57	2-0.5-1.0	1-0.5-1.0	1-0.5-1	0-	0	2.0-0.5	0-0	Jest Jest	le Identification		ravenmier	urrows Island	10.0006		The state of the s
	Number of Containers  Lead (USEPA Method 6010)  TCLP Lead (USEPA Method 1311/6010*)  TOLP Lead (USEPA Method 1311/6010*)	Number of Containers  Lead (USEPA Method 6010)  TCLP Lead (USEPA Method 1311/6010*)  TOLP Lead (USEPA Method 1311/6010*)  TOLP Lead (USEPA Method 1311/6010*)	Reviewed/Date				(	130	be Arcades	Company	1 1812	8:-	0181	1809	8081 19/2/2	1 0952	095]	0950		63/	Time Sampled	(other)	]	Standard (7 Days)		K One)	(Chark One)



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Chromatograms with final report ☐		Reviewed/Date	Reviewed/Date
			Received
2			Relinquished
S) vocassing.			Received
*		(	Relinquished
	38K N 1733	320	Received WARM CHEOU
* Hold samples for this analysis; running this compound is contingent	3/28/15 (723	Arcedis	Relinquished Wan Man
Comments/Special Instructions	Date Time	Company	Signature
		1 2421 19/4/80	45 SB-06-22-3,0-3.5
X		1240	48 SB-06-10-2.0-2.5
\(\infty\)	8 34 4	1308	H ISM-12-4-0-0.5
8	8 00 JA	1308	40 JSM-12-3-0-0.5
8	8 ON 100	1307	39 ISM-12-2-0-05
8	S ON HOL	03/28/19 13010	36 ISM-12-1-0-0.5
~	1 × 8	03/28/19 1305 Soil	37 ISM-12-A-0-0.5
6/2	Lead (L	Date Time Sampled Sampled Matrix	Lab ID Sample Identification
> m(	er of Co JSEPA Lead (U	(other)	Sampled by:
DISI	Method		Project Manager: Josh Gravenmier
57 OF		Standard (7 Days)	Project Name: USCG Burrows Island
	311/60	П	Project Number: B0003010.0006
	10*)	(Check One)	Arcadis
er: 03-283	Laboratory Number:	Turnaround Request (in working days)	Environmental inc.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received MARM UT	Relinquished & Symm (	Signature				147 EB-032519	146 EB-032419	45 EB-03Z719	144 83-032819	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Company: Arcadis	ENVIRONMENTAL INC.  14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					cow OSE	1958 Arcadis	Company				3/25/M (722 Y	3/26/19/1824	2/27/1/2/2	3/28/M 1357 Wasker	Date Time Sampled Sampled Matrix	(other)	]	Standard (7 Days)	☐ 2 Days	Same Day 1 Day	Turr (in
				-	368 19 1733	3/28/15 1723	Date Time					×	~ ×	×	Lead (I	er of Co USEPA Lead (U	Method		1311/60	010")	Laboratory Number:
Chromatograms with final report				whiter Samples preserved with thing-	on parent sample results (Lead Method 60 10).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions								0,4	5 N	361	Slo	<del>le</del>		r: 03-283



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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received JARLY SPOW	Relinquished Ships USS	Signature	#5M B-4-0-0.8 508	156ISM-13-3-0-0.5	15915M-13-2-0-0,5	154 ISM-13-1-0-0.5	153 ISM-13-A-0-0.5	15d ISM-12-4-0.5-1.0	S TSM-12-3-0.5-1.0	156 ISM-12-2-0.5-1.0	49 ISM-12-1-0.5-1.0	148 ISM-12-A-0.5-1.0 Bhs/19	Lab ID Sample Identification Sampled	Sampled by:	Project Manager: Josh Gravenmier	SCG Burrows Island	B0003010.0006		Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					120	Arcadis	Company	134	EHS!	1346	1345	1344	1330	1329	1328	1327	19 1326 Soil	ed Sampled Matrix	(other)		Standard (7 Days)		(Check One) Same Day 1 Day	(Charles Care)
					388191733	3/28/19 1723	Date Time	(130 1 NO 1	CTOH NO	0704 No	en Hald		CL70H NB	an FRD	ON HOLD	ONHOLD	X	Lead (I	JSEPA			1311/60	110*)	
Chromatograms with final report					on parent sample results (Lead Method ov 10).	* Hold samples for this analysis; running this compound is contingent	Comments/Special Instructions					×					~	0/0	<i>M</i>	nisi	AUra	,		

Date of Report: May 24, 2019 Samples Submitted: March 28, 2019 Laboratory Reference: 1903-283B

Project: B0003010.0006

### TOTAL LEAD EPA 6010D

Matrix: Soil

Units: mg/Kg (ppm)

Onits. Hig/Kg (ppin	'/			Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-04-1-0-0.5					
Laboratory ID:	03-283-37					
Lead	130	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-04-2-0-0.5					
Laboratory ID:	03-283-38					
Lead	160	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-04-3-0-0.5					
Laboratory ID:	03-283-39					
Lead	160	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-04-4-0-0.5					
Laboratory ID:	03-283-40					
Lead	280	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-1-1.0-1.5					
Laboratory ID:	03-283-73					
Lead	150	5.4	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-2-1.0-1.5					
Laboratory ID:	03-283-74					
Lead	100	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-3-1.0-1.5					
Laboratory ID:	03-283-75					
Lead	690	5.2	EPA 6010D	5-21-19	5-21-19	
Olivert ID:	IOM 00 4 4 0 4 5					
Client ID:	ISM-06-4-1.0-1.5					
Laboratory ID:	03-283-76		EDA 00465	5.04.40	5.04.40	
Lead	1000	5.1	EPA 6010D	5-21-19	5-21-19	

Date of Report: May 24, 2019 Samples Submitted: March 28, 2019 Laboratory Reference: 1903-283B

Project: B0003010.0006

### TOTAL LEAD EPA 6010D

Matrix: Soil

Units: mg/Kg (ppm)

99 (1-1)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-06-1-1.5-2.0					
Laboratory ID:	03-283-78					
Lead	11	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-2-1.5-2.0					
Laboratory ID:	03-283-79					
Lead	11	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-3-1.5-2.0					
Laboratory ID:	03-283-80					
Lead	180	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-06-4-1.5-2.0					
Laboratory ID:	03-283-81					
Lead	630	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-12-1-0-0.5					
Laboratory ID:	03-283-138					
Lead	280	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-12-2-0-0.5					
Laboratory ID:	03-283-139		ED 1 22/25	= 0.4	= 04 +5	
Lead	330	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	ISM-12-3-0-0.5					
Laboratory ID:	03-283-140					
Lead	640	5.2	EPA 6010D	5-21-19	5-21-19	
Leau	040	0.2	EFA 0010D	0-21-18	0-21-18	
Client ID:	ISM-12-4-0-0.5					
Laboratory ID:	03-283-141					
Lead	170	5.1	EPA 6010D	5-21-19	5-21-19	

Date of Report: June 7, 2019 Samples Submitted: March 28, 2019 Laboratory Reference: 1903-283C

Project: B0003010.0006

### TCLP LEAD EPA 1311/6010D

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-06-4-1.0-1.5					
Laboratory ID:	03-283-76					
Lead	0.71	0.20	EPA 6010D	5-31-19	5-31-19	
Client ID:	ISM-12-3-0-0.5					
Laboratory ID:	03-283-140					
Lead	ND	0.20	EPA 6010D	5-31-19	5-31-19	



### **United States Coast Guard**

### **DATA REVIEW**

### Burrows Island Light Station Skagit County, Washington

Metal (Lead) Analysis

SDGs # 1904-015B and 1904-015C

Analyses Performed By: Onsite Environmental Inc. Redmond, Washington

Report #: 32919R Review Level: Tier II Project: B0003010.0006

### **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # 1904-015B and 1904-015C for samples collected in association with the United States Coast Guard, Burrows Island Light Station, Skagit County, Washington. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

			Sample		Ana	llysis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	Lead	TCLP Lead
ISM-14-1-0-0.5	04-015-08	Soil	3/29/2019		Х	
ISM-14-2-0-0.5	04-015-09	Soil	3/29/2019		X	Х
ISM-15-1-0.5-1.0	04-015-20	Soil	3/29/2019		X	
ISM-15-2-0.5-1.0	04-015-21	Soil	3/29/2019		X	
ISM-15-3-0.5-1.0	04-015-22	Soil	3/29/2019		X	
ISM-15-4-0.5-1.0	04-015-23	Soil	3/29/2019		X	
ISM-18-1-0-0.5	04-015-46	Soil	3/30/2019		X	Х
ISM-18-2-0-0.5	04-015-47	Soil	3/30/2019		X	
ISM-18-3-0-0.5	04-015-48	Soil	3/30/2019		X	
ISM-18-4-0-0.5	04-015-49	Soil	3/30/2019		X	

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### **ANALYTICAL DATA PACKAGE DOCUMENTATION**

The table below is the evaluation of the data package completeness.

	Rep	orted		mance ptable	Not
Items Reviewed	No	Yes	No	Yes	Required
Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
Master tracking list		Х		X	
4. Methods of analysis		Х		Х	
5. Reporting limits		Х		Х	
6. Sample collection date		Х		Х	
7. Laboratory sample received date		Х		Х	
8. Sample preservation verification (as applicable)		Х		X	
Sample preparation/extraction/analysis dates		Х		X	
10. Fully executed Chain-of-Custody (COC) form		Х		X	
Narrative summary of Quality Assurance (QA) or sample problems provided		Х		Х	
12. Data Package Completeness and Compliance		Х		Х	

### **INORGANIC ANALYSIS INTRODUCTION**

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D and TCLP Lead. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review* (EPA 540-R-2017-001, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington* (March 2019).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

### Concentration (C) Qualifiers

- U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
- J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

### Quantitation (Q) Qualifiers

- E The reported value is estimated due to the presence of interference.
- N Spiked sample recovery is not within the control limits.
- Duplicate analysis is not within the control limits.

### Validation Qualifiers

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- UB Analyte considered non-detect at the listed value due to associated blank contamination.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

### **METALS ANALYSES**

### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Soil	180 days from collection to analysis	Cool to < 6°C

All samples were analyzed within the specified holding time criteria.

### 2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the RL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

### 3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

### 3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD recovery control limits do not apply for MS performed on samples where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis performed for lead on sample ISM-18-2-0-0.5 exhibited recoveries and RPD within the control limits.

### 3.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for soil matrices.

MS/MSD analysis was performed in addition to the laboratory duplicate analysis on sample ISM-18-2-0-0.5. The MS/MSD recoveries and laboratory duplicate analysis exhibited acceptable RPDs.

### 4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

The LCS analysis was not performed and reported by the laboratory within this SDG.

### 5. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL for soil matrices is applied to the difference between the results.

A field duplicate sample was not collected within this SDG.

### 6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR METALS**

METALS: SW-846 6010D	Rep	orted		rmance ptable	Not Required
	No	Yes	No	Yes	Required
Inductively Coupled Plasma - Atomic Emission Spe	ctrometry (I	CP-AES)			
Tier II Validation					
Holding Times		Х		X	
Reporting limits (units)		Х		Х	
Blanks					
A. Method Blanks		Х		X	
B. Equipment/Field Blanks	Х				Х
Laboratory Control Sample (LCS) %R	Х				Х
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R		Х		Х	
Matrix Spike Duplicate (MSD) %R		Х		Х	
MS/MSD Precision (RPD)		Х		Х	
Laboratory Duplicate Sample (RPD)		Х		Х	
Field Duplicate Sample (RPD)	X				Х
ICP Serial Dilution %D	Х				Х
Reporting Limit Verification		Х		Х	

Notes:

%R = Percent recovery

RPD = Relative percent difference

%D = Percent difference

Validation Performed By: Suresh PR

Signature: Rn Jm

Date: May 31, 2019

Peer Review: Dennis Dyke

Date: July 14, 2019

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### CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



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Number of Containers  Lead (USEPA Method 6010)  GRO (NWTPH-Gx)  DRO/HO/Mineral Oil (NWTPH-Dx)  PCBs (USEPA Method 8020)  Benzane (USEPA Method 8270 SIM)*  EPH (NWTPH-EPH)*  VPH (NWTPH-PVPH)*  RCRA 8 Method 8280)  PCBs (USEPA Method 6010)  PCBs (USEPA M								00	1	-			_	7	_			3/28/19	Date Sampled		]	∭ Star	☐ 2 D	San	(11	Tur
Number of Containers  Lead (USEPA Method 8010)  GRO (NWTPH-Gx)  DROI-HO/Alineral Oil (NWTPH-Dx)  PCBs (USEPA Method 8082)  Benzene (USEPA Method 8082)  FPH (NWTPH-EPH)*  **Hold for these samples results. Benzene, cPAHs, EPH, and VPH are confingent on the results of the GRODDROJHO results.  **TIME ON THE PLANT OF THE	Reviewed/Date				(	0.2	Arca	mpany	}	0952	1530	0950	2511	1115	1520	0730	750	800	Time Sampled	(other)		ndard (7 Days)		K One)	working days	Turnaround Request
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Comments/Special Instructions  Comments/Special Instructions  PCBs (USEPA Method 8092)  BTEX (USEPA Method 8092)  BTEX (USEPA Method 8260)  TCLP Lead  Chromatograms with final report  Chromatograms					3	3	50			1	1				0	9	7		cPAHs	(USEP	A Meth	od 8270	SIM)*			
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Moistvee  Market Contingent on ane, cPAHs, EPH, and VPH are the GRO/DRO/HO results.  MILIBIA STA BE  MILIBIA S	ograms		D	A		samp gent o	for the	nts/Sp	7										PCBs	(USEPA	Metho	d 8082)			9	7
Moistvee  Market Contingent on ane, cPAHs, EPH, and VPH are the GRO/DRO/HO results.  MILIBIA STA BE  MILIBIA S	with fin	R	Ad	2		le resun the r	se sa	ecial In											BTEX	(USEPA	Metho	d 8260)			(	5
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Level IV 

Electronic Data Deliverables (EDDs)



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					4/2/05/1	4/2/19	Date T	€ 0	X	7	X	7	01	X	X	X	_	GRO (I	NWTPH	l-Gx)	NWTPH	-Dx)		
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Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished All Lith	Signature	30 ISM-16-1-0-0,5	29 ISM-16-A-0-0.5	57-07-12-51-WSI 8C	3) ISM -15-3-1.0-1.5	57-01- E-51- WSI 96	28 ISM -12-1-1.0-1.5	24 ISM -15-4-1.0-1.5	23 TSM-15-4-0.5-1.0	27 TSM-15-3-0.5-1.0	J ISM -15-2-0.5-1.0	Lab ID Sample Identification	Sampled by:	Project Manager: Josh Gravenmier	Project Name: USCG Burrows Island	Project Number: B0003010.0006	Arcadis	14648 NE 95th Street • Redmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com
Reviewed/Date					380	Aveadis	Company	1 1039	8501	1529	1328	7527	1326	3/30/19 1325	1 1357	1356	3/24/9 1355 40:1	Date Time Sampled Sampled Matrix	(other)		X Standard (7 Days)		Same Day 1 Day	Turnaround Request (In working days)
					412/18/1/50	1/2/19 1150	Date Time	X On Hol	×	X en Role	X On Hold	X SA Hold	X On Hold	×	8	8	1 16 8 B	Lead (I GRO (I DRO/H PCBs (I Benze cPAHs	USEPA ne (USI	Method I-Gx) ral Oil (I Method 8 EPA Me	NWTPH 3082) od 8270	60)*		Laboratory Number:
Chromatograms with final report					parent sample results. Denzene, CFAns, EFN, and VFN are contingent on the results of the GRO/DRO/HO results.	* Hold for these samples; running these compounds is contingent on	Comments/Special Instructions		×	***				X	(R)	8	×	RCRA PCBs	(USEP/	A Metho	PA Method 8082) ad 8260)		0)	r: 04-015

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Electronic Data Deliverables (EDDs)



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ENVIRONMENTAL INC.  14648 NE 95th Street - Redmond, WA 98052 Phone: (425) R83-3881 - www.onside-environ	Turnaround Request (in working days)	Laboratory Number:	04-015
Company: Arcadis	k One)		
Project Number: B0003010.0006	2 Days 3 Days	60)*	pe
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Project Manager: Josh Gravenmier		Method Gx) al Oil (N Method 86	(USEP Method Method
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35 ISM-17-A-0-0.5	12/9	X	
36 ISM-17-1-0-0.5	1220	X ON To	
37 ISM-17-2-0-0.5	1661	X Du Ho	
38 ISM-17-3-0-05	アナナ	X on the	
9:0-0- 4-21- NSI 62	1223	X on Hel	A B
40 ISM-17-A-0.5-1.0	1 1350	+	
Signature	Company	Date Time	Comments/Special Instructions
Relinquished May Nich	Arcadis	4/2/19 1150	* Hold for these samples; running these compounds is contingent on
Received	380	OS11 51/7/H	parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.
Relinquished	9		
Received			
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Data Package: Level III 

Level IV 

Electronic Data Deliverables (EDDs)



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14848 NE 69376 Strast - Redwoord WA 98052   (In working days)			×	1	1553	-18-A-0-0i	5
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Arcadis  Arc		On Hold	×	1	1353	ISM-17-3-0.5-1	23
any: Arcadis  Brownoric(425) 883-3881 * www.orsite-env.com  Arcadis  Arcadis  Brownoric(425) 883-3881 * www.orsite-env.com  Arcadis  Arcadis  Brownoric(425) 883-3881 * www.orsite-env.com  Arcadis  Arcadis  Arcadis  Arcadis  Brownoric(425) 883-3881 * www.orsite-env.com  Arcadis  Arc		On Held	×	) /	1352	1-5,0-6-11-Not	17
Arcadis  Arc		7	×	50:1	30/19	754-17-1-05-	7
(Check One)    Same Day	RCRA	PCBs ( Benze cPAHs EPH (	Lead (I				Lab II
Sland    Same Day   1 Day   1 Day   2 Days   3 Days   3 Days   3 Days   1 Day   1 Day	8 Metal	USEPA ne (USI (USEP	JSEPA	er of Co		oled by:	Sam
Same Day	s (USE	Method 8 EPA Me A Meth	Method I-Gx)	ontaine		Josh	Proje
(Check One)    Same Day	od 8082)	3082) ethod 82 od 8270	6010)		Standard (7 Days)	USCG Burrows Island	Proje
Same Day  Same Day    Same Day   1 Day		60)*	I Dw)	3 Days	2 Days	B0003010.0006	Proje
(in working days) Laboratory Number: U4 - U	0)			☐ 1 Day	Sam	Arcadis	Com
	04-010	atory Number:	Labor	/s)	(in working da)	14648 NE 95th Street • Hedmond, WA 98052 Phone: (425) 883-3881 • www.onsite-env.com	

Data Package: Level III 

Level IV 

Electronic Data Deliverables (EDDs) 

.

Date of Report: Mat 28, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015B

Project: B0003010.0006

### TOTAL LEAD EPA 6010D

Matrix: Soil

Units: mg/Kg (ppm)

3 3 (T)				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-14-1-0-0.5					
Laboratory ID:	04-015-08					
Lead	300	5.3	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-14-2-0-0.5					
Laboratory ID:	04-015-09					
Lead	420	5.3	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-15-1-0.5-1.0					
Laboratory ID:	04-015-20					
Lead	24	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-15-2-0.5-1.0					
Laboratory ID:	04-015-21					
Lead	55	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-15-3-0.5-1.0					
Laboratory ID:	04-015-22					
Lead	6600	26	EPA 6010D	5-23-19	5-24-19	
Client ID:	ISM-15-4-0.5-1.0					
Laboratory ID:	04-015-23		ED4 0040D		= 00 t0	
Lead	47	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-18-1-0-0.5					
Laboratory ID:	04-015-46					
Lead	460	5.1	EPA 6010D	5-23-19	5-23-19	
Leau	400	J. I	EFA 0010D	0-23-18	0-23-18	
Client ID:	ISM-18-2-0-0.5					
Laboratory ID:	04-015-47					
Lead	83	5.2	EPA 6010D	5-23-19	5-23-19	

Date of Report: Mat 28, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015B

Project: B0003010.0006

### TOTAL LEAD EPA 6010D

Matrix: Soil

Units: mg/Kg (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-18-3-0-0.5					
Laboratory ID:	04-015-48					
Lead	34	5.1	EPA 6010D	5-23-19	5-23-19	
Client ID:	ISM-18-4-0-0.5					
Laboratory ID:	04-015-49					
Lead	220	5.1	FPA 6010D	5-23-19	5-23-19	

Date of Report: June 7, 2019 Samples Submitted: April 2, 2019 Laboratory Reference: 1904-015C

Project: B0003010.0006

### TCLP LEAD EPA 1311/6010D

Matrix: TCLP Extract Units: mg/L (ppm)

				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	ISM-14-2-0-0.5					
Laboratory ID:	04-015-09					
Lead	ND	0.20	EPA 6010D	5-31-19	5-31-19	
Client ID:	ISM-18-1-0-0.5					
Laboratory ID:	04-015-46					
Lead	ND	0.20	EPA 6010D	5-31-19	5-31-19	



### **United States Coast Guard**

### **DATA REVIEW**

### Burrows Island Light Station Skagit County, Washington

Metal (Lead) Analysis

SDGs # 1906-059

Analyses Performed By: Onsite Environmental Inc. Redmond, Washington

Report #: 33650R Review Level: Tier II Project: 30008877

### **SUMMARY**

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 1906-059 for samples collected in association with the United States Coast Guard, Burrows Island Light Station, Skagit County, Washington. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample		alysis
Sample ID	Lab ID	Watrix	Collection Date	Parent Sample	Lead	% Moisture
SED-1	06-059-01	Sediment	04/01/2019		X	Х
SED-2	06-059-02	Sediment	04/01/2019		Х	X

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### **ANALYTICAL DATA PACKAGE DOCUMENTATION**

The table below is the evaluation of the data package completeness.

	Rep	orted		mance ptable	Not
Items Reviewed	No	Yes	No	Yes	Required
Sample receipt condition		X		X	
2. Requested analyses and sample results		Х		X	
Master tracking list		Х		X	
4. Methods of analysis		Х		Х	
5. Reporting limits		Х		X	
6. Sample collection date		Х		Х	
7. Laboratory sample received date		Х		Х	
8. Sample preservation verification (as applicable)		Х		Х	
Sample preparation/extraction/analysis dates		Х		Х	
10. Fully executed Chain-of-Custody (COC) form		Х		Х	
Narrative summary of Quality Assurance (QA) or sample problems provided		х		Х	
12. Data Package Completeness and Compliance		Х		Х	

### **INORGANIC ANALYSIS INTRODUCTION**

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review* (EPA 540-R-2017-001, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington* (March 2019).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

### Concentration (C) Qualifiers

- U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
- J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

### Quantitation (Q) Qualifiers

- E The reported value is estimated due to the presence of interference.
- N Spiked sample recovery is not within the control limits.
- Duplicate analysis is not within the control limits.

### Validation Qualifiers

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- UB Analyte considered non-detect at the listed value due to associated blank contamination.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

### **METALS ANALYSES**

### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Sediment	180 days from collection to analysis	Cool to < 6°C

All samples were analyzed within the specified holding time criteria.

### 2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the RL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

### 3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

### 3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD recovery control limits do not apply for MS performed on samples where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis was not performed on sample associated within this SDG.

### 3.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for soil / sediment matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for soil / sediment matrices.

Laboratory duplicate analysis was not performed on sample associated within this SDG.

### 4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

The LCS analysis was not performed and reported by the laboratory within this SDG.

### 5. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The control limit of 50% for soil / sediment matrices is applied to the RPD between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL for soil / sediment matrices is applied to the difference between the results.

A field duplicate sample was not collected within this SDG.

### 6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

### **DATA VALIDATION CHECKLIST FOR METALS**

METALS: SW-846 6010D	Rep	orted		rmance eptable	Not Required						
	No	Yes	No	Yes	Required						
Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES)											
Tier II Validation											
Holding Times		Х		X							
Reporting limits (units)		X		X							
Blanks											
A. Method Blanks		X		X							
B. Equipment/Field Blanks	Х				Χ						
Laboratory Control Sample (LCS) %R	Х				Х						
Laboratory Control Sample Duplicate (LCSD) %R	Х				Χ						
LCS/LCSD Precision (RPD)	Х				Χ						
Matrix Spike (MS) %R	Х				Х						
Matrix Spike Duplicate (MSD) %R	Х				Х						
MS/MSD Precision (RPD)	Х				Х						
Laboratory Duplicate Sample (RPD)	Х				Х						
Field Duplicate Sample (RPD)	Х				X						
ICP Serial Dilution %D	Х				Х						
Reporting Limit Verification		Х		Х							

Notes:

%R = Percent recovery

RPD = Relative percent difference

%D = Percent difference

Validation Performed By: Suresh PR

Signature:

Date: August 01, 2019

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### CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

Reviewed/Date	Received	Relinquished	Received	Relinquished	Received	Relinquished	Signature				2 -038 6	1-835	Lab ID Sample Identification	Sampled by:	Tosh Gavenner	4 Burrows	80003010- cool	Arcalis Project Number	P	Analytical Laboratory Testing Services 14648 NE 95th Street • Redmond, WA 98052	Environmental Inc.
			4 CHEW	sugar	Take Ken	R					4/1/19	4/1/19	ion Date Sampled		์ -	Island X su		Sa	,onsite-env.com	d, WA 98052	Inc.
Reviewed/Date			08F	Jeff	ROHA	AWA	Company				1405 Sed	1400 Sed	Time Sampled Matrix	(other)	Contain	Standard (7 Days)	2 Days 3 Days	Same Day 1 Day	(Check One)	Turnaround Request (In working days)	
			06 9 111	1 4/0/19 11.	is/a/19 10:	\$16/9 1010	Date Time						NWTF NWTF Volatil	PH-Dx (	BTEX  Acid	/ SG C		5)		Laboratory Number:	,
Chromatograms with final report	Data Package: Standard		N	No.	10	0	Comments/Special Instructions						Semily (with I PAHs PCBs Organ Organ Chlorida)	volatiles ow-leve 8270D 8082A sochlori sophosi inated	s 8270E el PAHs /SIM (lo ine Pes phorus		3081B		1	per: 06-059	
ort Electronic Data Deliverables (EDDs)	Level III D Level IV D										×	*	Total I		Metals	( PL	) ON	4)			Page of

Date of Report: June 14, 2019 Samples Submitted: June 6, 2019 Laboratory Reference: 1906-059

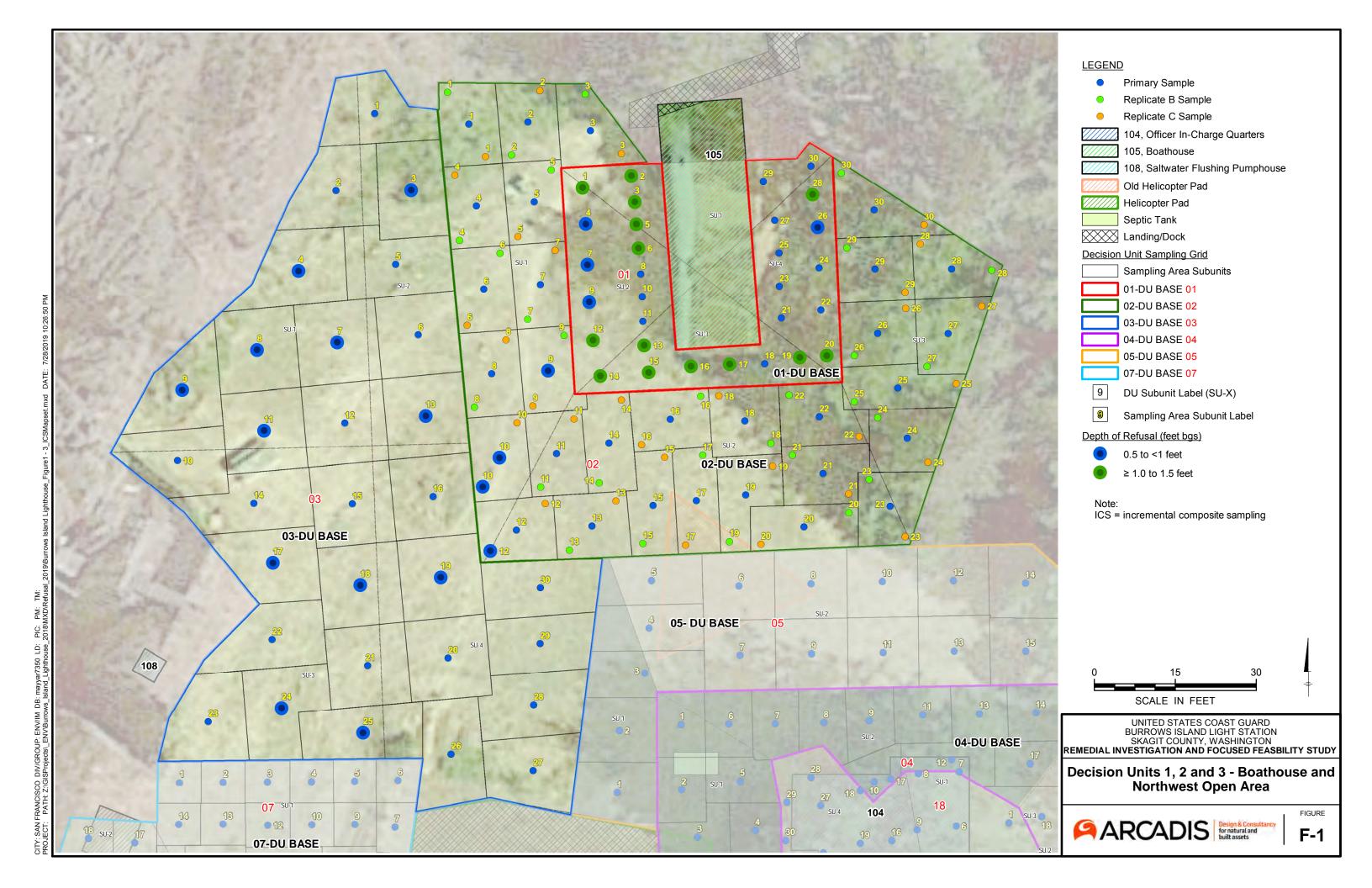
Project: B0003010-0006

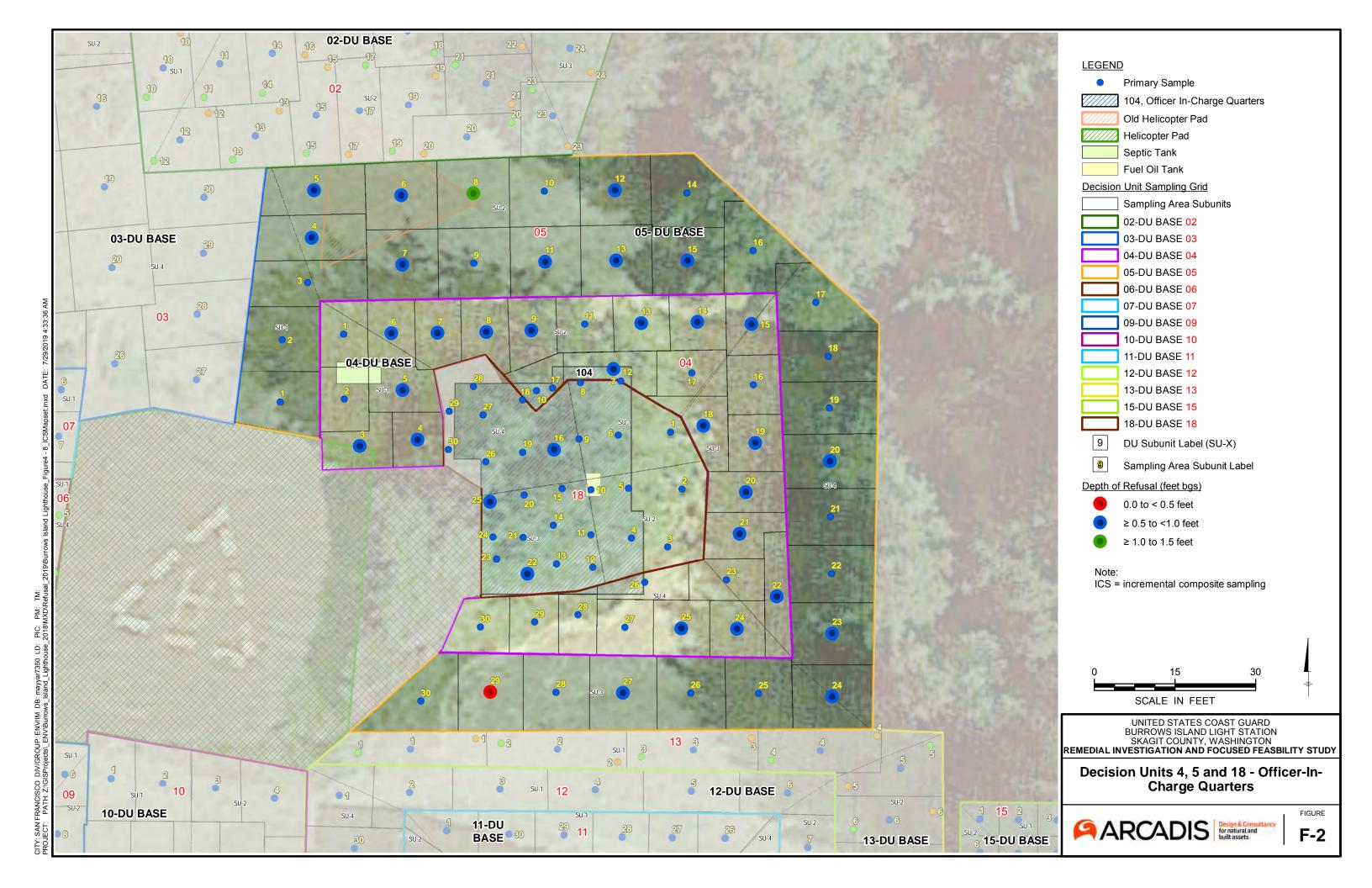
### TOTAL LEAD EPA 6010D

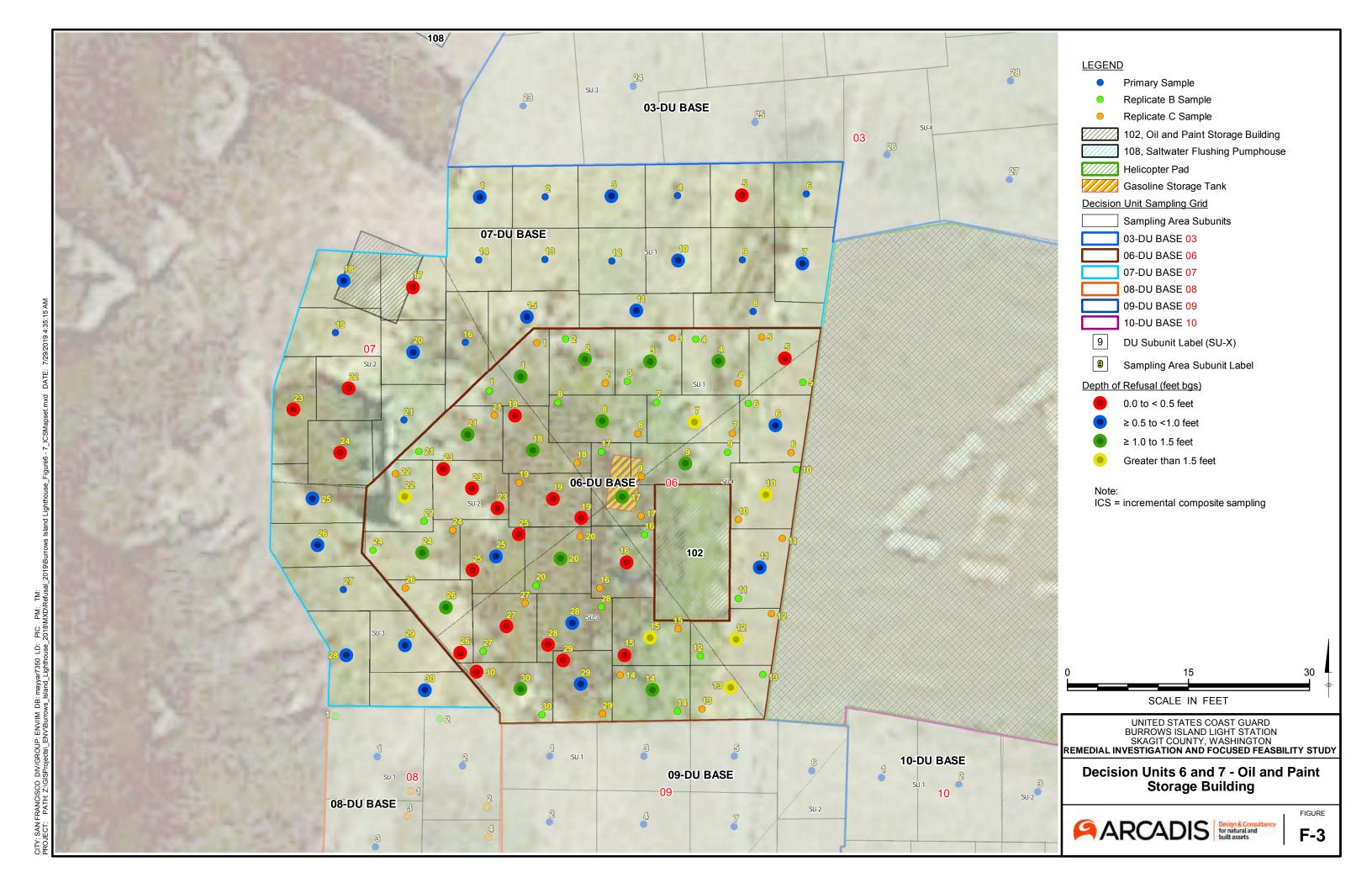
Matrix: Sediment
Units: mg/Kg (ppm)

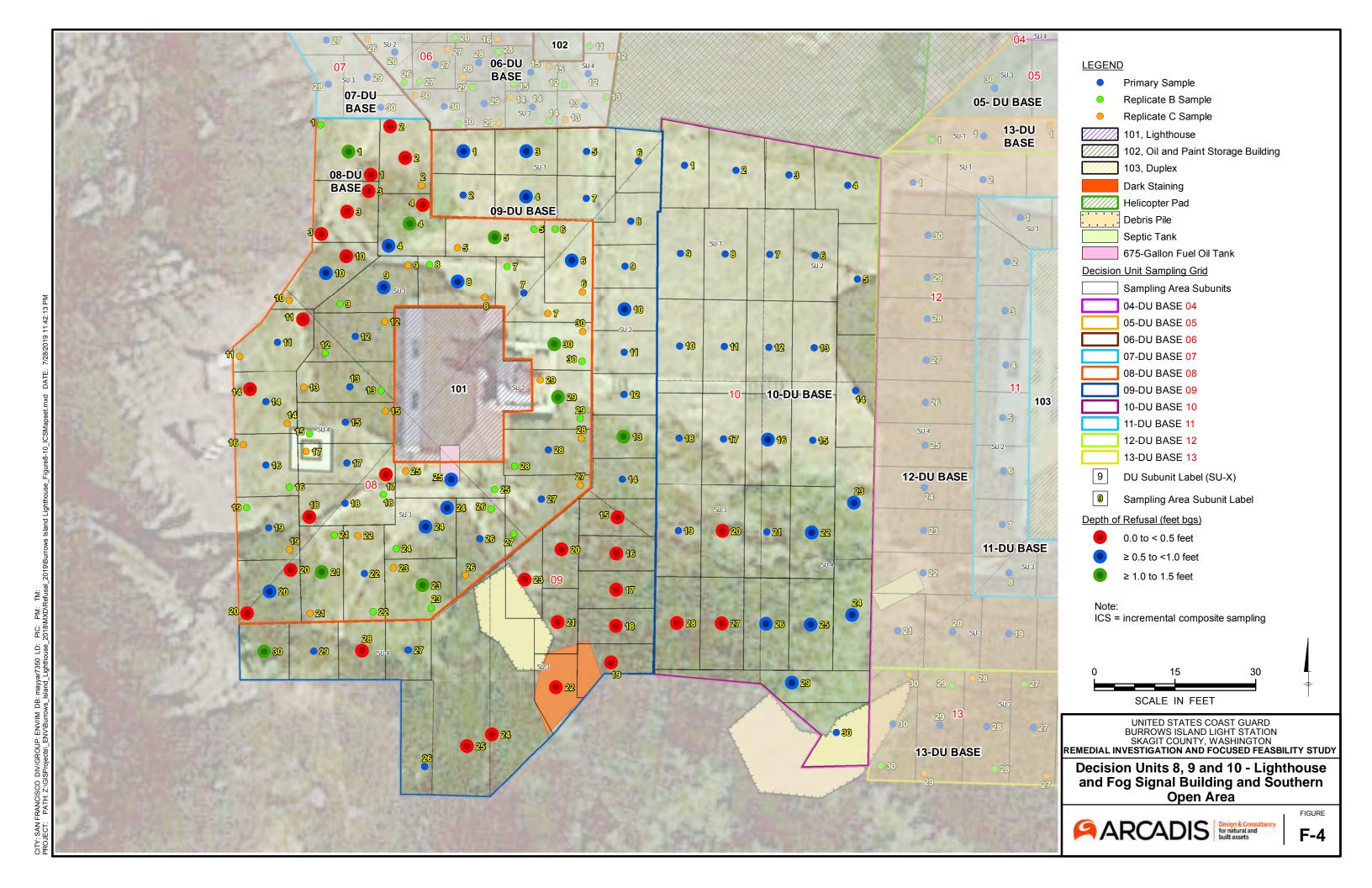
				Date	Date	
Analyte	Result	PQL	Method	Prepared	Analyzed	Flags
Client ID:	SED-1					
Laboratory ID:	06-059-01					
Lead	ND	5.3	EPA 6010D	6-10-19	6-10-19	
Client ID:	SED-2					
Laboratory ID:	06-059-02					
Lead	ND	5.9	EPA 6010D	6-10-19	6-10-19	

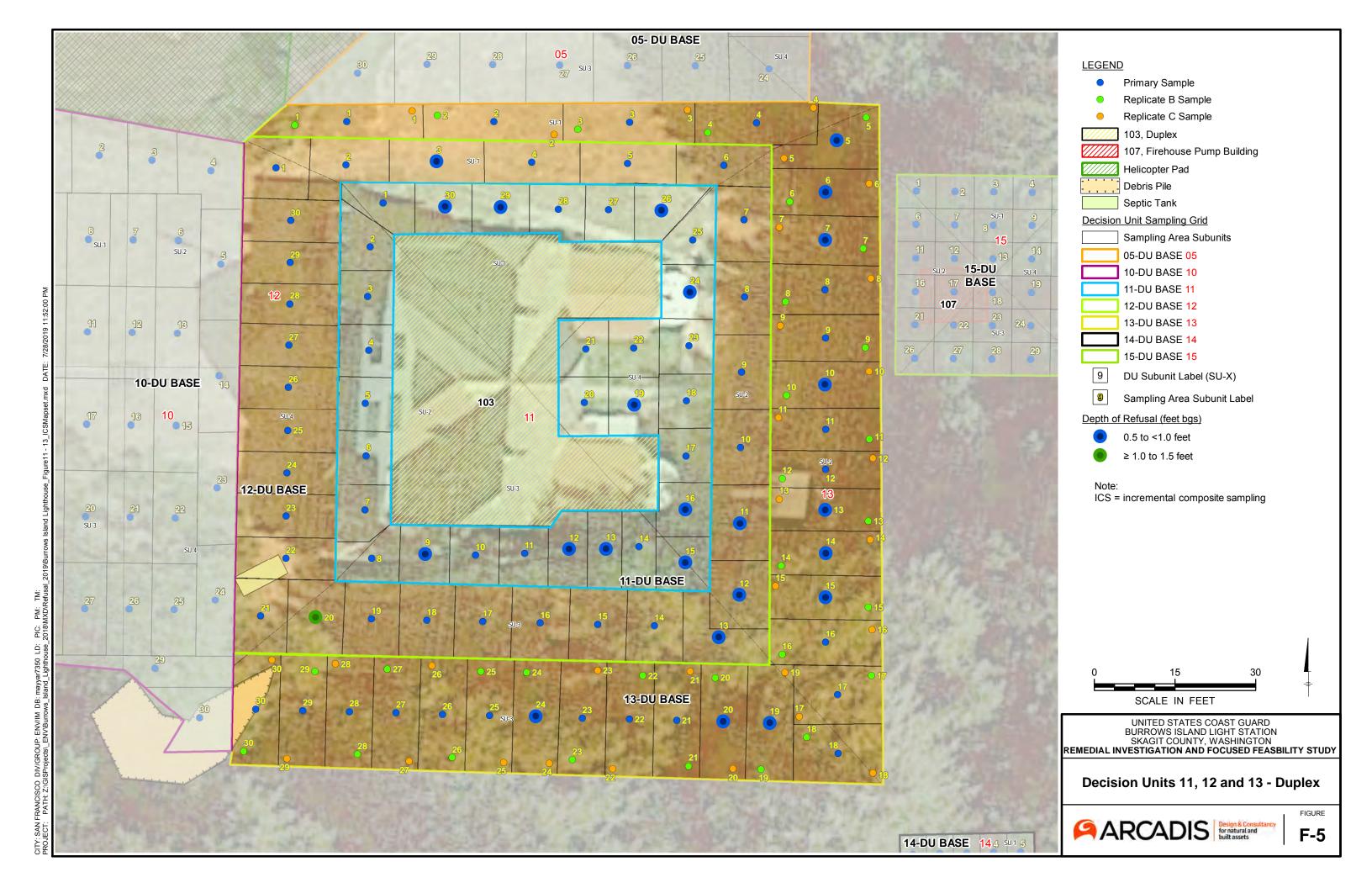
# **APPENDIX F Supporting Remedial Investigation Figures and Table**

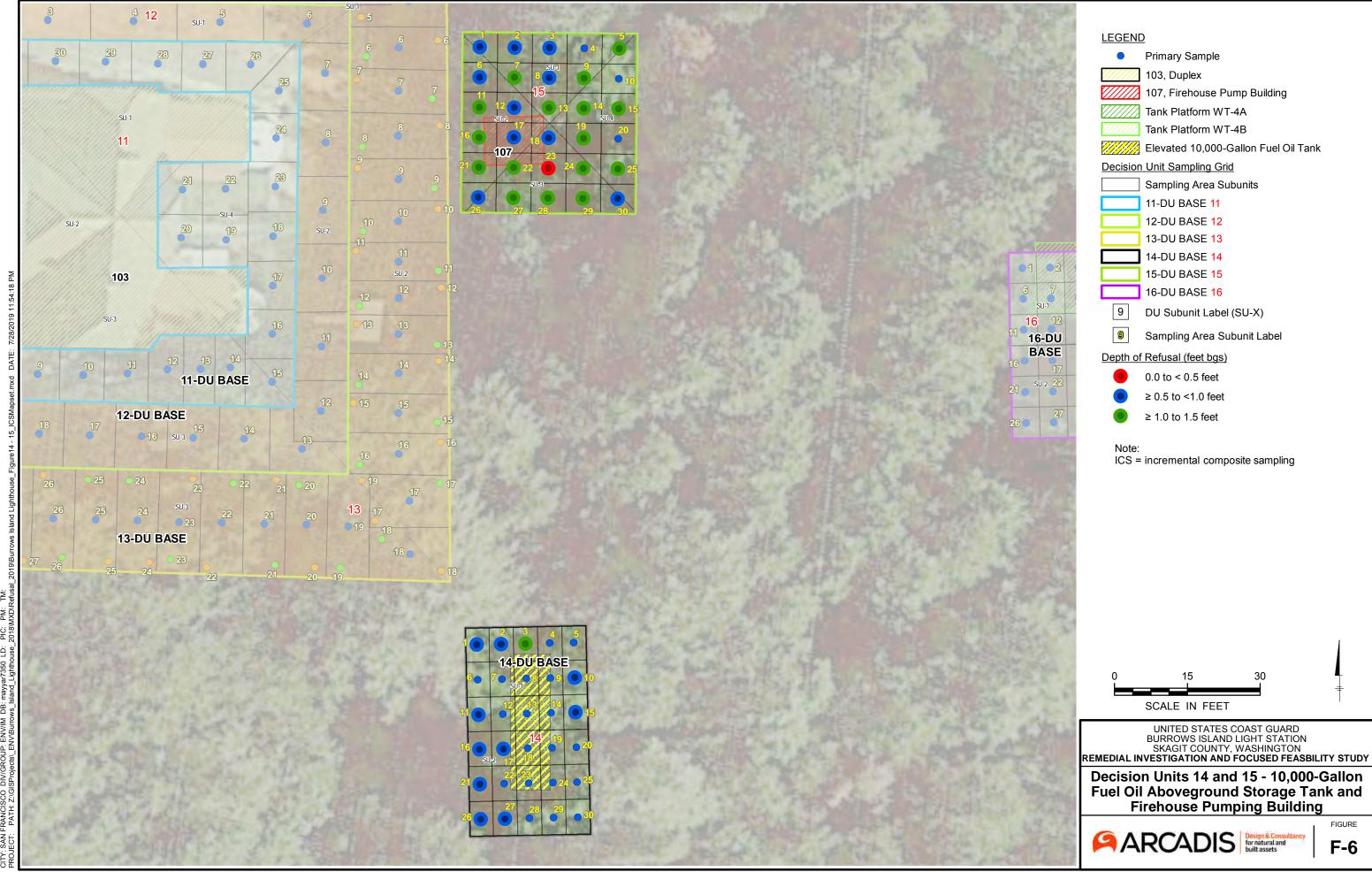














### APPENDIX G Lead Encapsulation Assessment

### **PHOTOGRAPH LOG**

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 1

**Description:**N side of Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019



Photograph: 2

**Description:**W side of Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019

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### **PHOTOGRAPH LOG**

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 3

**Description:**S side of Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019



Photograph: 4

**Description:** E side of Duplex

Location:

Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019

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United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 5

**Description:** E side of Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 6

**Description:**Chipped paint on doorframe – E side of Duplex

**Location:**Burrows Island

Photograph taken by: Alex Pink

Date: 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 7

**Description:**Chipped paint in doorframe – E side of Duplex

**Location:**Burrows Island

Photograph taken by: Alex Pink

**Date:** 3/26/2019

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| Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 8

**Description:** 

Chipped paint around doorframe – E side of Duplex

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

ARCADIS

| Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 9

**Description:**Chipped paint in doorframe – E side of Duplex

**Location**:
Burrows Island

Photograph taken by: Alex Pink

**Date:** 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 10

**Description:**Chipped paint in window frame – E side of Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 11

**Description:**Chipped paint in window frame – E side of Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

United States Coast Guard **Burrows Island Light Station** Skagit County, Washington





Photograph: 12

**Description:** 

Chipped paint along roof line – E side of Duplex

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 13

**Description:** 

Exterior damage to painted tank – E side of Duplex

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 14

**Description:**Chipped paint in window frame – E side of Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 15

Description:

Chipped paint on foundation – N side of

Duplex

Location:

Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019



Photograph: 16

**Description:** 

Chipped paint along the foundation line of the porch – W side of

Duplex

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 17

## **Description:**

Chipped paint along the foundation line of the porch – W side of Duplex

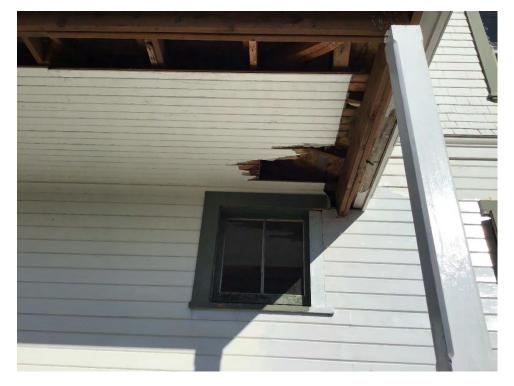
Location:

Burrows Island

# Photograph taken by:

Alex Pink

Date: 3/26/2019



Photograph: 18

## **Description:**

Damaged painted wood panels on the roof of the porch – W side of Duplex

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 10

**Description:**Chipped paint in window frame – E side of Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 11

**Description:**Chipped paint in window frame – E side of Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

United States Coast Guard **Burrows Island Light Station** Skagit County, Washington





Photograph: 12

**Description:** 

Chipped paint along roof line – E side of Duplex

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 13

**Description:** 

Exterior damage to painted tank – E side of Duplex

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 14

**Description:**Chipped paint in window frame – E side of Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 15

Description:

Chipped paint on foundation – N side of

Duplex

Location:

Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019



Photograph: 16

**Description:** 

Chipped paint along the foundation line of the porch – W side of

Duplex

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 17

## **Description:**

Chipped paint along the foundation line of the porch – W side of Duplex

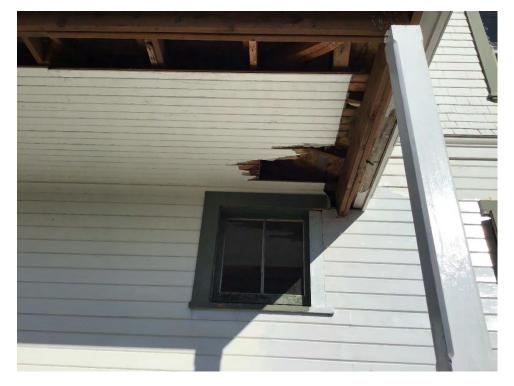
Location:

Burrows Island

# Photograph taken by:

Alex Pink

Date: 3/26/2019



Photograph: 18

## **Description:**

Damaged painted wood panels on the roof of the porch – W side of Duplex

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019

United States Coast Guard **Burrows Island Light Station** Skagit County, Washington





Photograph: 1

Description:

Damaged lattice on porch - W side of Duplex

Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019



Photograph: 2

Description:

Chipping paint on porch floor boards - W side of Duplex

Location:

Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 3

Description:

Chipping paint near the foundation line – S side of the Duplex

**Location:**Burrows Island

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 4

**Description:** 

E side of Light and Fog Signal Building

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 5

**Description:**N side of Light and Fog

Signal Building

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

ARCADIS

| Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 6

**Description:** 

W side of Light and Fog Signal Building

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 7

**Description:**S side of Light and Fog Signal Building

**Location:**Burrows Island

Photograph taken by: Alex Pink

**Date:** 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 8

**Description:** 

Chipping paint near the foundation – E side of Light and Fog Signal Building

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 9

**Description:** 

Chipping window trim – N side of Light and Fog Signal Building

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

United States Coast Guard
Burrows Island Light Station
Skagit County, Washington



Photograph: 1

**Description:** 

Flaking paint on window trim – W side of Light and Fog Signal Building

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019

ARCADIS

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Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 2

**Description:** 

Flaking paint on window trim – W side of Light and Fog Signal Building

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 3

**Description:** 

Flaking paint on roof vent – W side of Light and Fog Signal Building

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 4

**Description:** 

Chipping paint near foundation – S side of Light and Fog Signal Building

**Location:**Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 5

**Description:** 

Flaking paint on window trim – S side of Light and Fog Signal Building

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 6

**Description:** 

Damaged siding – E side of Light and Fog Signal Building

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 7

**Description:** 

W side of Boathouse

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

**Date:** 3/26/2019

ARCADIS

Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 8

**Description:** 

N side of Boathouse

Location:

**Burrows Island** 

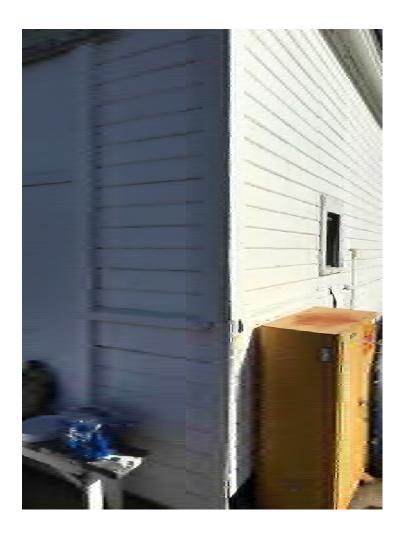
Photograph taken by:

Alex Pink

Date: 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 9

**Description:** NW corner of Boathouse

**Location:**Burrows Island

Photograph taken by: Alex Pink

**Date:** 3/26/2019

ARCADIS

Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 1

Description:

E side of Boathouse

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019



Photograph: 2

**Description:** 

E side of Boathouse

Location:

Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 3

**Description:**Damaged siding

Damaged siding – E side of Boathouse

**Location:** Burrows Island

Photograph taken by: Alex Pink

**Date:** 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 4

**Description:** 

S side of Boathouse

Location:

**Burrows Island** 

Photograph taken by:

Alex Pink

Date: 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 5

**Description:**Salt Water Flushing
Pumphouse

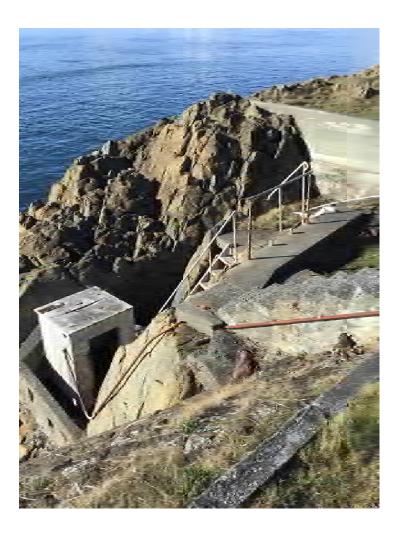
**Location:**Burrows Island

Photograph taken by: Alex Pink

**Date:** 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 6

**Description:**Salt Water Flushing
Pumphouse

**Location:**Burrows Island

Photograph taken by: Alex Pink

**Date:** 3/26/2019

ARCADIS Design & Consultancy for natural and built assets

United States Coast Guard Burrows Island Light Station Skagit County, Washington



Photograph: 7

**Description:** 

Concrete structure N of the Light and Fog Signal Building

**Location:**Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019



Photograph: 8

Description:

Concrete structure N of the Light and Fog Signal Building

Location:

Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019

United States Coast Guard Burrows Island Light Station Skagit County, Washington





Photograph: 9

**Description:**Supports for 10,000-gallon fuel oil AST

**Location**:
Burrows Island

Photograph taken by: Alex Pink

Date: 3/26/2019



Photograph: 10

**Description:**Supports for 10,000-gallon fuel oil AST

**Location**: Burrows Island

Photograph taken by:

Alex Pink

Date: 3/26/2019

# **APPENDIX H Applicable or Relevant and Appropriate Requirements**

Potential Federal and State Chemical-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance, U.S. Coast Guard Light Station Burrows Island, Skagit County, Washington

Constituent of Concern and Media	Authority	Act	Statute, Regulation, Administrative Code, or Guidance Document	Status	Synopsis of Requirement, Criteria, or Guidance
	Federal Regulatory Requirement and/or Criteria	Toxics Substances Control Act	15 U.S.C. §2601 et seq. 40 CFR 761.61	Applicable	This section provides cleanup and disposal options for PCB remediation waste, including but not limited to notification requirements and disposal requirements for PCB remediation waste.
Soil	Federal Advisories, Guidance, and Training Material		United States Environmental Protection Agency (USEPA) Recommendation of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil.  www.epa.gov/superfund/lead/products/adultpb.pdf	To Be Considered	This document is a non-promulgated guidance prepared by USEPA to provide guidance on assessing risks associated with adult exposures to lead in soil.
	State Regulatory Requirement and/or Criteria	MTCA Regulations	WAC 173-340-740(3) and WAC 173-340-355	Relevant and Appropriate	WAC 173-340-740(3) provide requirements for Method B soil cleanup levels for unrestricted landuse. WAC 173-340-355 provide requirements for development of cleanup action alternatives that include remediation levels. Remediation levels are used to identify the concentration (or other methods of identification) of hazardous substances at which different cleanup action components will be used. Remediation levels, by definition, exceed cleanup levels.
	State Advisories, Guidance, and Training Material	Ecology Guidance for Remediation of Petroleum Contaminated Sites	Publication No. 10-09-057, Revised June 2016	To Be Considered*	This document is generally applicable to all types of petroleum contaminated sites and media and may be applicable to sites with mixtures of other hazardous substances.

Notes:

NA Not Applicable

\* The U.S. Coast Guard solicited ARARs from Ecology in a letter dated January 28, 2019. A response from Ecology was received on February 14,2019. Potential State of Washington ARARs and To Be Considered guidance provided by Ecology has been incorporated into this table.

Potential Location-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance, U.S. Coast Guard Light Station Burrows Island, Skagit County, Washington.

Location	Authority	Act	Statute, Regulation, Administrative Code, or Guidance Document	Status	Synopsis of Requirement, Criteria, or Guidance
		National Historic Preservation Act of 1966	National Historic Preservation 16 USC 470. http://www.achp.gov/NHPA.pdf	Applicable	These rules require the identification and preservation of historic and archaeological sites. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices.
		National Historic Lighthouse Preservation Act of 2000 (NHLPA)	USC 16 Section 470 54 USC 305101-305106 (formerly at 16 USC 470w-7)	Applicable	An ammendment to the National Historic Preservation Act of 1966, the NHLPA provides a mechanism for the disposal of Federally-owned historic light stations that have been declared excess to the needs of the responsible agency.
Federally owned property	Federal Regulatory Requirement and/or Criteria	Endangered Species Act of 1973	Endangered Species 16 USC 1531-1543, 50 CFR 402, 50 CFR 17.  16 USC Chapter 35  Endangered and Threatened Wildlife and Plants (50 CFR Part 17) 50 CFR 17  Cooperation of Endangered and Threatened Species of Fish, Wildlife, and plants – Cooperation with the States (50 CFR Part 81) 50 CFR 81  Threatened Marine and Anadromous Species (50 CFR Part 223) 50 CFR 223  Endangered Marine and Anadromous Species (50 CFR Part 224) 50 CFR 224  Designated Critical Habitat (50 CFR 226) 50 CFR 226	Relevant and Appropriate	These rules require federal agencies to ensure that their actions do not jeopardize the continued existence of any threatened or endangered species or adversely modify the habitat of such species. The rules provide criteria for determining threatened and
	Federal Regulatory Requirement and/or Criteria, Continued	Archaeogical and Historic Preservation Act	Interagency Cooperation Endangered Species Act of 1973 (50 CFR 402) 50 CFR 402  16 USC 469	Applicable	It is the purpose of sections 469 to 469c–1 of this title to further the policy set forth in sections 461 to 467 of this title, by specifically providing for the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of (1) flooding, the building of access roads, the erection of workmen's communities, the relocation of railroads and highways, and other alterations of the terrain caused by the construction of a dam by any agency of the United States, or by any private person or corporation holding a license issued by any such agency or (2) any alteration of the terrain caused as a result of any Federal construction project or federally licensed activity or program.
	Official, Continued	Archaeological and Historic Preservation Act	16 USC 470aa, 43 CRF 7		The purpose of this chapter is to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data which were obtained before October 31, 1979.
Federally owned property, Continued	Federal Advisories, Guidance, and Training Material State Regulatory Requirement and/or Criteria	NA NA	NA RCW 90.58; WAC 173-27-060; 15 CFR 923-930	NA Applicable	None  This section requires that federal agency activities in or affecting Washington's coastal zone shall be consistent to the maximum extent practicable with the enforceable policies of the most recent federally approved Washington state coastal zone management program pursuant to the Federal Coastal Zone Management Act, 16 U.S.C. 1451 et seq. (CZMA) and federal regulations adopted pursuant thereto.
	State Advisories, Guidance, and Training Material	NA	NA	NA	None

Notes:

NA Not Applicable

<sup>\*</sup> The U.S. Coast Guard solicited ARARs from Ecology in a letter dated January 28, 2019. A response from Ecology was received on February 14, 2019. Potential State of Washington ARARs and To Be Considered guidance provided by Ecology has been incorporated into this table.

Potential Action-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance, U.S. Coast Guard Light Station, Burrows Island, Washington.

Action	Authority	Act or Statute	Regulation, Administrative Code, or Guidance Document	Status	Synopsis	
In-Water Work	Federal Regulatory Requirement and/or	Clean Water Act	Section 404 - Dredge or Fill Requirements Regulations, 33 U.S.C. 1344(a)-(d); 33 CFR Parts 320-330; 40 CFR 230	Potentially Applicable	Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands	
	Criteria		Section 401, Water Quality Certification, 33 U.S.C. 1340; WAC 173-225-010.		Section 401 of the CWA requires an applicant for a federal license or permit provide a certification that any discharges from the facility will comply with the CWA, including state-established water quality standard requirements.	
	Federal Regulatory Requirement and/or Criteria	Storm water discarges (applicable to State NPDES programs)	40 CFR 122.26		Provide requirements when a storm water permit is required under the NPDES program. See state requirements below.	
Stormwater	State Regulatory Requirement and/or Criteria	Stormwater Permit Program	RCW 90.48.260; Chapter 173-226 WAC		Provides requirements for obtaining construction stormwater permit and stormwater pollution prevention plan. Sites under five acres may be exempt from permit requirements if the site meets the requirements for low erosivity waiver: (1) the erosivity factor is less than five; (2) Project disturbs less than five acres; (3) Construction desturbance starts and finishes within the following timeline - June 15 - September 15 of the same year.	
	State Advisories, Guidance, and	( - Uldance for contaminated		ТВС	This spreadsheet shows treament systems that may be effective in treating specific contaminants.	
Stormwater, Continued	Training Material water on construction sites		https://ecology.wa.gov/Regulations-Permits/Guidance-technical- assistance/Stormwater-permittee-guidance-resources/Contaminated- water-on-construction-sites	120		
		Comprehensive Environmental Response,	Reporting Hazardous Substance Activity When Selling or Transferring Federal Real Property (Title 40 Code of Federal Regulations [CFR] 373)		These rules require notifications related to hazardous substances prior to the sale or transfer of real property owned by the federal government. This is applicable if a property with residual contamination is transferred.	
	Co Act am	Superfund Amendments	National Contingency Plan (42 USC 9605).		These promulgated rules require performing a Removal Site Evaluation and a Removal Action including preparing certain documents (e.g., Quality Assurance Project Plan [QAPP], Sampling and Analysis Plan (SAP), and Remedial Investigation/Feasibility Study Report (RI/FS).	
		and Reauthorization Act (SARA)	Executive Order 12580- Superfund Implementation		The Executive Order provides federal agencies, including the United States Coast Guard, the authority to carry out their CERLCA responsibilities under the National Contingency Plan as a lead agency.	
		Clean Air Act of 1970	National primary and secondary ambient air quality standards 42 USC 7409.	Applicable	Engineering controls may be required to reduce emissions associated with the excavation and off-site transportation and/or encapsulation, as needed, to maintain ambient air quality standards.	
Remedy Implementation and Waste Management	Federal Regulatory Requirement and/or Criteria	Resource Conservation and Recovery Act of 1976 (RCRA)	42 USC 6921; 40 CFR 261; 40 CFR 268	Applicable	These regulations establish requirements for identifying any hazardous wastes that may be generated in the course of the removal action. Not applicable regarding soil, as no removal action. Potentially applicable with regard to abatement of lead-based paint on Site structures.	
		Hazardous Materials Transport Act (HMTA) as Amended by the Hazardous Materials Transport Uniform Safety Act of 1990	49 CFR 51	<u>Applicable</u>	The HMTA regulates the transportation of certain hazardous materials.	
		Occupational Safety & Health Administration Act (OSHA) of 1970	Occupational Safety & Health Administration Act (Public Law 91-596 84 STAT. 1590).	<u>Applicable</u>	These regulations specify requirements for health and safety protection for workers potentially exposed to contaminants during hazardous waste site remediation.	

Potential Action-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance, U.S. Coast Guard Light Station, Burrows Island, Washington,

Action	Authority	Act or Statute	Regulation, Administrative Code, or Guidance Document	Status	Synopsis
	Federal Regulatory Requirement and/or Criteria	Toxics Substances Control Act	15 U.S.C. §2601 et seq. 40 CFR 761.61	Applicable	This section provides cleanup and disposal options for PCB remediation waste, including but not limited to notification requirements and disposal requirements for PCB remediation waste.
		Dangerous Waste Act and Regulations	RCW 70.105, Chapter 173-303 WAC	Relevant and Appropriate	Provide requirements for classification and disposal of Washington State Dangerous wastes.
		Regulation and Licensing of Well Contractors and Operators	Chapter 18.104 RCW; WAC 173-162-020-030	Potentially Applicable	This section provides regulations that apply to well contractors and operators who are contracting for well construction or constructing wells in the state of Washington.
Remedy Implementation and	Genera	Washington Clean Air Act, General Regulations of Air Contaminant Source	Chapter 70.94 RCW	Applicable	Provides requirements to protect air from harmful levels of pollution.
Waste Management, Continued		Puget Sound Clean Air Agency Regulations, Fugitive Dust Control Measures	Regulation 1, Section 9.15	Applicable	This rule prohibits visisible emissions of fugitie dust unless reasonable precautions are employed to minimize the emissions.
		Shoreline Master Program (SMP)	RCW 90.58; WAC 173-27-060	Applicable	This section requires federal agency activities in or affecting Washington's coast zone to be consistent to the maximum extent practicable with the enforceable policies of the most recent federally approved Washington state coastal zone management program pursuant to the Federal Coastal Zone Management Act, 16 U.S.C. 1451 et seq. (CZMA) and federal regulations adopted pursuant thereto.
			Chapter 43.21C RCW; Chapter 197-11 WAC and the SEPA procedures (Chapter 173-802 WAC)	Applicable	SEPA is a process (not a permit decision) indended to ensure that environmental values are considered during decision-making by state and local agencies. Substanstative requirements of SEPA will be achieved by public participation as part of the CERCLA process.
	State Advisories, Guidance, and Training Material	Ecology Guidance for Remediation of Petroleum Contaminated Sites	Publication No. 10-09-057, Revised June 2016	To Be Considered*	This document is generally applicable to all types of petroleum contaminated sites and media and may be applicable to sites with mixtures of other hazardous substances.

Notes:

NA Not Applicable

\* The U.S. Coast Guard solicited ARARs from Ecology in a letter dated January 28, 2019. A response from Ecology was received on February 14, 2019. Potential State of Washington ARARs and To Be Considered guidance provided by Ecology has been incorporated into this table.

### **APPENDIX I Supporting Cost Information**

Table I-1
Appendix I Supporting Cost Information
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Alternative 2 - Capping

Alternative 2 - Capping			Capital C	osts	
Description	Quantity	Unit	Unit Cost	Total Cost	Notes/Source
·	quantity	Oiiii	Oint Goot		110100/004100
Preparation Work Plan, Agency Correspondence, and Design	1	LS	\$30,000	\$30,000	Professional judgement and previous project experience.
Insurance, Bonding, Mobilization/Demobilization	1	LS	15%	\$27,000	Percentage of total costs, excluding transport and disposal, reporting, and testing.
Clearing/Grubbing/Tree Trimming	1	LS	\$7,800	\$7,800	Assumes up to 1 acre of clearing required to access soil treatment areas.
Repair to Dock Staircase	1	LS	\$50,000	\$50,000	Costs based on contractor information. Assume no armoring of the beach or permits are necessary.
Stormwater BMPs	1	LS	\$3,900	\$3,900	Silt fencing around perimeter of work area and other BMPs as needed for material handling and staging.
Marine Equipment					
Mobilization/Demobilization of Marine Equipment	1	LS	\$20,000	\$20,000	Contractor quote, assuming initial mobilization of crane and barge to facilitate soil removal.
Crane, Barge, and Tug Boats	10	DAY	\$6,000	\$60,000	Contractor quotes, average daily rate assumes tug boats and crew are not required for duration of project. Assumes equipment will be on standby and crew demobilizes during capping.
Soil and Debris Removal					
Debris Removal and Handling	4,000	SF	\$5	\$20,000	RSMeans and supplier quotes, adjusted for local conditions. Includes concrete sidewalks and helicopter pad materials.
Excavate and Handle for Offsite Disposal (PCB impacted soil)	410	CY	\$29	\$12,087	Supplier quotes and previous project experience. Actual volume of concrete to be confirmed during construction.
Disposal					
Transportation from Anacortes to Chemical Waste Management	700	TON	\$90	\$63,000	Supplier quote, assuming over-the-road transport.
Disposal of Soil at Chemical Waste Management	660	TON	\$120	\$79,200	Supplier quote, including taxes.
Transportation and Disposal of Construction Debris	40	TON	\$100	\$4,000	Supplier quote, including taxes.
Cap Installation		ı			
Separation Geotextile and Installation	26,000	SF	\$0.23	\$5,922	RSMeans rate and supplier quotes, adjusted for local conditions
Backfill, Grading, and Vegetation  Backfill Mobilized to Site	2,200	CY	\$27	\$58.740	Supplier quotes, adjusted for local conditions
Placement & Compaction for Backfill	2,200	CY	\$20		RSMeans rate and supplier quotes, adjusted for local conditions
Grading	4,400	SF	\$0.68		RSMeans rate and supplier quotes, adjusted for local conditions
Topsoil Placement and Seeding	30,400	SF	\$0.10	\$3,040	RSMeans rate and supplier quotes, adjusted for local conditions, Includes seeding cap cover
Building Encapsulation Repair/Restoration	800	SF	\$20	\$16,000	Scrape and stabilize trim and failing areas, prime, and re-paint.
Asbestos Roofing Replacement	4.000	SF	\$30		Scrape and stabilize trim and failing areas, prime, and re-paint.
Testing, Reporting, and Oversight	1,000	<u> </u>	400	<b>\$120,000</b>	1
Construction Oversight	27	DAY	\$1,500	\$40,500	Assumes 15 days for soil cap installation and backfill, 8 days for excavation, 2 days for encapsulation repair, and 2 days for mobilization/demobilization
CQA Testing and Laboratory	1	LS	\$5,000	\$5,000	Includes CQA confirmation soil testing and laboratory costs.
Construction Completion Report	1	LS	\$30,000	\$30,000	
Administrative Controls	1	LS	\$20,000	. ,	Includes survey and other coordination of administrative controls.
	Subtota	I Capital Cost		\$723,898 \$144,780	

Contingency 20% \$144,780

Total Capital Cost (Rounded up) \$869,000

### **Capital Cost Notes:**

LS = lump sum CQA = construction quality assurance

 $\mathrm{CY} = \mathrm{cubic}$  yards  $\mathrm{SY} = \mathrm{square}$  yard  $\mathrm{SF} = \mathrm{square}$  feet

1. The level of accuracy of these estimated costs is "Order of Magnitude," as defined by the American Association of Cost Engineers. The accuracy of an Order of Magnitude estimate is plus 50 percent and minus 30 percent. Cost estimates at this level may be used to compare alternatives, but should not be used to plan, finance, or develop projects. Changes in the cost elements are likely to occur during the engineering design of the remedial alternative. The cost estimate was prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000). Unit costs were selected based on previous remediation and project experience and based on budgetary quotes for some materials and services.

- 2. The unit weight of soil is assumed to be 1.6 tons/CY and concrete materials are assumed to be 2 tons/CY.
- 3. Soils contaminated with PCBs would be transferred offsite for disposal.  $\label{eq:contaminated}$
- 4. Staging area for waste transfer and mobilization of materials and equipment is assumed to be Anacortes, WA.
- 5. Prevailing wages are assumed to apply. An adjustment factor of 30% is applied to all labor.

Table I-1 **Appendix I Supporting Cost Information United States Coast Guard Burrows Island Light Station Anacortes, Washington** 

Alternative	2 -	Cap	ping
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Operation,	Maintenance, and Monitorin	ng Costs			
	Annual Costs				
Description		Quantity	Unit	Unit Cost	Total
	Years 1-30				
Post-Remedial Annual Cap Inspections		1	YEAR	\$3,000	\$3,000
Minor Repairs (No heavy equipment, materials carried to site)		1	YEAR	\$7,000	\$7,000
Engineering Design/Support	1	YEAR	\$3,000	\$3,000	
Management and Reporting	1	YEAR	\$5,000	\$5,000	
TOTAL ANNUAL OMM COSTS (Years 1-30)					\$18,000
	Periodic Costs				
Description	Year	Quantity	Unit	Unit Cost	Total
	Years 5, 10, 15, 20, 25				
Mobilization/Demobilization of Marine Equipment		1	YEAR	\$20,000	\$20,000
Cap Repair Materials		1	YEAR	\$5,000	\$5,000
Maintenance and Repair of Cap	Every 5 Years	1	YEAR	\$10,000	\$10,000
Engineering Design/Support		1	YEAR	\$15,000	\$15,000
Construction Oversight	7	1	YEAR	\$5,000	\$5,000
TOTAL PERIODIC OMM COSTS (Years 5, 10, 15, 20, 25, 30)					\$55,000

### PRESENT VALUE ANALYSIS

		Annual	Periodic		Discount Factor	
Year	Capital Cost	Cost	Cost	Total Cost Per Year	(3.0%)	Present Value
0	\$869,000	\$0	\$0	\$869,000	1	\$869,000
1	\$0	\$18,000	\$0	\$18,000	0.97	\$17,476
2	\$0	\$18,000	\$0	\$18,000	0.94	\$16,967
3	\$0	\$18,000	\$0	\$18,000	0.92	\$16,473
4	\$0	\$18,000	\$0	\$18,000	0.89	\$15,993
5	\$0	\$18,000	\$55,000	\$73,000	0.86	\$62,970
6	\$0	\$18,000	\$0	\$18,000	0.84	\$15,075
7	\$0	\$18,000	\$0	\$18,000	0.81	\$14,636
8	\$0	\$18,000	\$0	\$18,000	0.79	\$14,209
9	\$0	\$18,000	\$0	\$18,000	0.77	\$13,796
10	\$0	\$18,000	\$55,000	\$73,000	0.74	\$54,319
11	\$0	\$18,000	\$0	\$18,000	0.72	\$13,004
12	\$0	\$18,000	\$0	\$18,000	0.70	\$12,625
13	\$0	\$18,000	\$0	\$18,000	0.68	\$12,257
14	\$0	\$18,000	\$0	\$18,000	0.66	\$11,900
15	\$0	\$18,000	\$55,000	\$73,000	0.64	\$46,856
16	\$0	\$18,000	\$0	\$18,000	0.62	\$11,217
17	\$0	\$18,000	\$0	\$18,000	0.61	\$10,890
18	\$0	\$18,000	\$0	\$18,000	0.59	\$10,573
19	\$0	\$18,000	\$0	\$18,000	0.57	\$10,265
20	\$0	\$18,000	\$55,000	\$73,000	0.55	\$40,418
21	\$0	\$18,000	\$0	\$18,000	0.54	\$9,676
22	\$0	\$18,000	\$0	\$18,000	0.52	\$9,394
23	\$0	\$18,000	\$0	\$18,000	0.51	\$9,120
24	\$0	\$18,000	\$0	\$18,000	0.49	\$8,855
25	\$0	\$18,000	\$55,000	\$73,000	0.48	\$34,865
26	\$0	\$18,000	\$0	\$18,000	0.46	\$8,347
27	\$0	\$18,000	\$0	\$18,000	0.45	\$8,103
28	\$0	\$18,000	\$0	\$18,000	0.44	\$7,867
29	\$0	\$18,000	\$0	\$18,000	0.42	\$7,638
30	\$0	\$18,000	\$55,000	\$73,000	0.41	\$30,075
AL PRESENT V	ALUE OF ALTERNATIV	VE 2 (Rounde	d up to next \$	10,000)		\$1,430,000

TOTAL PRESENT VALUE OF ALTERNATIVE 2 (Rounded up to next \$10,000)

### Table I-2 Appendix I Supporting Cost Information United States Coast Guard Burrows Island Light Station Anacortes, Washington

Alternative 3 - Excavation and Onsite Repository

Alternative 3 - Excavation and Onsite Repository Capital Costs					
Description	Quantity	Unit	Unit Cost	Total Cost	Notes/Source
Preparation					
Work Plan, Agency Correspondence, and Design	1	LS	\$50,000	950,000	Professional judgement and previous project experience.
Work Flan, Agency Correspondence, and Design	Į.	LO	\$30,000	\$50,000	
Insurance, Bonding, Mobilization/Demobilization	1	LS	15%	\$36,000	Percentage of total costs, excluding transport and disposal, reporting, and testing.
Clearing/Grubbing/Tree Trimming	1	LS	\$7,800	\$7,800	Assumes up to 1 acre of clearing required to access excavation areas.
Repair to Dock Staircase	1	LS	\$50,000	\$50,000	Costs based on contractor quote and include procurement of applicable permits.
Stormwater BMPs	1	LS	\$3,900	\$3,900	Silt fencing around perimeter of work area and other BMPs as needed for material handling and staging.
Marine Equipment					
Mobilization/Demobilization of Marine Equipment	1	LS	\$20,000	\$20,000	Contractor quote, assuming initial mobilization of crane and barge to facilitate soil removal.
Crane, Barge, and Tug Boats	14	DAY	\$6,000	\$84,000	Contractor quotes, average daily rate assumes tug boats and crew not required for duration of project. Assuming equipment on standby and crew demobilizes during repository construction.
Soil Removal					
Excavate and Transfer to Onsite Repository	940	CY	\$20	\$18,474	Supplier quotes and previous project experience
Debris Removal and Handling	4,000	SF	\$5	\$20,000	RSMeans and supplier quotes, adjusted for local conditions. Includes concrete sidewalks and helicopter pad materials.
Excavate and Handle for Offsite Disposal	410	CY	\$29	\$12,087	Supplier quotes and previous project experience
Disposal		ı			
Transportation from Anacortes to Chemical Waste Management	700	TON	\$90	\$63,000	Supplier quote, assuming over-the-road transport.
Disposal of Soil at Chemical Waste Management	660	TON	\$120	\$79,200	Supplier quote, including taxes.
Transportation and Disposal of Construction Debris	40	TON	\$100	\$4,000	Supplier quote, including taxes.
Repository					
Surface Preparation	11,000	SF	\$0.47		RSMeans rate, adjusted for local conditions
Bottom GCL (material and install)	11,000	SF	\$1.30	\$14,300	Supplier quotes, adjusted for local conditions.
Waste Placement and Compaction	940	CY	\$20	\$19,101	Assume the same as placement and compaction for backfill.
Drainage (top and sides) Geocomposite	11,000	SF	\$0.40	\$4,400	Supplier quotes, adjusted for local conditions.
Cover (top and sides) GCL	11,000	SF	\$1.40	\$15,400	Supplier quotes, adjusted for local conditions.
Backfill, Grading, and Vegetation  Backfill Mobilized to Site	920	CY	\$31	\$28,290	Assumes backfill to 1-foot bgs in excavation areas, 1-foot cover over repository.
Placement & Compaction for Backfill	920	CY	\$20	\$18,694	RSMeans rate and supplier quotes, adjusted for local conditions
Grading	34,000	SF	\$0.60	\$20,400	RSMeans rate and supplier quotes, adjusted for local conditions
Seeding/Restoration	45,000	SF	\$0.10		RSMeans rate and supplier quotes, adjusted for local conditions, Includes seeding cap cover
Fence and Signage	1	LS	\$25,000	\$25,000	mondoo seeding cap cover
Building Encapsulation Repair/Restoration	800	SF	\$20	\$16,000	Scrape and stabilize trim and failing areas, prime, and re-paint.
Asbestos Roofing Replacement	4,000	SF	\$30	\$120,000	Scrape and stabilize trim and failing areas, prime, and re-paint.
Testing, Reporting, and Oversight					
Construction Oversight	30	DAY	\$1,500	\$45,000	Assumes 13 days for excavation, 7 days for construction of repository, 6 days of backfill/site restoration, 2 days for encapsulation repair, and 2 days of mobilization/demobilization
CQA Testing and Laboratory	1	LS	\$10,000	\$10,000	Includes CQA confirmation soil testing and laboratory costs.
Construction Completion Report	1	LS	\$30,000	\$30,000	
Administrative Controls	1	LS	\$20,000	\$20,000	Includes survey and other coordination of administrative controls.
		•			

 Subtotal Capital Cost
 \$844,730

 Contingency
 20%
 \$168,946

 Total Capital Cost (Rounded up)
 \$1,014,000

Capital Cost Notes: LS = lump sum

CQA = construction quality assurance

CY = cubic yards YR = year

SF = square feet GCL = geo-composite layer

SY = square yards

1. The level of accuracy of these estimated costs is "Order of Magnitude," as defined by the American Association of Cost Engineers. The accuracy of an Order of Magnitude estimate is plus 50 percent and minus 30 percent. Cost estimates at this level may be used to compare alternatives, but should not be used to plan, finance, or develop projects. Changes in the cost elements are likely to occur during the engineering design of the remedial alternative. The cost estimate was prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000). Unit costs were selected based on previous remediation and project experience and based on budgetary quotes for some materials and services.

- 2. The unit weight of soil is assumed to be 1.6 tons/CY and concrete materials are assumed to be 2 tons/CY.
- 3. Soils contaminated with PCBs would be transferred offsite for disposal. Lead and petroleum contaminated soils would be transferred to the onsite repository.
- 4. Staging area for waste transfer and mobilization of materials and equipment is assumed to be Anacortes, WA.
- 5. Prevailing wages are assumed to apply. An adjustment factor of 30% is applied to all labor.

Table I-2
Appendix I Supporting Cost Information
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Alternative 3 - Excavation and Onsite Repository			
Operation, Maintenance, and Monitoring Costs			
	Annual Costs		
Descript	ion	Quantity	
Years 1-30			
Post-Remedial Annual Cap Inspections		1	

	!	ILAN	\$3,000	φ3,000
	1	YEAR	\$7,000	\$7,000
	1	YEAR	\$3,000	\$3,000
	1	YEAR	\$5,000	\$5,000
				\$18,000
Periodic Costs				
Year	Quantity	Unit	Unit Cost	Total
Years 10, 20, 30				
	1	YEAR	\$20,000	\$20,000
	1	YEAR	\$5,000	\$5,000
Every 10 Years	1	YEAR	\$10,000	\$10,000
	1	YEAR	\$15,000	\$15,000
	1	YEAR	\$5,000	\$5,000
				\$55,000
	Year Years 10, 20, 30	Year Quantity Years 10, 20, 30  1 1	1	1

Unit Unit Cost Total

PRESENT	VALUE	<b>ANALYSIS</b>
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			Periodic			
Year	Capital Cost	Annual Cost	Cost	Total Cost Per Year	Discount Factor (3.0%)	Present Value
0	\$1,014,000	\$0	\$0	\$1,014,000	1	\$1,014,000
1	\$0	\$18,000	\$0	\$18,000	0.97	\$17,476
2	\$0	\$18,000	\$0	\$18,000	0.94	\$16,967
3	\$0	\$18,000	\$0	\$18,000	0.92	\$16,473
4	\$0	\$18,000	\$0	\$18,000	0.89	\$15,993
5	\$0	\$18,000	\$0	\$18,000	0.86	\$15,527
6	\$0	\$18,000	\$0	\$18,000	0.84	\$15,075
7	\$0	\$18,000	\$0	\$18,000	0.81	\$14,636
8	\$0	\$18,000	\$0	\$18,000	0.79	\$14,209
9	\$0	\$18,000	\$0	\$18,000	0.77	\$13,796
10	\$0	\$18,000	\$55,000	\$73,000	0.74	\$54,319
11	\$0	\$18,000	\$0	\$18,000	0.72	\$13,004
12	\$0	\$18,000	\$0	\$18,000	0.70	\$12,625
13	\$0	\$18,000	\$0	\$18,000	0.68	\$12,257
14	\$0	\$18,000	\$0	\$18,000	0.66	\$11,900
15	\$0	\$18,000	\$0	\$18,000	0.64	\$11,554
16	\$0	\$18,000	\$0	\$18,000	0.62	\$11,217
17	\$0	\$18,000	\$0	\$18,000	0.61	\$10,890
18	\$0	\$18,000	\$0	\$18,000	0.59	\$10,573
19	\$0	\$18,000	\$0	\$18,000	0.57	\$10,265
20	\$0	\$18,000	\$55,000	\$73,000	0.55	\$40,418
21	\$0	\$18,000	\$0	\$18,000	0.54	\$9,676
22	\$0	\$18,000	\$0	\$18,000	0.52	\$9,394
23	\$0	\$18,000	\$0	\$18,000	0.51	\$9,120
24	\$0	\$18,000	\$0	\$18,000	0.49	\$8,855
25	\$0	\$18,000	\$0	\$18,000	0.48	\$8,597
26	\$0	\$18,000	\$0	\$18,000	0.46	\$8,347
27	\$0	\$18,000	\$0	\$18,000	0.45	\$8,103
28	\$0	\$18,000	\$0	\$18,000	0.44	\$7,867
29	\$0	\$18,000	\$0	\$18,000	0.42	\$7,638
30	\$0	\$18,000	\$55,000	\$73,000	0.41	\$30,075
TOTAL PRESENT VA	LUE OF ALTERNATIVE	3 (Rounded up to	next \$10,00	00)		\$1,470,000

Table I-3
Appendix I Supporting Cost Information
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Alternative 4 - Excavation and Off-site Disposal

Alternative 4 - Excavation and Off-site Capital Costs	Disposai				
Description	Quantity	Unit	Unit Cost	Total Cost	Notes/Source
Preparation					
Work Plan, Agency Correspondence, and Design	1	LS	\$50,000	\$50,000	Professional judgement and previous project experience.
Insurance, Bonding, Mobilization/Demobilization	1	LS	15%	\$25,500	Percentage of total costs excluding disposal, reporting, and testing.
Clearing/Grubbing/Tree Trimming	1	LS	\$7,800	\$7,800	Assumes up to 1 acre of clearing required to access excavation areas.
Repair to Dock Staircase	1	LS	\$50,000	\$50,000	Costs based on contractor quote and include procurement of applicable permits.
Stormwater BMPs	1	LS	\$3,900	\$3,900	Silt fencing around perimeter of work area and other BMPs as needed for material handling and staging.
Marine Equipment	1				
Mobilization/Demobilization of Marine Equipment	1	LS	\$20,000	\$20,000	Contractor quote, assuming initial mobilization of crane and barge to facilitate soil removal.
Crane, Barge, and Tug Boats	18	DAY	\$6,000	\$108,000	Contractor quotes, average daily rate assumes tug boats and crew not required for duration of project.
Soil/Debris Removal					
Soil Excavation and Handling	1,250	CY	\$29	\$36,850	RSMeans and supplier quotes, adjusted for local conditions.
Debris Removal and Handling	4,000	SF	\$5	\$20,000	RSMeans and supplier quotes, adjusted for local conditions. Includes concrete sidewalks and helicopter pad materials.
Disposal					
Transportation from Anacortes to Chemical Waste Management	2,040	TON	\$90	\$183,600	Supplier quote, assuming over-the-road transport.
Disposal of Soil at Chemical Waste Management	2,000	TON	\$120	\$240,000	Supplier quote, including taxes.
Transportation and Disposal of Construction Debris	40	TON	\$100	\$4,000	Supplier quote, including taxes.
Backfill, Grading, and Vegetation					
Backfill	510	CY	\$31		Supplier quote, assuming delivery to Anacortes area.
Placement & Compaction for Backfill	510	CY	\$20		RSMeans and supplier quotes, adjusted for local conditions.
Grading	34,000	SF	\$0.68		RSMeans and supplier quotes, adjusted for local conditions.
Seeding/Restoration	34,000	SF	\$1.00	\$34,000	RSMeans and supplier quotes, adjusted for local conditions.
Building Encapsulation Repair/Restoration	800	SF	\$20	\$16,000	Supplier quote, assuming scrape and stabilize trim and failing areas, prime, and re-paint.
Asbestos Roofing Replacement	4,000	SF	\$30	\$120,000	Scrape and stabilize trim and failing areas, prime, and re-paint.
Testing, Reporting, and Oversight					
Construction Oversight	22	DAY	\$1,500	\$33,000	Assumes 18 days for soil excavation and backfill, 2 days for encapsulation, and 2 days for mobilization/demobilization.
CQA Testing and Laboratory	1	LS	\$2,500	\$2,500	Includes CQA confirmation soil testing and laboratory costs.
Construction Completion Report	1	LS	\$30,000	\$30,000	
	0				

Subtotal Capital Cost Contingency \$1,034,418 \$206,884

Total Capital Cost (Rounded up)

\$1,242,000

Capital Cost Notes: LS = lump sum

CQA = construction quality assurance

CY = cubic yards YR = ye

SF = square feet SY = square yards

1. The level of accuracy of these estimated costs is "Order of Magnitude," as defined by the American Association of Cost Engineers. The accuracy of an Order of Magnitude estimate is plus 50 percent and minus 30 percent. Cost estimates at this level may be used to compare alternatives, but should not be used to plan, finance, or develop projects. Changes in the cost elements are likely to occur during the engineering design of the remedial alternative. The cost estimate was prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000). Unit costs were selected based on previous remediation and project experience and based on budgetary quotes for some materials and services.

20%

- 2. The unit weight of soil is assumed to be 1.6 tons/CY and concrete materials are assumed to be 2 tons/CY.
- 3. Staging area for waste transfer and mobilization of materials and equipment is assumed to be Anacortes, WA.
- 4. Prevailing wages are assumed to apply. An adjustment factor of 30% is applied to all labor.

Table I-3
Appendix I Supporting Cost Information
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Soil Alternative 4 - Excavation and Off-Site Disposal

Operation, Maintenance, and Monitoring Costs				
Annual Costs				
Description	Quantity	Unit	Unit Cost	Total
Years 1-30				
None				
FOTAL ANNUAL OMM COSTS (Years 1-30)			\$0	

PRESENT VAL	UE ANALYSIS					
		Annual	Periodic			
Year	Capital Cost	Cost	Cost	Total Cost Per Year	Discount Factor (3.0%)	Present Value
0	\$1,242,000	\$0	\$0	\$1,242,000	1	\$1,242,000
1	\$0	\$0	\$0	\$0	0.97	\$0
2	\$0	\$0	\$0	\$0	0.94	\$0
3	\$0	\$0	\$0	\$0	0.92	\$0
4	\$0	\$0	\$0	\$0	0.89	\$0
5	\$0	\$0	\$0	\$0	0.86	\$0
6	\$0	\$0	\$0	\$0	0.84	\$0
7	\$0	\$0	\$0	\$0	0.81	\$0
8	\$0	\$0	\$0	\$0	0.79	\$0
9	\$0	\$0	\$0	\$0	0.77	\$0
10	\$0	\$0	\$0	\$0	0.74	\$0
11	\$0	\$0	\$0	\$0	0.72	\$0
12	\$0	\$0	\$0	\$0	0.70	\$0
13	\$0	\$0	\$0	\$0	0.68	\$0
14	\$0	\$0	\$0	\$0	0.66	\$0
15	\$0	\$0	\$0	\$0	0.64	\$0
16	\$0	\$0	\$0	\$0	0.62	\$0
17	\$0	\$0	\$0	\$0	0.61	\$0
18	\$0	\$0	\$0	\$0	0.59	\$0
19	\$0	\$0	\$0	\$0	0.57	\$0
20	\$0	\$0	\$0	\$0	0.55	\$0
21	\$0	\$0	\$0	\$0	0.54	\$0
22	\$0	\$0	\$0	\$0	0.52	\$0
23	\$0	\$0	\$0	\$0	0.51	\$0
24	\$0	\$0	\$0	\$0	0.49	\$0
25	\$0	\$0	\$0	\$0	0.48	\$0
26	\$0	\$0	\$0	\$0	0.46	\$0
27	\$0	\$0	\$0	\$0	0.45	\$0
28	\$0	\$0	\$0	\$0	0.44	\$0
29	\$0	\$0	\$0	\$0	0.42	\$0
30	\$0	\$0	\$0	\$0	0.41	\$0
TOTAL PRESE	NT VALUE OF ALTERN	NATIVE 4 (Ro	unded up to r	next \$10,000)		\$1,250,000

## **APPENDIX J Public Meeting Transcript and Summary**

### Response to the Comments on the Remedial Investigation and Focused Feasibility Study for U.S. Coast Guard Burrows Island Light Station

Public Meeting, Anacortes Public Library, January 10th, 2020

The following table summarizes comments received during the question and answer session of the public meeting for the USCG Burrows Island Light Station Remedial Investigation and Focused Feasibility Study report, conducted on January 10, 2020. The discussion was recorded by a stenographer and have been revised in the summary for clarity and brevity. Additional details have been added as noted based on research following the meeting. Questions that were similar in content have been composited. Questions of clarification on design elements are not included in the table but are provided in the transcript.

Comment Number	Commenter Name (s)	Summarized Comment	USCG Response	Location in Meeting Transcript
1	Dave Savage	Dave expressed interest in the landscaping of the property following soil removal, particularly concerning the difficulty bare rock and steep slopes would pose to vegetation management. Wanting no more bare rock than is there now.	The site will be graded following excavation in order to be compatible with expected future site uses. This will be discussed as part of the remedial design process.	pp. 6 - 8
2	Steve Anderson	Bullwhip kelp grows on the shoreline of the site and it may be a protected species with limited habitat. The kelp may be impacted by plans to anchor a barge for equipment.	As part of the CERCLA process, USCG will consult with state and federal agencies to ensure that the kelp and other species are protected.	pp. 10 - 12
3	Don Meehan	There are many maintenance and repair tasks at the light station that are not directly related to site cleanup but are essential for site safety and restoration. It would be valuable if the United States Coast Guard (USCG) could contribute to these efforts.	The USCG budget is only approved for site cleanup purposes, not restoration. However, some maintenance tasks will be included in the project scope for safety reasons during the cleanup. A review process ultimately determines which tasks are approved.	pp. 14 - 17
4	Max Schneider Dave Savage	Ms. Schneider and Mr. Savage questioned whether access to the site would be restricted during the cleanup process. Regular maintenance and restoration activities are ongoing. There are also up to 60 kayakers a day stopping at the site when the weather is good.	For safety reasons, no access to the site will be possible during the cleanup. USCG will consider hiring security to ensure safety. Site work will likely not coincide with the summer tourist season due to bird nesting season.	pp. 19 - 21
5	Doug Hennick Max Schneider Dan Call	Removal of the asbestos from the roof tiles is not currently planned under USCG's cleanup. The roof is damaged and there is concern that inclement weather could cause asbestos-containing tiles to fall to the ground with a potential for contamination.	Asbestos is not considered a hazardous material as long as the roof is functional.  Despite the damage, the roof is still considered to be functional; therefore, USCG's funding will not cover asbestos removal. The NWSS is responsible for	pp. 21 - 29

### Response to the Comments on the Remedial Investigation and Focused Feasibility Study for U.S. Coast Guard Burrows Island Light Station

Public Meeting, Anacortes Public Library, January 10th, 2020

Comment Number	Commenter Name (s)	Summarized Comment	USCG Response	Location in Meeting Transcript
5 (continued)		There is concern that some areas of the roof have exposed asbestos that has become friable. There are also considerable difficulties for the Northwest Schooner Society (NWSS) to replace the roof given the presence of asbestos and island location.	maintenance of the building, including protection from weather.  POST MEETING UPDATE: Upon further consideration of this concern, removal and replacement of asbestos tiles will be incorporated into the final remedial design. The RI/FFS report text has been updated to reflect this addition.	
6	Max Schneider	Ms. Schneider questioned whether the sidewalks will be removed from the site?	Sidewalks will be left in place when in good condition and if there is no excavation required. If areas of the sidewalks are considered a safety concern they will be replaced.	pp. 29
7	Max Schneider	Was testing for contamination done around the sidewalks?	Yes, sampling around the sidewalks was performed in the investigation, but not beneath sidewalks. Additional confirmation sampling will be performed after excavation around the sidewalks and other areas to ensure these areas meet the cleanup goals.	pp. 30
8	Max Schneider	Will foundation issues possibly caused by past excavations be fixed?	The cause of the foundation damage is not clear, and the USCG funding will not cover building repairs. Foundation repairs, if necessary, will fall to the NWSS.	pp. 32 - 35
9	Bobby Carson Dave Savage	It would be ideal if the barge for the remedial design activities could also convey roofing material for repairs to be performed by the NWSS. The NWSS has a grant from the state of Washington starting July 1st for two years that is currently on hold.  Coordinating roof repairs with remedial design would help make sure the money can be used effectively.	NWSS should discuss the possibility of coordinating roofing materials transport with the future remediation contractor.	pp. 36 - 37

### Response to the Comments on the Remedial Investigation and Focused Feasibility Study for U.S. Coast Guard Burrows Island Light Station

Public Meeting, Anacortes Public Library, January 10th, 2020

Comment Number	Commenter Name (s)	Summarized Comment	USCG Response	Location in Meeting Transcript
10	Max Schneider	Will the underground storage tank between the light station and the PCB area be addressed? It is believed to be an oil tank based on smell.	USCG will examine and address the tank if it is an oil tank.  POST MEETING UPDATE: Upon further consideration of this concern, any remaining liquid in the cistern will be removed and disposed offsite. The cistern will then be plugged and filled with cement fill. This revision has been incorporated into the Remedial Design.	pp. 46 - 47
11	Steve Anderson	Will there be another public meeting after the work is completed?	There may be another public-comment period or action memo after the remedial design is in place, but its not part of the requirements for this site. Based on interest, these actions will be considered.	pp. 52 - 53
12	Max Schneider Dan Call	Helicopters sometimes land on the landing pad at the site but take off before they can be identified.	If this is a problem, USCG may be able to help if the tail number, description, date, and time are reported. USCG will look into the status and necessary markings of the landing pad.	54 – 57

### **Abbreviations and Acronyms:**

 ${\sf CERCLA: Comprehensive \ Environmental \ Response, \ Compensation, \ and \ Liability \ Act}$ 

NWSS: Northwest Schooner Society USCG: United States Coast Guard

1	
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4	
5	PUBLIC MEETING RE
6	REMEDIAL INVESTIGATION AND FOCUSED FEASIBILITY STUDY AT
7	U.S. COAST GUARD BURROWS ISLAND LIGHT STATION,
8	SKAGIT COUNTY, WASHINGTON
9	
10	
11	FRIDAY, JANUARY 10, 2020
12	6:00 p.m.
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18	
19	THE PUBLIC MEETING was held at the Anacortes
20	Public Library, 1220 10th Street, Anacortes, Washington
21	98221 on the 10th day of January, 2020, beginning at
22	6:01 p.m., and public comments ran from 6:10 to
23	8:00 p.m., before Nor Monroe, Certified Court Reporter
24	for the state of Washington.
25	

1	APPEARANCES
2	
3	
4	JAMES HALL, U.S. Coast Guard, Project Manager
5	JEFF ZAPPEN, U.S. Coast Guard, Lighthouse Coordinator
6	for Washington
7	PAUL MCCULLOUGH, Arcadis, Engineer of Record
8	JOSH GRAVENMIER, Arcadis, Project Manager
9	MARK ULLERY, Arcadis, Project Engineer
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(ANACORTES, WASHINGTON; FRIDAY, JANUARY 10, 2020) 1 2 (After a presentation by James Hall, public comment 3 began at 6:10 p.m.) 4 JAMES HALL: And at this point, I'll open it 5 up for questions or comments. 6 Sir. 7 DAN CALL: The maps didn't indicate where the 8 PCB spill occurred, or --9 JAMES HALL: Sure. DAN CALL: -- if they did, I missed it. 10 JOSH GRAVENMIER: Can you state your name, 11 12 please, and spell it for our --13 DAN CALL: Dan Call, C-A-L-L. 14 JAMES HALL: So that is right in this area 15 right here [indicating]. That red . . . [indiscernible] 16 no, no, no. I'm sorry. It's down here [indicating]. 17 (Simultaneous talking.) 18 JAMES HALL: This is the -- this K section 19 down here, that is the PCB transformer spill. 20 transformer pad was right in this area [indicating]. 21 When the spill happened, the Coast Guard came in and dug 22 up a lotta soil. I think it was 170 cubic yards at the 23 time. We think they backfilled it with some concrete, 24 based on our sampling effort. That'll be further . . . 25 you know, that'll be further delineated. We -- we found

1 some residual PCBs. Not a lot. Levels are pretty low. 2 The s- -- the concentration that's acceptable in 3 Washington state right now is one part per million, or 4 one milligram per kilogram. We did have exceedances of 5 that, so that soil will need to be -- you know, that 6 soil will go off site. 7 DAN CALL: And as a follow-on question, if I 8 may, you mentioned that at the time of the original 9 spill, it was done to the then existing standards --10 JAMES HALL: Yep. 11 DAN CALL: -- and now you're proposing to do 12 it to the now existing standards. What are -- can you 13 check your crystal ball and see what might happen in the 14 future in that regard? JAMES HALL: I cannot. 15 I have no idea what 16 the future standard might be. But I will tell you that 17 one part per million is pretty low, and if we get it 18 down to one part per million, it's prob'ly pretty close to zero. 19 20 MAX SCHNEIDER: Max, M-A-X, Schneider, 21 S-C-H-N-E-I-D-E-R. 22 What you're talking about doing involves some 23 pretty heavy equipment. It also involves being able to 24 move your equipment from the water to the land.

Right.

JAMES HALL:

25

MAX SCHNEIDER: How are you gonna do that?

JAMES HALL: So there's two -- we're -- we're

looking at two methods, and it's gonna depend on the -
the size of the equipment that ends up being needed. We

can lift hel- -- we can lift equipment in with a

helicopter if we have to, and we can also potentially

anchor a crane that can reach onto the island.

MAX SCHNEIDER: So I guess my potential

question here, with being part of the people that are

question here, with being part of the people that are taking care of this property, is moving that amount of material, even if it's done with a helicopter, is gonna cause considerable damage to how you get on the island; how you get off. Is that written into how -- your proposal for what you're gonna do there?

JAMES HALL: So we don't intend to impact the landing site as it is right now. As a matter of fact, we'll probably end up having to shore up part of that -- that landing, 'cause it looks like it's washed out.

MAX SCHNEIDER: Last year's storm was very severe.

JAMES HALL: Yeah.

MAX SCHNEIDER: I guess that's my question in a nutshell, is will you, you know, restructure that and -- you know, 'cause getting that soil off of there is gonna be interesting.

JAMES HALL: S- -- yeah, so we're still 1 2 developing -- like, that'll be part of the remedial 3 design, is to how -- how we're actually going to 4 implement that. But most likely we'll end up anchoring 5 a bar- -- or -- yeah. There will be an anchor system 6 with a barge somewhere out -- off the side of this island [indicating] --7 8 MAX SCHNEIDER: Mm-hmm. 9 JAMES HALL: -- and some way soil will get 10 moved on and off. 11 But in order to get people on and off the 12 landing up here, which is washed out, will most likely 13 have to be repaired. 14 MAX SCHNEIDER: And in this repairing, are you 15 planning on bringing people on and off every day or are 16 they staying over? 17 JAMES HALL: That hasn't been determined yet. 18 That'll be a question for the contractor who's awarded 19 the contract. 20 MARK ULLERY: We got a historical site plan 21 [indiscernible]. 22 JAMES HALL: Sure. 23 Sir. 24 DAVE SAVAGE: Dave Savage, S-A-V-A-G-E. 25 represent the Northwest Schooner Society --

1	JAMES HALL: Yes, sir.
2	DAVE SAVAGE: and I'm president of it. And
3	we have a license. We're eight years into ten years'
4	worth of license. And we're delighted you're here.
5	JAMES HALL: Happy to hear that.
6	DAVE SAVAGE: I mean, this is this is
7	we've been waiting. It's great. And I'm really
8	impressed with the sampling on the island. I mean, you
9	really do know what's there.
10	Okay. So we're all for number four.
11	JAMES HALL: Okay.
12	DAVE SAVAGE: Go get 'em.
13	(Laughter.)
14	DAVE SAVAGE: And what we'd like to see when
15	you're done is that there's no more bare rock than there
16	is now. Because for grass. I mean
17	JAMES HALL: Okay.
18	DAVE SAVAGE: so we have and that the
19	contours are fairly smooth, for kind of a simple reason:
20	that it's tough to mow steep-side hills, and they're all
21	volunteers.
22	JAMES HALL: Under understood. So the
23	the cut where the helicopter pad is now
24	DAVE SAVAGE: Mm-hmm.
25	JAMES HALL: we'll probably try to smooth

1	that out. It's gonna d what the final contouring
2	was gonna look like is gonna depend on the future site
3	uses.
4	DAVE SAVAGE: Yeah.
5	JAMES HALL: And we're gonna need to discuss
6	that further when we get to the remedial design.
7	But yeah we we understand that, and
8	DAVE SAVAGE: Yeah.
9	JAMES HALL: we're gonna work towards that.
10	DAVE SAVAGE: The the helicopter the
11	landing pad with the Marston Mat that's in there now,
12	if if it could somewhat resemble what it is, a flat
13	area
14	JAMES HALL: We we under
15	DAVE SAVAGE: when we're done
16	JAMES HALL:stand the the flat area's
17	important to the future use of the property, and we will
18	work towards towards making it stay the same.
19	DAVE SAVAGE: Just wanted that in the record,
20	yeah.
21	We're delighted you're here. Thank you.
22	MAX SCHNEIDER: As you were saying sorry
23	to finish what I was talking about, where were you
24	planning on putting a barge to offload on?
25	JAMES HALL: So we're not sure we're not

1 100 percent sure yet. And some -- and to an extent, 2 that is gonna depend on the company that ends up winning 3 that job. 4 MAX SCHNEIDER: Right. 5 JAMES HALL: But our thought is that they will 6 anchor somewhere in here [indicating], using a -- an 7 anchor system. 8 MAX SCHNEIDER: It's a more feasible spot, 9 because the tides are severe. 10 JAMES HALL: Yes. 11 MAX SCHNEIDER: And trying to do it on the 12 stair side would be. . . . 13 JAMES HALL: I don't think that the stair 14 sides is feasible, based on my experience with it. I --15 I don't think that that's gonna happen. 16 DAN CALL: It'll be too shallow on the stair 17 side. 18 JAMES HALL: Yeah. Sir. 19 20 STEVE ANDERSON: Steve Anderson, Northwest 21 Schooner Society. So let's see. Arcadis was the 22 testing company that did the site testing. You mentioned going down a half a foot to three feet. 23 24 has that -- like, the limitation Arcadis was able to go 25 down with their testing tool, or the half-foot down to

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1
     three feet is some other. . . .
 2
               JAMES HALL:
                            So -- so the --
 3
               (Simultaneous talking.)
               JAMES HALL: -- so either would have hit
 4
 5
     bedrock or they would have hit clean soil.
 6
               STEVE ANDERSON: Okay. So they dug down as
     far as they basically could?
 7
 8
               JAMES HALL: Yes.
 9
               JOSH GRAVENMIER: We dug down; sampled.
                                                         If it
10
     was contaminated or above the level, then we would go
11
     down more, unless --
12
               (Simultaneous talking.)
13
               STEVE ANDERSON: Oh, you did it in steps.
14
               JOSH GRAVENMIER: Yes.
15
               STEVE ANDERSON:
                                Ah, okay.
16
               All right. Second, another -- something
17
     slightly different. The place that you mentioned maybe
18
     the company -- a company that gets a contract anchor off
19
     that one site. They've got that bullwhip sea grass.
20
     Apparently that is . . .
21
               JAMES HALL: So --
22
               STEVE ANDERSON: . . kinda delicate stuff.
23
     Only coupla places it grows. [Indiscernible] Natural
24
     Resources is gonna have a problem with that.
25
               JAMES HALL: So as part of the CERCLA process,
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1 we will consult with the -- the different agencies, 2 state and federal, and in part -- as part of that 3 consultation, we'll get either best management practices 4 or -- because it's CERCLA, there are no permits, but 5 we'll essentially have what -- we'll have consultation 6 in place that covers saving or -- or destruction. Yeah. MAX SCHNEIDER: Is there a time frame involved 7 8 with this? 9 JAMES HALL: It. . . . 10 (Laughter.) 11 STEVE ANDERSON: Key question. 12 JAMES HALL: It -- it's a priority. I guess 13 that that's what I would say. I -- I -- it's very 14 hard for me to put times in because there's a lot of 15 factors involved. 16 MAX SCHNEIDER: Right. [Indiscernible] shot 17 in the wind would be given the current situation that's 18 happening with the government, are we gonna get dinged 19 by that or we --20 JAMES HALL: No. 21 MAX SCHNEIDER: -- well on the roll here? 22 JAMES HALL: No, so . . . so my job is to --23 to clean up properties. The Coast Guard essentially 24 gets the same pot of money every year to do cleanups --25 MAX SCHNEIDER: Mm-hmm.

1 JAMES HALL: -- and this is -- this is prob'ly 2 my highest and -- maybe second highest -- priority 3 cleanup that I -- that I have. So it's -- it's high up 4 on my list of projects to do. 5 Sir. 6 DON MEEHAN: Don Meehan, Lighthouse Environmental Programs. So when it's all said and done, 7 8 you're replacing soil, and you're comin' back to the 9 level that was traditionally there. Is that correct? 10 JAMES HALL: So I don't know exactly what the 11 grading's gonna look like because -- and I don't have, 12 like -- so I have some historic t- -- topography, but I 13 don't know for sure -- I don't have a hundred percent, 14 you know, what that is. But in the past, when they did 15 a previous remediation project in 2005, they dug out a 16 lot around the buildings. 17 DON MEEHAN: Yeah. 18 JAMES HALL: We're gonna replace that. 19 don't want that negative grade there. 20 DON MEEHAN: Okay. That's what I w- -- and --21 and will you p- -- you know, compact it? 'Cause 22 vou're --23 JAMES HALL: So --24 -- gonna go in there and then DON MEEHAN: 25 you're gonna leave.

JAMES HALL: So we are probably not going to do, like, 95 percent compaction, because if we do that, grass won't grow. We're gonna compact it to a point where you're not gonna see subsidence, but we don't wanna compact it to a point where you can't get vegetation to grow back.

2.1

MAX SCHNEIDER: So the other involvement, when you're cleaning up this area, there are quite a few piping systems that are going on out there.

JAMES HALL: There are. And so part of what Arcadis did this year was to trace out where those piping systems are. As we dig, we may find other abandoned utilities that didn't show up. At that point, we will probably remove them, unless there's a need for them on site. Because it's a potential for recontamination if those pipes aren't clean.

DAVE SAVAGE: One of the things we have to do to get this site back functioning, where people can be there, is restore those utilities. So we need at least enough dirt to bury a pipe in and electrical that we -- electrical from generator and -- since there's no on-site electricity anymore. But -- so when they go back and fill it in, we need to be able to have enough dirt to put utility, either water or electrical, in the soil.

JAMES HALL: So I guess what I'm gonna say is that we prob'ly are not going to cover more bedrock than what is already there. We're also not going to -- to, like, take a -- we're not going to change the depth of soil that's there in -- if we need to bring back -- fill in, we would. We're gonna -- we plan to restore the site as much as we can.

 $$\operatorname{\textsc{MAX}}$$  SCHNEIDER: My assumption with that restoration is that are you gonna replant grass seed or. . .

JAMES HALL: So we will probably -- for -- for erosion reasons, we'll prob'ly wanna come in and hydroseed or -- or try -- we'll try to match the grass that's there. We may actually already have that data. We're gonna go back and check our reports. That was one of the things we talked about today. But . . . yeah, we will most likely have to rehydroseed it, because we don't want to have erosion issues during the year that we're [indiscernible].

Sir?

DON MEEHAN: Yeah, so James, on -- on the -- where we come in to the -- to the lighthouse, and the light station, you know, we've got a huge erosion problem there, with that concrete bulkhead that's there --

JAMES HALL: This one right here [indicating]?

DON MEEHAN: Yeah.

JAMES HALL: Yeah.

DON MEEHAN: Yeah. And so are you guys gonna

fix that? I mean --

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(Simultaneous talking.)

JAMES HALL: So --

DON MEEHAN: Here -- here's the -- why I'm asking this question is that it's one thing to come in and clean up all the nasty chemicals that have fallen off the building through the years, but it's another thing to think about preservation, and the fact that when you guys are said and done, we really, as a community, we want this facility to -- to be a shining example of what a light station was. And we recognize that it takes a hell of a lot of volunteer effort to get there. And so I'm always very interested in, okay, well, what capability are you giving us after you leave that would help us to the next step up, to be able to do these things that -- that need to be done. And as Dave has already pointed out, they've been at it for eight years, and. . . I -- I can tell you a whole buncha things that could make huge improvements there if -- and would be very easy for the Coast Guard to actually do those kinds of things. They don't have to do with the

removal of nasty chemicals that are on site. They have to do with fixing structures there that make things work better for the teams that come in later, years later, literally.

JAMES HALL: So I understand, and I would love to have the money to do that. Unfortunately, my funding stream that I can use to clean this project up is restricted only to cleaning up. Now, if I have to repair something in the process, to make it safe for people to get on and off, then that can be included in the scope. But I cannot use the money just for -- for other restoration. I -- I wish I could. I wish I could go in and clean the entire place up and then restore it all. That funding stream is --

(Simultaneous talking.)

DON MEEHAN: -- recognize you're not gonna do that. But -- but like I say, the -- fixin' -- fixin' that whole staircase would be a huge -- huge asset to everybody.

JEFF ZAPPEN: And -- and depending on the scope of work and which contractor gets, they may get there and realize that this isn't safe for their employees, and that may be added to the scope to at least repair from the landing to the boathouse --

DON MEEHAN: Yeah.

1	JAMES HALL: Correct.
2	JEFF ZAPPEN: that would meet current OSHA
3	or
4	(Simultaneous talking.)
5	DON MEEHAN: You know what I'm talking about?
6	JEFF ZAPPEN: I do. I absolutely I do.
7	But
8	JAMES HALL: And we've we've noted it, as
9	well.
10	JEFF ZAPPEN: Right.
11	JAMES HALL: That when we write a scope
12	of work for things like this, it goes through a review
13	process, and they look and see, like, is this
14	appropriate or is it not. Things that I put in are
15	sometimes removed, as they say, even though I think that
16	it's appropriate for the use of funds. Like, it goes
17	through a process. So I I don't wanna promise
18	anything. I would say that I feel like it's unsafe and
19	I would want that fixed before I put people going in and
20	outta there.
21	DAVE SAVAGE: Do you think you'll be removing
22	much of the foundation from the officers' quarters?
23	JAMES HALL: We will be removing at least some
24	of it, because it's in the way of the cleanup.
25	DAVE SAVAGE: Yeah.

	·
1	JAMES HALL: I don't know that we'll be
2	rem I don't know how much of it will be removed.
3	JEFF ZAPPEN: You're talking about the OIC
4	quarters that are no longer there?
5	JAMES HALL: Yeah.
6	Sir.
7	KEN DINSMORE: What's what are you gonna do
8	with the helicopter landing pad?
9	JAMES HALL: We'll be removing that. We need
10	to clean up underneath.
11	MAX SCHNEIDER: Are you talking about the
12	materials or
13	(Indiscernible talking.)
14	JEFF ZAPPEN: The metal grating will go away,
15	then they'll remediate underneath it. The the
16	purpose of landing a helicopter, at least from the
17	federal government standpoint, is no longer needed. But
18	again, to support the needs of the future, it'll more
19	than likely be left flat.
20	JAMES HALL: Yeah, we're gonna we're
21	gonna we're gonna leave it flat.
22	JEFF ZAPPEN: So
23	JAMES HALL: We understand that that's a
24	priority.
25	JEFF ZAPPEN: Tents, camping, other

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1
     [indiscernible] pavilions --
 2
                (Simultaneous talking.)
 3
               JEFF ZAPPEN: -- weddings [indiscernible]
 4
     still be supported.
 5
               DON MEEHAN:
                            So how long is this gonna take
 6
     from the time you guys let your contractors go to work?
 7
     Do you have a deadline on when you wanna see this done?
 8
                (Laughter.)
 9
               DON MEEHAN:
                            I -- I'm sorry. I ask all the
10
     hard questions.
11
               JAMES HALL: No, no, it's fine.
12
     what -- that's why here.
13
                (Simultaneous talking.)
14
               JEFF ZAPPEN: It's not a hard question.
15
     a flexible answer.
16
               JAMES HALL: Yes. So -- so, I mean, ideally,
     we wanna see it happen as fast as possible. In realty,
17
18
     I just can't give an answer as to, like, how long
19
     it'll -- how long it'll -- how long the work will
20
     actually take and how long it'll take to get to the
21
     point where the work is -- is . . . you know --
22
                (Simultaneous talking.)
23
               MAX SCHNEIDER: I guess my only other question
24
     about it would be: When you're in the midst of doing
25
     all this, can we still continue on our projects?
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JAMES HALL: No. When we start the work on this, we will have to restrict access to the island. So because of the lead contaminants and the PCBs, and also just because the heavy equipment moving around, it just isn't safe.

DAVE SAVAGE: Currently we work, with good weather, year-round, but really from May to September is the active work season. Also during that time we can have up to 60 kayaks show up on a day.

(Simultaneous talking.)

DAVE SAVAGE: On the weekends in the summer. So there's a lot -- actually a lotta traffic for this place.

MAX SCHNEIDER: There's a ton of traffic, and we started installing game cameras to make sure that people are on and off and not living there and things like that. And there is a ton of traffic. So in getting certain entities to cooperate with you in the sense that they shouldn't go on the island. . . .

JAMES HALL: It -- it may come to the point where we have to hire security. We've had -- I've had to do that at other sites. Hopefully it doesn't come to that. And it may be that the -- our -- really our work window for this is outs- -- is -- is in -- outside of nesting season, so I think it'll likely begin in August

1 is the earliest that we can start work. So it may be 2 that we -- that the work window -- the way the work 3 window lines up is that we avoid, you know, that -- that 4 time of year. 5 (Simultaneous talking.) 6 UNIDENTIFIED MAN: Nesting of what? 7 JAMES HALL: Eagles. 8 JEFF ZAPPEN: And so even though it's a CERCLA 9 process, we're still worried about the Migratory Bird 10 Act; the Marine Mammal Protection Act; the murrelet; the 11 puffin. 12 JAMES HALL: Yeah. It's a cleanup project, 13 and we don't get permits, but we still follow all of the 14 same regulations and laws and rules. It's just a 15 slightly different process. 16 JEFF ZAPPEN: The world of work for most of 17 our ATON and lighthouse work is August to October. 18 Every year. 19 DOUG HENNICK: I'm Doug Hennick, 20 H-E-N-N-I-C-K. Can you explain why Coast Guard doesn't 21 have to handle the asbestos problem out there? 22 JAMES HALL: So the asbestos problem is 23 because it's inside the building. And so for my 24 projects, I am not allowed to -- using of the funding 25 stream that I have available, I'm not allowed to clean

up anything that is inside the building. 1 2 (Simultaneous talking.) DAVE SAVAGE: The tiles on the roof are 3 4 asbestos. 5 JAMES HALL: So the tiles on the roof are 6 asbestos. That becomes a little trickier. So --DAVE SAVAGE: Asbestos; reinforced concrete. 7 8 JAMES HALL: Right. And so that asbestos, 9 because it's encased, and as long as it's on the roof, 10 it's preserving its function. If it falls off the roof, 11 then we can clean it up. 12 MAX SCHNEIDER: So I guess the question at 13 this point about the roofing would be that there's been 14 considerable damage because of the weather. 15 JAMES HALL: Okay. 16 MAX SCHNEIDER: So . . . you know . . . if 17 it's not removed, it's gonna contaminate again. 18 JEFF ZAPPEN: James. 19 JAMES HALL: Yes. 20 JEFF ZAPPEN: So just -- just carefully review License states that the Northwest 21 your license. 22 Schooner Society is gonna ensure that the weather 23 envelope is there. So if we were to go in and remove, 24 let's say, hap- -- we slip, we fell, a hundred asbestos 25 tiles slipped, and now you don't have a roof, that's

1 gonna fall on you to fix. 2 So what James is saying is currently . . . 3 70 percent of the tiles are in place; 80 percent; 90. 4 I -- I know there's pieces on the ground. But you have 5 a fairly intact roof on that one side. We're not gonna 6 remove, because it's doing its job. And our money -you said the current government budget. We're actually 7 8 doing pretty good, but as James pointed out, it's very 9 strict and very -- the protocols are ridiculous on what 10 we can spend our money on. 11 MAX SCHNEIDER: I understand what you're 12 saying, but to be very clear about it, that we have done 13 repairs on that roof in order for it to s--- be 14 working --15 JEFF ZAPPEN: Right. 16 MAX SCHNEIDER: -- and a roof --17 (Simultaneous talking.) 18 JEFF ZAPPEN: And that's part of your license, 19 though . . . 20 MAX SCHNEIDER: I understand that. 21 JEFF ZAPPEN: . . to do that. 22 MAX SCHNEIDER: But we're talking about tarping and putting boards up and that sort of thing 23 24 instead of building a roof. 25 JEFF ZAPPEN: And at some point, I imagine,

like Mukilteo, Patos, Dungeness, you're prob'ly gonna 1 2 end up replacing those roofs. 3 MAX SCHNEIDER: And I agree with that 4 full-heartily. But no, we're not like any of those 5 lighthouses. Everything we do is on an island. 6 very, very hard to get equipment out there. 7 JEFF ZAPPEN: I agree. 8 MAX SCHNEIDER: It's very, very hard to get 9 things on and off. 10 JEFF ZAPPEN: I -- I hear you. Trust me. 14 11 lighthouses fall under my office. 12 MAX SCHNEIDER: I understand that --13 JEFF ZAPPEN: You are --14 MAX SCHNEIDER: -- sir. 15 JEFF ZAPPEN: -- an island, but so is Patos. 16 MAX SCHNEIDER: What I'm trying to explain at 17 this particular point is that there have been stop gaps done in order for it to be a roof. It's not a whole and 18 19 healthy roof --20 JEFF ZAPPEN: Agreed. 21 MAX SCHNEIDER: -- the respect that you're 22 talking about it. And all's it takes is another 23 windstorm, all's it takes is another wind --24 JEFF ZAPPEN: Mm-hmm. 25 MAX SCHNEIDER: -- to blow all those onto the

1 And I -- at this particular point, as far as I around. 2 understand, we're prepared to put a new roof on that. 3 JEFF ZAPPEN: Right. 4 MAX SCHNEIDER: We're not prepared to take 5 every single piece off that's contaminated, because 6 we're not really allowed to do that. So we're kinda in 7 a sticky wicket. 8 JEFF ZAPPEN: It's a unique site. Absolutely. 9 It is a unique site. 10 MAX SCHNEIDER: And, you know, if we keep that 11 sort of thing in mind, that would be great. 12 considering that you're considering helicopters, a lotta 13 that roof's gonna not exist. 14 JAMES HALL: Okay. Well, I mean, we can keep 15 that in mind and -- yeah. 16 MAX SCHNEIDER: Thank you. 17 DON MEEHAN: James? Did anybody mention how 18 much we appreciate you doin' this? 19 (Laughter.) 20 JAMES HALL: Well, I'm happy to be doing it. 21 MAX SCHNEIDER: Can it look like that when 22 we're done? 23 (Indiscernible talking.) 24 DON MEEHAN: -- we have some of that on the 25 island?

1 JEFF ZAPPEN: Unfortunately, that's not 2 indigenous to the island, so we can't bring that in. 3 (Simultaneous talking.) 4 JEFF ZAPPEN: The State won't allow that. 5 Woops. Go ahead, sir. 6 DAN CALL: So I think I understood the 7 discussion that just went on about the roof, but that 8 means that you are abandoning in place hazardous Is that --9 materials. 10 JAMES HALL: So --11 DAN CALL: -- correct? 12 JAMES HALL: -- asbestos is an interesting 13 substance in that it isn't a hazardous material as long 14 as it's performing the job that it's supposed to do. 15 if the tile falls off the roof, at that point it's a 16 waste and I can dispose of it. As long as it's on the 17 roof, I cannot touch it. DAN CALL: But . . . but isn't that material 18 19 being weathered, and isn't it being exposed by 20 continuing to be on the building? Or are you saying 21 that if you walked away from it and nobody touched it, 22 ten years from now there wouldn't be any free asbestos 23 anywhere? 24 JAMES HALL: I'm not saying that. 25 (Laughter.)

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1
               DAN CALL: I didn't think you were. I'm just
 2
     trying to get you to. .
               JAMES HALL: I -- I can only clean up
 3
 4
     hazardous materials that are -- that have been released
 5
     to the environment. I guess that's -- I -- I know -- I
 6
     know that is not the answer everybody wants, and I wish
     I could give you the answer that I would like to give
 7
 8
     you, but I -- I just can't. I mean, that's -- my
 9
     funding source will not cover me removing anything from
10
     the roof or disposing of the tiles.
                                           I -- I --
11
     they'll -- I can -- we will clean up the tiles that are
12
     on the ground, because that's been released to the
     environment at that point, but I cannot clean up the
13
14
     tiles that are on the roof.
15
                          So if by some mysterious process a
               DAN CALL:
16
     bunch of those tiles ended up on the ground, you'd haul
17
     'em away?
18
               MAX SCHNEIDER: No.
                                     No.
19
               (Laughter.)
20
               (Simultaneous talking.)
21
               BOBBY CARLSON: Don't put that in the
22
     transcript.
23
               (Indiscernible talking.)
24
               DAN CALL: And let me clear: I'm not a member
25
     of this society or. . . .
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1 (Laughter.) 2 MAX SCHNEIDER: Oh, this is --3 (Simultaneous talking.) 4 DAN CALL: I'm an Anacortes resident, not a --5 DON MEEHAN: James, do you -- do you have a 6 ballpark figure on what estimate this is gonna cost? A million dollars. 7 JAMES HALL: A million? That's all? 8 DON MEEHAN: 9 JAMES HALL: As a nice, round number. 10 DON MEEHAN: Yeah. Thank you. 11 DAN CALL: For sure. 12 DON MEEHAN: Thank you, taxpayer. 13 JAMES HALL: Is that. . . . 14 JOSH GRAVENMIER: I -- I think the only thing 15 I would mention is that asbestos, when it was installed, 16 and now that it's been there, gets kinda grandfathered 17 It's still encapsulated. It's only when it becomes 18 friable when -- when it becomes a hazardous waste. 19 if you're gonna remove a piping that has asbestos on it, 20 you have to treat it as hazardous waste. But the piping 21 itself that has asbestos insulation on it can remain in 22 place and be fine. It's only when it becomes friable 23 that it is actually a waste or hazard. 24 JAMES HALL: When it -- when it gets disturbed 25 or when the fibers go into the soil, if, you know, you

1 the soil and there's fibers in there, that -- that 2 becomes a waste. But, yeah, as long as it's encased in 3 the concrete, it's -- it's not --4 MAX SCHNEIDER: This is --5 JAMES HALL: -- friable. 6 MAX SCHNEIDER: This is the 7 point [indiscernible]. I guess it's the point that 8 everybody's driving home time and time again is the fact that it is. 9 10 JAMES HALL: Asbestos. 11 MAX SCHNEIDER: It's been flying in the 12 breeze. 13 JAMES HALL: Oh. Okay. 14 MAX SCHNEIDER: So it's not encapsulated in 15 what -- any way, shape, or form. I have a HAZWOPER 16 myself, and I know exactly what to do with the stuff and 17 exactly what not to do with it, and it's at that point. 18 JAMES HALL: Okay. 19 DOUG HENNICK: Doug Hennick again. Are you 20 gonna pour a new concrete sidewalk around that building 21 out there? 22 JAMES HALL: So no, we're not going to pour a 23 new concrete sidewalk around the building. I know the 24 sidewalk's been brought up. And the portions of the 25 sidewalk that are in poor condition, we'll -- we'll

1 remove that. There's a lotta sidewalk out there that 2 seems to be in -- in relatively decent condition --3 DAVE SAVAGE: Yes. JAMES HALL: -- and we wouldn't want to remove 4 5 As a matter of fact, I think that it might be that. 6 historical, and so that would become kind of a problem 7 for us to remove. And it's unlikely to be contaminated 8 underneath. You know, it's prob'ly been there, frankly, 9 since the contamination started. Same with some of the 10 other foundations around. We'll likely clean up around 11 them, but we don't wanna remove, you know, other 12 foundations that are in good shape. If -- if it's 13 shattered and broken and it's in the way and it's -- you 14 know, there's contamination underneath it, we're gonna 15 clean that up. 16 DOUG HENNICK: Okay. And then so you'll just 17 leave grass in its place if you take it away? 18 JAMES HALL: Yeah. MAX SCHNEIDER: That would be a curious 19 20 question. When you were testing, did you test around 21 the cracks in the sidewalks or . . . pieces that were 22 missing or. . . 23 JOSH GRAVENMIER: You were the one collecting 24 most of the samples.

MARK ULLERY: We collected samples close --

25

1 within the concrete, both inside and outside, around the 2 duplex specifically, and we collected composite samples 3 that were representative of that area around the duplex, and included the sidewalk. 4 5 JAMES HALL: When we -- when we do the 6 remediation, there's gonna be confirmation sampling 7 that's done, and so when they dig down, they'll, 8 you know -- they'll sample along that sidewalk. 9 MAX SCHNEIDER: Thank you [indiscernible]. 10 DAVE SAVAGE: A detail. The 102 up here 11 that's the coal-oil storage shed for the lighthouse at 12 one time, and there's contamination around it, are you 13 likely to remove that foundation or not? Be the same 14 answer as it's been there for so long that . . . that 15 it's in terrible shape, but I'm not sure it'd be 16 reusable, but. . . . 17 JAMES HALL: So if it's in terrible shape, you 18 know, if it's cracked and crumbling and there's contamination underneath of it, it'll be removed. 19 20 it's -- you know. If there's a good reason to leave it, 21 we -- we can certainly discuss it. 22 DAVE SAVAGE: Well, at some point that 23 structure will be replaced. 24 JAMES HALL: Okay. 25 DAVE SAVAGE: And if the foundation is usable

or repairable, we should keep what's there.

JAMES HALL: And we feel the same way. I mean, if there's a repairable in -- if in -- if there's a repairable foundation that's in good condition and it can be reused, we're open to leaving than in place.

DAVE SAVAGE: And then on the foundation of the main quarters building, there's a lotta paint peeling off of it, especially at the interface where the soil was at one time.

JAMES HALL: Right.

DAVE SAVAGE: And so do you peel off that -- the loose stuff and then repaint that? Or what's --

JAMES HALL: So the areas on the -- the areas on the -- the buildings that have peeling paint that the -- either the encapsulation has failed or it wasn't encapsulated in the previous project, those will be re-encapsulated, and in some cases it'll have to be scraped off. But we're not going to leave the site in a manner where it's gonna be recontaminated with flaking lead paint.

DAN CALL: I've only been around -- I just moved here a couple years ago, so what went on historically I'm clueless about. But I notice that some of the areas that I now understand you removed soil at some point, there are cracks in the foundation of the

structure that I don't know if those resulted from the 1 2 removal of the lateral support to the structure or if it was something else. Where does that fit into your 3 4 plans? 5 JAMES HALL: So I can't repair it. I wish 6 that they hadn't done that. 7 (Laughter.) 8 JAMES HALL: I'm going to put the soil back so that it doesn't -- you know, so it has the lateral 9 10 support there and so that we don't have water, you know, 11 washing into the building. 12 MAX SCHNEIDER: So we don't really have 13 anywhere to go with that, do we? 14 JAMES HALL: With. . . 15 The damage that was caused MAX SCHNEIDER: 16 because of that remedial. JAMES HALL: No. I -- not that -- there's 17 nothing -- I -- I can't -- I can't do anything about 18 that. 'Cause I can't even -- I can't even be sure that 19 20 that is the cause of that. So. . . . 21 MAX SCHNEIDER: Is there anywhere to go with 22 that or no? 23 JEFF ZAPPEN: Again, if you've read the 24 license, there's other -- I know you're unique. I know 25 you're an island. But this is the responsibility of

the -- of the licensee, to -- to assume the responsibility of this. The Lighthouse Society -- U.S. Lighthouse Society [indiscernible] Point Wilson, which includes the riprap and sea wall. The last time the Coast Guard fixed that was \$1.8 million. And I realize accessibility's a lot easier, and the U.S. Lighthouse Society's a much bigger organization, but that's a huge take for a licensee to -- to assume. So there's a lot of the stuff falls on the -- the individuals or the agency that takes responsibility of the structure within that government contract.

(Simultaneous talking.)

MAX SCHNEIDER: I have no confusion about the responsibility, and I have no confusion about the expense of it and the damage that's been done. What I do have confusion about is that it was done by another company, another agency, that was supposedly cleaning up this site. So. . . .

(Simultaneous talking.)

JEFF ZAPPEN: -- I don't know we actually know for a fact that that was a cause of the cracked foundation. Do we?

MAX SCHNEIDER: Oh, it's structural. You can look at it and you know right off that that's what happened. I retired from construction.

1	You retired from house building.
2	There's more than one person that's been out
3	there inspecting it, and it's very apparent that that's
4	what happened.
5	JEFF ZAPPEN: Well, it's that'd be another
6	funding stream outside of what James has with this
7	project.
8	MAX SCHNEIDER: Okay, James. It's all right.
9	(Laughter.)
10	JAMES HALL: Again, you know, I mean, I wish I
11	could. I just that I just
12	MAX SCHNEIDER: It's just to make it clear at
13	this point because, as you know, we've waited a long
14	time. You're our favorite son right now.
15	(Laughter.)
16	JAMES HALL: Sir.
17	STEVE ANDERSON: Steve Anderson. So 106 that
18	was on there, that's the old pump house. But is there
19	any plans of some involvement or work being done on
20	that? Was that is
21	(Simultaneous talking.)
22	JAMES HALL: 106 way up there? No. That was
23	clean, and so we don't we're not touching that.
24	STEVE ANDERSON: Okay.
25	DON MEEHAN: Fixing the old crane there would

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1
     really be a help to the new contractor coming in.
 2
               (Laughter.)
 3
               (Simultaneous talking.)
 4
               DON MEEHAN:
                            I'm pretty sure.
 5
               JAMES HALL:
                            So I'm gonna tell you, we -- we
 6
     actually did consider it.
                            Did you?
 7
               DON MEEHAN:
 8
               JAMES HALL: Mark looked into it.
                                                   But it is
     not a viable solution for us to use to remove soil on
 9
     and off the island.
10
11
               DON MEEHAN: Oh.
                                  Well. But there's other
12
     things you're [indiscernible]. . . .
13
               (Laughter.)
14
               MAX SCHNEIDER:
                                [Indiscernible.]
15
               DON MEEHAN: You should think about it.
16
               BOBBY CARLSON: Your contractor is bringing
17
     out a barge of some sort?
18
               JAMES HALL: So we don't know yet. But yes.
19
     It -- we suspect that that's how --
20
               (Simultaneous talking.)
21
               BOBBY CARLSON: Some kind of conveyance.
22
               JAMES HALL: Yeah.
23
               BOBBY CARLSON: All right. Is there any way
24
     that . . . we can hitch a ride on it? And what I'm
25
     getting at is at some point we're gonna need to redo the
```

1 roof on the dwelling. We need to be able to take a lot 2 of roofing material out to the island. 3 JAMES HALL: I can't speak to that at this 4 point. It's I guess what I'm gonna say. 5 DAVE SAVAGE: We would talk to the contractor at the time. 6 7 JAMES HALL: Yeah. 8 DAVE SAVAGE: We have a grant from the State 9 for -- I think it nets out about 79,000, a two-to-one 10 matching grant, that is on -- was supposed to start the 11 1st of July for two years, and is currently on hold, and 12 we'd love you -- to have you get right to this so that 13 we can capture that money. 14 JAMES HALL: Understood. 15 DAVE SAVAGE: First chance you get. You know 16 that, but. . . . 17 JAMES HALL: I do. I do. 18 MAX SCHNEIDER: [Indiscernible.] 19 DAN CALL: My comments have been perhaps a bit 20 critical of what damage has been done by previous work, 21 but let me also say that I hugely appreciate that you're 22 proposing to do what you're proposing to do. 23 trying to make sure that there's no -- no way to 24 hitchhike some of these other environmental problems on 25 top of what you're trying to do, so that --

1 JAMES HALL: Understood. 2 DAN CALL: -- it all gets taken care of. 3 JAMES HALL: Yes, sir. Understood. 4 MAX SCHNEIDER: So the -- the pump house, the 5 106, there was sampling done there or --6 JAMES HALL: Yep. 7 MAX SCHNEIDER: Somebody else has already done 8 it and you did look at it --9 (Simultaneous talking.) 10 JAMES HALL: We sampled it. 11 MAX SCHNEIDER: That's interesting that there 12 was nothing found there. 13 JAMES HALL: Yeah, it was surprising, but 14 Nothing was found. So . . . we used an ISM 15 technique, which is where we collect a whole bunch of 16 increments, and it kinda gives a good average 17 concentration of the soil across -- lead -- I -- I mean, 18 you might -- might know, but lead is -- metals in soil 19 tend to be really heterogeneous. I mean, it's -- you 20 can take a sample here and it can be a thousand and you 21 can take one here and it can be zero. So this gives us 22 a better understanding of what the contaminants actually 23 are around instead of, you know, it being luck. 24 MAX SCHNEIDER: I quess my only tangent that I 25 would be that there's a -- a well next to it.

1	JAMES HALL: Right.
2	MAX SCHNEIDER: Was that tested, also?
3	JOSH GRAVENMIER: There were three sample
4	points around there. So
5	(Simultaneous talking.)
6	JOSH GRAVENMIER: in addition to the
7	composites, we also had individual readings, and so the
8	results that were shown on both [indiscernible] the
9	composites, which can average things out, but also
10	individual points, which the remediation footprint was
11	based on the worst case of all those situations.
12	JAMES HALL: Yeah, so so we we took a
13	lot of XRF points before we to to develop the
14	decision units for the ISM sampling.
15	MAX SCHNEIDER: [Indiscernible.]
16	JAMES HALL: Yeah. And and so that was
17	how and when we looked at what the remediation
18	footprint is, we took into account the discrete XRF
19	samples, as well.
20	DON MEEHAN: Where can we find this these
21	documents that you've been showing?
22	(Simultaneous talking.)
23	JAMES HALL: In the library.
24	DON MEEHAN: Do you have 'em on the Web or
25	any anyplace?

1	JOSH GRAVENMIER: Didn't we send them to
2	Kitty?
3	DAVE SAVAGE: Kitty has a copy. I have a copy
4	of it.
5	(Simultaneous talking.)
6	DAVE SAVAGE: I I've forgotten. It's,
7	like, 486 pages. It's it's huge. But a lot the
8	last bit is are field notes s which b the
9	initial part, the summary of it, based on this mass of
10	field notes. So it it's actually about 150 pages of
11	reading. It's
12	(Simultaneous talking.)
13	PAUL MCCULLOUGH: Yeah, it's if you were to
14	print it out, it's yea thick [indicating].
15	(Simultaneous talking.)
16	PAUL MCCULLOUGH: Like they were saying, most
17	of it is you know, there's a lot of appendices, lab
18	reports, stuff like that
19	JAMES HALL: You're welcome to email me and I
20	can send I can arrange to have it sent to you
21	electronically.
22	DON MEEHAN: Okay. As a PDF.
23	JAMES HALL: Yeah, yeah.
24	DON MEEHAN: Excellent.
25	PAUL MCCULLOUGH: Too big to email sometimes,

1 so you gotta have a --2 (Simultaneous talking.) 3 JAMES HALL: It may be too big to email, and 4 if it is, then I have a file-share program that I can 5 It's called DoD Safe. It looks strange when I use. 6 send it, but it -- it works. 7 MAX SCHNEIDER: Do you have any questions the 8 other way, James, or no? 9 JAMES HALL: I don't right now, not at -- not 10 for this meeting. But we will, you know, obviously be 11 talking to the Schooner Society and -- yeah, as we move 12 forward. 13 JOSH GRAVENMIER: Maybe --14 MAX SCHNEIDER: We have had divers down there, 15 so if there's any question about sea life and what 16 critters live there, we can tell you. We actually have 17 photographs, also. JAMES HALL: That information would be 18 helpful. 19 20 JOSH GRAVENMIER: Probably good to mention the 21 schedule of this project as we transition to the next 22 project that they're asking about. 23 JAMES HALL: Sure. So -- so why don't you 24 actually speak to that. 25 JOSH GRAVENMIER: Okay. So this is just the

remedial investigation focused feasibility study. We're getting your comments. We're gonna incorporate them into the document as an additional appendix. And then from that we're going to take our preferred alternative, option four -- which everyone is in agreement with; right? -- and then develop the remedial design. So basically the footprint of how that -- that's going to happen. And that will be the basis of how Coast Guard takes and creates their request for proposal for contractor to then get the contractor on board. Right. And so each one of these has steps and processes.

So when you're asking about how long is it

So when you're asking about how long is it gonna take, we're not even at that point yet of talking about the contractor. Right. We're still -- here's what we proposed, then we're gonna get to the next step with the design, then we're gonna get to the contract, then we're gonna let [ph] the contract, and however long it gets through that process. Right. Take a little while.

DON MEEHAN: Which is to say if the work period is August through October, we could be talkin' 2021.

JAMES HALL: We could be.

DON MEEHAN: Yeah. Yeah. This is federal.

JAMES HALL: It's federal.

1 DON MEEHAN: Maybe '23. 2 (Laughter.) 3 JAMES HALL: Hopefully before that. MAX SCHNEIDER: You said that out loud. 4 5 DON MEEHAN: Well, this is really important, 6 because they have a lotta work to do on that building, 7 to keep it from deteriorating, and so being able to --8 having to shut down this year . . . 9 JAMES HALL: Yeah. 10 DON MEEHAN: . . . you know, I mean, that's 11 They should be fixin' the roof, you know, problematic. 12 if they possibly can. 13 JAMES HALL: Understood. And -- and we're 14 happy to -- to engage. You know, we wanna engage with 15 you guys. We're -- we're happy to answer questions; 16 phone calls. Yeah. And as we move forward with the 17 schedule, we'll q- -- we'll -- we'll provide updates. 18 What Josh described is -- is essentially the 19 process. Once I have the remedial design, it's 20 delivered to me, and it goes through, you know, all the 21 comments, everything, then I'll write a scope of work 22 Prob'ly actually end up having to write two scopes of work because the way the contracting's gonna 23 24 work, I think. And then from there I'll have to get 25 funding for it. And then once I have the funding in

place, we can put it out to bid. And I don't get to decide how that goes, so whatever contract mechanism the contracting officer decides to use will determine the amount of time that that takes.

MAX SCHNEIDER: There's a lot of things pushing us along that we're all overachievers. Very good points were made about the roof and everything else. But we also need to consider the weather cycle that we have, 'cause we're starting to get into that bad part of it. So.

JAMES HALL: Yeah.

MAX SCHNEIDER: It's gonna be hard.

DAVE SAVAGE: You would not wanna be out there tonight.

MAX SCHNEIDER: [Indiscernible.]

DAVE SAVAGE: Or have a barge tied up there.

MAX SCHNEIDER: It could go bad really

18 | quickly.

JAMES HALL: Yeah. I mean, and that is something that we do understand. W- -- when the work is awarded, I mean, that'll be one of the things we have to look at, is what -- what is the time frame we're gonna work -- work in. And the other part of it is that there's also agency consultations that have to happen, and so they may -- we already know, based on -- we

1 already know that to do the work on the land, we have to 2 do it between a certain time frame. But when we start 3 talking about putting barges in the water, then it's 4 possible we'll have another time window that we have to 5 They may not overlap, which then we have to work 6 through how -- how is that gonna play out. 7 MAX SCHNEIDER: [Indiscernible] guite a bit 8 because they changed the traffic speeds there, but you'd 9 be shocked at how much wave action you get just from 10 traffic that goes through there. 11 JAMES HALL: Yeah. 12 MAX SCHNEIDER: And it's large. It's not 13 small. 14 JAMES HALL: Yep. We -- so I -- I have done a 15 lotta work in the Bay Area. And actually, Josh does a 16 ton of work in the Bay Area, doing dredging. And so 17 yeah, we --18 MAX SCHNEIDER: [Indiscernible.] 19 JAMES HALL: Yeah. Yep. We get a big tanker 20 that goes by and. . 21 DON MEEHAN: Do you guys interact with U.S. 22 Army Corps Engineers? 'Cause seems to me they do all 23 this shoreline stuff for United States and. . . . 24 JAMES HALL: So we do. The Army Corps of 25 Engineers does a ton of dredging work. But when it

comes to projects like these, they might help us out in some way, like if they happen to have a ship in the area and we need something dropped off, they will sometimes be willing to accommodate us on that, but it's really unpredictable.

2.1

DAN CALL: Do you have any sense of the extent or nature of uptake of the contaminants into the vegetation that's grown on the site since the Coast Guard moved onto it? Like, a lotta trees and stuff that aren't in the early pictures that are -- I've seen.

JAMES HALL: So we did not do an actual risk assessment for this site to -- to look at that.

Typically lead from paint is not super soluble, so it's probably unlikely that there's a lot of uptake. But that being said, that's kind of a generality. We did not do a study on that for this site. And I don't think that there's any, like, fruit trees growing in the -- the area, so it's not something we're super concerned about.

MAX SCHNEIDER: [Indiscernible.]

DAN CALL: What about the PCBs on the south side of the structure --

(Simultaneous talking.)

JAMES HALL: We'll -- we'll be removing the

vegetation that's growing in that area. But yeah, once 1 2 that's removed, like . . . PCBs, because there's no 3 groundwater, it's not probably super mobile, it's not really a -- it's not really volatile. And as long as --4 5 I mean, we -- we found a pretty good footprint for where it was at, so I don't think it's migrated very far, so 6 it's unlikely that, you know, once it's removed that 7 8 there would be any further impacts from that. MAX SCHNEIDER: So there's a tank inside the 9 10 lighthouse itself, underneath the floor. 11 JAMES HALL: That we will look at. 12 DAVE SAVAGE: I think it overlaps 13 outside/inside. It's a cistern. 14 JAMES HALL: So if it's a cistern, I can't 15 touch it. If it's oil tank or a fuel tank --16 MAX SCHNEIDER: It's oil. 17 JAMES HALL: -- then I can --It's oil? 18 MAX SCHNEIDER: You can smell it. 19 20 JAMES HALL: Okay. 21 MAX SCHNEIDER: And there are [indiscernible] 22 plates that came off of it that have since rusted and 23 broken off and --24 JAMES HALL: Okay. That -- that we can 25 address.

1	MAX SCHNEIDER: I'd say it's time for beer,
2	but it should be doughnuts and coffee; right?
3	JOSH GRAVENMIER: We have two new
4	participants, too. You guys have come in late.
5	I don't know if you wanna rehash everything.
6	(Laughter.)
7	JAMES HALL: Are you gentlemen aware of the
8	project?
9	LARRY BECKER: I wasn't.
10	(Simultaneous talking.)
11	KEN REINEBACH: Curious about what was going
12	on.
13	JAMES HALL: Sure. So we're doing a
14	remediation project on Burrows Island for the former
15	light station, and this meeting is really just for
16	people that have answer questions. It was mostly
17	lead, and some PCBs from a former spill, and some
18	petroleum impacts. And our plan is to remove the the
19	impacted soil and clean up the site.
20	I'm happy to take any questions or comments
21	or
22	KEN REINEBACH: You mentioned lead. Is it,
23	like, a lead-based paint?
24	JAMES HALL: Yeah, it's from lead-based paint.
25	LARRY BECKER: Who's gonna be payin' for it?

1 JAMES HALL: The Coast Guard. 2 JOSH GRAVENMIER: We have a stenographer who's 3 recording our comments. Can you provide her with your 4 names, please? 5 LARRY BECKER: Sure. Larry Becker. 6 KEN REINEBACH: Ken Reinebach. So how is the 7 lead paint being remediated? 8 JAMES HALL: So we intend to dig it up and 9 remove it from the island. Take it to a landfill. 10 KEN REINEBACH: Okay. So it's just . . . it's 11 just dust from -- from removing it or. . . . 12 JAMES HALL: So over the years -- the 13 lighthouse was established in 1906, and so over the 14 years it was painted over and over, and the -- as the --15 you know, it's -- it's weathered, and as it falls off, 16 the lead flakes off into the soil, it weathers and 17 deteriorates, and it can actually go down into the soil. 18 So our impacts were from half a foot to three feet deep. 19 KEN REINEBACH: So where is the -- the impact 20 from lead in the soil there? I mean, why couldn't you 21 just put another coat of paint on the existing lead 22 paint? 23 JAMES HALL: Well, we can't do that because 24 the lead is actually in the soil, all around the 25 buildings.

1 KEN REINEBACH: Well, unless --2 (Simultaneous talking.) KEN REINEBACH: -- [indiscernible] gardening 3 4 in the soil or eating the dirt, there's no exposure, 5 so . . . what's the point? Is what I'm saying. 6 JAMES HALL: Well -- well, the -- the exposure is to the folks that are gonna restore the island, and 7 8 potentially have caretakers out there for up to six 9 months out of the year. So at that point we need to 10 worry about, you know, people being exposed to the soil. 11 And also for any visitors that visit the site. 12 KEN REINEBACH: Uh-huh. 13 JAMES HALL: So we wanna make sure that when 14 we leave it, it's clean. 15 Also, because we're a federal agency, when we 16 have a property that's contaminated, in order to divest 17 of it, we have to meet certain requirements under 18 CERCLA. And so we have to sign off that it's -- we 19 either have to sign off that it's clean or we have to 20 put in -- institutional controls in place. 21 DON MEEHAN: James, are you satisfied that you 22 have not had a riot tonight and that your preferred option is -- is good to go? 23 24 JAMES HALL: I think I am. 25 (Simultaneous talking.)

1 The comment period is open for a JAMES HALL: 2 while longer, so --3 Are there questions that we DON MEEHAN: 4 shoulda asked that we weren't smart enough to ask that 5 woulda scared 'ya that you can tell us what those are 6 right now? 7 JAMES HALL: No, actually, I've been really 8 pleased with the way the investigation went. I feel 9 like we have a really good product and a really thorough 10 analysis. 11 JOSH GRAVENMIER: If you come up with 12 additional questions after today's meeting, you can 13 submit 'em to James via email up to February 5th. 14 There's still plenty of time if other things come to 15 mind. 16 JAMES HALL: So what I would say, too, you can 17 submit questions to me at any time. Up to February 18 5th they'll be included in the appendix [indiscernible]. 19 20 DON MEEHAN: Do we have your contact 21 information anywhere? 22 JAMES HALL: It is in the public notice, and I can give it to you now if you'd like it. 23 24 DON MEEHAN: Sure. 25 So my email address is JAMES HALL:

james.c.hall, H-A-L-L, 2, the number 2, @uscg.mil,
M-I-L.

Yes.

STEVE ANDERSON: Yeah, Steve Anderson. So I don't know if -- would it be standard procedure for you to have another public meeting like this after everything is said and done, even after the sample testing is all finished, to say, "Hey, we've already done all this"? Maybe not as long of a meeting and what's going on now. I'm just curious. I don't know what the procedure is.

JAMES HALL: So we may open another k- -public-comment period after we have a design in place.

We may issue an action memo. At this point I -- I am
not certain that we're going to do that. 'Cause this
isn't an NPL site, we're not required to do much more
beyond this meeting. But if there's interest and -and -- and everybody feels that it's helpful, then we
can consider that.

JEFF ZAPPEN: The other thing we can do within my office and the sector Coast Guard unit is share that media that's positive. So if the project's done, everybody's happy, and the NWSS has these grand plans, it's like, "Coast Guard just did this, and this is the future of the station." So we've got that -- the -- all

1 the media's available to do that, to help the NWSS to 2 maybe kick off another fundraiser round for 'ya. 3 that would be a good conclusion of this project to maybe 4 the next phase of renovation that the group may be 5 doing. 6 JAMES HALL: Sir? LARRY BECKER: How -- sounds to me like this 7 8 is gonna be open to the public at some point? 9 JAMES HALL: Yes, aksh- -- I -- I believe so. 10 LARRY BECKER: How --11 (Simultaneous talking.) 12 LARRY BECKER: -- how will people access it? 13 DAVE SAVAGE: By boat. 14 (Simultaneous talking.) 15 DAVE SAVAGE: We also have work parties pretty 16 regularly. Not right now, but when the season starts 17 opening up a little bit. Send a email to Northwest 18 Schooner Society. Google up Burrows Island Light 19 Station. And come out with us on a -- when we're going 20 out. We'll give you a ride and come on out and see it. 21 That'd be great. LARRY BECKER: 22 JAMES HALL: So there's a concrete dock out 23 there right now that -- that . . . pretty open. 24 I don't think. . . . 25 DAVE SAVAGE: It's open to the public.

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1
     that's part of our -- our agreement, our license, is
 2
     that it is open to the public. It's not a private .
 3
     and never will be.
 4
               LARRY BECKER: Is there helicopter pad out
 5
     there?
 6
               JAMES HALL: It is.
 7
               LARRY BECKER: Is that open to the public,
 8
     too?
 9
                (Simultaneous talking. Laughing.)
10
               DAVE SAVAGE: People -- people routinely land
11
     a helicopter out there, I think for training purposes.
12
               LARRY BECKER:
                               Okay.
13
               JAMES HALL: They do -- they --
14
                (Simultaneous talking.)
15
               JEFF ZAPPEN: P- -- public lands?
                                                   We have --
16
     we have public entities, private citizens, landing out
17
     there for training?
               DAVE SAVAGE: We don't have a chance to talk
18
19
     to 'em.
              They land and look around and then they leave.
20
                (Simultaneous talking.)
21
               JEFF ZAPPEN: If that's a problem for you,
22
     just get us a tail number, and we'll solve that problem.
23
               (Simultaneous talking.)
24
               JEFF ZAPPEN: There's all kinds of safety
25
     issues around a helicopter landing on an island, you
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don't know they're comin'.

MAX SCHNEIDER: It's -- it's happened more than once. And unfortunately, can't get their tail number before they take off. So.

JEFF ZAPPEN: If -- if that's a concern of yours, then you provide me with as much information as you can get. K- -- Kitty has all my numbers. And we -- we have other agencies that we can help follow up on why they were there, what they're doing, and maybe better planning to let you know they're coming in the future. 'Cause you're right, it might be a good venue to have a helicopter come out, you know, but. . .

MAX SCHNEIDER: As far as stationing a team, it's a great place to have, but there's also the problem of the naval base doing exercises there when you have unnotified flight there.

JEFF ZAPPEN: Yeah, if there's a -- a licensed pilot flying a helicopter anywhere near Whidbey, they're flying within the rules or Whidbey would be doing something about it. We get those notifications all the time.

(Simultaneous talking.)

MAX SCHNEIDER: I totally get what you're saying, but I doubt very, very much that that was in their flight plan. 'Cause you can see it. They're

1 going on their flight plan and then, "Oh, look. That's 2 a landing pad." 3 JEFF ZAPPEN: Right. Yeah. It was an un- --4 yeah, an unannounced landing. Agreed. Yeah. If you 5 have that information, if that's a problem -- I consider 6 that to be a problem, but I'm not there. So. If that's a problem, and you get tail numbers, a description, a 7 8 date, a time, we -- we do work for the Department of 9 Homeland Security; we can prob'ly track down where the 10 plane took off from and where it landed. Pay a visit 11 and say, "Hey, don't do that again without permission." 12 'Cause we don't let -- all these other light stations 13 that we have that have landing pads similar to that, 14 they're not allowed to land there, either. 15 DAN CALL: I believe that that facility is 16 marked as a heliport, and it's not marked as a out-of-service --17 18 MAX SCHNEIDER: It isn't. 19 DON MEEHAN: It's not. You're absolutely 20 right. 21 So the current FHA charts have JEFF ZAPPEN: 22 it listed as a viable --23 MAX SCHNEIDER: They have it listed as an 24 active pad. 25 JEFF ZAPPEN: All right.

1	MAX SCHNEIDER: Which is
2	JEFF ZAPPEN: I'll take that I'll take that
3	back with me.
4	DON MEEHAN: But it doesn't have an X on it,
5	which is what it should have
6	(Simultaneous talking.)
7	DON MEEHAN: as a decommissioned airstrip.
8	Landing strip.
9	JAMES HALL: And we can look into that.
10	DAN CALL: Of course if you disappear the
11	whole thing, that solves part of your problem.
12	KEN REINEBACH: Question. Where is the
13	off-site disposal for the PCB-contaminated soil?
14	JAMES HALL: So it'll go to well, it's
15	actually below TOSCA limits, so but it will go to a
16	licensed RCRA you know, RCRA license
17	(Simultaneous talking.)
18	KEN REINEBACH: That doesn't really dispose of
19	it. It just stores it in the landfill until that
20	becomes a problem.
21	JAMES HALL: Correct. It is taking it from
22	one spot and just moving it someplace else.
23	KEN REINEBACH: Yeah.
24	JAMES HALL: But it'll be safer for the public
25	if it's in a landfill that is licensed and monitored

```
and -- and. . . .
 1
 2
               KEN REINEBACH: [Indiscernible.]
 3
               DON MEEHAN:
                             Thank you.
 4
               JAMES HALL: Great.
 5
               Thank you. I mean, if nobody has any more
 6
     questions, I'm -- we are here for a little while longer,
 7
     but we're happy to, yeah, answer any questions.
 8
                (Pause from 7:07 to 7:08 p.m.)
 9
               LARRY BECKER: I just would encourage you not
     to just arbitrarily X out the helipad. It's a great
10
11
             The people that are flying helicopters, they can
12
     call if they need -- if they wanna notification of it or
13
     something, they can give 'em a number that they can call
14
     and let them know that they're coming and that sort of
15
     thing. But it's really a -- a nice thing to have.
16
     great to have. That would be sad.
17
                (No further public comment from 7:08 to
18
     8:00 p.m., at which time the public meeting was
19
     adjourned.)
20
21
22
23
24
25
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1	CERTIFICATE
2	
3	STATE OF WASHINGTON )
4	COUNTY OF WHATCOM )
5	
6	I, Nor Monroe, Certified Court Reporter in and
7	for the state of Washington, do hereby certify to the
8	following:
9	That I reported by stenotype all proceedings
10	in the foregoing matter;
11	That my stenographic notes were reduced to
12	typewriting under my direction;
13	And that the foregoing transcript, pages 1
14	through 58, inclusive, constitutes a full, true, and
15	accurate record of all such testimony adduced and oral
16	proceedings had, and of the whole thereof.
17	Witness my hand this 24th day of January,
18	2020.
19	
20	10 - ( 10 - 0 - 0
21	NOR MONROE, RDR, CRR, CRC
22	Stenographic Court Reporter Washington CCR No. 3442
23	Expiration: November 10, 2020
24	
2.5	

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