# REMEDIAL INVESTIGATION WORK PLAN

## BLOCK OF WASHINGTON, E. SECOND & PARK
## DUNKIRK, CHAUTAUQUA COUNTY, NEW YORK
## NYSDEC SITE NO. C907042


Prepared For:

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August 2025

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# 1.0 INTRODUCTION

This Remedial Investigation Work Plan (RIWP) document presents details of work activities designed to support a Remedial Investigation (RI) at 11 parcels on the block of Washington, East Second, and Park Streets (Site) in the City of Dunkirk, Chautauqua County, New York (refer to **Figure 1**). The eleven parcels include:

- **220 Washington – SBL No. 79.57-1-79**
- **208-214 Washington – SBL No. 79.57-1-81**
- **Park Ave. Rear - SBL No. 79.57-1-80**
- **E. Second St. - SBL No. 79.57-1-2**
- **E. Second St - SBL No. 79.57-1-73**
- **215 Park Ave. - SBL No. 79.57-1-75**
- **211 Park Ave. - SBL No. 79.57-1-74**
- **Park Ave. - SBL No. 79.57-1-72**
- **207 Park Ave. - SBL No. 79.57-1-71**
- **E. Second St - SBL No. 79.57-1-70**
- **E. Second St. - SBL No. 79.57-1-69**

A preliminary Brownfield Cleanup Program (BCP) project schedule is provided in **Figure 2** and a boundary survey map of the Site is provided in **Figure 3.**

Regan Development Corporation has entered the BCP to remediate the Site for development of multi-family apartment units, associated parking areas and recreational/greenspace.

Environmental assessments and investigations conducted on the Site concluded that there are impacted soils across the facility due to the property's former use. The primary contaminants found during the BE3 Phase II Environmental Site Assessment (ESA) which focused on site soils are associated with impacted fill or urban fill including semi-volatile organic compounds (SVOCs), mainly polyaromatic hydrocarbons (PAHs), and metal compounds. Historical uses and investigations also indicate petroleum, polychlorinated biphenyls (PCBs), and chlorinated solvents impacts.

The purpose of the RI phase of the BCP is to address the following activities and requirements:

- Obtain environmental data from the site under site specific quality assurance/quality control (QA/QC) for sampling, analyses, and data evaluation.
- Provide plans and approaches for health and safety and air monitoring for field activities.
- Summarize previous environmental assessments and investigations.
- Describe and illustrate the physical conditions of the site including surface waterbodies, ecological receptors, significant utility corridors.
- Tabulate and illustrate proposed sampling plan and results to include location, matrix, depth, analytes, methodologies, rationale, and QA/QC.
- Provide a schedule of activities and details of the proposed investigation team.
- Describe the areas of concern including impacted soil, fill material, groundwater, indoor air, and building conditions.
- Determine the necessity of a fish and wildlife impact analysis and, if required, gather data to evaluate impacts.
- Complete a qualitative exposure assessment for human health and fish/wildlife resources.

- Ensure (1) field work is sufficiently comprehensive to evaluate natural attenuation of groundwater, as applicable, and (2) all waste derived from field work is managed in a manner that does not negatively impact human health and the environment.

The New York State Department of Environmental Conservation (NYSDEC) will be notified to prior to any deviations from the work plan.

## 1.1 Site Description and History

The property includes eleven separate parcels within the city block noted above. Some of these parcels are currently vacant and others include partially occupied former factory buildings.

Historically the 208-214-220 Washington Avenue parcels were used for wholesale auto parts in the 1960s to the 1990s, auto sales and service in the 1940s and for the Mulholland Company Factory, makers of roadside dining cars, automobile body parts, carriages and springs from the late 1800s through at least the 1930s. After 1935, the factory was used for the manufacturing of malted milk and storage of wholesale groceries. All of the other parcels within the site, with the exception of 220 Washington, are currently vacant. The parcels in the center of the site historically were a part of the Burns Coal & Building Supply Company during the 1940s through the 1960s. Some of the parcels along Park Avenue in the east-center and southeastern part of the site historically contained a bottle warehouse in the 1960s, an Ice Cream Depot in the 1930s and 1940s, a sugar warehouse in the 1920s and a tin shop in the late 1800s.

Both buildings on the 220 Washington Avenue parcel are operated by Paradis Fence & Flag company. The main building has a workshop and storage for tools equipment and miscellaneous materials. The separate shed on site contains mostly lumber and tools/equipment. Neither building is routinely occupied as the building is mainly used for storage. The building will be completely vacated upon the completion of the sale to Regan Development Corporation which is dependent on the approval of the Remedial Action Work Plan (RAWP). Once this occurs, fencing will also be placed just beyond the entire BCP site boundary to secure the site. Fencing may be put up earlier if the demolition of the onsite buildings occur prior to remediation (See Figure 8).

The building on 208 Washington Avenue is currently in disrepair and vacant. There is miscellaneous debris seen throughout.

## 1.2 Contemplated Use of the Site

The proposed use of the Site includes development of multi-family apartment units, associated parking areas and recreational/greenspace. It should be noted that all buildings currently on site are planned to demolished. The planned remedial track for this site is Track 4 where shallow impacted soils will be removed and replaced with soil meeting restricted residential SCOs.

## 1.3 Project Organization

The following personnel constitute the primary members of the project team:

Project Manager – Jason M. Brydges, P.E.
Engineers – John Berry, P.E.
Project Staff and Field Technicians – Paul Staub, Project Engineer; Alexis Palumbo, Project Engineer; Travis Numan, Project Engineer.
Health and Safety Officer – Jason M. Brydges, P.E.
QA/QC – John Berry, PE

Project Geologist – John Boyd
Attorney – Michael W. Tyzko, LLP
Asbestos/lead/universal waste subcontractor – to be determined
Drilling/Excavation subcontractors – to be determined.
Analytical Laboratory – to be determined.

# 2.0 GOALS AND OBJECTIVES

## 2.1 RI OBJECTIVES

In general, an RI has the following objectives as described in New York Codes, Rules, and Regulations (NYCRR) Part 375-1.8(e):

- Delineation of the extent of the contamination at and emanating from all media at the Site and the nature of that contamination.
- Characterization of the surface and subsurface characteristics of the Site, including topography, surface drainage, stratigraphy, depth to groundwater, and any aquifers that have been impacted or have the potential to be impacted;
- Identification of the sources of contamination, the migration pathways, and actual or potential receptors of contaminants;
- Evaluation of actual and potential threats to public health and the environment; and,
- Production of data of sufficient quality and quantity to support the necessity for, and the proposed extent of, remediation and to support the evaluation of proposed alternatives.

## 2.2 SPECIFIC GOALS

Based on the data collected to date and history of the Site, RI activities have been developed that will allow for further assessment of fill material and depth of native soil, depth to bedrock, and depth to groundwater. The potential for vapor will also be further assessed to include a vapor intrusion investigation in accordance with NYSDEC/New York State Department of Health (NYSDOH) protocol. Specific goals for the RI are as follows:

- Perform additional soil borings below slabs and non-former building areas to add to the existing data. The focus will be on impacted areas identified during the previous investigations;
- Install and sample groundwater wells to assess potential contamination and its sources (i.e., on or off-Site), direction of groundwater flow, and potential impacts;
- Conduct a soil vapor investigation beneath building slabs and across the Site;
- Conduct building environmental condition assessments related to building Pre-demolition/renovation, as necessary, that may include asbestos containing material (ACM), lead-based paint (LBP), and other indoor hazardous materials within the existing structures.
- Perform a hydraulic assessment of the groundwater in the subsurface using the installed wells; and,
- Fill in any data gaps resulting from previous assessments.

To the extent possible, RI field work will also include the identification of any significant structures, sensitive areas, or appurtenances that could have an impact on contaminant migration or future remedial action such as any existing stormwater and/or sewer lines.

## 2.3 CONTAMINANTS AND AREAS OF CONCERN

Based on the findings related to historic use of the Site and previous investigations, contaminates of concern (COCs) in the soils are SVOCs (primarily PAHs) and metals. The potential for chlorinated solvents and petroleum/PCBs will also be assessed in site soils and groundwater. The full suite of soil contaminants as identified in 6 NYCRR Part 375 will be analyzed during the RI. Groundwater samples will also be analyzed for the full suite of contaminants per NYSDEC Division of Water Technical and Operational Guidance Series (TOGS). See **Figure 4** for an illustration of exceedances based upon the previous investigation results.

The existing buildings will also be assessed for hazardous materials and universal wastes such as ACM in floors/caulk/roofing/insulation, LBP in ceilings/structures/windows/walls/doors, PCBs in light ballasts and caulk throughout the buildings, and mercury in fluorescent bulbs. Also, drains and sumps within the buildings will be assessed and contents, if any, characterized.

# 3.0 PAST ENVIRONMENTAL ASSESSMENTS/INVESTIGATIONS

The following environmental assessments have occurred on the Site:

Phase I ESA (2010) and Phase II ESA (2012) performed by TurnKey Environmental at the 208-214 Washington Avenue Parcel Only

The Phase I ESA identified the following recognized environmental condition (REC) at the 208-214 Washington Avenue parcel:

- The Site was formerly occupied by the Mulholland Company from the 1880s through at least the 1930s; historic uses include the manufacturing of various items such as wagon springs, carriages, automobile bodies, and dining cars. During that time, uses also included blacksmith shops, wood shops, printing, painting and machine shops. Environmental concerns associated with these types of past uses include use and/or storage of various petroleum products, chemicals and heavy metals.

The Phase II ESA investigation included five (5) surface soil samples, nine (9) subsurface soil borings and three (3) temporary wells.

The previous phase II ESA provided the following conclusions:

- Surface soil samples had elevated concentrations of PAHs, PCBs, arsenic, lead, and mercury above NYSDEC Part 375 Soil Cleanup Objectives (SCOs).
- Subsurface soil samples had elevated concentrations of several PAHs, arsenic, barium, lead, and mercury above NYSDEC Part 375 SCOs.
- VOC analytes were not detected above their respective NYSDEC Groundwater Quality Standards (GWQS) from groundwater samples collected.

Phase I ESA (2022) performed by BE3

The Phase I ESA revealed the following RECs in connection with the subject properties:

- Manufacturing of component parts for automobiles (springs, drive shafts, and rubber tires) and later manufacturing car bodies and diners at the 208-204-220 Washington Avenue

parcels.
- Coal storage, possible refining and rail use as well as other commercial uses on some of the eleven parcels.
- Identification of fill materials across most of the properties.

BE3's Phase I also noted that site structures most likely contain LBP and asbestos and would require a formal survey to document levels and locations.

Phase II ESA (2023) performed by BE3

A total of seventeen (17) soil borings were advanced at specific locations across the property (see **Figure 4**). A total of eighteen (18) soil samples and one groundwater grab sample was collected.

The borings indicate that shallow subsurface conditions generally consisted of fill with some construction and demolition debris consisting mostly of brick with some cement, cinder, ash, and some coal. Fill depths ranged from 2 to 4 feet below ground surface (bgs) in most locations. Below the fill in most locations was brown silty-clay or red-brown silty-clay stiff and tight at most depths. Refusal was encountered at BH3 at eleven (11) feet bgs. Please note that an earlier investigation completed by others encountered refusal at similar depths and this may denote depth to bedrock.

The results of the Phase II assessment indicated the following:

- Fill exists at shallow depths across the properties to about 2-5 feet in most locations.
- The fill contains elevated levels of metals and SVOCs (mostly PAHs).
- No significant VOCs were detected in shallow subsurface soil or in the temporary shallow well.
- VOC analytes were not detected above their respective NYSDEC Groundwater Quality Standards (GWQS) from the one groundwater sample collected.

# 4.0 INVESTIGATION SCOPE OF WORK

## 4.1 INTRODUCTION

The investigation will include: soil and groundwater sampling/analysis, soil vapor and groundwater hydraulic assessments, and hazardous building materials inventory/assessment. All investigation field work will be completed in accordance with the Health and Safety Plan (HASP) in **Appendix A** and the Community Air Monitoring Program (CAMP) in **Appendix B.** It is anticipated that the RI can be completed in a single phase and include the following:

- Soil investigation to supplement previous investigation findings (soil borings, sampling and chemical analysis
- Groundwater investigation (well installation, sampling, chemical analysis)
- Soil vapor/air assessment within and exterior to buildings
- Hydraulic assessment of subsurface groundwater
- Building Hazardous materials and universal waste survey/assessment

## 4.2 SOIL ASSESSMENT

This soil assessment will allow the visual inspection and characterization of soil conditions below the interior and exterior of the Site buildings with the objective of confirming the depth of fill material across the site including below building slabs and to collect and analyze additional fill and native soil samples. Also, the extent of known contamination will be quantified and contamination sources identified, as data allows. The only soil assessments completed to date have been the April 2012 Phase II ESA at the 208-214 Washington parcel and the February 2023 Phase II ESA at the entire Site (refer to section 3.0). As such, the RI soil assessment will use previous data to provide general information about areas of concern and will focus on delineating the extent of contaminants in soil on site. A total of 16 soil borings will be completed. The borings will be spread out with a focus on previously identified impacted areas and areas where no investigation has been performed, such as beneath the buildings (See **Figure 5**). The precise sampling locations will be based on real-time field observations and will specifically target potential contaminant features while ensuring that areas of concern are examined. Additional soil samples will be taken from proposed groundwater well screen depths where possible.

Previous investigations identified areas of concern with high exceedances in metals (i.e. Arsenic and Lead). A total of 8 surface soil samples will be conducted 2-inches below vegetative cover in these areas and analyzed for contaminants of concern based on previous investigations.

Step out sampling will also be conducted in areas of concern to delineate previously identified target exceedances. Four discrete samples will be taken from each surrounding boring in each direction and analyzed for TAL Metals.

Borings will be advanced to native soil or refusal (estimated depth of between 6 to 14 feet bgs but may be deeper if environmental impacts extend deeper). Borings may be advanced to presumed bedrock to confirm depth of bedrock across the site if possible. Borings will be installed using Geoprobe® direct push technology. Continuous soil sampling will be conducted using the Geoprobe® with a two-inch diameter sampler. At each boring location the following will be recorded:

- Thickness and characteristics of the cover/fill material
- Depth to the water table, if encountered
- Thickness and characteristics of the native soil
- Photoionization detector (PID) screening results
- Samples collected at an estimated depth

A detailed log of boring records will be maintained to assist field personnel in selecting the most appropriate sample at each location.

Samples will be selected based upon (1) areas that appear to be impacted based upon visual, olfactory, or PID detections, (2) areas of natural soil at interface with fill material, and (3) known fill material that may or may not be impacted but believed to represent Site soils. Soil sampling will be biased toward soil with detectable vapors (PID), staining or gross characteristics. Also, additional soil samples will be required if differing stratified contaminant layers in fill soil or native soil are encountered. QA/QC procedures are provided in **Appendix C** QA/QC Plan. The soil samples will be analyzed by a NYSDOH environmental laboratory accreditation program (ELAP) certified laboratory that produces NYSDEC Category B data package deliverables. Data Usability Summary Reports (DUSRs) will be prepared for all samples. An estimated 41 soil samples plus

QA/QC samples will be collected for laboratory analyses. See **Appendix C** for proposed sample summary. All samples will be analyzed for the full Part 375 Brownfields constituent list which includes the following:

- Target Compound List (TCL) VOCs + Tentatively Identified Compounds (TICs)
- TCL SVOCs + TICs
- Target Analyte List (TAL) Metals (Including total mercury and total cyanide)
- PCBs
- TCL Pesticides
- 1,4-dioxane
- Per- and Polyfluoroalkyl Substances ([PFAS]; Perfluorooctanoic acid [PFOA]/ Perfluorooctanesulfonic acid [PFOS])

Any boring or subsurface disturbance will be performed at a minimum distance of 2.5 feet away from marked utilities to reduce the risk damaging an underground utility line. Fill used to backfill boreholes for the native soil portion will consist of bentonite pellets or chips. Sand may be used for backfill of the fill layer. Alternatively, the entire core hole may be backfilled with bentonite and an asphalt/cement patch will be placed, as necessary.

Field equipment will be operated in accordance with standard practices and in a safe and efficient manner so as to minimize any hydraulic system leaks or lubricant and fuel leaks (See **Appendix A** – HASP for details).

Additional field activities performed by the field geologist/technician include: properly labeling, packaging, and delivering samples to the laboratory; supervising field operations; and completing boring logs, which can be performed in the office after recording field notes. The geologist/technician will update the Project Manager (PM) at least daily on progress in the field and results of the subsurface investigation. No major changes in the subsurface investigations will occur unless approved by the PM, who will also notify the Client and NYSDEC regarding project developments. A detailed description of the sampling methods and procedures on managing investigation derived waste (IDW) is provided in the **Appendix D** – Field Sampling Plan.

**Table 4.2 Summary of Proposed Soil Borings and Sampling**

| Soil Boring | Boring Depth (ft bgs) | Proposed Sampling Depth (ft bgs) | Target Analyses | Sampling Rationale |
|---|---|---|---|---|
| RI-BH-1<br>RI-BH-2<br>RI-BH-4<br>RI-BH-6<br>RI-BH-8<br>through<br>RI-BH-15 | 12’ | 0-4’ | TCL VOCs + TICs, TCL SVOCs + TICs, TAL Metals, PCBs, TCL Pesticides, 1,4dioxane, PFAS (PFOA/PFOS) | Nature and Extent of Fill Layer |
| | | 4-8' | | Characterize Native Soil |
| RI-BH-3<br>RI-BH-5<br>RI-BH-7<br>RI-BH-16 | 12’ | 0-4’ | TCL VOCs + TICs, TCL SVOCs + TICs, TAL Metals, PCBs, TCL Pesticides, | Nature and Extent of Fill Layer |

| | | | | |
|---|---|---|---|---|
| | | | 1,4dioxane, PFAS (PFOA/PFOS) | |
| MW-1 through MW-5 | 12’ | 7-12’ | TCL VOCs + TICs, TCL SVOCs + TICs, TAL Metals, PCBs, TCL Pesticides, 1,4dioxane, PFAS (PFOA/PFOS) | Characterize Soil Surrounding Well Screens |
| SS-1 SS-3 SS-4 | 0.5’ | 0.17-0.5’ | TAL Metals + TCL SVOCs | Characterize Near Surface Soils For Potential Health Risks |
| SS-5 | 0.5’ | 0.17-0.5’ | TAL Metals | Characterize Near Surface Soils For Potential Health Risks |
| SS-2 SS-6 SS-7 SS-8 | 0.5’ | 0.17-0.5’ | TCL SVOCs + TICs, TAL Metals, PCBs, TCL Pesticides, 1,4dioxane, PFAS (PFOA/PFOS) | Characterize Near Surface Soils For Potential Health Risks |
| STP-1 Through STP-4 | 4’ | 0-4’ | TAL Metals | Delineate and Characterize Areas of Concern |

## 4.3 GROUNDWATER

A total of five (5) overburden groundwater monitoring wells will be installed where shown on **Figure 5** using a conventional truck mounted drill rig with hollow stem auger drilling techniques. Well locations may be revised in the field to accommodate logistics and previous PID detections. Soil samples may be collected during the installation of wells depending on soil conditions observed during drilling and analyzed in a similar manner as presented in Section 5.2. The NYSDEC will be notified prior to any changes in well locations.

If overburden groundwater is not encountered in enough locations to accurately determine groundwater flow and potential groundwater contamination across the site (i.e. 1 upgradient and 2 downgradient), bedrock wells will be installed in consultation with the NYSDEC. A minimum of three bedrock wells will be installed on-site. Bedrock wells will also be installed if contamination is found in the overburden groundwater.

### 4.3.1 Well Construction

Each of the 5 wells will consist of a 2-inch inside diameter, schedule 40 Polyvinyl Chloride (PVC) casing equipped with a 5-footwell screen that is Schedule 40 pipe with 0.010 slot size. Section 3.1 of **Appendix D** provides a step-by-step method for the open-hole method of installing a groundwater well once a boring or augured hole has been drilled to a desired depth within the

subsurface.

If overburden wells are required to be set directly above bedrock, a 0.5' layer of bentonite will be placed in the bottom of the borehole to create a competent uniform base for the filter pack.

Any bedrock wells required to be installed will follow the procedures outlined Appendix D Field Sampling Plan Section 3.1. Steel casings will be installed approximately 3 feet into competent bedrock and coring logs will be generated and provided to the NYSDEC for review. Wells will be completed at the ground surface and covered with a curb box.

Wells will be completed at the ground surface and covered with a curb box. Drill cuttings will be placed on-site in sealed NYS Department of Transportation (DOT) approved drums and labeled for subsequent characterization and disposal. Disposal will be done in accordance with all Resource Conservation and Recovery Act (RCRA) standards.

The top of the well casings and ground surface elevations of the wells will be surveyed to allow for groundwater contours to be developed for the Site.

All fieldwork will adhere to the HASP provided in **Appendix A** and Investigation Derived Waste (IDW) will be managed in accordance with NYSDEC DER-10 Section 3.3e.

### 4.3.2 Well Development

After installation of monitoring wells, but not within 24 hours, new wells will be developed in accordance with **Appendix D** – Section 3.2 and NYSDEC protocols. Initially, development water will be containerized in NYSDOT-approved drums and labeled per monitoring well location. If light non-aqueous phase liquid (LNAPL), dense NAPL (DNAPL), odors, or sheen are encountered during well development, water will be properly characterized and disposed accordingly. Based on the RI groundwater analytical results, it will be determined, in consultation with NYSDEC, if the containerized development water is acceptable for surface discharge in the vicinity of the monitoring well being developed or requires subsequent on-site treatment and/or off-site disposal.

### 4.3.3 Groundwater Sampling

Sampling will commence as soon as adequate recharge has occurred. Although not required, it is recommended that purging and sampling occur at least 24 hours after development. Prior to sample collection, static water levels will be measured and recorded from all on-site monitoring wells to facilitate the preparation of an isopotential map. Following water level measurement, field personnel will purge and sample monitoring wells using a submersible pump with dedicated pump tubing following low-flow/minimal drawdown purge and sample collection procedures provided in Sections 3.3 – Well Purging and 3.4 – Well Sampling of **Appendix D**. In the event of pump failure or the saturated unit does not permit the proper implementation of low-flow sampling, a dedicated polyethylene bailer will be used to purge and sample the well. Field measurements for pH, temperature, turbidity, dissolved oxygen (DO), oxidation-reduction potential (ORP), specific conductance and water level, as well as visual and olfactory field observations will be periodically recorded and monitored for stabilization. Low-flow purging will be considered complete when the field measurements stabilize and turbidity falls below 50 Nephelometric Turbidity Units (NTU) or becomes stable above 50 NTU regardless of volume purged.

Collected groundwater samples will be transported under chain-of-custody to a NYSDOH ELAP-

certified analytical laboratory for the analyses indicated in 5.3.4.

### 4.3.4 Groundwater Sample Analyses

One groundwater sample will be collected from each of the newly installed monitoring wells. Well development and sampling will be in accordance with the **Appendix D** - FSP. Groundwater samples will be analyzed for the following Part 375 brownfield constituents:

- TCL VOCs plus + TICs
- TCL SVOCs +TICs
- TAL Metals (Including total mercury and total cyanide)
- PCBs
- Pesticides
- 1,4-dioxane
- PFAS (PFOA/PFOS)

Sample analysis will be in accordance with Analytical Services Protocols (ASP) Cat B requirements. DUSRs will be completed for all samples. QA/QC requirements for all sample analysis are provided in **Appendix C** QA/QC Plan. Table 1 in **Appendix C** summarizes the number of groundwater samples to be collected.

All detected sample concentrations will be included in a table and compared to NYSDEC TOGS as well as applicable standards, criteria, and guidance materials (e.g., Sampling, Analysis, and Assessment of PFAS).

**Table 4.3.4 Summary of Proposed Groundwater Monitoring Wells**

| Well ID | Type | Estimated Depth (ft bgs) | Screen Interval (ft bgs) | Target Analyses |
|---|---|---|---|---|
| RI-MW-1 | Overburden | 10 | 5-10 | TCL VOCs + TICs, TCL SVOCs + TICs, TAL Metals, PCBs, TCL Pesticides, 1,4dioxane, PFAS (PFOA/PFOS) |
| RI-MW-2 | Overburden | 10 | 5-10 | |
| RI-MW-3 | Overburden | 10 | 5-10 | |
| RI-MW-4 | Overburden | 10 | 5-10 | |
| RI-MW-5 | Overburden | 10 | 5-10 | |

| | | | | |
|---|---|---|---|---|
| RI-BW-01 | Bedrock | 20 | 10-20 | |
| RI-BW-02 | Bedrock | 20 | 10-20 | |
| RI-BW-03 | Bedrock | 20 | 10-20 | |

### 4.3.5 Groundwater Flow/Hydraulic Assessment

Static depth to groundwater measurements will be obtained from the newly installed RI monitoring wells. Groundwater elevation data will be calculated and used to develop an isopotential map that will indicate the general direction of groundwater flow. Groundwater elevations will be relative to an arbitrary site-specific vertical datum and benchmark (e.g., fire hydrant survey). A well construction summary table will be prepared and include top of riser and grade elevations as well as construction depths (elevations) and materials.

In-Situ Hydraulic Conductivity Testing will be determined using the variable-head test method ("rising head") (Bouwer and Rice Method, 1976). Hydraulic assessment includes the completion of hydraulic conductivity tests and the measurement of water levels in monitoring wells. Variable head tests will be completed using a stainless steel or PVC slug to displace water within the well or by removing water from the well with a bailer or pump. The recovery of the initial water level is then measured with respect to time. Data obtained using this test will be evaluated using procedures presented in "The Bouwer and Rice Slug Test - An Update," Bouwer, H., Groundwater Journal, Vol. 27, No. 3, May-June 1989, or similar method.

## 4.4 Building Environmental Condition Assessment

The RI will also include: (1) an ACM survey; (2) an LBP survey (3) a PCB inventory assessment and (4) existing floor drain assessment for the two buildings on the 220 Washington parcel and the one building on the 208-214 Washington parcel.

### 4.4.1 ACM Survey

AMD Environmental Consultants, Inc. (NYS Department of Labor [DOL] No. 56177), under subcontract to BE3, will provide NYSDOL Certified Asbestos Inspectors to identify and quantify homogenous areas, and to collect bulk samples of each homogenous area within the building for laboratory analysis. Asbestos sampling activities will be conducted in accordance with guidelines and techniques identified in NYCRR 56. The samples will be sent to a laboratory approved by NYSDOH ELAP for subsequent analysis.

Layered building materials will be separated by layer into individual homogenous areas. The sampling event will include a visual examination to identify the location, approximate quantities, apparent condition, and friability of materials that are typically suspected to contain asbestos as identified in 12 NYCRR 56-5.1.

Bulk samples will be laboratory analyzed for the presence of asbestos, using polarized light microscopy (PLM). Samples that are determined by the laboratory to be non-friable organically bound (NOB) in nature and determined to contain less than one percent asbestos by PLM analysis, will also be analyzed by transmission electron microscopy (TEM). TEM analysis is required by the NYSDOH to conclusively determine that NOB materials contain less than one percent asbestos. An asbestos survey report will be completed for inclusion in the RI report.

### 4.4.2 Lead Inspection

BE3/AMD will provide Environmental Protection Agency (EPA) certified LBP Risk Assessors/Environmental Technicians to perform an LBP inspection of the interior and exterior surfaces of the buildings using X-Ray Fluorescence (XRF) analyzer. Surfaces will be classified as LBP using the Housing and Urban Development (HUD) criteria which defines LBP as any paint, varnish, stain, or other applied coating measuring 1.0 milligram per centimeter$^2$ (mg/cm$^2$) or 0.5 percent by weight or more of lead. All surfaces yielding inconclusive results during the XRF inspection shall be assumed positive for LBP. A report documenting the results of the LBP survey will be developed and included in the RI report.

### 4.4.3 PCB Survey

BE3/AMD will provide Environmental Technicians to identify transformer oils, lubricating oils, window caulks, and fluorescent light fixtures for suspect PCB containing materials and collect verification samples. The samples will be submitted to an accredited laboratory to determine the presence of PCBs and compared against existing EPA standards. The survey will also investigate lighting ballasts for PCB related labelling and provide a count of fixtures that are not labelled as being non-PCB containing. A report will be developed for inclusion in the RI report. Note that analytical results from the PCB Survey will also complete DUSRs and be submitted to EQuIS, in accordance with the QA/QC Plan (see also Section 8.0 DATA REDUCTION, VALIDATION, AND USABILITY of attached QA/QC Plan).

### 4.4.4 Floor Drain Survey

A survey of any building floor drains will be conducted and contents characterized. Sediment found within floor drains will be sampled for TCL VOCs, SVOCs and TAL metals.

## 4.5 VAPOR INTRUSION SURVEY

Historical records of operations at the Site indicated the potential use and storage of petroleum and/or solvent compounds. To confirm and further assess if solvent/petroleum vapors exist in the soil beneath the existing building slabs or future building slabs, a soil vapor intrusion investigation will be undertaken. Vapor/air sampling will include:

- Individual vapor points in the west end building on the 220 Washington parcel.
- Individual vapor points within the east end “out” building at 220 Washington, the building on the 208-214 Washington parcel and designated exterior locations across the Site (See **Figure 5**).

As all existing buildings on site are planned to be demolished and are not routinely occupied, co-located indoor air & sub-slab samples would not be accurate in determining potential exposure. Soil vapor samples will be collected across the site instead.

Soil vapor probes will be installed individual boreholes (see **Figure 5**). Borehole vapor probes will be installed as follows:

- VP-2 in the 208-214 Washington parcel building.
- VP-3 in the 220 Washington parcel eastern “out” building.
- VP-1, VP-4, VP-5  VP-6, VP-7, and VP-8 across the remainder of the Site (exterior of buildings).

Vapor point samples will be completed using a skid-steer mounted Geoprobe to install the sampling probes. A ¼ inch PVC tube with a 3/8-inch stainless steel screen will be installed at the bottom of each probe hole. Vapor Point Installation diagrams will be developed. Porous sand will be backfilled around the screen to a two-foot depth (or less depending on total depth of the borehole) of each hole and a bentonite seal will be placed above the sand layer to seal off the hole around the tubing.

Vapor/air samples will be collected in regulated 6 Liter Summa canisters over a 24-hour period. The samples will be analyzed for EPA Method TO-15 compounds. The sampling procedures are also provided in Section 8.0 of **Appendix** D. NYSDEC Category B analytical data package deliverables will be provided. Air samples to be collected are summarized in Table 1 of **Appendix C** along with QA/QC requirements. DUSRs will be completed for all samples.

**Table 4.5 Summary of Proposed Vapor Probes**

| Vapor Probe | Estimated Depth (ft bgs) | Screen Interval (ft bgs) | Target Analyses |
|---|---|---|---|
| RI-VP-1 through RI-BH-8 | 10 | 8-10’ | TO-15 |

# 5.0 ADDITIONAL SUPPLEMENTAL FIELD INVESTIGATIONS

All the data generated during the RI will be evaluated to determine if additional investigation activities are needed beyond what is described herein. Additional assessment may include an additional subsurface boring or test trench and sample analysis limited to contaminants identified during the RI program. Should the site investigations indicate the likelihood of site contaminants leaching outside the Site boundary, additional assessment for potential off-site soil vapor intrusion may be necessary.

# 6.0 INVESTIGATION DERIVED WASTE MANAGEMENT

Investigation-derived waste (IDW) will include soil, groundwater, and miscellaneous solid waste generated on site during the RI. IDW generated on site that cannot be disposed of on site will be containerized and disposed of at an approved facility. IDW will be managed in accordance with NYSDEC DER-10 Section 3.3e. Refer to Appendix D Field Sampling Plan for specific procedures applicable to specific medias.

# 7.0 QUALITATIVE EXPOSURE ASSESSMENT

Qualitative exposure assessments will be completed in accordance with DER-10 sections 3.3(c) 3 & 4. The assessments will include what impacts site contaminants and field activities may have, if any, on human health and fish and wildlife resources considering all media (ground/surface water, soil, soil vapor, ambient air, and biota). Human health and ecological exposure impacts will be assessed as outlined in DER-10 Appendix 3B - Qualitative Human Health Exposure Assessment and Appendix 3C - Fish and Wildlife Resources Impact Analysis (FWRIA) Decision Key. The Appendix 3C Fish and Wildlife Resources Impact Analysis Decision Key is provided in **Appendix E**. No FWRIA is needed based on the completed decision key process. This determination is based on the following:

- The Site was a commercial property in a Brownfield Opportunity Area (BOA).
- The contamination at the site has very low potential to migrate into or impact any off-site habitat of endangered, threatened, or special concern species or other fish and wildlife resources.
- There are no habitats onsite or nearby.

The qualitative human health exposure assessment will evaluate the five elements (DER-10 Appendix 3B) associated with exposure pathways and describe how each of these elements pertains to the Site. The exposure pathway elements that will be addressed include:

- A description of the contaminant source(s) including the location of the contaminant release to the environment (any waste disposal area or point of discharge) or if the original source is unknown, the contaminated environmental medium (soil, indoor or outdoor air, biota, and water) at the point of exposure.
- An explanation of the contaminant release and transport mechanisms to the exposed population.
- Identification of all potential exposure point(s) where actual or potential human contact with a contaminated medium may occur.
- Description(s) of the route(s) of exposure (i.e., ingestion, inhalation, dermal absorption).
- A characterization of the receptor populations who may be exposed to contaminants at a point of exposure.

A discussion of potential off-site migration of site contaminants in all media will be included in the RI report.

As called for in DER-10 for volunteers in the BCP, sufficient field information and sampling data will be provided to identify the presence of contamination, if any, that may be leaving the Site to support qualitative off-site exposure assessments by others.

# 8.0 REPORTING

An RI report will be prepared in accordance with the applicable requirements of DER-10 and Part 375. All RI data will be submitted to the NYSDEC data database. Once the approved lab has completed its sample analysis of a lab data sample batch it is inserted by the lab into lab Electronic Data Deliverable (EDD) forms (only lab data) and a CAT B is prepared and sent to the independent preparer of DUSRs. Once the DUSRs are received, the final EDD is prepared for the sample batch incorporating the lab data plus the site-specific data called for in the EDD. Any data changes called for in the DUSRs are also incorporated in the final EDD (latest format). The

latest NYSDEC EDD Valid values tables are also checked. Select computers and staff have standalone Electronic Data Processors (EDP) inserted from NYSDEC on their computers. The final EDD is inserted in the EDP which confirms if all the data has been correctly inserted and shows where data is incomplete. Corrections are then made until the EDP indicates the EDD data is correct. Once correct the EDP has a process to submit the completed EDD in Zip format to Albany for final check.

A schedule is provided in **Figure 2**. It is anticipated that upon completion of the 30-day public comment period an RI report will be drafted. This report may also include a corresponding Alternative Analysis Report (AAR) that (1) evaluates remedial alternatives based upon the data obtained in the RI and (2) initiates the 45-day public comment period for the generation of the Remedial Action Work Plan (RAWP) and final decision document produced by the NYSDEC.

A Citizen Participation Plan (CPP) has been prepared for the Site in accordance with the requirements outlined in NYSDEC's DER-23 Citizen Participation Handbook for Remedial Programs, issued January 2010, as amended as a stand-alone document. The CPP provides for issuance of fact sheets and public meetings at various stages in the investigation/remedial process. A fact sheet will be prepared by NYSDEC to announce the availability of the RIWP for review, followed by a 30-day comment period. A public meeting will be held, if requested, during the public comment period.

The major components of the CPP are as follows:

- Names and addresses of the interested public as set forth on the Brownfield site contact list provided with the BCP application
- Identification of major issues of public concern related to the site and that may be encountered during the remediation project
- A description of citizens participation activities already performed and to be performed during remediation
- Identification of document repositories for the project
- A description and schedule of public participation activities that are either required by law or needed to address public concerns related to the Site

Summaries of the RI investigation will be submitted to the NYSDEC as monthly progress reports as noted in Section XI of the BCA. Fact sheets documenting the goals and progress of the project will be prepared at key milestones during the project and distributed to those on the project mailing list. The distribution list is included in the CPP.

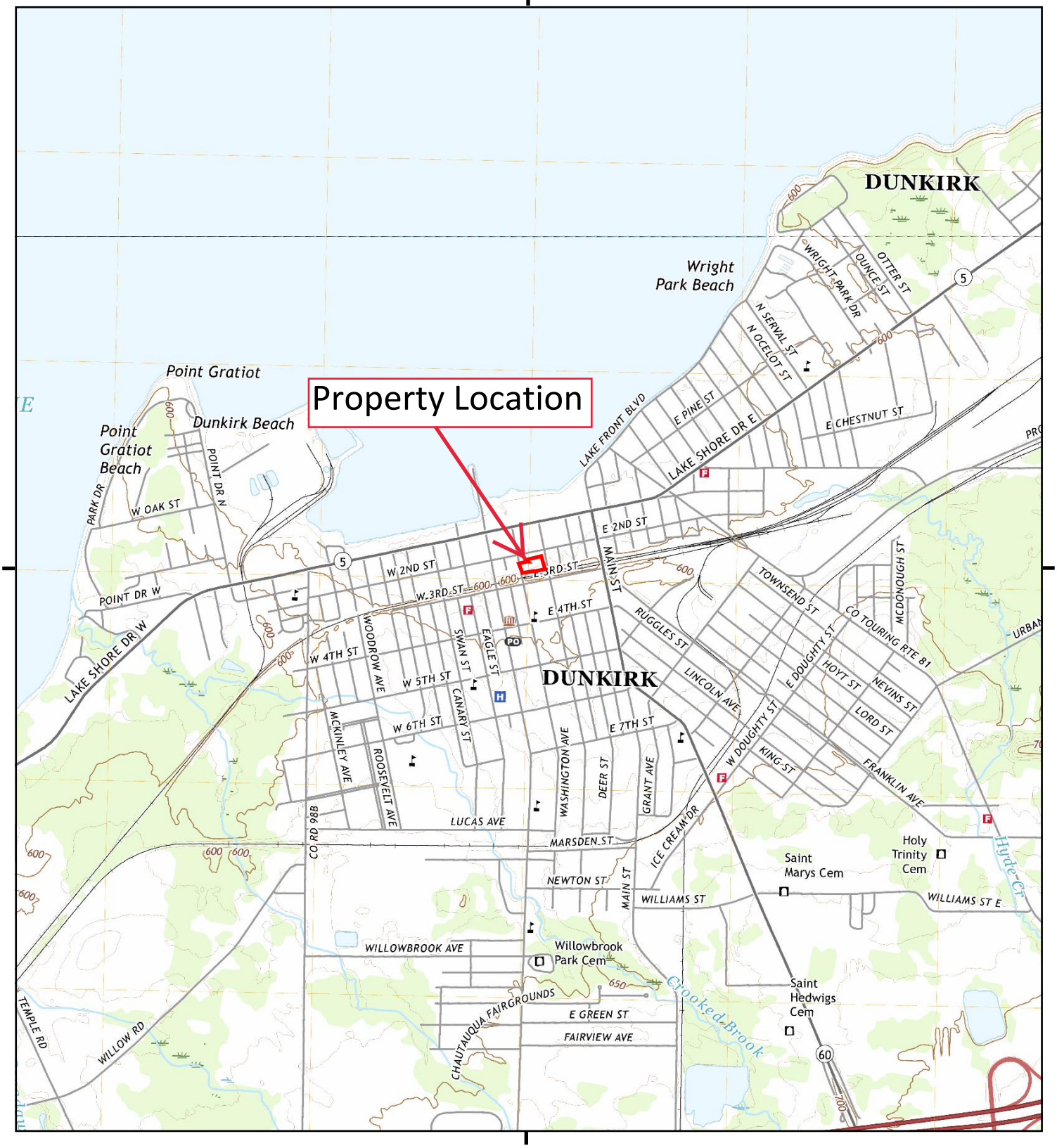
# 9.0 WORK PLAN CERTIFICATION

Jason M. Brydges certifies that he is currently NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Remedial Investigation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).


_____

Jason M. Brydges, P.E.

# FIGURES




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

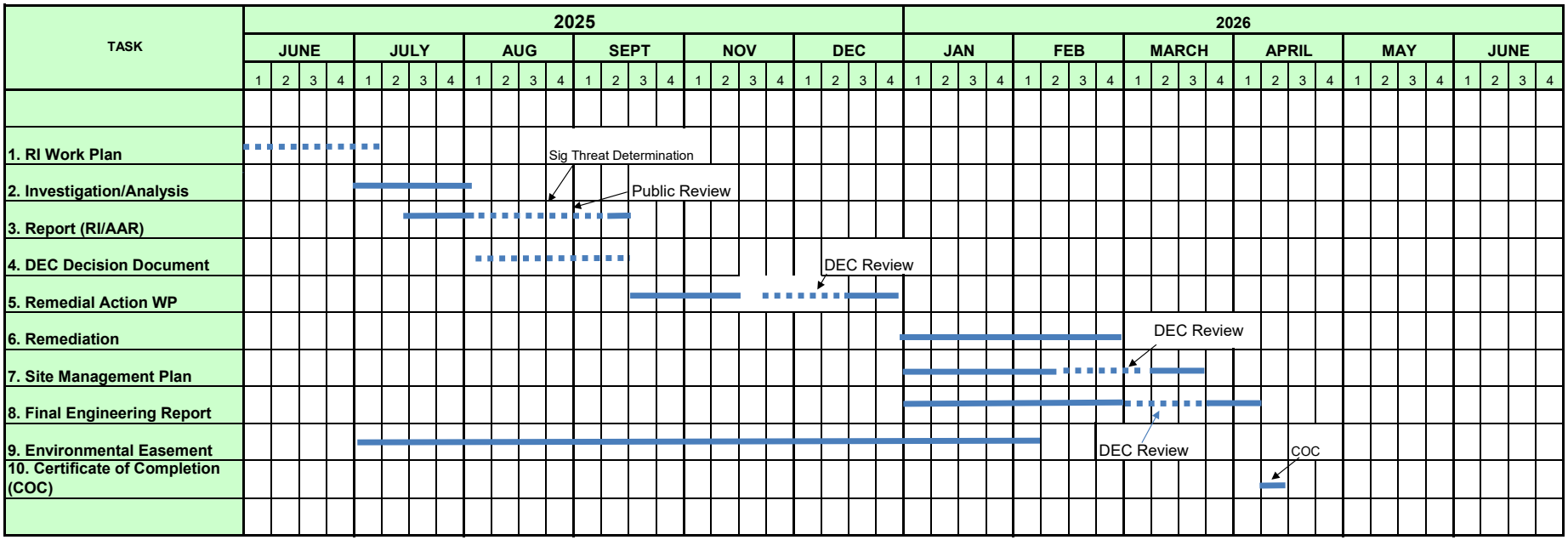
TP, Dunkirk, 2019, 7.5-minute
N, North of Dunkirk, 2019, 7.5-minute

**FIGURE 1**
**Site Location Map**
**Block of Washington, E.2nd & Park**

N

## FIGURE 2

***BCP PROJECT SCHEDULE June 2025***
***BLOCK OF WASHINGTON, E. SECOND AND PARK - DUNKIRK, NY***



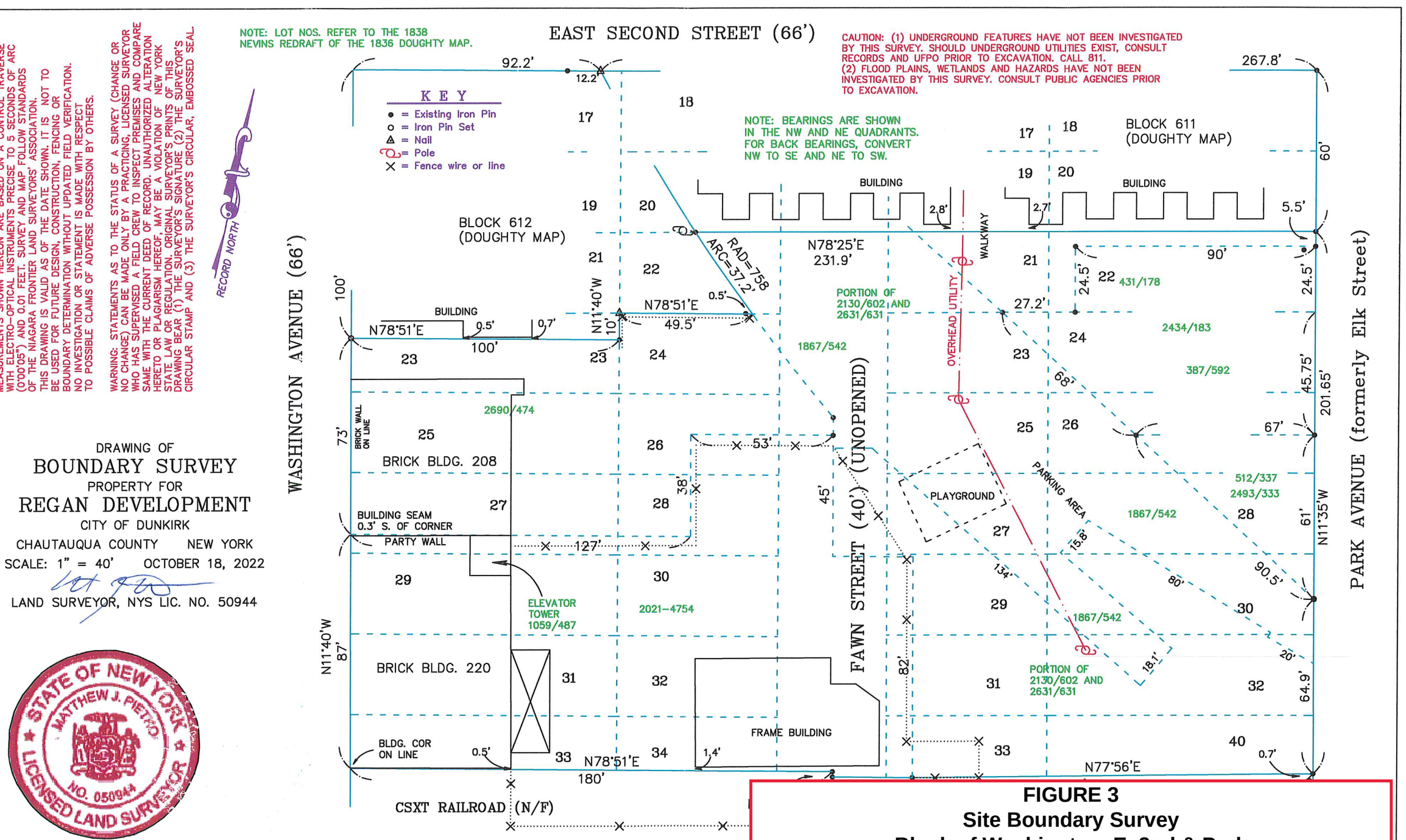
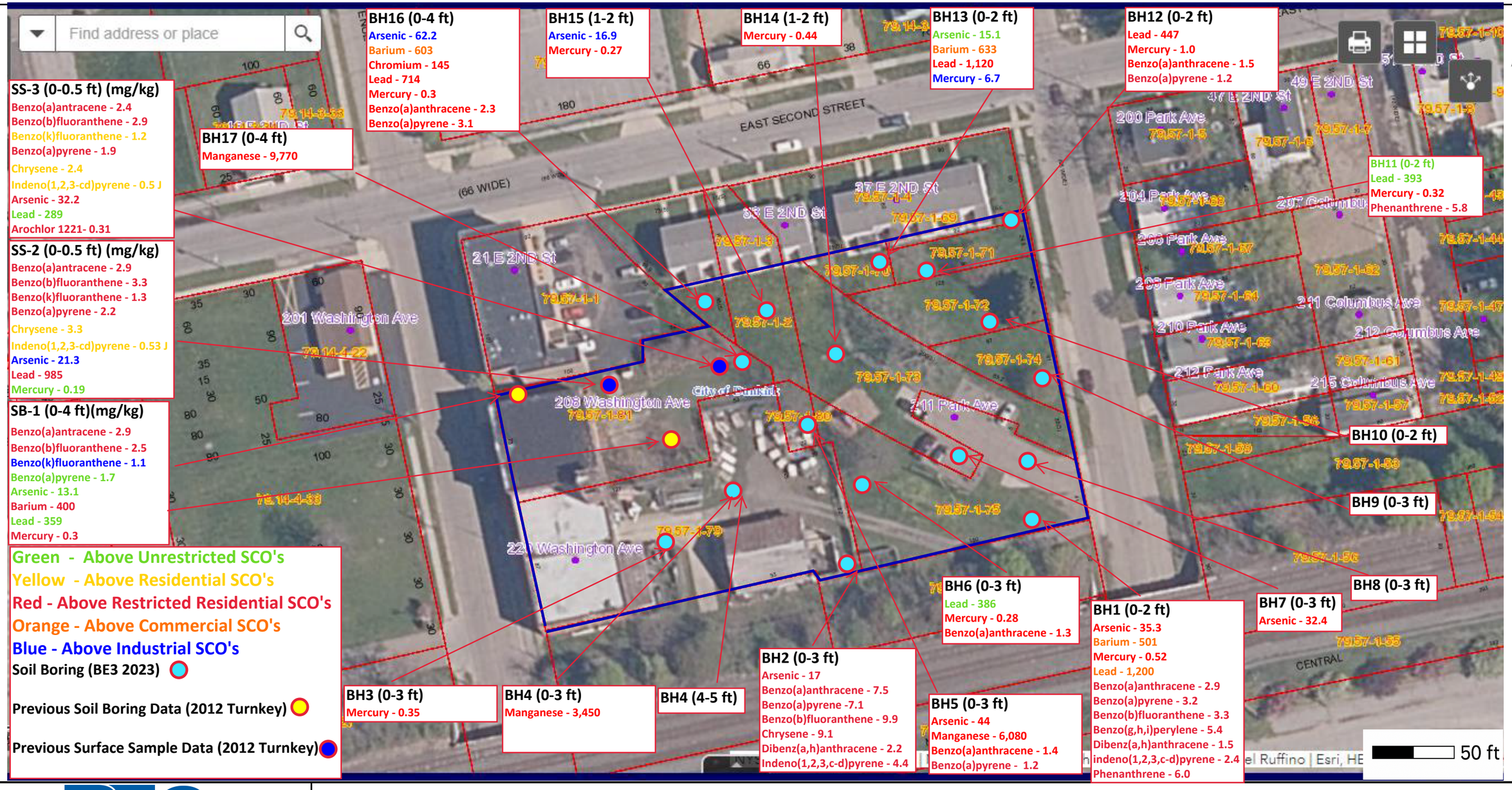
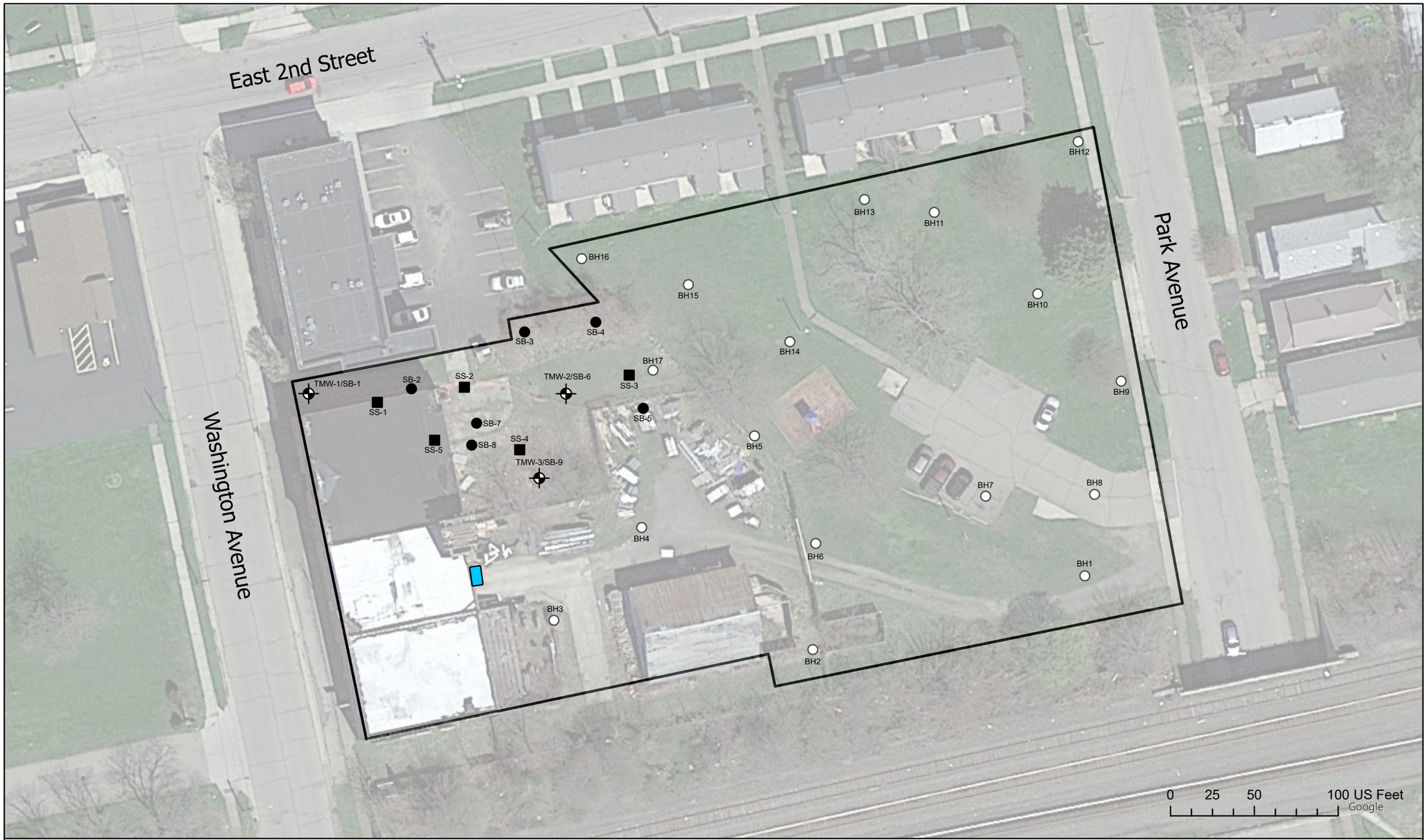



**FIGURE 3**
**Site Boundary Survey**
**Block of Washington, E. 2nd & Park**




| | | |
|---|---|---|
| BRYDGES ENGINEERING IN ENVIRONMENT AND ENERGY, DPC | Boring Locations | |
| | Dunkirk | 1/13/2023 |
| | New York | Regan Development - Dunkirk |

**FIGURE 4 - Phase 2 ESA - Block of Washington,E. 2nd & Park-Boring Soil Sample Locations & Analytical Results**




## LEGEND

- Property Boundary
- Cylindrical Gas Tanks
- BH1 — Previous Phase II ESA Boring Locations (1/13/2023)
- SB-1 — Previous Phase II ESA Boring Locations (3/16/2012)
- SS-1 — Previous Phase II ESA Surface Sample Locations (3/16/2012)
- TMW-1/SB-1 — Previous Phase II ESA Temporary Well/Boring Locations (3/16/2012)

## NOTES

1. Basemap adopted from Google Maps
2. Previous investigation locations are approximate

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jbrydges@be3corp.com

CLIENT: REGAN DEVELOPMENT

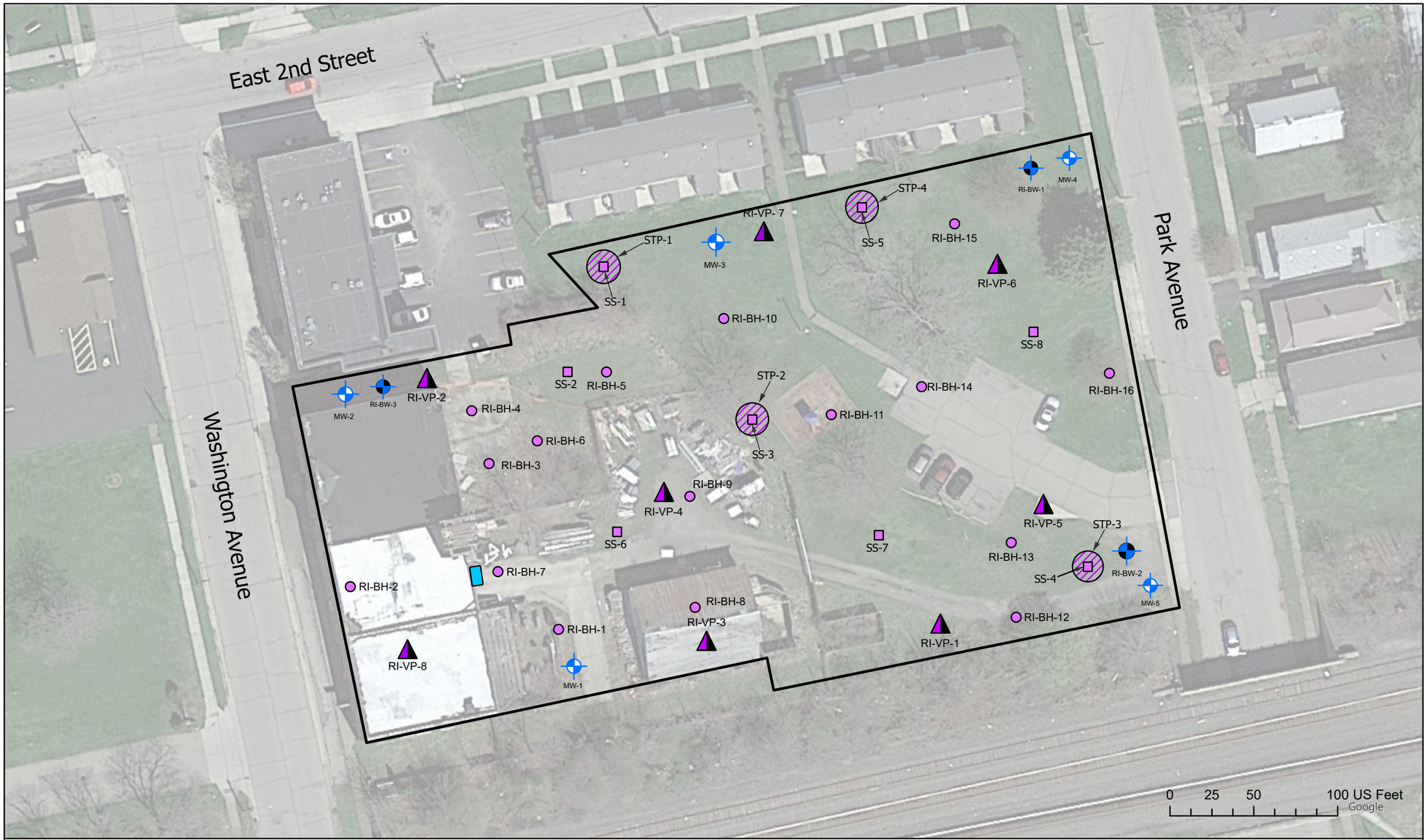
# FIGURE 5
## Previous Sampling Locations

Block of Washington, East 2nd and Park
Dunkirk, NY 14048

N W E S

DATE ISSUED:
May 15, 2025

SCALE: 1:700




## LEGEND

- Property Boundary
- MW-1 — RI Monitoring Well
- RI-BH-1 — RI Boring Locations
- VP-1 — Vapor Point
- Cylindrical Gas Tanks
- RI Bedrock Well
- STP-1 — Step Out Sample
- SS-2 — Surface Sample

## NOTES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# FIGURE 6
## Proposed RI Sampling Locations

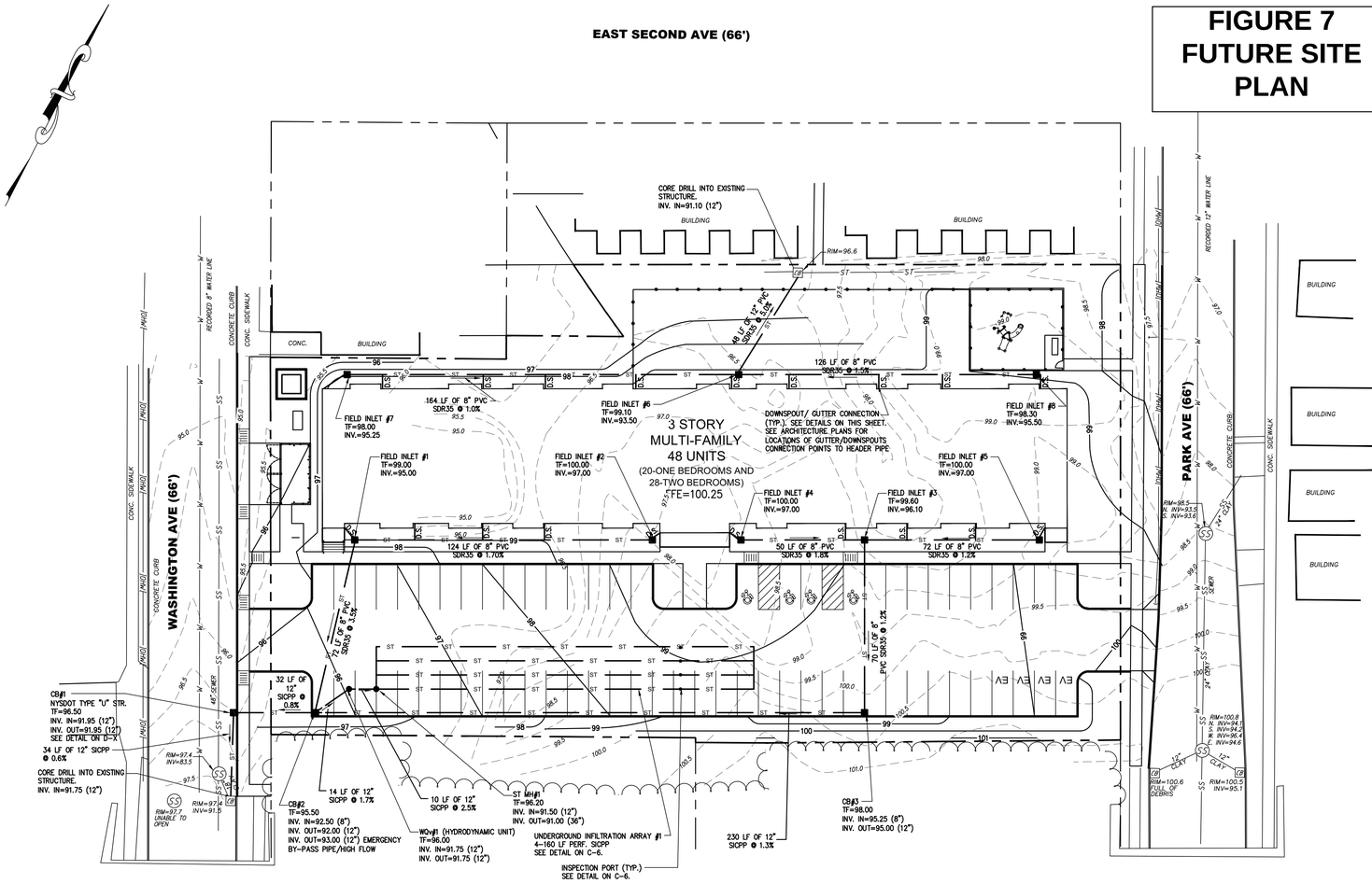
Block of Washington, East 2nd and Park
Dunkirk, NY 14048

N W E S

DATE ISSUED:
July 31, 2025
△
△
△

SCALE: 1:700

# FIGURE 7
# FUTURE SITE PLAN




**NEW YORK CENTRAL RAILROAD TRACKS**



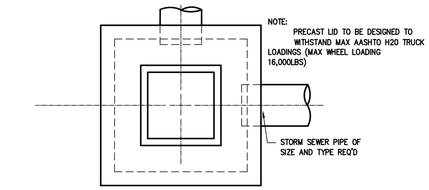

YARD DRAIN OR CLEAN-OUT STORM DRAIN
N.T.S.



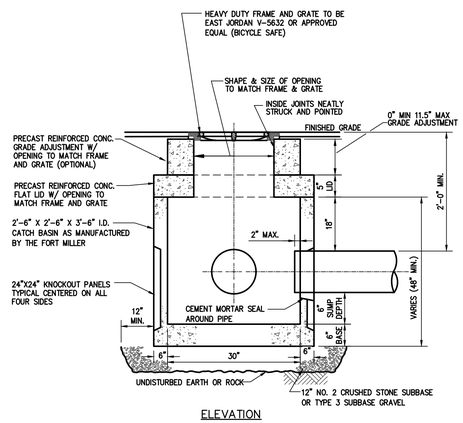




DOWNSPOUT TO STORM CONNECTION
N.T.S.

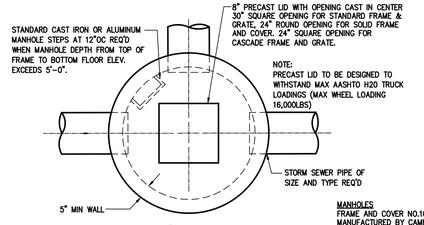



PLAN

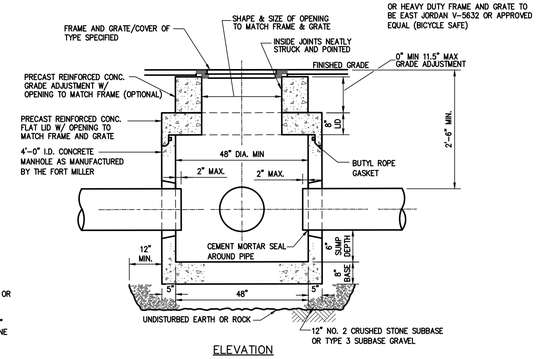



ELEVATION

CONCRETE CATCH BASIN
N.T.S.

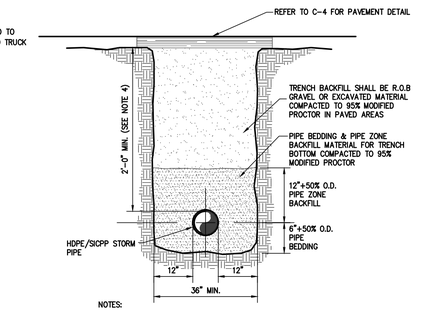



PLAN




ELEVATION

CONCRETE MANHOLE
N.T.S.




NOTES:

1. PIPE BEDDING & PIPE ZONE BACKFILL SHALL BE A NATURAL RUN-OF-BANK (R.O.B.) SAND OR A MIXTURE OF CRUSHED STONE AND GRAVEL, FREE OF SOFT, NONDURABLE PARTICLES, ORGANIC MATERIALS, AND ELONGATED PARTICLES, AND SHALL BE WELL GRADED FROM FINE TO COARSE PARTICLES. BEDDING GRADATIONS SHALL BE APPROVED BY THE ENGINEER AND SHALL MEET THE FOLLOWING GRADATION REQUIREMENTS:

| SIEVE DESIGNATION | % PASSING |
|---|---|
| 3/4" | 100% |
| NO. 40 | 70% |
| NO. 200 | 0-10% |

2. TRENCH BACKFILL SHALL BE A NATURAL RUN-OF-BANK (R.O.B.) GRAVEL, FREE OF SOFT, NONDURABLE PARTICLES, ORGANIC MATERIALS, AND ELONGATED PARTICLES, AND SHALL BE WELL GRADED FROM FINE TO COARSE PARTICLES. TRENCH BACKFILL GRADATIONS SHALL BE APPROVED BY THE ENGINEER AND SHALL MEET THE FOLLOWING GRADATION REQUIREMENTS:

| SIEVE DESIGNATION | % PASSING |
|---|---|
| 4" | 100% |
| NO. 40 | 70% |
| NO. 200 | 0-10% |

IN UNPAVED AREAS, TRENCH BACKFILL CAN BE MATERIALS EXCAVATED FROM THE TRENCH AS APPROVED BY THE ENGINEER.

3. TRENCHING SHALL BE CONDUCTED IN ACCORDANCE WITH O.S.H.A. STANDARDS.

4. 2'-0" MIN COVER SHALL BE APPLIED TO STORM SEWER PIPES ONLY.

STORM PIPE TRENCH
N.T.S.

PRELIMINARY "NOT FOR CONSTRUCTION"

30' 15' 0 30'



SUBMITTAL / REVISIONS

| No. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| | |
|---|---|
| PROJ. MANAGER: | JWE |
| CHIEF DESIGNER: | JWE |
| DESIGNED BY: | JWE |
| DRAWN BY: | JWE |

DRAFT

SEAL

EP LAND SERVICES LLC
621 COLUMBIA STREET- COHOES, NY 12047
PHONE: 518-785-9000

REGAN DEVELOPMENT

GRADING PLAN

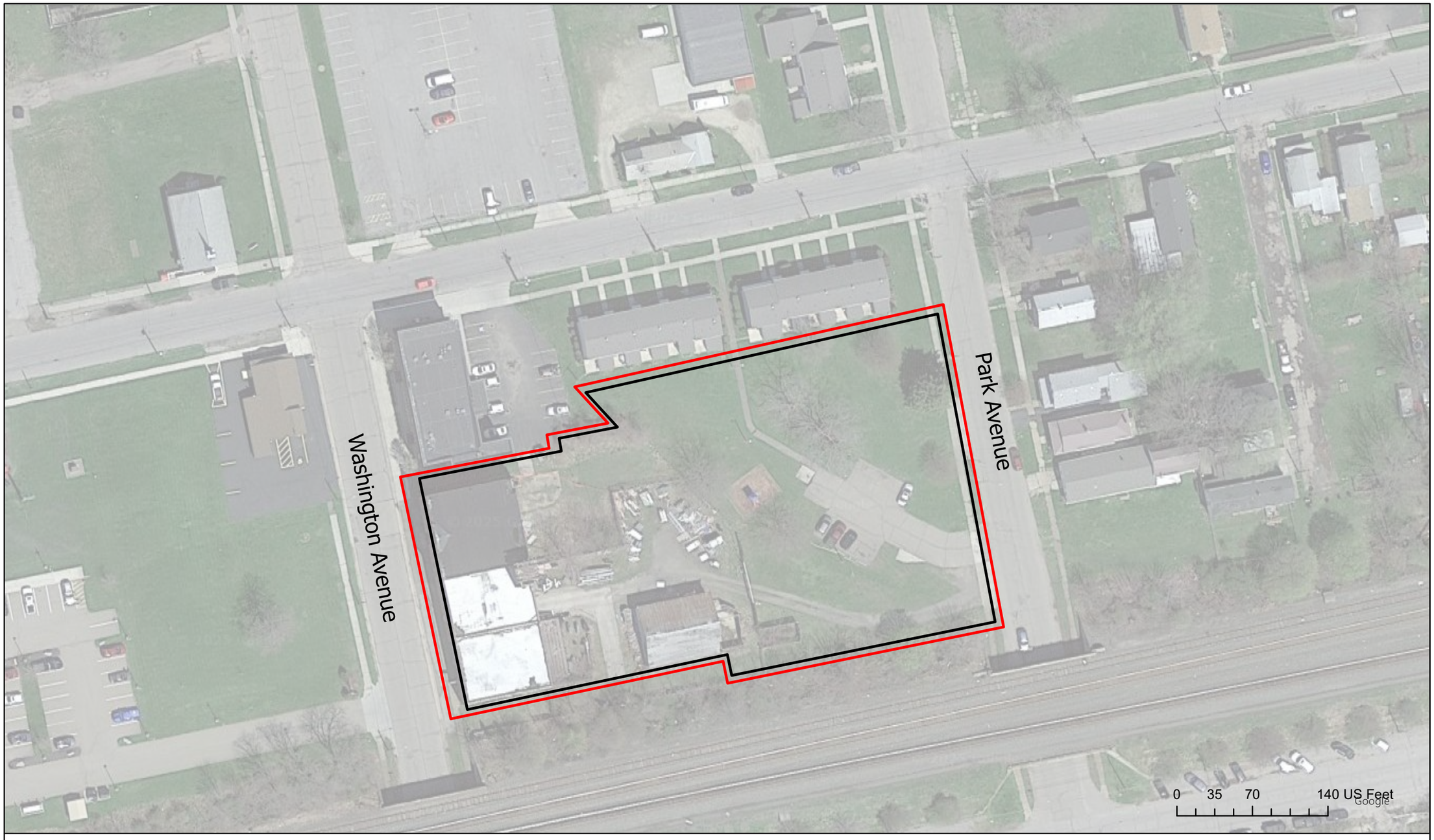
208 TO 220 WASHINGTON AVE.
TAX PARCELS 79.57-1-81, 80, 79, 75, 74, 73, 72, 71, 70, 2

THE CITY OF DUNKIRK NEW YORK

SCALE: 1"=30'
PROJ. No.: 2022-08E
DATE: JUNE 2023

C-5

File Name: I:\Engineering Projects\Other Clients\2022\2022-09 Dunkirk-Regan\04-Cad File\Civil Site Plan (Washington 5-30-23).dwg (Layout: C-5)
Date: Tue, Jun 20, 2023 - 2:54 PM (Name: jleaston)




## LEGEND

- Property Boundary
- Planned Fencing

## NOTES

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CLIENT: REGAN DEVELOPMENT

# FIGURE 8
## Planned Fence Locations

Block of Washington, East 2nd and Park
Dunkirk, NY 14048

N
W E
S

DATE ISSUED:
July 31, 2025
△
△
△

SCALE: 1:1,094

# TABLES

**TABLE 1**

**SUMMARY OF SURFACE SOIL ANALYTICAL RESULTS**

**APRIL 2012 PHASE II**

| Parameter [1] | Unrestricted SCOs (mg/Kg)[2] | Restricted Residential SCOs (mg/Kg)[3] | Restricted Commercial SCOs (mg/Kg)[4] | SAMPLE LOCATION | | | |
|---|---|---|---|---|---|---|---|
| | | | | SS-2 (0'-0.5') | SS-3 (0'-0.5') | SS-4 (0'-0.5') | SS-5 (0'-0.5') |
| ***Poly-Aromatic Hydrocarbons (PAHs)[5] - mg/Kg*** | | | | | | | |
| Acenaphthylene | **100** | **100** | **500** | 0.29 J | 0.17 J | 0.14 J | 0.92 J |
| Acenaphthene | **20** | **100** | **500** | 0.1 J | 0.27 J | 0.13 J | 0.39 J |
| Anthracene | **100** | **100** | **500** | 0.56 J | 0.68 J | 0.39 J | 3.6 |
| Benzo(a)anthracene | **1** | **1** | **5.6** | **2.9** | **2.4** | **1.5** | **11** |
| Benzo(b)fluoranthene | **1** | **1** | **5.6** | **3.3** | **2.9** | **2.1** | **12** |
| Benzo(k)fluoranthene | **0.8** | **1** | **56** | **1.3** | **1.2** | **1.2** | **5.8** |
| Benzo(g,h,i)perylene | **100** | **100** | **500** | 0.47 J | 0.46 J | 0.41 J | 1.7 |
| Benzo(a)pyrene | **1** | **1** | **1** | **2.2** | **1.9** | **1.3** | **7.1** |
| Chrysene | **1** | **1** | **56** | **3.3** | **2.4** | **1.8** | **8.4** |
| Dibenzo(a,h)anthracene | **0.33** | **0.33** | **0.56** | 0.13 J | 0.19 J | 0.17 J | **0.69 J** |
| Fluoranthene | **100** | **100** | **500** | 5.4 | 5.7 | 3.4 | 25 |
| Fluorene | **30** | **100** | **500** | ND | 0.22 J | 0.12 J | 0.56 J |
| Indeno(1,2,3-cd)pyrene | **0.5** | **0.5** | **5.6** | **0.53 J** | **0.5 J** | 0.4 J | **2** |
| Naphthalene | **12** | **100** | **500** | 0.46 J | 0.21 J | 0.13 J | 0.25 J |
| Phenanthrene | **100** | **100** | **500** | 2.5 | 3.9 | 2 | 15 |
| Pyrene | **100** | **100** | **500** | 4.7 | ND | 2.5 | 17 |
| ***RCRA Metals - mg/Kg*** | | | | | | | |
| Arsenic | **13** | **16** | **16** | **21.3** | **32.2** | 10.6 | **13.2** |
| Barium | **350** | **400** | **400** | 133 | 184 | 153 | **490** |
| Cadmium | **2.5** | **4.3** | **9.3** | 1.2 | 0.44 | 1.3 | 1.9 |
| Chromium | **30** | **180** | **400** | 20.4 B7 | 16.3 B7 | 23.2 B7 | 28.9 B7 |
| Lead | **63** | **400** | **1000** | **985** | **289** | **353** | **1020** |
| Mercury | **0.18** | **0.81** | **2.8** | **0.19** | 0.09 | 0.072 | 0.093 |
| ***Polychlorinated Biphenyls (PCBs) - mg/Kg[5]*** | | | | | | | |
| Aroclor 1221 | **0.1** | **1** | **1** | ND | **0.31** | ND | ND |
| Aroclor 1254 | **0.1** | **1** | **1** | ND | ND | **0.18 J** | ND |
| Aroclor 1260 | **0.1** | **1** | **1** | ND | ND | **0.13 J** | ND |

**Notes:**

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Unrestricted Soil Cleanup Objectives (SCOs).
3. Values per NYSDEC Part 375 Restricted-Residential Soil Cleanup Objectives (SCOs).
4. Values per NYSDEC Part 375 Restricted-Commercial Soil Cleanup Objectives (SCOs).
5. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.

**Definitions:**

ND = Parameter not detected above laboratory detection limit.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B7 = Analyte was detected in method blank at or above method reporting limit.
Concentration found in the sample was 10 times above the concentration found in the blank.

| | |
|---|---|
| **BOLD** | = Value exceeds Unrestricted SCOs |
| **BOLD** | = Value exceeds Restricted Residential SCOs |
| **BOLD** | = Value exceeds Restricted Commercial SCOs |

**TABLE 1**

**SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS**

**APRIL 2012 PHASE II**

| Parameter [1] | Unrestricted SCOs (mg/Kg)[2] | Restricted Residential SCOs (mg/Kg)[3] | Restricted Commercial SCOs (mg/Kg)[4] | SAMPLE LOCATION | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | SB-1 (0'-4') | SB-4 (0'-6') | SB-6 (0'-6') | SB-9 (0'-6') | SB-9 (12'-14') |
| ***TCL plus STARS Volatile Organic Compounds (VOCs)[5] - mg/Kg*** | | | | | | | | |
| Acetone | **0.05** | **100** | **500** | NA | NA | NA | NA | 0.014 J |
| Cyclohexane | **--** | **--** | **--** | NA | NA | NA | NA | 0.0009 J |
| Methylcyclohexane | **--** | **--** | **--** | NA | NA | NA | NA | 0.0018 J |
| ***Poly-Aromatic Hydrocarbons (PAHs)[5] - mg/Kg*** | | | | | | | | |
| Acenaphthylene | **100** | **100** | **500** | 0.3 | 0.023 J | 0.013 J | 0.037 J | NA |
| Acenaphthene | **20** | **100** | **500** | 0.83 | ND | ND | 0.14 J | NA |
| Anthracene | **100** | **100** | **500** | 2 | 0.025 J | 0.048 J | 0.39 | NA |
| Benzo(a)anthracene | **1** | **1** | **5.6** | **2.9** | 0.14 J | 0.19 J | 0.88 | NA |
| Benzo(b)fluoranthene | **1** | **1** | **5.6** | **2.5** | 0.2 J | 0.2 J | 0.98 | NA |
| Benzo(k)fluoranthene | **0.8** | **1** | **56** | **1.1** | 0.057 J | 0.1 J | 0.34 | NA |
| Benzo(g,h,i)perylene | **100** | **100** | **500** | 0.27 | 0.034 J | 0.38 J | 0.16 J | NA |
| Benzo(a)pyrene | **1** | **1** | **1** | **1.7** | 0.1 J | 0.15 J | 0.61 | NA |
| Chrysene | **1** | **1** | **56** | **2.6** | 0.16 J | 0.19 J | 0.89 | NA |
| Dibenzo(a,h)anthracene | **0.33** | **0.33** | **0.56** | 0.16 J | ND | 0.022 J | 0.058 J | NA |
| Fluoranthene | **100** | **100** | **500** | 6.1 | 0.28 | 0.38 | 2 | NA |
| Fluorene | **30** | **100** | **500** | 0.97 | ND | 0.016 J | 0.14 J | NA |
| Indeno(1,2,3-cd)pyrene | **0.5** | **0.5** | **5.6** | 0.34 | 0.038 J | 0.039 J | 0.16 J | NA |
| Naphthalene | **12** | **100** | **500** | 0.51 | 0.031 J | 0.035 J | 0.06 J | NA |
| Phenanthrene | **100** | **100** | **500** | 6.5 | 0.15 J | 0.22 | 1.8 | NA |
| Pyrene | **100** | **100** | **500** | 4.1 | 0.2 J | 0.27 | 1.5 | NA |
| ***RCRA Metals - mg/Kg*** | | | | | | | | |
| Arsenic | **13** | **16** | **16** | **13.1** | 14 | 9.8 | 8.3 | NA |
| Barium | **350** | **400** | **400** | **400** | 162 | 93.9 | 55.7 | NA |
| Cadmium | **2.5** | **4.3** | **9.3** | 1.7 | 1.3 | ND | 0.26 | NA |
| Chromium | **30** | **180** | **400** | 16 B7 | 17 B7 | 7.5 B7 | 9.7 B7 | NA |
| Lead | **63** | **400** | **1000** | **359** | **353** | **78** | **483** | NA |
| Mercury | **0.18** | **0.81** | **2.8** | **0.3** | 0.041 | 0.046 | 0.068 | NA |

**Notes:**

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Unrestricted Soil Cleanup Objectives (SCOs).
3. Values per NYSDEC Part 375 Restricted-Residential Soil Cleanup Objectives (SCOs).
4. Values per NYSDEC Part 375 Restricted-Commercial Soil Cleanup Objectives (SCOs).
5. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.

**Definitions:**

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B7 = Analyte was detected in method blank at or above method reporting limit.
Concentration found in the sample was 10 times above the concentration found in the blank.

| | |
|---|---|
| **BOLD** | = Value exceeds Unrestricted SCOs |
| **BOLD** | = Value exceeds Restricted Residential SCOs |
| **BOLD** | = Value exceeds Restricted Commercial SCOs |

**TABLE 1**

**SUMMARY OF GROUNDWATER ANALYTICAL RESULTS**

**APRIL 2012 PHASE II**

| Parameter [1] | NYSDEC Class GA Groundwater Quality Standards[2] | Sample Locations | | |
|---|---|---|---|---|
| | | TMW-1 | TMW-2 | TMW-3 |
| ***TCL plus STARS Volatile Organic Compounds (VOCs) - ug/L*** | | | | |
| Acetone | **50** | 4.8 J | ND | 3.7 J |
| Carbon disulfide | **60** | 0.85 J | ND | 0.68 J |
| Cyclohexane | **--** | 9.3 | ND | 1.7 |
| 2-Hexanone | **50** | 1.4 J | ND | ND |
| 1,2,4 Trimethylbenzene | **5** | 3.9 | ND | ND |
| 1,3,5 Trimethylbenzene | **5** | 1.1 | ND | ND |
| Methylcyclohexane | **--** | 15 | ND | 3.5 |
| Total Xylene | **5** | 3.3 | ND | ND |

**Notes:**

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC part 703.5, table 1, Class GA Groundwater Quality Standards.
3. Excludes TICs identified in the laboratory blank.

**Definitions:**

ND = Parameter not detected above laboratory detection limit.

"--" = No SCO available.

J = Estimated value; result is less than the sample quantitation limit but greater than zero.

**BOLD** Sample Result exceeds NYSDEC Groundwater Quality Standards. (None)

# TABLE 2
# SUMMARY OF SOIL ANALYTICAL RESULTS
# FEBRUARY 2023 PHASE II

| Parameter Tested | BE3 Phase II Report January 2023 - Sample Identification, Sample Depth in feet below ground surface (bgs), and Sample Date | | | | | | | | NYSDEC Soil Cleanup Objectives (SCOs) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BH1 0-2 | BH2 0-3 | BH3 0-3 | BH4 0-3 | BH4 4-5 | BH5 0-3 | BH6 0-3 | BH7 0-3 | Unrestricted | Residential | Restricted Residential | Commerical | Industrial |
| | 1/13/2023 | | | | | | | | | | | | |
| **METALS/INORGANICS** | | | | | | | | | | | | | |
| Arsenic | **35.3** | **17.0** | 3.6 | 11.4 | ND | **44.0** | 10.2 | **32.4** | 13 | 16 | 16 | 16 | 16 |
| Barium | **501** | 221 | 39.5 | 73.0 | ND | 141.0 | 248 | 109 | 410 | 410 | 410 | 410 | 10,000 |
| Beryllium | 1.2 | 2.10 | 0.23 J | 0.5 | ND | 0.89 | 0.78 | 1.10 | 4.4 | 8.8 | 43 | 670 | 750 |
| Cadmium | 1.2 | 0.7 | 0.094 J | 0.3 | ND | 0.35 | 0.62 | 0.37 | 2.5 | 2.5 | 2.5 | 3.7 | 4.4 |
| Chromium | 22.3 | 18.7 | 6.1 | 28.1 | ND | **78.0** | 13.6 | 17.4 | 30 | 30 | 110 | 1,700 | 2,000 |
| Copper | **114.0** | **64.5** | 9.6 | 20.4 | ND | **63.7** | **54.6** | 41.0 | 50 | 280 | 280 | 280 | 10,000 |
| Lead | **1200** | **245** | 60.6 | 10.6 | ND | 31.6 | **386** | **90** | 63 | 400 | 400 | 1,000 | 3,900 |
| Manganese | 313 B | 482 B | 108 B | **3450.0** | ND | **6080 B** | 198 B | 261 B | 1,600 | 2,000 | 2,000 | 10,000 | 10,000 |
| Mercury | **0.52 B** | **0.23 B** | **0.35 B** | 0.04 B | ND | 0.051 B | **0.28 B** | 0.16 B | 0.18 | 0.26 | 0.26 | 1.1 | 1.1 |
| Nickel | 25.8 | **38.0** | 6.1 | 13.9 | ND | **49.4** | 16.7 | 23.3 | 30 | 44 | 210 | 320 | 3,400 |
| Selenium | 3.0 J | ND | ND | 1.5 J | ND | 1.3 J | 1.0 J | 1.1 J | 4 | 22 | 110 | 1,700 | 2,000 |
| Silver | 0.54 J | ND | ND | ND | ND | 0.34 J | 0.34 J | ND | 2 | 22 | 110 | 1,700 | 2,000 |
| Zinc | **353** | **146** | 54.4 | 17.1 | ND | 22.7 | **174** | 91.4 | 109 | 1,300 | 6,600 | 10,000 | 10,000 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)** | | | | | | | | | | | | | |
| Acenaphthene | 0.61 J | ND | ND | ND | ND | 0.38 | 0.11 J | ND | 20 | 100 | 100 | 500 | 1,000 |
| Acenaphthylene | ND | ND | ND | ND | ND | ND | 0.036 J | ND | 100 | 100 | 100 | 500 | 1,000 |
| Anthracene | 1.2 J | 1.3 J | ND | ND | ND | 0.84 | 0.37 | ND | 100 | 100 | 100 | 500 | 1,000 |
| Benzo(a)anthracene | **2.9** | **7.5** | ND | ND | ND | **1.4** | **1.3** | 0.086 J | 1 | 1 | 1.4 | 37 | 37 |
| Benzo(a)pyrene | **3.2** | **7.1** | 0.38 J | 0.032 J | ND | **1.2** | **1.3** | 0.13 J | 1 | 1 | 1 | 3.7 | 3.7 |
| Benzo(b)fluoranthene | **3.3** | **9.9** | 0.47 J | 0.04 J | ND | **1.2** | **1.3** | 0.17 J | 1 | 1 | 1.4 | 37 | 37 |
| Benzo(g,h,i)perylene | **5.4** | **4.2** | 0.31 J | 0.038 J | ND | **0.83** | **0.85** | 0.15 J | 0.64 | 1.2 | 4.9 | 47 | 78 |
| Benzo(k)fluoranthene | **1.4 J** | **4.3** | 0.16 J | ND | ND | 0.64 | 0.72 | 0.071 J | 0.8 | 1.2 | 4.9 | 47 | 78 |
| Chrysene | **3.1** | **9.1** | 0.30 J | ND | ND | **1.3** | **1.4** | 0.13 J | 1 | 1.2 | 4.9 | 47 | 78 |
| Dibenz(a,h)anthracene | **1.5 J** | **2.2** | ND | ND | ND | 0.24 | 0.27 | 0.047 J | 0.33 | 0.33 | 0.33 | 3.7 | 3.7 |
| Dibenzofuran | 0.33 J | ND | ND | ND | ND | 0.22 | 0.074 J | ND | 2.1 | 4.2 | 18 | 180 | 290 |
| Fluoranthene | 7.0 | 11 | 0.49 J | 0.029 J | ND | 2.9 | 2.2 | 0.14 J | 85 | 100 | 100 | 500 | 1,000 |
| Fluorene | 0.55 J | 0.37 J | ND | ND | ND | 0.39 | 0.11 J | ND | 30 | 100 | 100 | 500 | 1,000 |
| Indeno(1,2,3-cd)pyrene | **2.40** | **4.4** | 0.27 J | 0.034 J | ND | **0.74** | **0.8** | 0.11 J | 0.5 | 0.5 | 1.4 | 37 | 37 |
| Naphthalene | ND | ND | ND | ND | ND | 0.13 J | 0.071 J | ND | 12 | 84 | 100 | 500 | 1,000 |
| Phenanthrene | **6.0** | **4.5** | 0.27 J | 0.036 J | ND | **3.1** | **1.6** | 0.11 J | 1.1 | 1.2 | 4.9 | 47 | 78 |
| Pyrene | 6.0 | 8.2 | 0.46 J | 0.037 J | ND | 3.1 | 2.3 | 0.17 J | 64 | 100 | 100 | 500 | 1,000 |

ND Analyte not detected
\- Not Applicable or sample not tested for this analyte
J Estimated Concentration
B Anaalyte detected in method blank
K Result is reported as Benzo(b)fluoranthene
E Results exceeded calibration range
T Result is Tentatively Identifies Compound and an estimated value

Analyte detected
Reported concentration greater than or equal to the NYSDEC Unrestricted SCO
Reported concentration greater than or equal to the NYSDEC Residential SCO
Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO
Reported concentration greater than or equal to the NYSDEC Commercial SCO
Reported concentration greater than or equal to the NYSDEC Industrial SCO

# TABLE 2
# SUMMARY OF SOIL ANALYTICAL RESULTS
# FEBRUARY 2023 PHASE II

| Parameter Tested | BE3 Phase II Report January 2023 - Sample Identification, Sample Depth in feet below ground surface (bgs), and Sample Date | | | | | | | | NYSDEC Soil Cleanup Objectives (SCOs) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BH8 0-3 | BH9 0-3 | BH10 0-2 | BH11 0-2 | BH12 0-2 | BH13 0-2 | BH14 1-2 | BH15 1-2 | Unrestricted | Residential | Restricted Residential | Commerical | Industrial |
| | 1/13/2023 | | | | | | | | | | | | |
| **METALS/INORGANICS** | | | | | | | | | | | | | |
| Arsenic | 4.2 | 10.7 | 12.5 | 10.0 | 9.4 | **15.1** | 8.3 | **16.9** | 13 | 16 | 16 | 16 | 16 |
| Barium | 90.7 | 155 | 180.0 | 194 | 203 | **633** | 89.7 | 131 | 410 | 410 | 410 | 410 | 10,000 |
| Beryllium | 0.85 | 0.8 | 0.92 | 0.74 | 0.50 | 0.89 | 0.80 | 0.95 | 4.4 | 8.8 | 43 | 670 | 750 |
| Cadmium | 0.17 J | 0 | 0.460 | 0.95 | 0.63 | 0.7 | 0.23 J | 0.40 | 2.5 | 2.5 | 2.5 | 3.7 | 4.4 |
| Chromium | 6.5 | 26.8 | 26.6 | **33.1** | 16.5 | 28.2 | 11.0 | 12.9 | 30 | 30 | 110 | 1,700 | 2,000 |
| Copper | 31.8 | 32.1 | 33.2 | 58.6 | 30.9 | 70.8 | 49.0 | 84.5 | 50 | 280 | 280 | 280 | 10,000 |
| Lead | 47.9 | **104.0** | **281.0** | **393.0** | **447** | **1120** | **70.6** | **192** | 63 | 400 | 400 | 1,000 | 3,900 |
| Manganese | 290 B | 302 B | 375 B | 320 B | 365 B | 762 B | 288 B | 336 B | 1,600 | 2,000 | 2,000 | 10,000 | 10,000 |
| Mercury | 0.035 B | 0.15 B | 0.15 B | **0.32 B** | **1.0 B** | **6.7 B** | **0.44 B** | **0.27 B** | 0.18 | 0.26 | 0.26 | 1.1 | 1.1 |
| Nickel | 8.4 | **33.7** | **31.6** | **44.6** | 15.6 | **30.1** | 20.7 | 24.6 | 30 | 44 | 210 | 320 | 3,400 |
| Selenium | ND | 0.65 J | ND | ND | ND | 1.1 J | ND | 1.4 J | 4 | 22 | 110 | 1,700 | 2,000 |
| Zinc | 39.8 | **105.0** | **176.0** | **261** | **284** | **438** | 93.1 | 99 | 109 | 1,300 | 6,600 | 10,000 | 10,000 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)** | | | | | | | | | | | | | |
| Acenaphthene | ND | ND | 0.049 J | ND | 0.42 | ND | ND | ND | 20 | 100 | 100 | 500 | 1,000 |
| Acenaphthylene | ND | ND | ND | ND | ND | ND | 0.13 J | 0.028 J | 100 | 100 | 100 | 500 | 1,000 |
| Anthracene | ND | ND | 0.19 J | ND | 0.9 | ND | ND | ND | 100 | 100 | 100 | 500 | 1,000 |
| Benzo(a)anthracene | ND | ND | 0.39 | ND | **1.5** | 0.093 J | 0.44 J | 0.28 | 1 | 1 | 1.4 | 37 | 37 |
| Benzo(a)pyrene | ND | 0.18 J | 0.38 | ND | **1.2** | 0.13 J | 0.57 J | 0.27 | 1 | 1 | 1 | 3.7 | 3.7 |
| Benzo(b)fluoranthene | ND | 0.21 J | 0.42 | ND | **1.1** | 0.15 J | 0.83 J | 0.34 | 1 | 1 | 1.4 | 37 | 37 |
| Benzo(g,h,i)perylene | ND | ND | 0.26 | ND | **0.740** | 0.095 J | 0.38 J | 0.16 J | 0.64 | 1.2 | 4.9 | 47 | 78 |
| Benzo(k)fluoranthene | ND | 0.14 J | 0.2 J | ND | 0.63 | 0.061 J | 0.29 J | 0.16 J | 0.8 | 1.2 | 4.9 | 47 | 78 |
| Chrysene | ND | ND | 0.43 | ND | **1.5** | 0.14 J | 0.52 J | 0.3 | 1 | 1.2 | 4.9 | 47 | 78 |
| Dibenz(a,h)anthracene | ND | ND | 0.084 J | ND | 0.18 J | ND | ND | 0.051 J | 0.33 | 0.33 | 0.33 | 3.7 | 3.7 |
| Dibenzofuran | ND | ND | 0.051 J | ND | 0.16 J | ND | ND | 0.03 J | 2.1 | 4.2 | 18 | 180 | 290 |
| Fluoranthene | 3.5 J | 0.39 J | 0.8 | 6.3 J | 2.9 | 0.250 | 0.61 J | 0.31 | 85 | 100 | 100 | 500 | 1,000 |
| Fluorene | ND | ND | 0.064 J | ND | 0.340 | ND | ND | ND | 30 | 100 | 100 | 500 | 1,000 |
| Indeno(1,2,3-cd)pyrene | ND | 0.13 J | 0.25 | ND | **0.69** | 0.095 J | 0.37 J | 0.16 J | 0.5 | 0.5 | 1.4 | 37 | 37 |
| Naphthalene | ND | ND | 0.039 J | ND | ND | ND | ND | 0.041 J | 12 | 84 | 100 | 500 | 1,000 |
| Phenanthrene | ND | 0.25 J | 0.77 | **5.8 J** | **3.6** | 0.19 J | 0.2 J | 0.23 | 1.1 | 1.2 | 4.9 | 47 | 78 |
| Pyrene | 3.2 J | 0.35 J | 0.83 | 5.0 J | 3.6 | 0.260 | 0.51 J | 0.35 | 64 | 100 | 100 | 500 | 1,000 |

Notes: All units in parts per million (ppm)

ND Analyte not detected

\- Not Applicable or sample not tested for this analyte

J Estimated Concentration

B Anaalyte detected in method blank

K Result is reported as Benzo(b)fluoranthene

E Results exceeded calibration range

T Result is Tentatively Identifies Compound and an estimated value

Analyte detected

Reported concentration greater than or equal to the NYSDEC Unrestricted SCO

Reported concentration greater than or equal to the NYSDEC Residential SCO

Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO

Reported concentration greater than or equal to the NYSDEC Commercial SCO

Reported concentration greater than or equal to the NYSDEC Industrial SCO

**TABLE 2**
**SUMMARY OF SOIL ANALYTICAL RESULTS**
**FEBRUARY 2023 PHASE II**

| Parameter Tested | BE3 Phase II Report January 2023 - Sample Identification, Sample Depth in feet below ground surface (bgs), and Sample Date | | | | NYSDEC Soil Cleanup Objectives (SCOs) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | BH-16 0-4 | BH-17 0-4 | | | | | | | |
| | 1/13/2023 | | | | Unrestricted | Residential | Restricted Residential | Commerical | Industrial |
| **METALS/INORGANICS** | | | | | | | | | |
| Arsenic | 62.2 | 11.5 | | | 13 | 16 | 16 | 16 | 16 |
| Barium | 603 | 161 | | | 410 | 410 | 410 | 410 | 10,000 |
| Beryllium | 0.6 | 1.20 | | | 4.4 | 8.8 | 43 | 670 | 750 |
| Cadmium | 1.6 | 0.45 | | | 2.5 | 2.5 | 2.5 | 3.7 | 4.4 |
| Chromium | 145.0 | 51.9 | | | 30 | 30 | 110 | 1,700 | 2,000 |
| Copper | 114.0 | 37.1 | | | 50 | 280 | 280 | 280 | 10,000 |
| Lead | 714 | 12 | | | 63 | 400 | 400 | 1,000 | 3,900 |
| Manganese | 1910 B | 9770 B | | | 1,600 | 2,000 | 2,000 | 10,000 | 10,000 |
| Mercury | 0.30 B | 0.008 J B | | | 0.18 | 0.26 | 0.26 | 1.1 | 1.1 |
| Nickel | 44.1 | 22.9 | | | 30 | 44 | 210 | 320 | 3,400 |
| Selenium | 3.9 J | 3.5 J | | | 4 | 22 | 110 | 1,700 | 2,000 |
| Zinc | 376 | 41.7 | | | 109 | 1,300 | 6,600 | 10,000 | 10,000 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)** | | | | | | | | | |
| Acenaphthene | ND | ND | | | 20 | 100 | 100 | 500 | 1,000 |
| Acenaphthylene | ND | ND | | | 100 | 100 | 100 | 500 | 1,000 |
| Anthracene | ND | ND | | | 100 | 100 | 100 | 500 | 1,000 |
| Benzo(a)anthracene | 2.3 J | ND | | | 1 | 1 | 1.4 | 37 | 37 |
| Benzo(a)pyrene | 3.1 J | ND | | | 1 | 1 | 1 | 3.7 | 3.7 |
| Benzo(b)fluoranthene | ND | ND | | | 1 | 1 | 1.4 | 37 | 37 |
| Benzo(g,h,i)perylene | ND | ND | | | 0.64 | 1.2 | 4.9 | 47 | 78 |
| Benzo(k)fluoranthene | ND | ND | | | 0.8 | 1.2 | 4.9 | 47 | 78 |
| Chrysene | ND | ND | | | 1 | 1.2 | 4.9 | 47 | 78 |
| Dibenz(a,h)anthracene | ND | ND | | | 0.33 | 0.33 | 0.33 | 3.7 | 3.7 |
| Dibenzofuran | ND | ND | | | 2.1 | 4.2 | 18 | 180 | 290 |
| Fluoranthene | 6.0 J | 0.027 J | | | 85 | 100 | 100 | 500 | 1,000 |
| Fluorene | ND | ND | | | 30 | 100 | 100 | 500 | 1,000 |
| Indeno(1,2,3-cd)pyrene | ND | ND | | | 0.5 | 0.5 | 1.4 | 37 | 37 |
| Naphthalene | ND | ND | | | 12 | 84 | 100 | 500 | 1,000 |
| Phenanthrene | 4.8 J | ND | | | 1.1 | 1.2 | 4.9 | 47 | 78 |
| Pyrene | 4.5 J | 0.027 J | | | 64 | 100 | 100 | 500 | 1,000 |

Notes: All units in parts per million (ppm)

ND Analyte not detected

\- Not Applicable or sample not tested for this analyte

J Estimated Concentration

B Analyte detected in method blank

K Result is reported as Benzo(b)fluoranthene

E Results exceeded calibration range

Analyte detected

Reported concentration greater than or equal to the NYSDEC Unrestricted SCO

Reported concentration greater than or equal to the NYSDEC Residential SCO

Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO

Reported concentration greater than or equal to the NYSDEC Commercial SCO

Reported concentration greater than or equal to the NYSDEC Industrial SCO

# APPENDICES

# APPENDIX A

# HEALTH AND SAFETY PLAN

# HEALTH AND SAFETY PLAN
# for
# SITE INVESTIGATIONS AND REMEDIAL OVERSIGHT

## 11 PARCELS
## BLOCK OF WASHINGTON, E. SECOND & PARK
## CITY OF DUNKIRK, CHAUTAUQUA COUNTY, NEW YORK

Prepared for:

**Regan Development Corporation**
**1055 Saw Mill River Road #204**
**Ardsley, NY 10502**

Prepared By:


960 Busti Ave. Suite B-150
Buffalo, New York 14213

**July 2025**

# Table of Contents



**ATTACHMENTS**

# 1.0 INTRODUCTION

The following health and safety procedures apply to Brownfield Cleanup Program (BCP) project personnel, including subcontractors, performing activities described in the Remedial Investigation Work Plan (RIWP). Please note, however, that contractors performing remedial work are required to either develop their own Health and Safety Plans (HASPs) meeting these requirements at a minimum or adopt this plan.

## 1.1 PURPOSE

Directed at protecting the health and safety of the field personnel during field activities, the following HASP was prepared to provide safe procedures and practices for personnel engaged in conducting the field activities associated with this project. The plan has been developed using the Occupational Safety and Health Administration (OSHA) 1910 and 1926 regulations and New York State Department of Environmental Conservation (NYSDEC) Brownfields Department of Environmental Remediation (DER)-10 as guidance. The purpose of this HASP is to establish personnel protection standards and mandatory safety practices and procedures for this task specific effort. This plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise during the field efforts.

## 1.2 APPLICABILITY

The provisions of the plan are mandatory for all personnel engaged in field activities. All personnel who engage in these activities must be familiar with this plan and comply with its requirements. The plan is based on available information concerning the project area and planned tasks. If more data concerning the project area becomes available that constitute safety concerns, the plan will be modified accordingly. A member of each contractor on the BCP project will be designated as Field Safety Officer and will be responsible for field safety. Any modifications to the plan will be made by the Field Safety Officer after discussion with the Project Manager and Health and Safety Officer. All modifications will be documented and provided to the Project Manager and the Health and Safety Officer for approval. A copy of this plan will be available to all on-site personnel, including subcontractors prior to their initial entry onto the site.

Before field activities begin, all personnel will be required to read the plan. All personnel must agree to comply with the minimum requirements of this plan, be responsible for health and safety, and sign the Statement of Compliance before site work begins.

## 1.3 FIELD ACTIVITIES

The work addressed by this HASP includes remedial investigation (RI) activities such as assessment of subsurface conditions related to soil, groundwater and vapor and oversight activities related to remediation. Field work will be conducted that can include soil borings, monitoring well installation, groundwater, vapor sampling and soil sampling, etc.

## 1.4 PERSONNEL REQUIREMENTS

Key personnel are as follows:

Health and Safety Officer – Jason M. Brydges, P.E.
Engineer and Project Managers – Jason M Brydges, P.E, Paul Staub, EIT, Alexis Palumbo, Travis Numan.
Geologist – John Boyd, PG
Technicians – Jim Hull
QA/QC – John Berry, P.E.

Responsibilities of some of the key personnel are as follows:

Project Manager:

- Assuring that personnel are aware of the provisions of the HASP and are proficient in work practices necessary to ensure safety and in emergencies;
- Verifying that the provisions of this plan are implemented;
- Assuring that appropriate personnel protective equipment (PPE), if necessary, is available and properly utilized by all personnel;
- Assuring that personnel are aware of the potential hazards associated with Site operations;
- Supervising the monitoring of safety performance by all personnel and ensuring that required work practices are employed; and,
- Maintaining sign-off forms and safety briefing forms.

Health and Safety Officer:

- Monitoring work practices to determine if potential hazards are present, such as heat/cold stress, safety rules near heavy equipment, etc.;
- Determining changes to work efforts or equipment to ensure the safety of personnel;
- Evaluating on-site conditions and recommend to the Project Manager modifications to work plans needed to maintain personnel safety;
- Determining that appropriate safety equipment is readily available and monitor its proper use;
- Stopping work if unsafe conditions occur or if work is not being performed in compliance with this plan:
- Monitoring personnel performance to ensure that the required safety procedures are followed.
- Documenting incident and reporting to Project Manager within 48 hours of occurrence if established safety rules and practices are violated; and,
- Conducting safety meetings as necessary.

Field Personnel, including geologists and technicians:

- Understanding the procedures outlined in this plan;
- Taking precautions to prevent injury to themselves and co-workers;

- Performing only those tasks believed to be safe;
- Reporting accidents or unsafe conditions to the Health and Safety Officer and Project Manager;
- Notifying the Health and Safety Officer and Project Manager of special medical problems (e.g., allergies, medical restrictions, etc.);
- Thinking about safety first while conducting field work; and,
- Not eating, drinking or smoking in work areas.

All Site personnel have the authority to stop work if conditions are deemed to be unsafe. Visitors will be required to report to the overall Site Project Manager or designee and follow the requirements of this plan and the Contractor's HASP (if different).

# 2.0 SITE DESCRIPTION AND SAFETY CONCERNS

## 2.1 SITE BACKGROUND AND DESCRIPTION

The property includes eleven separate parcels within the city block noted above. Some of these parcels are currently vacant and others include partially occupied former factory buildings. A summary of the background of the eleven parcels follows:

**220 Washington (SBL #79.57-1-79) –** The irregularly-shaped property is approximately 0.42-acres (Front 87 feet, depth 210 feet) and contains a 19,172 square foot brick and wood building built in 1900 and a 2,784 square foot separate shed-machine shop wood building built in 1960. The main brick structure contains two floors with no basement. It shares a common wall with the adjacent 208-214 Washington Avenue subject property to the north. Raised rail tracts are located to the south which separate the property from Third Street which is further south. The parcel abuts Washington Street to the west and further west across Washington Street is the Fredonia Technology Incubator and ECCB. The subject parcels 215 Park Avenue and Park Avenue Rear abut this property to the east. Park Avenue is further East. Currently the building is occupied by the Paradis Fence & Flag company. The structure contains floor tiles and florescent lights throughout. The first floor contains an active workshop and storage for tools, equipment, miscellaneous materials, and vehicles. The separate shed building contains mostly lumber and tools/equipment. Various miscellaneous equipment, lumber and metal fencing is located in areas around the building. Two large cylinder gas tanks are located in the rear of the building with no apparent signs of leakage. Both gas tanks are located on an asphalt driveway, but do not have any secondary containment. The location of the two gas tanks has not been previously sampled and will be further investigated during the RIWP. Some small quantities of maintenance chemicals, paints and spray cans are in the buildings. Historically this property was used for wholesale auto parts in the 1960s to the 1990s, auto sales and service in the 1940s and as part of the adjoining 208-214 Washington Street for the Mulholland company factory - makers of roadside dinning cars, automobile body parts, carriages, and springs from the late 1800s through at least the 1930s.

The Mulholland firm constructed a new traditional brick and wood frame plant on Washington Street in 1886.The firm changed its line of production with the changing times. Its original specialization was in manufacturing carriage springs, and later it diversified into the manufacture of component parts for automobiles (springs, drive shafts, and rubber tires). For a few years

around 1910, complete automobiles were being assembled but from 1915 to 1925, it produced only car bodies. Around 1930, the firm shifted to the manufacture of streamlined roadside diners (steel-framed dining cars, 30 feet long and 10 feet wide). The Mulholland company continued through 1933, but then disappeared from the records, perhaps a victim of the Depression. After 1935, the factory was used for the manufacture of malted milk and storage of wholesale groceries.

**208-214 Washington (SBL#79.57-1-81)** - The irregularly shaped property is approximately 0.31-acres (Front 73 feet, depth 180 feet) and contains a 13,393 square foot brick and wood building built in 1900. The brick structure shares a common wall with 220 Washington Ave parcel and is a three-story row building, generally constructed of brick and wood. The structure is currently vacant and in very poor condition. The first floor of the building was rotted exposing the earthen floor beneath the building. The second and third floors are mostly collapsed and were not entered. The western portion of the building fronts Washington Avenue and abuts the sidewalk. The building occupies most of the property; however, the eastern portion of the Site is unimproved and abuts the East Second Street parcel (79.57-1-2) to the east and the 220 Washington Street parcel to the southeast. The Chadwick Bay Lofts are located adjacent to the north at 21 East Second Street**.** The parcel abuts Washington Street to the west and further west across Washington Street is the Fredonia Technology Incubator and ECCB. Historically, as part of the adjoining 208-214 Washington Street parcel, this parcel was the Mulholland company factory from the late 1800s through at least 1934. After 1935, this portion of the factory was used for the manufacture of malted milk and storage of wholesale groceries and may have been associated with auto parts warehousing and sales in the 1960s through the 1990s.

**Park Ave. Rear (SBL #79.57-1-80)** – The irregularly shaped property is approximately 0.02-acres (Front 20 feet, depth 45 feet) vacant unimproved parcel. The western portion of the parcel is adjacent to the 220 and 208-214 Washington Avenue properties. The north, south and eastern sides of the property border the subject parcels East Second Street and 215 Park Avenue. Historically, this property was part of the Burns Coal & Building Supply Company which was located on this and adjacent properties during the 1940s through the 1960s. Prior to that time there may have been a residential building on or partially on the property and the property may have been associated with the Mulholland Company.

**East Second (SBL #79.57-1-2) -** The irregularly shaped property is an approximately 0.08-acre (Front 40 feet, depth 85 feet) vacant unimproved parcel. The western portion of the parcel is adjacent to the subject 208-214 Washington Avenue property and The Chadwick Bay Lofts. City of Dunkirk Housing Authority residential apartments/row houses are located adjacent north at 35 East Second Street. The southern portion of the property is adjacent to the eastern end of the 208-214 Washington Avenue subject parcel. The eastern sides of the property border the subject parcels East Second Street (79.57-1-73) subject property. Historically, this property was part of the Burns Coal & Building Supply Company which was located on this and adjacent properties during the 1940s through the 1960s. Rail tracks and coal sheds may have also been associated with this property.

**East Second Street (SBL #79.57-1-73) -** The irregularly shaped property is approximately 0.06-acres (front 30 feet, depth 89 feet). It currently contains some vacant unimproved areas and sidewalk and parking areas. This parcel is divided into two separate land areas by the subject parcel East Second (79.57-1-2). The western portion of the parcel is adjacent to the subject 208-

214 Washington Avenue property and The Chadwick Bay Lofts as well as 208-220 Washington Avenue parcels. City of Dunkirk Housing Authority residential apartments/row houses are located adjacent north at 35 East Second Street. The southern portion of the property is adjacent to the subject parcel 215 Park Avenue (79.57-1-75). The eastern sides of the property border the subject parcel subject property 215 Park Avenue (79.57-1-75), Park Avenue and Park Ave. (79.57-1-72). Historically, this property was part of the Burns Coal & Building Supply Company which was located on this and adjacent properties during the 1940s through the 1960s. Rail tracks and coal sheds may have also been associated with this property.

**215 Park Avenue (SBL #79.57-1-75) -** The irregularly shaped property is approximately 0.14-acres (front 41feet, depth 150 feet) and is a partially vacant parcel with a parking area. The western portion of the parcel is adjacent to the subject 220 Washington Avenue property. Elevated rail tracks are located south of the subject parcel and undeveloped vacant subject properties are north and east. Historically, this property was part of the Burns Coal & Building Supply Company which was located on this and adjacent properties during the 1940s through the 1960s. Rail tracks and coal sheds may have also been associated with this property.

**211 Park Avenue (SBL #79.57-1-74) -** The triangle shaped property is approximately 0.1-acre (front 61 feet, depth 67 feet) and is a vacant/undeveloped parcel. The western and southern portion of the subject parcel is adjacent to the subject East Second Street (79.57-1-70) property. Park Street is adjacent to the east and the subject Park Ave. (79.57-1-72) is adjacent north**.** Historically, this property contained a bottle warehouse in the 1960s, an Ice Cream Depot in the 1930s and 1940s, a sugar warehouse in the 1920s and a tin shop in the late 1800s. Rail tracks cross the subject parcel during those times as well.

**Park Avenue (SBL #79.57-1-72) -** The irregularly shaped property is an approximately 0.13-acre (front 45 feet, depth 125 feet) vacant unimproved parcel. The property abuts Park Avenue to the east and is surrounded by other subject parcels to the north, south and west. Historically, the western part of this parcel was part of the Burns Coal & Building Supply Company which was located on this and adjacent properties during the 1940s through the 1960s. The eastern portion of this parcel contained a bottle warehouse in the 1960s, an Ice Cream Depot in the 1930s and 1940s, a sugar warehouse in the 1920s and a tin shop in the late 1800s.

**207 Park Avenue (SBL #79.57-1-71) -** The rectangular shaped property is an approximately 0.05-acre (front 24 feet, depth 90 feet) vacant, unimproved parcel. The property abuts Park Avenue to the east, the subject parcel East Second Street (79.57-1-69) to the north and by other subject parcels to the south and west. Historically, this property appears to have been residential and contained residential structures with rail lines to the west.

**East Second Street (SBL #79.57-1-70) -** The irregularly shaped property is an approximately 0.04-acre (front 30 feet, depth 55 feet) vacant, unimproved parcel with a sidewalk running north south through the center. The property abuts The City of Dunkirk/Housing Authority row apartments to the north, 207 Park Avenue (SBL #79.57-1-71) to the south and the subject parcels 207 Park Avenue (SBL #79.57-1-71) and East Second Street (79.57-1-69) to the east. Other subject parcels are located to the west and south. Historically, this property contained rail tracks on its western end and was vacant and may have been residential on its eastern end.

**East Second Street (SBL #79.57-1-69) -** The rectangular shaped sliver is an approximately 0.01-acre (front 90 feet, depth 5 feet) vacant, unimproved parcel. The property abuts the City of Dunkirk/Housing Authority row apartments to the north, 207 Park Avenue (SBL #79.57-1-71) to the south, Park Avenue to the east, and the subject parcel East Second Street (SBL #79.57-1-70) to the west. Historically, this property appears to have been residential and contained residential structures.

## 2.2 HAZARD EVALUATION

Based on the findings related to historic use of the Site and previous investigations, contaminates of concern (COCs) in the soils and groundwater are semi-volatile organic compounds (SVOCs), and metals. There is also potential for chlorinated solvents and petroleum/PCBs in site soils, groundwater, and vapors.

The existing building materials may also have hazardous materials and universal wastes such as ACM in floors/caulk/roofing/insulation, LBP in ceilings/structures/windows/walls/doors, polychlorinated biphenyls (PCBs) in light ballasts and caulk throughout the building, and mercury in fluorescent bulbs.

Specific health and safety concerns to the project tasks include working around low levels of metals, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs) in soil and groundwater. Physical hazards include those associated with working near open excavations and adjacent to field equipment. Contractors will have separate detailed health and safety procedures/requirements for excavations and the transportation and disposal of impacted material that will meet or exceed requirements in this plan. A table of potential hazards and OSHA Standards for consideration during investigation and remedial activities is provided in **Attachment 1**.

### *2.2.1 Chemical Hazards*

Chemical hazards detected at the site include metals and organic compounds that were detected in soil samples at concentrations that exceed NYSDEC Part 375 soil cleanup objectives. These compounds could be encountered during the RI and remedial activities and potential routes of exposure include:

- Skin contact;
- Inhalation of vapors or particles;
- Ingestion; and,
- Entry of contaminants through cuts, abrasions or punctures.

The anticipated levels of personnel protection will include Level D PPE that includes the following:

1. Long sleeve shirt and long pants
2. Work boots with steel toe
3. Hard hats when heavy equipment or overhead hazards are present
4. Safety glasses

5. Work gloves and chemical resistant gloves when sampling potentially contaminated materials
6. High visibility vests or outer gear when Site traffic is significant

Modifications may include booties, overalls, hearing protection, or respiratory protection if air monitoring levels indicate sustained photoionization detector (PID) readings greater than 5 ppm above established background levels. If these levels are reached, work will be halted pending discussions with field and office management. If any readings are recorded above background, work will proceed with caution and breathing zone monitoring will be conducted.

### *2.2.2 Other Physical Hazards*

Depending on the time of year, weather conditions or work activity, some of the following physical hazards could result from project activities:

- Noise
- Heat Stress
- Cold Stress
- Slips, trips, and falls
- Exposure to moving machinery during drilling and excavation activities
- Physical eye hazards
- Lacerations and skin punctures
- Back strain from lifting equipment
- Electrical storms and high winds
- Contact with overhead or underground utilities

*Slips, Trips, and Falls.* Field personnel shall become familiar with the general terrain and potential physical hazards that is associated with the risk of slips, trips, and falls. Special care shall be taken when working near demolition and excavation operations and material stockpiles. Workers will observe all pedestrian and vehicle rules and regulations. Extra caution will be observed while working near roadways and while driving in reverse to ensure safety.

*Noise. The Occupational Health & Safety Administration (OSHA) requires employers to implement a hearing conservation program when noise exposure is at or above 85 decibels averaged over 8 working hours, or an 8-hour time-weighted average (TWA). Hearing conservation programs strive to prevent initial occupational hearing loss, preserve and protect remaining hearing, and equip workers with the knowledge and hearing protection devices necessary to safeguard themselves.*

For RI work on this site when tasks are performed around noise generating tools or equipment, all personnel shall wear hearing protection devices, such as earmuffs or ear plugs, as work conditions warrant. Any noise producing equipment that produces noise level conditions such as difficulty hearing while speaking to one another at a normal tone within three feet will warrant hearing protection if it's not already employed. If normal speech is interfered with due to work noise, the Health and Safety Officer or designee will mandate the use of hearing protection or other noise-producing equipment or events.

*Heat/Cold Stress.* Heat stress work modification may be necessary during ambient temperatures of greater than 29 degrees Celsius (°C) (85 degrees Fahrenheit [°F]) while wearing normal clothing or exceeding 21°C (70°F) while wearing PPE. Because heat stress is one of the most common and potentially serious illnesses at work sites, regular monitoring and preventive measures will be utilized such as additional rest periods, supplemental fluids, restricted consumption of drinks containing caffeine, use of cooling vests, or modification of work practices. Most of the work to be conducted during the oversight and monitoring operations is expected to consist of light manual labor and visual observation. Given the nature of the work and probable temperatures, heat stress hazards are not anticipated. See **Attachment 2** for heat stress management procedures.

If work is to be conducted during winter conditions, cold stress may be a concern to the health and safety of personnel. Wet clothes combined with cold temperatures can lead to hypothermia. If air temperature is less than 4°C (40°F) and a worker perspires, the worker should change to dry clothes. The following summary of the signs and symptoms of cold stress are provided as a guide for field personnel.

1. Incipient frostbite is a mild form of cold stress characterized by sudden blanching or whitening of the skin.
2. Chilblain is an inflammation of the hands and feet caused by exposure to cold moisture. It is characterized by a recurrent localized itching, swelling, and painful inflammation of the fingers, toes, or ears. Such a sequence produces severe spasms, accompanied by pain.
3. Second-degree frostbite is manifested by skin with a white, waxy appearance and the skin is firm to the touch. Individuals with this condition are generally not aware of its seriousness because the underlying nerves are frozen and unable to transmit signals to warn the body. Immediate first aid and medical treatment are required.
4. Third-degree frostbite will appear as blue blotchy skin. The tissue is cold, pale, and solid. Immediate medical attention is required.
5. Hypothermia develops when body temperature falls below a critical level. In extreme cases, cardiac failure and death may occur. Immediate medical attention is warranted when the following symptoms are observed:

    - Involuntary shivering
    - Irrational behavior
    - Slurred speech
    - Sluggishness

*Fire and Explosion.* These hazards will be minimal for activities associated with this project. All heavy equipment will be equipped with a fire extinguisher.

*Trenching and Excavations.* There are a variety of potential health and safety hazards associated with excavations. These include:

- Surface encumbrances, such as structures, fencing, stored materials, etc.;
- Below- and above-ground utilities, such as water and sewer lines, gas lines, telephone lines, and optical cable lines, etc.;

- Overhead power lines and other utilities;
- Vehicle and heavy equipment traffic around the excavations;
- Falling loads from lifting or digging equipment;
- Water accumulation within excavations;
- Hazardous atmospheres, such as oxygen deficiency, flammable gases, and toxic gases;
- Falling into or driving equipment into unprotected or unmarked excavations; and,
- Cave-in of loose rocks and soil at the excavation face.

OSHA requirements for trenching and excavations are contained in 29 Code of Federal Regulations (CFR), Subpart P, 1926:650 through 1926.652. See **Attachment 3** for details on excavation and trenching safety requirements, which include the following basic minimum excavation requirements:

- Personnel entry into excavations should be minimized whenever possible and no entry will occur in pits greater than 4 feet below ground surface (bgs). Sloping, shoring or equivalent means should be utilized.
- Surface encumbrances such as structures, fencing, piping, stored material etc. that may interfere with safe excavations should be avoided, removed or adequately supported prior to the start of excavations. Support systems should be inspected daily.
- Underground utility locations should be checked and determined, and permits should be obtained prior to initiating excavations. Local utility companies will be contacted at least two days in advance, advised of proposed work, and requested to locate underground installations. When excavations approach the estimated location of utilities, the exact location should be determined by careful probing or hand digging and when it is uncovered, proper supports should be provided.
- A minimum safe distance of 15 feet should be maintained when working around overhead high-voltage lines or the line should be de-energized following appropriate lock-out and tag- out procedures by qualified utility personnel.
- Excavations five feet or more, if entered, will require an adequate means of exit, such as a ladder, ramp, or steps and located to require no more than 25 feet of lateral travel. Under no circumstances should personnel be exited/entered an excavation using heavy equipment.
- Personnel working around heavy equipment, or who may be exposed to public vehicular traffic should wear high visibility clothes, especially at night.
- Heavy equipment or other vehicles operating next to or approaching the edge of an excavation will require that the operator have a clear view of the edge of the excavation, or that warning systems such as barricades, hand or mechanical signals, or stop logs be used. If possible, the surface grade should slope away from the excavation.
- Personnel should be safely located in and around the trench/excavation face and should not work underneath loads handled by lifting or digging equipment.
- Hazardous atmospheres, such as oxygen deficiency (atmospheres containing less than 19.5% oxygen), flammable gases (airborne concentrations greater than 20% of the lower explosive limit), and toxic gases (airborne concentrations above the OSHA Permissible Exposure Limit or other exposure limits) may occur in excavations. Monitoring should be conducted for hazardous atmospheres prior to entry and at regular intervals. Ventilation or respiratory protection may be provided to prevent personnel exposures to oxygen deficient or toxic atmospheres. Periodic retesting (at least each

shift) of the excavation will be conducted to verify that the atmosphere is acceptable. A log or field book records should be maintained.

- Personnel should not work in excavations that have accumulated water or where water is accumulating unless adequate precautions have been taken. These precautions can include shield systems, water removal systems, or safety harnesses and lifelines. Groundwater entering the excavation should be properly directed away and down gradient from the excavation.
- Safety harnesses and lifelines should be worn by personnel entering excavations that qualify as confined spaces.
- Excavations near structures should include support systems such as shoring, bracing, or underpinning to maintain the stability of adjoining buildings, walls, sidewalks, or other structures endangered by the excavation operations.
- Loose rock, soil, and spoils should be piled at least two and preferably 5 feet or more from the edge of the excavation. Barriers or other effective retaining devices may be used to prevent spoils or other materials from falling into the excavation.
- Walkways or bridges with standard guardrails that meet OSHA specifications will be provided where employees, the public, or equipment are required to cross over excavations.
- Adequate barrier physical protection should be provided, and excavations should be barricaded or covered when not in use or left unattended. Excavations should be backfilled as soon as possible when completed.
- Safety personnel should conduct inspections prior to the start of work and as needed throughout the work shift and after occurrence that increases the hazard of collapse (i.e., heavy rain, vibration from heavy equipment, freezing and thawing, etc.).
- Personnel working in excavations should be protected from cave-ins by sloping or benching of excavation walls, a shoring system or some other equivalent means in accordance with OSHA regulations. Soil type is important in the determination of the angle of repose for sloping and benching, and the design of shoring systems.

### *2.2.3 Biological Hazards*

Biological hazards can result from encounters with mammals, insects, snakes, spiders, ticks, plants, parasites, and pathogens. Mammals can bite or scratch when cornered or surprised. The bite or scratch can result in local infection with systemic pathogens or parasites. Insect and spider bites can result in severe allergic reactions in sensitive individuals. Exposure to poison ivy, poison oak or poison sumac results in skin rash. Ticks are a vector for several serious diseases. Dead animals, organic wastes, and contaminated soil and water can harbor parasites and pathogens. These hazards are reduced if work is conducted during late fall and winter months. The following are highlighted because they represent more likely concerns for the site-specific tasks and location:

*Bees, Ants, Wasps and Hornets.* Sensitization by the victim to the venom from repeated stings can result in anaphylactic reactions. If a stinger remains in the skin, it should be removed by teasing or scraping, rather than pulling. An ice cube placed over the sting will reduce pain. An analgesic corticosteroid lotion is often useful. People with known hypersensitivity to such stings should consult with their doctor about carrying a kit containing an antihistamine and aqueous epinephrine in a pre-filled syringe when in endemic areas. Nests and hives for bees,

wasps, hornets and yellow jackets often occur in the ground, trees and brush. Before any nests or hives are disturbed, an alternate sampling location should be selected. If the sample location cannot be relocated, site personnel who may have allergic reactions shall not work in these areas.

*Ticks.* The incidence of Lyme disease is correlated to outdoor workers in areas where the disease is widespread and heightened risk of encountering ticks infected with B. burgdorferi, which varies from state to state, within states, and even within counties. Preventing tick bites is of utmost importance in preventing Lyme disease and other tickborne illnesses. Tick bite prevention strategies include avoidance or clearing of tick-infested habitats and use of personal protective measures (e.g., repellents and protective clothing). Tick checks should be done regularly, and ticks should be removed promptly. If a worker in a high-risk area develops flu-like symptoms (fever, chills, muscle aches, joint pains, neck stiffness, headache) or a bulls-eye rash, they should seek medical attention even if there is no recall of a tick bite. Workers who have experienced a tick bite should remove the tick and seek medical attention if signs and symptoms of tick-borne diseases occur.

*Storm Conditions.* When lightening is within 10 miles of the work site, all personnel should evacuate to a safe area.

*Sun.* When working in the sun, personnel should apply appropriate sun screening lotions (30 sunscreen or above), and/or wear long sieve clothing and hats.

### *2.2.4 Activity Hazard Analysis*

Table 1 presents a completed activity hazard analysis for the performance of an RI.

Table 1. Activity Hazard Analysis

| PRINCIPAL STEPS | POTENTIAL SAFETY/HEALTH HAZARDS | RECOMMENDED CONTROLS |
|---|---|---|
| RI soil/groundwater investigation | Potential exposure to low levels of metals, SVOCs such as PAHs, petroleum products and solvents | 1. Use of administrative controls (site control and general safety rules), work cloths, dust suppression<br>2. Use of real-time monitoring and action levels<br>3. Use Physical Hazards Standard Operating Procedures (SOPs)<br>4. Wear gloves when handling soil and groundwater |

| EQUIPMENT TO BE USED | INSPECTION REQUIREMENTS | TRAINING REQUIREMENTS |
|---|---|---|
| Excavation and other heavy equipment, Backhoe or Geoprobe | 1. Daily inspection of equipment<br>2. Continuous safety oversight | 1. Safety plan review<br>2. Routine safety briefings |

# 3.0 MONITORING

The purpose of air monitoring for potential airborne contaminants is to verify that protection levels are suitable. Monitoring will be performed for dust/particulates and volatile organic compounds during all intrusive RI activities such as borings/drillings and during excavation activities. Daily background and calibration readings will be recorded prior to the start of field activities. All monitoring equipment used during this investigation will be maintained and calibrated and records of calibration and maintenance will be kept in accordance with 29 CFR 1910.120(b)4(11)E.

A Community Air Monitoring Program (CAMP) will be conducted. CAMP reports will be submitted to DEC/DOH for review on a weekly basis and also as soon as possible if/when an exceedance occurs. All data from the CAMP should be included in the RIR.

## 3.1 PARTICULATE MONITORING

Real-time air monitoring readings are obtained from upwind and downwind locations in accordance with DER-10 for community air-monitoring. Daily field reports will be completed that document activities performed, equipment and manpower onsite, screening and monitoring results, general Site conditions, and weather conditions.

## 3.2 AIR MONITORING FOR WORKER PROTECTION

Real time air monitoring will be conducted whenever site soil is disturbed during sampling, excavation, grading, etc. A real time personal aerosol monitor (i.e., TSI SidePak AM5 10 Personal Aerosol monitor or equivalent) will be used. This monitor is a laser photometer that measures data as both real-time aerosol mass-concentration and 8-hour time weighted average (TWA). The monitor will be used to measure real-time concentrations in milligrams per meter cubed ($mg/m^3$). Action levels are based on potential exposure to calcium carbonate and will be as follows (SEE NOTE BELOW):

- 15 $mg/m^3$ total dust
- 5 $mg/m^3$ respirable fraction for nuisance dusts

Dust suppression techniques should be employed prior to exceeding the action levels. However, if these levels are exceeded, then work will be halted, and additional dust suppression techniques employed until safe levels are reached.

**NOTE: For worker protection Appendix 1A NYSDOH Generic Community Air Monitoring Plan and Appendix 1 B Fugitive Dust and Particulate Monitoring from DER-10 are provided in Appendix B of the RIWP and will be followed by all field workers.**

### 3.3 TOTAL VOLATILE ORGANICS MONITORING

Monitoring of VOCs will be conducted using a PID – See Note below. If a sustained reading of 5 ppm above background occurs, then work will be halted, and personnel will evacuate the work area. Levels will be allowed to stabilize, and another reading will be taken in the breathing zone. If background levels continue to be exceeded, then work will not continue at that location and the project manager will be notified of the situation. Action levels will remain the same.

**NOTE: Appendix 1A NYSDOH Generic Community Air Monitoring Plan and Appendix 1 B Fugitive Dust and Particulate Monitoring from DER-10 are provided in Appendix B of the RIWP and will be followed by all field workers.**

# 4.0 SAFE WORKING PRACTICES

The following general safe work practices always apply to a construction site:

- Eating, drinking, chewing gum or tobacco and smoking are prohibited within the work area.
- Contact with potentially contaminated substances should be avoided.
- Puddles, pools, mud, etc. should be avoided if possible.
- Kneeling, leaning, or sitting on equipment or on the ground should be avoided if possible.
- Upon leaving the work area, hands, face and other exposed skin surfaces should be thoroughly washed.
- Unusual site conditions shall be promptly conveyed to the project manager, health and safety officer, or site superintendent for resolution.
- A first-aid kit shall be available at the site.
- Field personnel should use all their senses to alert themselves to potentially dangerous situations (i.e., presence of strong, irritating, or nauseating odors).
- If severe dusty conditions are present, then soils will be dampened to mitigate dust.
- All equipment will be cleaned before leaving the work area.
- Field personnel must attend safety briefings and should be familiar with the physical characteristics of the investigation, including:
    - Accessibility to personnel, equipment, and vehicles.
    - Areas of known or suspected contamination.
    - Site access.
    - Routes and procedures to be used during emergencies.
- Personnel will perform all investigation activities with a “buddy” who is able to:
    - Provide his or her partner with assistance.
    - Notify management or emergency personnel if needed.
- Excavation activities shall be terminated immediately in the event of thunder or electrical storm.

- The use of alcohol or drugs at the site is strictly prohibited.

# 5.0 PERSONAL SAFETY EQUIPMENT AND SITE CONTROL

## 5.1 PERSONAL SAFETY EQUIPMENT

As required by OSHA in 29 CFR 1920.132, this plan constitutes a workplace hazard assessment to select PPE to perform the site investigation. The PPE to be donned by on-site personnel during this investigation are those associated with the industry standard of Level D. Protective clothing and equipment to initiate the project will include:

- Work clothes, pants and long sleeves
- Work boots with steel toe
- Work gloves as necessary
- Hard hat if work is conducted near equipment
- Safety glasses
- Hearing protection as necessary

Modifications may include chemically resistant gloves, booties, and overalls. If air monitoring indicates levels are encountered that require respiratory protection (sustained readings at or above action levels above a daily established background), then work will be halted, and an adequate resolution of PPE will be made by the health and safety manager, field manager, and project manager.

## 5.2 SITE CONTROL

Site control will be established near each work zone by the Contractor. The purpose is to control access to the immediate work areas from individuals not associated with the project. All work zones will be fenced off with controlled access and appropriately designated as an exclusion area.

Each excavation or drilling area where heavy equipment is being utilized will be set up as a work zone and include an exclusion area and support zone. The exact configuration of each zone is dependent upon location, weather conditions, wind direction and topography. The Contractor's safety manager will establish the control areas daily at each excavation.

An area of 10 feet (as practical) around each excavation will be designated as the exclusion area. This is the area where potential physical hazards are most likely to be encountered by field personnel. The size of the exclusion area may be altered to accommodate site conditions and the drilling/excavation location. If levels of protection higher than Level D are used, this plan will be modified to include decontamination procedure. The Site excavation contractor will be required to have eye/face wash equipment/means available on-site.

A support area will be defined for each field activity where support equipment will be located. Normal work clothes are appropriate within this area. The location of this area depends on factors such as accessibility, wind direction (upwind of the operation.), and resources (i.e., roads, shelter, utilities). The location of this zone will be established daily. Excavation areas

will be filled or secured (fencing) to prevent access from the public.

# 6.0 EMERGENCY INFORMATION

In the event of an emergency, the field personnel or the health and safety manager will employ emergency procedures. A copy of emergency information will be kept in the field and will be reviewed during the initial site briefing. Copies of emergency telephone numbers and directions to the nearest hospital will be prominently posted in the field.

## 6.1 MEDICAL TREATMENT AND FIRST AID

A first aid kit adequate for anticipated emergencies will be maintained in the field. If any injury should require advanced medical assistance, emergency personnel will be notified, and the victim will be transported to the hospital. The Contractor will establish his own first aid station and details will be provided in his HASP.

In the event of an injury or illness, work will cease until the field safety and oversight inspector has examined the cause of the incident and taken appropriate corrective action. Any injury or illness, regardless of extent, is to be reported to the project manager and health and safety officer.

## 6.2 EMERGENCY CONTACTS

Emergency telephone numbers will be posted in the field and are listed below:

- Ambulance, Fire, Police 911
- Poison Control Center 800-222-1222
- NYSDEC Spills Hotline 800-457-7362
- Jason M. Brydges, BE3 716-830-8636
- Michael Keller, NYSDEC PM 716 851-7220
- Eamonn O'Neil, NYSDOH PM 518-402-7877
- Brooks TLC Hospital System 529 Central Ave, Dunkirk - **(716) 366-1111** See **Attachment 4**.

Verbal communications between workers or use of a vehicle horn repeatedly at intervals of three short beeps shall be used to signal all on-site personnel to immediately evacuate the area and report to the vehicle parking area.

## 6.3 EMERGENCY STANDARD OPERATING PROCEDURES

The following standard operating procedures are to be implemented by on-site personnel in the event of an emergency. The health and safety manager and Contractor's field manager shall manage response actions.

1. Upon notification of injury to personnel, the designated emergency signal shall be sounded. All personnel are to terminate their work activities and assemble in a safe location. The emergency facility listed above shall be notified. If the injury is minor, but requires medical attention, the Contractor's field manager or the health and safety

manager shall accompany the victim to the hospital and help in describing the circumstances of the accident to the attending physician.

2. Upon notification of an equipment failure or accident, the Contractor's field manager or the health and safety manager shall determine the effect of the failure or accident on site operations. If the failure or accident affects the safety of personnel or prevents completion of the scheduled operations, all personnel are to leave the area until the situation is evaluated, and appropriate actions taken.
3. Upon notification of a natural disaster, such as tornado, high winds, flood, thunderstorm or earthquake, on-site work activities are to be terminated and all personnel are to evacuate the area.

## 6.4 Emergency Response Follow-Up Actions

Following activation of an emergency response, the health and safety officer shall notify the project manager, and the Contractor's field manager shall submit a written report documenting the incident to the project manager.

## 6.5 Medical Treatment

The Contractor's field manager shall be informed of any site-related injury, exposure or medical condition resulting from work activities. All personnel are entitled to medical evaluation and treatment in the event of a site accident or incident.

## 6.6 Site Medical Supplies and Services

The Contractor's field manager or a trained first aid crew member shall evaluate all injuries at the site and render emergency first-aid treatment, as appropriate. If an injury is minor but requires professional medical evaluation, the field manager shall escort the employee to the appropriate emergency room. For major injuries occurring at the site, emergency services shall be requested. A first-aid kit shall be readily accessible, fully supplied, and maintained at specified locations used for on-site operations.

## 6.7 Precautions

Universal precautions shall be followed on-site that consist of treating all human blood and certain body fluids as being infected with Human Immune Deficiency Virus (HIV), Hepatitis B virus (HBV), or other blood borne pathogens. Clothing and first-aid materials visibly contaminated with blood or other body fluids will be collected and placed into a biohazard bag. Individuals providing first aid or cleanup of blood- or body-fluid contaminated items should wear latex gloves. If providing CPR, a one-way valve CPR device should be used. Biohazard bags, latex gloves, and CPR devices will be included in the site first-aid kits.

Work areas visibly contaminated with blood or body fluids shall be cleaned using a 1:10 dilution of household bleach. If equipment becomes contaminated with blood or body fluids, and can not be sufficiently cleaned, the equipment shall be placed in a plastic bag and sealed. Any personnel servicing the equipment shall be made aware of the contamination, so that proper precautions can be taken.

# 7.0 RECORDKEEPING

The Contractor's field manager and health and safety officer are responsible for site record keeping. Prior to the start of work, they will review this Plan along with the Contractor's HASP. A Site safety briefing will be completed prior to the initiation of field activities. This shall be recorded in the field logbook. An accident report should be completed by the Field Manager if an accident occurs and forwarded to the project manager.

# 8.0 PERSONNEL TRAINING REQUIREMENTS

## 8.1 INITIAL SITE BRIEFING

Prior to site entry, the Contractor's health and safety manager shall provide all personnel (including site visitors) with site-specific health and safety training. A record of this training shall be maintained. This training shall consist of the following:

- Discussion of the elements contained within this plan
- Discussion of responsibilities and duties of key site personnel
- Discussion of physical, biological and chemical hazards present at the site
- Discussion of work assignments and responsibilities
- Discussion of the correct use and limitations of the required PPE
- Discussion of the emergency procedures to be followed at the site
- Safe work practices to minimize risk
- Communication procedures and equipment
- Emergency notification procedures

## 8.2 DAILY SAFETY BRIEFINGS

The Contractor's health and safety manager will determine if a daily safety briefing is required. The briefing shall discuss the specific tasks scheduled for that day and the following topics:

- Specific work plans
- Physical, chemical or biological hazards anticipated
- Fire or explosion hazards
- PPE required
- Emergency procedures, including emergency escape routes, emergency medical treatment, and medical evacuation from the site
- Weather forecast for the day
- Buddy system
- Communication requirements
- Site control requirements
- Material handling requirements

# 9.0 COMMUNITY AIR MONITORING PROGRAM (CAMP)

A Community Air Monitoring Program (CAMP) requires real-time monitoring for VOCs and particulates (i.e., dust) at the upwind and downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The program is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors and on-site workers not directly involved with work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. A New York State Department of Health (NYSDOH) generic CAMP obtained from NYSDEC DER-10 is presented in the **Appendix B** of the RIWP that will be followed and adhered to for work activities that could generate dust from an impacted area.

A program for suppressing fugitive dust and particulate matter monitoring will also be conducted in accordance *NYSDEC DER-10* titled *Appendix 1B Fugitive Dust and Particulate Monitoring,* which is also provided in **Appendix B**. The fugitive dust suppression and particulate monitoring program will be employed at the site during building demolition, IRM site remediation and other intrusive activities which warrant its use.

Both the CAMP and the fugitive dust and particulate monitoring program will be administered by the environmental engineer/consultant. Monitoring results of the CAMP will be reported to the New York State Department of Health daily for review in daily field reports that will include a work location map, wind direction, location of CAMP monitoring stations, and CAMP data.

The NYSDEC and NYSDOH will be notified within one business day of any exceedances noted in CAMP data as well as any corrective measures taken to suppress fugitive dust.

# ATTACHMENT 1

## Table of Potential Hazards and OSHA Standards

# Potential Hazards and OSHA Standards for Consideration during IRMs

| Site Exposure/Control | Potentially Applicable OSHA Standard* | |
|---|---|---|
| | 1910 General Industry | 1926 Construction |
| Hazard Assessmen & Employee Training | 29 CFR 1910.132(d) | 29 CFR 1926.21(b) |
| Chemical Exposure | 29 CFR 1910.1000 | 29 CFR 1926.55 |
| Noise Exposure | 29 CFR 1910.95 | 29 CFR 1926.52 |
| Sanitation | 29 CFR 1910.141 | 29 CFR 1926.51 |
| Wiring Methods (temporary wiring ) | 29 CFR 1910.305(a)(2)<br>29 CFR 1910.333 | 29 CFR 1926.405(a)(2) |
| Electrical Hazards | | 29 CFR 1926.416 |
| Emergency Action Planning | 29 CFR 1910.38 | 29 CFR 1926.35 |
| Excavation | covered by 1926 | 29 CFR 1926 Subpart P |
| Confined Space Entry | 29 CFR 1910.146 | 29 CFR 1926.21(b)(6)29 CFR 1926.353(b) |
| Material Handling | 29 CFR Subpart N | 29 CFR Subpart N29 CFR 1926.600-60229 CFR 1926.604 |
| Building Demolition | covered by 1926 | 29 CFR 1926 Subpart T |
| Site ContaminantAbatement | 29 CFR 1910.1000-1029<br>29 CFR 1910.1043-1052 | 29 CFR 1926.5529 CFR 1926.6229 CFR 1926.1101-1152 |
| Elevated Work Surfaces | 29 CFR 1910 Subpart D<br>29 CFR 1910 Subpart F | 29 CFR 1926 Subpart L29 CFR 1926 Subpart M29 CFR 1926.552 |
| Chemical Storage | 29 CFR 1910 Subpart H29 CFR 1910.1200 | 29 CFR 1926.5929 CFR 1926 Subpart F |
| Personal Protective Equipment | 29 CFR 1910 Subpart I | 29 CFR 1926 Subpart E |
| Heavy Equipment Operation | 29 CFR 1910.9529 CFR 1910 Subpart N | 29 CFR 1926.5229 CFR 1926 Subpart O |
| Tasks-Long Duration | 29 CFR 1910.141-142 | 29 CFR 1926.51 |

The Federal General Industry and Construction citations are provided above

# ATTACHMENT 2

# Heat Stress Management Program and Procedures

INTRODUCTION

Panamerican employees engage in a variety of activities with potential exposure to excessive ambient temperatures and humidity, with the overall result being Aheat stress@. This procedure establishes the Panamerican Heat Stress Management Program. It establishes responsibilities and basic requirements for personnel who may be required to work in situations where the ambient temperature exceeds 21° C (70° F) while wearing protective equipment (e.g., hazardous waste site investigations) or when the ambient temperature exceeds 29° (85° F) while wearing normal clothing. Because heart stress is one of the most common and potentially serious illnesses at job sites and particularly hazardous waste sites, regular monitoring and other preventive measures are warranted.

There are no regulations addressing heat stress. However, it should be noted that OSHA does recognize heat stress as a potentially serious health hazard and can site employers under the Ageneral duty clause@ of the Occupational Safety Health Act if heat-related illness is occurring or likely to occur.

**PROGRAM ADMINISTRATION AND RESPONSIBILITIES**

The Heat Stress Management Program is administered by Panamerican Managers and Health and Safety personnel.

These Individuals:

- Oversee the implementation of the Heat Stress Management Program;
- Periodically audit and evaluate program implementation;
- Evaluate this procedure on an ongoing basis to see that it reflects current practice and regulations;
- Assist field crews in their implementation of this procedure.

Project Managers (PM) and Safety Personnel are responsible for:

- Implementing this Procedure in all field operations:
- Providing guidance to staff regarding heat stress management as described in the Procedure; and
- Providing feedback to management regarding program effectiveness.

Staff Members are responsible for:

- Complying with this Procedure as it applies to their activities; and
- Providing feed back to their supervisor regarding program effectiveness.

**HEAT STRESS HAZARDS AND RISK FACTORS**

Heat Stress is defined as the total net load on the body with contributions from both exposure to external sources, such as sunshine and hot surfaces, and from internal metabolic heat production. A person=s

exposure to the increased ambient temperatures and humidity produces physiological responses referred to as heat stress which are characterized by an increase in the: a) Acore@ or Adeep body temperature@. b) heart rate, c) blood flow to the skin, and d) water and salt loss due to sweating. Conditions of excessive heat stress may occur either when the physical work is too heavy or the environment is too hot in relation to the work being performed. If work is performed under hot environmental conditions, the work load effort must be reviewed and the heat exposure limit maintained at or below the levels to protect the worker from the risk of acute heat illness.

In general, there are four types of physiological disorders associated with heat stress. They include:

- Heat Rash - a skin reaction occurring as a result of obstructed sweat glands, often associated with impermeable clothing.

- Heat Cramps - painful muscle spasms of extremities and abdomen, resulting from inadequate balance of electrolytes which are lost from sweating.

- Heat Exhaustion - a mild form of heat stroke due to depletion of body fluids and electrolytes. Blood vessels dilate despite decreased volume of blood. Symptoms include weakness, dizziness, nausea, rapid pulse, and a small increase in body temperature.

- Heatstroke - a potentially fatal disorder resulting from failure of the body=s thermoregulatory system. The classical description of heatstroke includes (1) a major disruption of central nervous function (unconsciousness of convulsions), (2) a lack of sweating (3) hot, dry, red or mottled skin, and (4) a core temperature in excess of 41$^{o}$C (105.8$^{o}$ F). Heatstroke is a serious medical condition which calls for emergency medical action.

Seven factors play significant roles in the development of or predisposition to, heat stress disorders. These factors include:

- Acclimatization - Heat acclimatization leads to increased and quicker sweating, cooler skin due to an increase in evaporative cooling and a lower, more stable core body temperature. Maximal sweating rates in unacclimatized persons are lower, but salt concentrations in their perspiration are higher, requiring a higher rate of salt replacement.

- Age - Older individuals are generally more susceptible to heat stress than younger individuals. However, older healthy workers are able to perform well in hot jobs if permitted to proceed at a self-regulated pace.

- Gender - The average woman has a lower aerobic capacity than a similar-sized man. Nevertheless, when working at similar proportions of their maximum aerobic capacity, women perform similarly or only slightly less well than men.

- Body Fat - The lower level of physical fitness, decreased maximum work capacity and decreased cardiovascular capacity frequently associated with obesity predispose individuals to heat disorders.

- Water and Electrolyte Balance - Sustained, effective work performance in heat requires a

replacement of body water and electrolytes lost through sweating. If this water is not replaced by drinking, continued sweating will draw on water reserves from both tissues and body cells leading to dehydration.

- Use of Alcohol and Medication - Not withstanding the potential hazards from impaired coordination and judgment, the ingestion of alcohol before or during work in the heat should not be permitted because it reduces heat tolerance and increases the risk of heat illness, Many drugs, including diuretics and antihypertensives, can interfere with the body=s thermoregulation.

- Physical Fitness - Physical conditioning enhances heat tolerance by increasing the functional capacity of the cardiovasculatory system, and reduces the time required to develop heat acclimatization by about 50% over those not physically fit.

The factors listed above are to be taken into account by all project personnel when planning or executing a project subject to heat stress conditions. The factors should be taken into consideration for:

- the development of the project schedule;
- the ordering of supplies/equipment;
- the support facilities to be made available at the site;
- the execution of work tasks; and
- the after work hours activities.

The following is a summary of signs and symptoms of heat stress:

**Heat Rash** may result from continuous exposure to heat or humid air .

**Heat cramps** are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:

- Muscle Spasms
- Pain in the hands, feet and abdomen.

**Heat Exhaustion** occurs from increased stress on various body organs, including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include:

- Pale, cool and moist skin
- Heavy sweating
- Dizziness, fainting and nausea

**Heat stroke** is the most serious form of heat stress. Temperature regulation fails, and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Competent medical help must be obtained. Signs and symptoms are:

- Red, hot and unusually dry skin
- Lack of or reduced perspiration
- Dizziness and confusion

- Strong, rapid pulse and coma.

**HEAT AND STRESS PREVENTION**

Preventive measures should be taken to prevent personnel from experiencing heat stress illness. Prevention of heat stress is also important because if an individual has experienced a heat illness incident, he has an increased likelihood of future occurrences. Preventive measures include: favorable work scheduling, acclimatization of workers to hot environments, drinking sufficient quantities of fluids, providing cool, sheltered work and rest areas, and utilizing cooling devices as appropriate of feasible. Heat stress monitoring/work rest regimens are discussed below.

Work Schedules and Activity

If possible, work should be scheduled during the coolest part of the day. Early morning and evening work can be considerably more effective than working midday when the additional time for breaks and heat stress monitoring are taken into account.

Employees should also be encourages to maintain a certain level of activity during the work shift. Prolonged standing in hot environments can lead to heat illness because the blood pools in the lower extremities. Workers should periodically walk about to encourage blood circulation from the feet and legs.

Acclimatization of Workers

A properly designed and applied heat acclimatization program will dramatically increase the ability of workers to work at a hot job and will decrease the risk of heat-related illnesses and unsafe acts. Heat acclimatization can usually be induced in 5 to 7 days of exposure to the hot job. For workers who have had previous experience with the job, the acclimatization regimen should be exposure for 50% on day 1, 60% on day 2, 80% on day 3 and 100% on day 4. For workers new to job the schedule should be 20% on day 1 with a 20% increase in each additional day.
Acclimatization can be induced by sustained elevations of the skin and core body temperatures above levels for the same work in cool environments for an hour or more per day. Acclimatization needs periodic reinforcement such as occurs daily during the work week. Persons may show some loss of acclimatization on the first day of the new shift after being idle for two days or over a weekend. After vacations of two weeks or longer he loss of acclimatization is substantial, several days at work will be needed before heat tolerance is fully restored.

Drinking Sufficient Quantities of Fluids

Under hot conditions where sweat production may reach 6 to 8 liters per day, voluntary replacement of the water lost is usually incomplete. The normal thirst mechanism is not sensitive enough to urge us to drink enough water to prevent dehydration. Individuals are seldom aware of the exact amount of seat they produce of how much water is needed to replace that lost in sweat; 1 liter/hour is not an uncommon rate of water loss. Every effort should be made to encourage individuals to drink water, low-sodium noncarbonated beverages or electrolyte replacement fluids (e.g., Gatorade). Lightly salted water (1 gram/liter of water (0.1%) or one level teaspoon per 15 quarts of water), should be provided to unacclimated workers. The salt should be dissolved completely and the water kept cool. Salt tablets as dietary supplements are not generally recommended.

Workers should drink at least 500 ml (one pint) of water before beginning work. The fluid should be maintained at temperatures of 10° to 15° (50 to 59° F). If possible, small quantities of fluids should be consumed at frequent intervals (e.g., 150 to 250 milliliters (ml), or at least a quarter pint, every 20 minutes) rather than the intake of 750 ml (3 cups) or more once per hour. Individuals vary, but water intake should total 4 to 8 liters (quarts) per day. When heat stress is considered a potential problem, a minimum of 1 liter/hour/person of water are to be maintained onsite. Individual paper or plastic cups will be provided in order to prevent the spread of communicable disease.

Alcohol and diuretics such as caffeine (contained in coffee, tea and soft drinks) can increase dehydration. Therefore employees with potential exposure to heat stress should be discouraged from the consumption of these types of fluids during and after working hours.

Cool, sheltered Work and Rest Areas

Exposure to direct sunlight significantly increases the overall thermal loading of the body, thereby increasing an individuals susceptibility to heat stress illnesses. Whenever possible work should be conducted under suspended tarps, in shady areas or in other sheltered areas in order to reduce thermal loading caused by the sun. Cool sheltered areas should be provided also for rest breaks. A rest area should be situated so that part of it is in the contamination reduction area so that workers can take breaks without being required to undertake a full decontamination procedure. Canopies or tarps and open air tents, are types of cool shelters which can provide shaded rest areas.

Cooling Devices

Auxiliary cooling devices can be successfully used to provide body cooling, especially to workers wearing protective garments at hazardous waste sites. Vortex coolers utilize high velocity air which is directed inside the protective clothing. Vortex coolers have been used successfully in some operations. Cooling vests utilizing Ablue ice@ type packs can provide some cooling to the torso, but add weight for the wearer and can inhibit body movements.

Newer, more sophisticated tube and refrigerant systems woven into undergarments are also available. However, some of these systems ,,may not be effective in situations where the work involves considerable motion, since bending and lifting can crimp the tubes, impending the flow of refrigerant.

Heat Stress Monitoring

Several heat stress monitoring systems have been devised to help manage heat stress in hot work environments. Panamerican performs heat stress monitoring when: 1) employees are wearing normal work clothing in ambient temperatures exceeding 29° C, (85° F) and 2) employees wearing chemical protective clothing (including paper coveralls) working in ambient temperatures exceeding 21° C (70° F). The temperature differential is related to the reduced ability of a person to maintain a core temperature of $\pm$ 37° C (98.6° F) when wearing chemical protective clothing.

It should be noted by personnel that there are no Afast and true@ methods of heat stress monitoring; likewise there are no regulations concerning heat stress monitoring. Individual susceptibility to heat stress is highly variable. Some individuals are highly susceptible to any increase in their internal body temperature while other individuals can work very well with internal body temperatures of 39°C (102.2° F) or higher.

The heat stress monitoring systems should be used by Site Safety Officers as guidelines and not necessarily as hard, fast rules. Individuals working in elevated temperatures should be queried on a regular basis regarding their perceived state of heat stress. If the calculated heat stress index value indicates that work can continue but a person states that they believe they are experiencing heat stress, the work effect should be discontinued and a rest break taken.

Likewise, if the calculated heat stress index value indicates that a rest break should be taken but the workers believe they can work longer, they should be permitted to work longer providing that their heart rates do not exceed 110 beats per minute. If the individual's heart rate rates exceed 110 beats per minute a rest break will be taken. In all cases, individual workers should not be permitted or expected to perform excessive work which could result in heat stress. If a SSO has any concerns that an individual may be pushing himself/herself past the Abreaking point@ the calculated work/rest regimen will be followed.

For strenuous field activities that are part of ongoing site work activities in hot weather, the following procedures shall be used to monitor the body=s physiological response to heat, and to monitor the work cycle of each site worker. There are two phases to this monitoring: the initial work/rest cycle is used to estimate how long the first work shifts of the day should be. Heart rate monitoring of each worker will establish the length of the successive work periods. Both phases are to be used are to be used for heat stress monitoring. Failure to use either one could place workers at risk of heat-related disorders.

Phase 1 - Determination of the Initial Work - Rest Regimen

The determination of the initial work - rest regimen can be performed using either of two methods:

-The Modified Dry Bulb Index; or
-The Wet Bulb Globe Thermometer (WBGT) Index

After the initial work - rest regimen has been determined, environmental conditions must be monitored for changes which would require a modification to the work - rest regimen. This, coupled with the heart rate monitoring, determines the work cycles to be followed on a site.

The Modified Dry Bulb Index accounts for the effects caused by solar, load, air temperature, and chemical protective clothing, under a light work load (walking at approximately 3 mph). A mercury thermometer, shielded from direct sunlight, is used to measure ambient temperature. The percentages of (of time) of sunlight and cloud cover are then estimated to determine a sunshine quality factor (e.g., 100% sunshine - no cloud cover = 1.0; 50% sunshine - 50% cloud cover = 0.5; 0% sunshine - 100% cloud cover = 0.0). When these two sets of values have been obtained, they are inserted into the following equation to calculate the adjusted temperature:

$$T\,(^{o}C, \text{adjusted}) = T\,(^{o}C, \text{actual}) + (7.2 \times \text{sunshine quality factor})$$

-OR-

$$T\,(^{o}F, \text{adjusted}) = T\,(^{o}F, \text{actual}) + (13 \times \text{sunshine quality factor})$$

After the adjusted temperature has been calculated, the length of the first work shift can be determined using the following table:

**Initial Break and Physiological Monitoring Cycles**

| ADJUSTED TEMPERATURE | NORMAL WORK CLOTHES | PROTECTIVE CLOTHING |
|---|---|---|
| $90^0$F ($32.2^0$ C) or above | After each 45 minutes of work | After each 15 minutes of work |
| $87.5^0$-$90^0$ F ($30.8^0$-$32.2^0$ C) | After each 60 minutes of work | After each 30 minutes of work |
| $82.5^0$-$87.5^0$ F ($28.1^0$-$30.8^0$ C) | After each 90 minutes of work | After each 60 minutes of work |
| $77.5^0$-$82.5^0$ F ($25.3^0$-$28.1^0$ C) | After each 120 minutes of work | After each 90 minutes of work |
| $72.5^0$-$77.5^0$ F ($22.5^0$-$25.3^0$ C) | After each 150 minutes of work | After each 120 minutes of work |

NOTE: The standard rest period is 15 minutes

WET BULB GLOBE THERMOMETER INDEX

The Wet Bulb Globe Thermometer (WBGT) Index was developed by the U.S. Army in the 1950s to prevent heat stress in army recruits. The WBGT Index accounts for the effects caused by humidity, air movement, evaporation, air temperature and work rate. It does not, however, account for the effects of chemical protective clothing, non-acclimatized workers, age, or other factors which may affect the likelihood of heat stress. Because of this, it is necessary to make adjustments to the index and conduct Heart Rate Monitoring.

WBGT measurements are usually obtained through the use of are-contained electronic devices. Such devices are easy to set up and can provide the user with the capabilities to store data and download to print out a hard copy.

Heat produced by the body and the environmental heat together determine the total heat load. Therefore, after the WBGT Index has been obtained, the anticipated work load category of each job shall be determined and the initial-rest regimen established using the table below.

The work load category may be determined by ranking each job into light, medium and heavy categories on the basis of type of operation. Examples of each category are:

| | |
|---|---|
| Light work: | sitting or standing to control machines, performing light hand work |
| Moderate work: | walking about with moderate lifting and pushing; and |
| Heavy work: | pick and shovel work. |

| PERMISSIBLE HEAT EXPOSURE | | | |
|---|---|---|---|
| WORK-REST REGIMEN | WORK LOAD | | |
| | LIGHT | MODERATE | HEAVY |
| | $30.0^0$ C/$86^0$ F | $26.7^0$ C/$80.1^0$ F | $25^0$C/$77^0$F |
| 75% Work-25% Rest Each Hour | $30.6^0$ C/$87.1^0$ F | $28^0$ C/$82.4^0$ F | $25.9^0$ C/$78.6^0$ F |
| 50% Work-50% Rest Each Hour | $31.4^0$ C/$88.5^0$ F | $29.4^0$ C/$85.0^0$ F | $27.9^0$ C/$82.2^0$ F |
| 25%Work-75 % Rest Each Hour | $32.2^0$ C/$90.0^0$ F | $31.1^0$ C/$88.0^0$ F | $30.0^0$ C/$86.0^0$ F |

The table reads as follows:

Light, continuous work is possible at any WBGT reading up to $30^0$ C ($86^0$F) but above that limit work breaks

are needed to recover from the heat; light work at temperatures of between 30.0 and 30.6$^0$C (86 to 87$^0$F) can be conducted, but 15 minute breaks must be taken every hour, etc. It is important to note that this table is applicable primarily to healthy, acclimatized personnel; wearing standard work clothing.

NOTE: An additional 6 to 11$^0$C ( 42.8 to 51.8$^0$F) must be added to the calculated WBGT temperature for personnel wearing chemical protective clothing prior to determining the initial work - rest regimen from this table. Because the WBGT Index does not take into account unacclimatized workers, or individual susceptibilities, the addition to the WBGT value does not eliminate the requirement for Heart Rate Monitoring after work has begun.

Phase 2 - Heart Rate Monitoring

An increase in the heart rate is a significant indication of stress, whether induced by exposure to heat or through physical labor. Although baseline heart rates can vary significantly between individuals and during the day for an individual, a heart rate of 110 beats per minute or greater is an indication of physiological stress. To prevent heat stress illnesses, the heart rate (HR) should be measured by radial (wrist) or carotid (neck) pulse for 30 seconds as early as possible in the rest period. The HR at the beginning of the rest period should not exceed 110 beats/minute. If the HR is higher, the next work period should be shortened by 33 percent while the length of the rest period stays the same. If the pulse rate still exceeds 110 beats/minute at the beginning of the next rest period, the following work period should be further shortened by 33 percent while the length of the rest period stays the same.

# ATTACHMENT 3

## Trenching and Excavation
## Health and Safety Requirements

**REGULATORY AUTHORITY**

**Excavations will be performed in accordance with OSHA 29 CFR, subpart P, 1926:650-1926.652 and USACOE EM 385-1-1 section 25 requirements as they apply to project activities.**

**GENERAL**

- **At all times the need for personnel to enter excavations will be minimized. Inspections or sample removal will be done from above the excavation, whenever possible.**
- **Personnel will only enter excavations after the requirements of this plan have been met.**
- **Personnel protective equipment including hard hat, safety glasses and steel-toe work boots may be required.**

**SURFACE ENCUMBRANCES**

**Surface encumbrances such as structures, fencing, piping, stored material etc. which may interfere with safe excavations will be avoided, removed or adequately supported prior to the start of excavations. Support systems will be inspected daily.**

**UNDERGROUND UTILITIES**

**Underground utility locations will be checked and determined and permits as necessary will be in place prior to initiating excavations. Local utility companies will be contacted at least two days in advance, advised of proposed work, and requested to locate underground installations. When excavations approach the estimated location of utilities, the exact location will be determined by careful probing or hand digging and when it is uncovered, proper supports will be provided.**

**OVERHEAD OBSTACLES**

**A minimum safe distance of 20 feet will be maintained when working around overhead high-voltage lines or the line will be de-energized following appropriate lock-out and tag-out procedures by qualified utility personnel.**

**ENTRY/EXIT ROUTES**

**Excavations five feet or more deep will require an adequate means of exit, such as a ladder, ramp, or steps and located so as to require no more than 25 feet of lateral travel. Under no circumstances will**

**personnel be raised.**

**VEHICLE CONTROL/SAFETY**

**Personnel working around heavy equipment, or who may be exposed to public vehicular traffic will wear a traffic warning vest consisting of at least 400 square inches of red or orange material. At night, at least 400 square inches of florescent or other reflective material will be worn.**

**For excavation work on or adjacent to highways or streets, signs, signals, and barricades tat conform to the requirements of the current American National Standards Institute (ANSI) D6.1, Manual on Uniform Traffic Control Devices for Streets and Highways will be used to protect work areas. Signs, signals, and barricades will be adequately lighted at night. Flagmen will be provided when signs, signals and barricades do not provide adequate protection. Flagmen will use signals and procedures contained in the current issue of ANSI D6.1. At night, flagmen will be clearly illuminated so as to be easily seen by approaching traffic.**

**For mobile equipment operating next to or approaching the edge of an excavation, the operator will have a clear view of the edge of the excavation, or a warning system such as barricades, hand or mechanical signals, or stop logs will be used. If possible the surface grade will slope away from the excavation.**

**Personnel will be safely located in and around the trench and will not be permitted to work underneath loads handled by lifting or digging equipment. Personnel are required to stand away from vehicles being loaded and unloaded. Operators can remain in the cabs of vehicles being loaded or unloaded provided the vehicles are equipped to provide adequate protection to the operator.**

**HAZARDOUS ATMOSPHERES**

**Hazardous atmospheres, such as oxygen deficiency (atmospheres containing less than 19.5% oxygen), flammable gases or vapors (airborne concentrations greater than 20% of the lower explosive limit), and toxic gases or vapors (airborne concentrations above the OSHA Permissible Exposure Limit or other exposure limits) may occur in excavations, especially around landfills and hazardous waste sites.**

**In locations where oxygen deficiency or hazardous gaseous conditions are possible, the air in the excavation will be tested before personnel are permitted to enter an excavation deeper than 4 feet. When flammable gases are present, adequate ventilation will be provided and sources of ignition will be eliminated. Ventilation or respiratory protection will be provided to prevent personnel exposures to oxygen deficient or toxic atmospheres. Periodic retesting (at least each shift) of the excavation will be conducted to verify that the atmosphere is acceptable. A log or field book records will be maintained of all test results.**

**WATER ACCUMULATION HAZARDS**

**Personnel will not work in excavations that have accumulated water or where water is accumulating unless adequate precautions have been taken. These precautions can include special support or shield systems, water removal systems such as pumps, or safety harnesses and lifelines. Water removal systems will be operated and monitored by experienced personnel. Diversion ditches or dikes will be used to prevent surface water from entering the excavation and to provide adequate drainage of the area around the excavation. Adequate precautions, as described above, will be taken for excavating**

**subject to heavy rains.**

**STABILITY OF ADJACENT STRUCTURES**

**Support systems such as shoring, bracing, or underpinning will be provided to maintain the stability of adjoining buildings, walls, or other structures endangered by the excavation operations. Excavations below a foundation or retaining wall that could be reasonably expected to pose a hazard to personnel will not be permitted unless:**

- **a support system is provided**
- **The excavation is in stable rock; or**
- **A Registered Professional Engineer has determined that the structure will not be effected by the excavation activity or that the excavation work will pose a hazard to employees. The Professional Engineer is required to demonstrate how the above determination was made on the basis of appropriate calculations.**

**Sidewalks will not be undermined unless shored to protect from possible collapse.**

**PROTECTION FROM LOOSE ROCK, MATERIALS OR SPOILS**

**In excavations and trenches that personnel may be required to enter, loose rock, excavated or other material, and spoils will be effectively stored and retained at least two feet or more from the edge of the excavation.**

**As an alternative to the clearance prescribed above, barriers or other effective retaining devices may be used in order to prevent spoils or other materials from falling into the excavation.**

**Walkways, runways, and sidewalks will be kept clear of excavated material from other obstructions.**

**Scaling operations may be used to remove loose material and will be performed only by experienced crews under the direct supervision of a competent supervisor. The scalers will be provided with scaler=s lifelines, safety belts, boatswain chair, and other safety equipment necessary for their protection.**

**FALL PROTECTION**

**Walkways or bridges with standard guardrails that meet OSHA specifications will be provided where employees, the public, or equipment are required to cross over excavations.**

**Adequate barrier physical protection will be provided at all remotely located excavations. All excavations will be barricaded or covered.**

**EMERGENCY RESCUE**

**In the event of a cave-in, the Emergency Rescue Squad will be immediately notified. The caller should provide his name, location, nature of the accident (an excavation collapse), the dimensions of the excavation, and number of people trapped in the excavation. Personnel are not to enter a collapsed trench to attempt rescue. This may cause a further collapse of the trench. Under no circumstance is heavy equipment to be used to attempt rescue of personnel in a collapsed excavation; injury or decapitation could be the result. All heavy equipment and traffic in the area is to be shut down and**

**stopped to reduce vibration. Pumps should be started if water ensues.**

**INSPECTION PROGRAM**

**Safety personnel will conduct daily inspections of the excavation, the adjacent areas, and protective systems. Inspections will be conducted prior to the start of work and as needed throughout the work shift. Inspections will also be made after every rainstorm or other occurrence that increases the hazard of collapse (i.e., vibration from heavy equipment, freezing and thawing, etc.).**

**The excavation inspection will include a check for the following:**

- **Evidence if situations that could result in possible cave-in (i.e. soil crumbling or sloughing, water saturated soils, freezing and thawing, unusual vibrations such as from heavy equipment, heavy rains, surface run off entering trench, etc.);**
- **Indications of failure of protective systems;**
- **Hazardous atmosphere (oxygen deficiency, flammable and toxic gases and vapors);**
- **Condition and support of exposed underground installations;**
- **Adequate means of egress;**
- **Signs, signals, and barricades for work area protection;**
- **Precautionary measures to control water accumulation;**
- **Stability and support of adjacent structures; and**
- **Adequate protection from loose rock and soil.**

**PROTECTIVE SYSTEMS**

**Personnel working in excavations will be protected from cave-ins by sloping and/or benching of excavation walls, a shoring system or some other equivalent means except when:**

- **The excavation is made entirely in stable rock; or**
- **Excavations are less than five feet deep and safety personnel have determined that there is no indication of potential cave-in. Depending on site and soil conditions protective measures may be taken for the excavations less than five feet in depth.**

**The most important factor influencing the choice of protective systems is the soil type classification. Once the soil type has been classified, selection of the protective system, the determination of the angle of repose for sloping and benching, and the design of shoring systems will be made. Decisions will be based on careful evaluation of pertinent factors such as depth of cut; possible variation in water content of the material while the excavation is open; anticipated changes in materials from exposure to air, sun, water, or freezing; loading imposed structures equipment, overlying material, or stored material; and vibration from equipment, blasting traffic or other sources.**

**Soil Classification**

**Appendix A of the OSHA Excavation Standard describes a methjod to classify soils into four types:**

**1. Stable Rock - Solid mineral matter that can be excavated with vertical sides.**

**2. Type A - cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tsf) or greater. Examples include: clay; silty clay; sandy clay; clayey loam; and cemented soils such as caliche and hardpan. No soil is considered to be Type A if it is fissured, subject to vibration, previously disturbed, or part of a sloped, layered system.**

**3. Type B - cohesive soils with an unconfined compressive strength of greater than 0.5 tsf but less than 1.5 tsf. Examples include: angular gravel similar to crushed rock; silt; silty loam; and sandy loam; Type B soils also include : previously disturbed soils that are not type C; Type A soils that are fissured or subject to vibration; and dry rock that is not stable.**

**4. Type C - cohesive soils with an unconfined compressive strength of 0.5 tsf or less. Examples include: gravel; sand; loamy sand; submerged soil or soil from which water is seeping; submerged rock that is not stable.**

**The engineer, geologist, or safety personnel will conduct at least one visual and at least one manual test as described in the OSHA excavation standard in order to classify soils. Visual tests include looking for : particle size and soil cohesiveness (clumping); cracking in the excavation sides which suggests fissured material; underground installations ans previously disturbed soils; layered soil systems that slope toward the excavation; evidence of surface water and water seeping from the sides of the excavation; and sources of vibration that may affect the excavation stability. Manual tests include: plascticity; dry strength; tumb penetration; drying test; and strength tests using a pocket penetrometer or hand-operated shearvane.**

**<u>Sloping and Benching</u>**

**One of the following options for sloping and benching systems described in section 1926.652(b) of the OSHA Excavation Standard will be used in excavations of .5 foot or deeper or at the discretion of the safety personnel:**

- **The walls of excavation will be sloped at an angle not steeper than 0ne-and one-half horizontal to one vertical. Sloping configurations will follow the slopes shown for Type C soils in Appendix B of the OSHA Excavation Standard.**

- **Maximum allowable slopes and sloping and benching configurations will be determined according to soil type as described in Appendices A and B of the OSHA Excavation Standard.**

- **Use of other written tabulated data and designs, such as tables and charts, to design sloping and benching systems. A copy of the tabulated data must be approved by a registered Professional Engineer. A copy of the tabulated data must be kept at the job site.**

**Personnel are not allowed to work on the faces of sloped or benched excavations above other workers unless the workers at the lower levels are protected from falling material or equipment. Similar protection will be provided for personnel working in excavations below other workers.**

**<u>Support Systems, Shield Systems, and Other Protective Devices</u>**

**One of the following options described in OSHA (1926.652 (c)) will be followed.**

- **Timber shoring, designed according to the conditions and requirements of Appendix C of the OSHA Excavation Standard or aluminum hydraulic shoring designed according to manufacturers tabulated data or Appendix D of the OSHA Excavation Standard. In order to use the information in Appendices C or D, the soil type must first be determined using the classification system in Appendix A. For each soil type the size and spacing of the cross braces, uprights, and walls that comprise the shoring system are then selected based on the depth and width of the trench.**

- **Use of the manufacturer=s written tabulated to design support systems, shielded systems, and other protective devices. Any deviation from this tabulated data must be approved by the manufacturer. A copy of the tabulated data as well as any approvals to deviate from the tabulated data must be kept at the job site.**

- **Use of other written tabulated data to design support systems, shield systems, and other protective devices. The tabulated data must be approved by a Registered Professional Engineer. A copy of the tabulated data must be kept at the job site.**

- **Use of a written support system, shield system, and other protective device design that has been approved by a Registered Professional Engineer. A copy of the written design must be kept at the job site.**

**<u>Installation and Removal of Support</u>**

**Cross braces or trench jacks, uprights, and walls will be secured together to prevent sliding, falling or kickouts.**

**Additional precautions by way of shoring and bracing will be taken to prevent slides or cave-ins when excavations or trenches are made in locations adjacent to backfilled excavations, or where excavations are subjected to vibrations from railroad or highway traffic, the operation of machinery, or any other source.**

**If it is necessary to place or operate power shovels, derricks, trucks, materials, or other heavy objects on a level above or near any excavation, the side of the excavation will be sheetpiled, shored, and braced as necessary to resist the extra pressure due to such superimposed loads.**

**Backfilling and removal of trench supports will progress together from the bottom of the trench. Jacks or braces will be released slowly and , in unstable soil, ropes will be used to pull out the jacks or braces from above after employees have cleared the trench.**

**<u>Shield Systems</u>**

**Portable trench boxes or sliding trench shields may be used for protection of personnel in lieu of a shoring system or sloping. Where such trench boxes or shields are used, they will be designed, constructed and maintained in a manner which will provide protection equal to or greater than the sheeting or shoring required for the trench. Shields will be installed so as to restrict lateral or other hazardous movement. Personnel are not allowed inside shields when shields are being moved.**

## EXCAVATION SAFETY LIST

**To be completed prior to each work shift, or prior to personnel entering a new trench for the first time, by the Site Safety Officer/Competent Person:**

**Project_____Location_____**

**Job Number_____**

**Competent Person(CP)*_____Date_____**

| | | Yes | No | N/A |
|---|---|---|---|---|
| **1.** | **Has the site been cleared for utilities and other underground obstructions?** | ____ | ____ | ____ |
| **2.** | **If on public property, has the regional utility locating service been notified?** | ____ | ____ | ____ |
| **3.** | **Has the excavation equipment been safety checked by the operator?** | ____ | ____ | ____ |
| **4.** | **Are copies of relevant OSHA excavation regulations available on site?** | ____ | ____ | ____ |
| **5.** | **Will the excavation be 5 feet or more in depth?** | ____ | ____ | ____ |
| **6.** | **If 4 is yes, will personnel enter the excavation at any time?** | ____ | ____ | ____ |
| **7.** | **If 4a is yes, have provisions been made for shoring, sloping, or benching the excavation? Describe:** _____ _____ _____ | ____ | ____ | ____ |
| **8.** | **Has an inspection of the site and excavation been conducted by the SSO?** | ____ | ____ | ____ |
| **9.** | **Has the Competent Person conducted visual and manual tests to classify the soil?** | ____ | ____ | ____ |

*** According to Federal OSHA, A Competent Person is a person who is capable of identifying existing and predictable hazards in the surroundings; or working conditions which are unsanitary, hazardous, or dangerous to employees; and who has the authority to take prompt corrective measures to eliminate them.**

| | | | | | |
|---|---|---|---|---|---|
| **10.** | **G** | **Visual Test _____(type)** | | | |
| | **G** | **Manual Test_____(type)** | | | |
| | **G** | **Soil Classification_____(type)** | | | |
| **11.** | | **Are there any conditions that might expose employees to injury from possible moving ground?** | ____ | _____ | ____ |
| **12.** | | **Is excavated material being placed at least 2 feet from the edge of the excavation?** | ____ | ____ | ____ |
| **13.** | | **Is work in the excavation at all times under the immediate supervision of the SSO or other competent person?** | ____ | ____ | ____ |
| **14.** | | **Is there a stairway, ladder, or ramp securely fastened in place to provide ingress and egress from the excavation?** | ____ | ____ | ____ |
| **15.** | | **If the excavation is 4 feet or more in depth, are safe means of access (see 8) provided so as to require no more than 25 feet of lateral travel to reach them?** | ____ | ____ | ____ |
| **16.** | | **If structural ramps are installed that are used for access/egress: were they designed by a qualified engineer?** | ____ | ____ | ____ |
| **17.** | | **Do the structural ramps have appropriate means to prevent slipping and are the ramps uniform in thickness?** | ____ | ____ | ____ |
| **18.** | | **Are walkways or bridges provided across the excavation to safe crossing?** | ____ | ____ | ____ |
| **19.** | | **If excavations are 71/2 or more feet in depth, do the walkways have guardrails and toeboards?** | ____ | ____ | ____ |
| **20.** | | **Are undermined structures adequately supported to safely carry all anticipated loads and protect workers?** | ____ | ____ | ____ |
| **21.** | | **Are there adequate means provided to prevent mobile equipment from inadvertently entering the excavation?** | ____ | ____ | ____ |
| **22.** | | **Is the excavation well marked and barricaded to prevent personnel from falling IN?** | ____ | ____ | ____ |
| **23.** | | **Are means available to prevent surface water from entering the excavation and to provide** | ____ | ____ | ____ |

| | | | | |
|---|---|---|---|---|
| | **adequate drainage of the area adjacent to the trench?** | | | |
| **24.** | **Where it is reasonable to expect hazardous atmospheres, including oxygen deficiency, to exist in the excavation, is appropriate atmosphere testing equipment available.** | ____ | ____ | ____ |
| **25.** | **Has the testing equipment been calibrated, and the calibrations recorded, today?** | ____ | ____ | ____ |
| **26.** | **Are employees trained in proper use of this equipment?** | ____ | ____ | ____ |
| **27.** | **Has a harness and lifeline been provided whenever an employee is required to enter a confined footing excavation?** | ____ | ____ | ____ |
| **28.** | **Is appropriate personal protective equipment (hardhat, safety boots, eye protection, etc.) available and in use?** | ____ | ____ | ____ |

**Notes:**_____

_____

_____

_____

_____ _____

**CPs Name (Print)** **Signature**

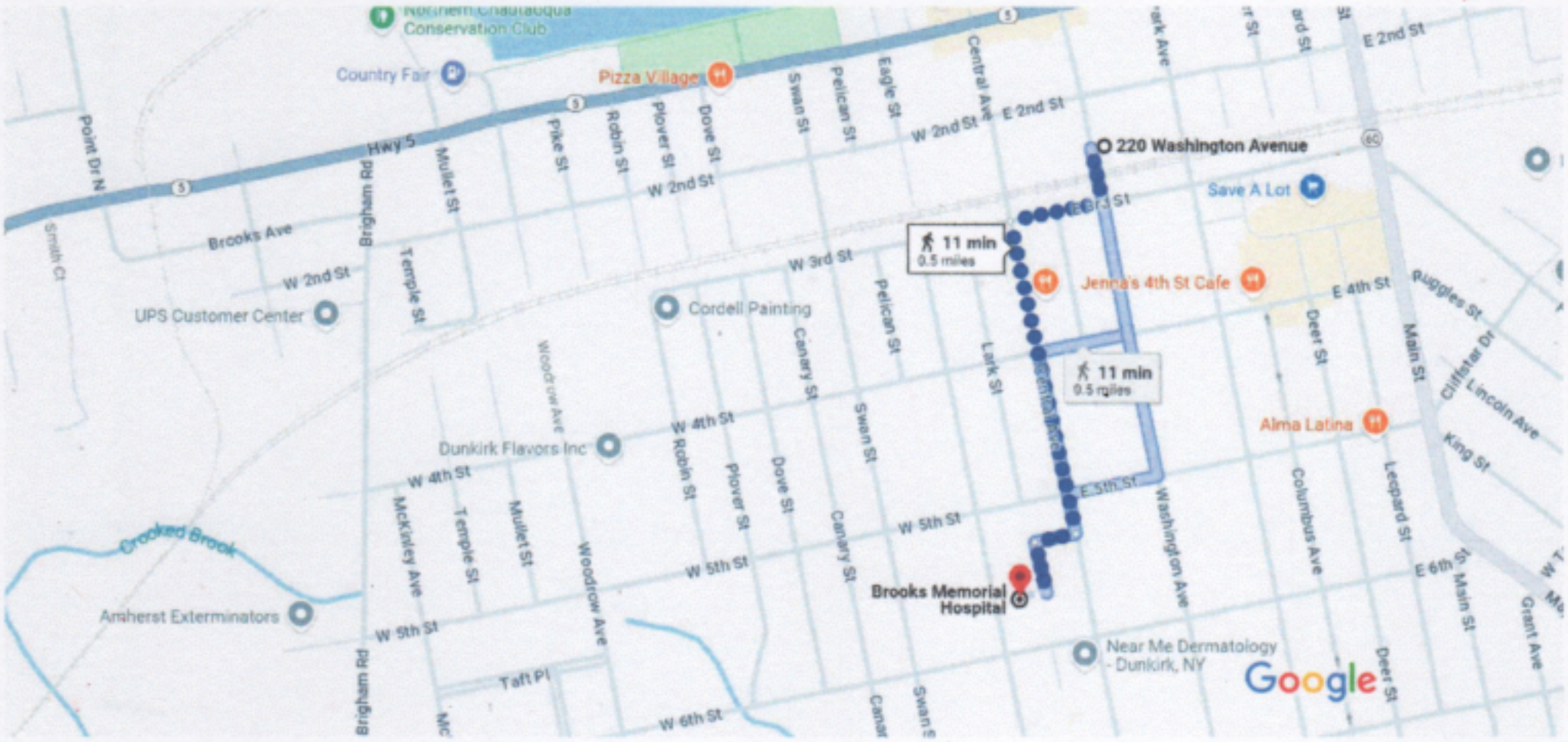
# ATTACHMENT 4

## Map to Hospital

Google Maps

# 220 Washington Ave, Dunkirk, NY 14048 to Brooks Mem Hospital, 529 Central Ave, Dunkirk, NY 14048

Walk 0.5 mile, 11 min




| | | |
|---|---|---|
| via Central Ave | 11 min | 0.5 mile |
| via Washington Ave and Central Ave | 11 min | 0.5 mile |
| via Washington Ave | 11 min | 0.5 mile |

All routes are mostly flat

# APPENDIX B

# COMMUNITY AIR MONITORING PLAN

# COMMUNITY AIR MONITORING PROGRAM (CAMP)

## 11 PARCELS
## BLOCK OF WASHINGTON, E. SECOND & PARK
## CITY OF DUNKIRK, CHAUTAUQUA COUNTY, NEW YORK

Prepared for:

**Regan Development Corporation**
**1055 Saw Mill River Road #204**
**Ardsley, NY 10502**

Prepared By:

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC

960 Busti Ave. Suite B-150
Buffalo, New York 14213

**SEPTEMBER 2024**

# Table of Contents



# Attachments

# 1.0 COMMUNITY AIR MONITORING PROGRAM (CAMP)

A Community Air Monitoring Program (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the upwind and downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The program is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors and on-site workers not directly involved with work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. A NYSDOH generic CAMP obtained from NYSDEC DER-10 is presented in Attachment 1 that will be followed and adhered to for work activities that could release potential contaminants from an impacted area.

A program for suppressing fugitive dust and particulate matter monitoring will also be conducted in accordance NYSDEC DER-10 titled Appendix 1B Fugitive Dust and Particulate Monitoring, which is also provided in Attachment 1. The fugitive dust suppression and particulate monitoring program will be employed at the site during building demolition, site investigations/remediation and other intrusive activities which warrant its use.

Both the CAMP and the fugitive dust and particulate monitoring program will be administered by the environmental engineer/consultant. Monitoring results of the CAMP will be reported to the New York State Department of Health daily for review.

NYSDEC and NYSDOH are to be provided CAMP data on a daily basis when collected in daily field reports. Daily field reports will include work zones, wind direction, location of CAMP monitoring devices, and CAMP data. When sample excursions occur, identify the reason for the excursions and measures to address the excursions.

# ATTACHMENT 1

## NYSDOH Generic CAMP
## and
## Fugitive Dust and Particulate Monitoring

## Appendix 1A
## New York State Department of Health
## Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

**Continuous monitoring** will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

**Periodic monitoring** for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($mcg/m^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $mcg/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $mcg/m^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $mcg/m^3$ of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

## Appendix 1B
## Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50° C (14 to 122° F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/$m^3$, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/$m^3$ or less at the monitoring point.

- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

Special Requirements for Indoor Work With Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures" except that in this instance "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evenings) when building occupancy is at a minimum.

# APPENDIX C

# QA/QC PLAN

# QUALITY ASSURANCE/QUALITY CONTROL PLAN

## 11 PARCELS
## BLOCK OF WASHINGTON, E. SECOND & PARK
## CITY OF DUNKIRK, CHAUTAUQUA COUNTY, NEW YORK

Prepared for:

**Regan Development Corporation**
**1055 Saw Mill River Road #204**
**Ardsley, NY 10502**

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**July 2025**

# Table of Contents

# 1.0 INTRODUCTION

This Quality Assurance/Quality Control (QA/QC) Plan provides an overview of QA/QC procedures required for the project. It also provides methods for laboratory testing of environmental samples obtained from the Site, which helps to ensure the quality of the data produced. The organizational structure for this project is presented in the Work Plan, which identifies the names of key project personnel. The project manager is responsible for verifying that QA procedures are followed in the field so that quality, representative samples are collected. The Project Manager is in contact with the analytical laboratory to monitor laboratory activities so that holding times and other QA/QC requirements are met. The anticipated quantity of field samples collected, and corresponding analytical parameters/methods are provided below.

**TABLE 1**
**ANALYTICAL SUMMARY TABLE**

| PARAMETER | EPA METHOD | QUANTITY(GW)[A] | Soil | Air |
|---|---|---|---|---|
| Part 375 VOCs + TICs | 8260 | 5 | 41 | |
| Part 375 SVOCs + TICs | 8270 | 5 | 41 | |
| Part 375 Metals | 6010/7470/7471 | 5 | 41 | |
| Part 375 PCBs | 8082 | 5 | 41 | |
| Part 375 Pesticides | 8081 | 5 | 41 | |
| PFAS Contaminants | 1633 | 5 | 41 | |
| 1,4 Dioxane | 8270SIM | 5 | 41 | |
| VOCs | TO-15 | | | 8 |

Note, soil totals include 1 sample for a duplicate per 20 samples (total of 2). Holding Times:
8260-14 days and 8270, 8081, and 8082-7 days
A = 1 MS/MSD and 1 trip blank per day

A complete analyte list is provided in **Table 2** and analytical methods and procedures are provided in **Table 3**. Both tables are located at the end of this document.

All samples analyzed for VOCs and/or SVOCs will report TICs as specified in DER-10 Section 2.1(a)1.i. Sampling for emerging contaminants will be conducted in accordance with the NYSDEC Guidance Sampling, Analysis, and Assessment of Per-And Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs – April 2023. As part of a site investigation or remedial action compliance program, whenever samples of potentially affected media are collected and analyzed for the standard Target Analyte List/Target Compound List (TAL/TCL), PFAS analysis should also be performed. Field sampling for PFAS performed should follow the appropriate procedures outlined for soils, sediments, or other solids (Appendix B), non-potable groundwater (Appendix C), surface water (Appendix D), public or private water supply wells (Appendix E), and fish tissue (Appendix F). QA/QC samples (e.g. duplicates, MS/MSD) should be collected as specified in DER-10, Section 2.3(c).

As detailed in the guidance document, EPA Method 1633 is the procedure to use for environmental samples. Reporting limits for PFOA and PFOS in aqueous samples should not exceed 2 ng/L. Reporting limits for PFOA and PFOS in solid samples should not exceed 0.5 µg/kg. Reporting limits for all other PFAS in aqueous and solid media should be as close to these limits as possible. The analytical laboratory proposed for use for the analysis of samples will be a certified NYSDOH ELAP laboratory. The QA Manager of the laboratory will be responsible for performing project-specific audits and for overseeing the quality control data generated. The field geologist/technician coordinates all personnel involved with field sampling, verifies that all sampling is conducted per the FSP, and communicates regularly with the Project Manager. The ultimate responsibility for maintaining quality throughout the project rests with the Project Manager, including field and laboratory QA/QC.

# 2.0 DATA QUALITY OBJECTIVES

## 2.1 BACKGROUND

Data quality objectives (DQOs) are qualitative and quantitative statements, which specify the quality of data required supporting the investigation for the site. DQOs focus on the identification of the end use of the data to be collected. The project DQOs are achieved utilizing the definitive data category as outlined in *Guidance for the Data Quality Objectives Process,* EPA QA/G-4 (September 1994). All sample analyses will provide definitive data, which are generated using rigorous analytical methods such as reference methods approved by the United States Environmental Protection Agency (USEPA). The purpose of this investigation is to determine the nature and extent of contamination at the site.

Within the context of the purpose stated above, the project DQOs for data collected during this investigation are:

- To assess the nature and extent of contamination in soil, groundwater, and soil vapor
- To maintain the highest possible scientific/professional standards for each procedure
- To develop sufficient data to assess whether the levels of contaminates identified in the media sampled exceed regulatory guidelines

## 2.2 QA OBJECTIVES FOR CHEMICAL DATA MEASUREMENT

Sample analytical methodology for the media sampled and data deliverables are required to adhere to the requirements in NYSDEC Analytical Services Protocol. Laboratories are instructed to complete Sample Preparation and Analysis Summary forms and submit with the data packages. The laboratory is instructed that matrix interferences must be fixed to the extent practicable. To achieve the definitive data category described above, the data quality indicators of precision, accuracy, representativeness, comparability, and completeness are measured during analysis.

### *2.2.1 Precision*

Precision examines the distribution of the reported values about their mean. The distribution of reported values refers to how different the individual reported values are from the average

reported value. Precision may be affected by the natural variation of the matrix or contamination within that matrix and by errors made in field or laboratory handling procedures. Precision is evaluated using analyses of a laboratory matrix spike/matrix spike duplicate (for organics) and matrix duplicates (for inorganics), which indicate analytical precision through the reproducibility of the analytical results. Relative Percent Difference (RPD) is used to evaluate precision and it must meet the method requirements.

### *2.2.2 Accuracy*

Accuracy measures the analytical bias in a measurement system. Sources of error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques. These data help to assess the potential concentration contribution from various outside sources. The laboratory objective for accuracy is to equal or exceed the accuracy demonstrated for the applied analytical methods on samples of the same matrix. The percent recovery criterion is used to estimate accuracy based on recovery in the matrix spike/matrix spike duplicate and matrix spike blank samples. The spike and spike duplicate, which will give an indication of matrix effects that may be affecting target compounds is also a good gauge of method efficiency.

### *2.2.3 Representativeness*

Representativeness expresses the degree to which the sample data accurately and precisely represent the characteristics of a population of samples, parameter variations at a sampling point, or environmental conditions. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program or sub-sampling of a given sample. Objectives for representativeness are defined for sampling and analysis tasks and are a function of the investigative objectives. The sampling procedures described in the Field Sampling Plan have been selected with the goal of obtaining representative samples for the media of concern.

### *2.2.4 Comparability*

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. A DQO for this program is to produce data with the greatest possible degree of comparability. This goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. Complete field documentation will support the assessment of comparability. Comparability is limited by the other parameters (e.g., precision, accuracy, representativeness, completeness, comparability), because only when precision and accuracy are known can data sets be compared with confidence. For data sets to be comparable, it is imperative that contract-required methods and procedures be explicitly followed.

### *2.2.5 Completeness*

Completeness is defined as a measure of the amount of valid data obtainable from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is important that appropriate QA procedures be maintained to verify that valid data are obtained to meet project needs. For the data generated, a goal of 90% is required for

completeness (or usability) of the analytical data. If this goal is not met, then project personnel will determine whether the deviations might cause the data to be rejected.

# 3.0 SAMPLING LOCATIONS, CUSTODY, AND HOLDING TIMES

Sampling locations are discussed and identified in the Remedial Investigation Work Plan (RIWP) Section 5.0 Investigation Scope of Work which this QA/QC plan is attached.. Procedures addressing field and laboratory sample chain-of-custody and holding times details are presented in the Field Sampling Plan. The laboratory must meet the method required detection limits which are referenced within the methods.

# 4.0 CALIBRATION PROCEDURES AND FREQUENCY

To obtain a high level of precision and accuracy during sample processing procedures, laboratory instruments must be calibrated properly. Several analytical support areas must be considered so the integrity of standards and reagents is upheld prior to instrument calibration. The following sections describe the analytical support areas and laboratory instrument calibration procedures.

## 4.1 ANALYTICAL SUPPORT AREAS

Prior to generating quality data, several analytical support areas must be considered; these are detailed in the following paragraphs.

Standard/Reagent Preparation – Primary reference standards and secondary standard solutions shall be obtained from National Institute of Standards and Technology (NIST), or other reliable commercial sources to verify the highest purity possible. The preparation and maintenance of standards and reagents will be accomplished according to the methods referenced. All standards and standard solutions are to be formally documented (i.e., in a logbook) and should identify the supplier, lot number, purity/concentration, receipt/preparation date, preparers name, method of preparation, expiration date, and any other pertinent information. All standard solutions shall be validated prior to use. Care shall be exercised in the proper storage and handling of standard solutions (e.g., separating volatile standards from nonvolatile standards). The laboratory shall continually monitor the quality of the standards and reagents through well documented procedures.

Balances – The analytical balances shall be calibrated and maintained in accordance with manufacturer specifications. Calibration is conducted with two Class AS" weights that bracket the expected balance use range. The laboratory shall check the accuracy of the balances daily and they must be properly documented in permanently bound logbooks.

Refrigerators/Freezers – The temperature of the refrigerators and freezers within the laboratory shall be monitored and recorded daily. This will verify that the quality of the standards and reagents is not compromised, and the integrity of the analytical samples is upheld. Appropriate acceptance ranges (2 to 6°C for refrigerators) shall be clearly posted on each unit in service.

Water Supply System – The laboratory must maintain a sufficient water supply for all project needs. The grade of the water must be of the highest quality (analyte-free) to eliminate false-positives from the analytical results. Ultraviolet cartridges or carbon absorption treatments are recommended for organic analyses and ion-exchange treatment is recommended for inorganic tests. Appropriate documentation of the quality of the water supply system(s) will be performed on a regular basis.

### 4.2 LABORATORY INSTRUMENTS

Calibration of instruments is required to verify that the analytical system is operating properly and at the sensitivity necessary to meet established quantitation limits. Each instrument for organic and inorganic analyses shall be calibrated with standards appropriate to the type of instrument and linear range established within the analytical method(s). Calibration of laboratory instruments will be performed according to specified methods.

In addition to the requirements stated within the analytical methods, the contract laboratory will be required to analyze an additional low-level standard at or near the detection limits. In general, standards will be used that bracket the expected concentration of the samples. This will require the use of different concentration levels, which are used to demonstrate the instrument's linear range of calibration.

Calibration of an instrument must be performed prior to the analysis of any samples and then at periodic intervals (continuing calibration) during the sample analysis to verify that the instrument is still calibrated. If the contract laboratory cannot meet the method required calibration requirements, corrective action shall be taken. All corrective action procedures taken by the contract laboratory are to be documented, summarized within the case narrative, and submitted with the analytical results.

## 5.0 INTERNAL QUALITY CONTROL CHECKS

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as determining the effect sample matrix may have on data being generated. Two types of internal checks are performed and are described as batch QC and matrix-specific QC procedures. The type and frequency of specific QC samples performed by the contract laboratory will be according to the specified analytical method and project specific requirements. Acceptable criteria and target ranges for these QC samples are presented within the referenced analytical methods.

QC results which vary from acceptable ranges shall result in the implementation of appropriate corrective measures, potential application of qualifiers, and/or an assessment of the impact these corrective measures have on the established data quality objectives. Quality control samples including any project-specific QC will be analyzed are discussed below.

## 5.1 BATCH QC

Method Blanks – A method blank is defined as laboratory-distilled or deionized water that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Method blanks are analyzed at a frequency of one per analytical batch.

Matrix Spike Blank Samples – A matrix spike blank (MSB) sample is an aliquot of water spiked (fortified) with all the elements being analyzed for calculation of precision and accuracy to verify that the analysis that is being performed is in control. An MSB will be performed for each matrix and organic parameter only.

## 5.2 MATRIX-SPECIFIC QC

Matrix Spike Samples – An aliquot of a matrix is spiked with known concentrations of specific compounds as stipulated by the methodology. The matrix spike (MS) and matrix spike duplicate (MSD) are subjected to the entire analytical procedure to assess both accuracy and precision of the method for the matrix by measuring the percent recovery and relative percent difference of the two spiked samples. The samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance. MS/MSDs are analyzed at a frequency of one each per 20 samples per matrix.

Matrix Duplicates – The matrix duplicate (MD) is two representative aliquots of the same sample which are prepared and analyzed identically. Collection of duplicate samples provides for the evaluation of precision both in the field and at the laboratory by comparing the analytical results of two samples taken from the same location. Obtaining duplicate samples from a soil matrix requires homogenization (except for volatile organic compounds) of the sample aliquot prior to filling sample containers, to best achieve representative samples. Every effort will be made to obtain replicate samples; however, due to interferences, lack of homogeneity, and the nature of the soil samples, the analytical results are not always reproducible.

Rinsate (Equipment) Blanks – A rinsate blank is a sample of laboratory demonstrated analyte-free water passed through and over the cleaned sampling equipment. A rinsate blank is used to indicate potential contamination from ambient air and from sample instruments used to collect and transfer samples. This water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. The rinsate blank should be collected, transported, and analyzed in the same manner as the samples acquired that day. Rinsate blanks for nonaqueous matrices should be performed at a rate of 10 percent of the total number of samples collected throughout the sampling event. Rinse blanks will not be performed on samples (i.e., groundwater) where dedicated disposable equipment is used.

Trip Blanks – Trip blanks are not required for nonaqueous matrices. Trip blanks are required for aqueous sampling events. They consist of a set of sample bottles filled at the laboratory with laboratory demonstrated analyte free water. These samples then accompany the bottles that are prepared at the lab into the field and back to the laboratory, along with the collected samples for analysis. These bottles are never opened in the field. Trip blanks must return to the lab with the same set of bottles they accompanied to the field. Trip blanks will be analyzed for

volatile organic parameters. Trip blanks must be included at a rate of one per volatile sample shipment.

# 6.0 CALCULATION OF DATA QUALITY INDICATORS

## 6.1 PRECISION

Precision is evaluated using analyses of a field duplicate or a laboratory MS/MSD that indicate analytical precision through the reproducibility of the analytical results. RPD is used to evaluate precision by the following formula:

$$RPD = \frac{(X_1 - X_2)}{[(X_1 + X_2)/2]} \times 100\%$$

where:

$X_1$ = Measured value of sample or matrix spike
$X_2$ = Measured value of duplicate or matrix spike duplicate

Precision will be determined using MS/MSD (for organics) and matrix duplicates (for inorganics) analyses.

## 6.2 ACCURACY

Accuracy is defined as the degree of difference between the measured or calculated value and the true value. The closer the numerical value of the measurement comes to the true value or actual concentration, the more accurate the measurement is. Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at known concentrations before analysis. Analytical accuracy may be assessed using known and unknown QC samples and spiked samples. It is presented as percent recovery. Accuracy will be determined from matrix spike, matrix spike duplicate, and matrix spike blank samples, as well as from surrogate compounds added to organic fractions (i.e., volatiles, semivolatiles, PCB), and is calculated as follows:

$$Accuracy\ (\%R) = \frac{(X_s - X_u)}{K} \times 100\%$$

where:

$X_s$ - Measured value of the spike sample
$X_u$ - Measured value of the unspiked sample
K - Known amount of spike in the sample

## 6.3 COMPLETENESS

Completeness is calculated on a per matrix basis for the project and is calculated as follows:

$$Completeness\ (\%C) = \frac{(X_v - X_n)}{N} \times 100\%$$

where:

$X_v$ - Number of valid measurements
$X_n$ - Number of invalid measurements

N - Number of valid measurements expected to be obtained

# 7.0 CORRECTIVE ACTIONS

Laboratory corrective actions shall be implemented to resolve problems and restore proper functioning to the analytical system when errors, deficiencies, or out-of-control situations exist at the laboratory. Full documentation of the corrective action procedure needed to resolve the problem shall be filed in the project records, and the information summarized in the case narrative. A discussion of the corrective actions to be taken is presented in the following sections.

## 7.1 INCOMING SAMPLES

Problems noted during sample receipt shall be documented by the laboratory. The Project Manager shall be contacted immediately for problem resolution. All corrective actions shall be documented thoroughly.

## 7.2 SAMPLE HOLDING TIMES

If any sample extraction or analyses exceed method holding time requirements, the Project Manager shall be notified immediately for problem resolution. All corrective actions shall be documented thoroughly.

## 7.3 INSTRUMENT CALIBRATION

Sample analysis shall not be allowed until all initial calibrations meet the appropriate requirements. All laboratory instrumentation must be calibrated in accordance with method requirements. If any initial/continuing calibration standards exceed method QC limits, recalibration must be performed and, if necessary, reanalysis of all samples affected back to the previous acceptable calibration check.

## 7.4 REPORTING LIMITS

The laboratory must meet the method required detection limits listed in NYSDEC ASP, 10/95 criteria. If difficulties arise in achieving these limits due to a sample matrix, the laboratory must notify PEI project personnel for problem resolution. To achieve those detection limits, the laboratory must utilize all appropriate cleanup procedures to retain the project required detection limits. When any sample requires a secondary dilution due to high levels of target analytes, the laboratory must document all initial analyses and secondary dilution results. Secondary dilution will be permitted only to bring target analytes within the linear range of calibration. If samples are analyzed at a secondary dilution with no target analytes detected, the Project Manager will be immediately notified so that appropriate corrective actions can be initiated.

## 7.5 METHOD QC

All QC method-specified QC samples shall meet the method requirements referenced in the analytical methods. Failure of method-required QC will result in the review and possible qualification of all affected data. If the laboratory cannot find any errors, the affected sample(s)

shall be reanalyzed or re-extracted/redigested, then reanalyzed within method-required holding times to verify the presence or absence of matrix effects. If matrix effect is confirmed, the corresponding data shall be flagged accordingly using the flagging symbols and criteria. If matrix effect is not confirmed, then the entire batch of samples may have to be reanalyzed or re-extracted/redigested, then reanalyzed at no cost. Project Manager shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.

### 7.6 CALCULATION ERRORS

All analytical results must be reviewed systematically for accuracy prior to submittal. If upon data review calculation or reporting errors exist, the laboratory will be required to reissue the analytical data report with the corrective actions appropriately documented in the case narrative.

## 8.0 DATA REDUCTION, VALIDATION, AND USABILITY

### 8.1 DATA REDUCTION

Laboratory analytical data are first generated in raw form at the instrument. These data may be either in a graphic or printed tabular format. Specific data generation procedures and calculations are found in each of the referenced methods. Analytical results must be reported consistently. Identification of all analytes must be accomplished with an authentic standard of the analyte traceable to NIST or USEPA sources. Individuals experienced with an analysis and knowledgeable of requirements will perform data reduction.

### 8.2 DATA VALIDATION

Data validation is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of validity prior to its intended use. All analytical results from soil and groundwater samples will have ASP Category B deliverables and DUSRs. The data validation will be in accordance with DER-10 Section 2.2 with ASP - Category B data deliverables provided by the laboratory and a DUSR provided for validation. Where possible, discrepancies will be resolved by the project manager.

- Technical holding times will be in accordance with NYSDEC ASP, 7/2005 edition.
- Organic calibration and QC criteria will be in accordance with NYSDEC ASP, 7/2005 edition. Data will be qualified if it does not meet NYSDEC ASP, 7/2005 criteria.

Note that analytical results from the PCB Survey will also complete DUSRs and be submitted to EQuIS, in accordance with the Quality Assurance/Quality Control Plan (QA/QC Plan). All EDDs will be submitted to EQuIS and a copy will be sent to the NYSDEC PM Taylor Monnin at michael.keller @dec.ny.gov.

# 9.0 REFERENCES

Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Quality Assurance Manual, Final Copy, Revision I, October 1989.

National Enforcement Investigations Center of USEPA Office of Enforcement. *NEIC Policies and Procedures.* Washington: USEPA.
New York State Department of Environmental Conservation (NYSDEC) 2005. *Analytical Services Protocol*, (ASP) 7/2005 Edition. Albany: NYSDEC.

NYSDEC "DER-10 Technical Guidance for Site Investigation and Remediation (DER-10)," dated May 3, 2010, Appendix 2B

# TABLE 2
# ANALYTE LIST

## *Part 375 Metals (ICP)*
**EPA 6010C**

***Analyte***

Arsenic
Barium
Beryllium
Cadmium
Chromium
Copper
Lead
Manganese
Nickel
Selenium
Silver
Zinc
Mercury EPA 7471B
Cyanide, Total EPA 9014

## *PCBs* **EPA 7471B**

PCB-1016
PCB-1221
PCB-1232
PCB-1242
PCB-1248

## *Chlorinated Pesticides*
**EPA 8081B/ Herbicides EPA 8151**

4,4-DDD
4,4-DDE
4,4-DDT
Aldrin
alpha-BHC
beta-BHC
cis-Chlordane
delta-BHC
Dieldrin
Endosulfan I
Endosulfan II
Endosulfan Sulfate
Endrin
Endrin Aldehyde
Endrin Ketone
gamma-BHC (Lindane)
Heptachlor
Heptachlor Epoxide
Methoxychlor
Toxaphene
trans-Chlordane
2,4,5-TP Acid (Silvex)

## *Semi-Volatile Organics (Acid/Base Neutrals)*
**EPA 8270D**

1,1-Biphenyl
1,2,4,5-Tetrachlorobenzene
1,2,4-Trichlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2,2-Oxybis (1-chloropropane)
2,3,4,6-Tetrachlorophenol
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-Chloronaphthalene
2-Chlorophenol
2-Methylnapthalene
2-Methylphenol
2-Nitroaniline
2-Nitrophenol
3&4-Methylphenol
3,3'-Dichlorobenzidine
3-Nitroaniline
4,6-Dinitro-2-methylphenol
4-Bromophenyl phenyl
4-Chloro-3-methylphenol
4-Chloroaniline
4-Chlorophenyl phenyl ether
4-Nitroaniline
4-Nitrophenol
Acenaphthene
Acenaphthylene
Acetophenone
Anthracene
Atrazine
Benzaldehyde
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Bis (2-chloroethoxy) methane
Bis (2-chloroethyl) ether
Bis (2-ethylhexyl) phthalate
Butylbenzylphthalate
Caprolactam
Carbazole
Chrysene
Dibenz (a,h) anthracene
Dibenzofuran
Diethyl phthalate
Dimethyl phthalate
Di-n-butyl phthalate
Di-n-octylphthalate
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Indeno (1,2,3-cd) pyrene
Isophorone
Naphthalene
Nitrobenzene
N-Nitroso-di-n-propylamine
N-Nitrosodiphenylamine
Pentachlorophenol
Phenanthrene
Phenol
Pyrene

## *Volatile Organics*
**EPA 8260C**

1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2,3-Trichlorobenzene
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,2-Dibromo-3-Chloropropane
1,2-Dibromoethane
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3,5-Trimethylbenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,4-dioxane
2-Butanone
2-Hexanone
4-Methyl-2-pentanone
Acetone
Benzene
Bromochloromethane
Bromodichloromethane

## TABLE 2 (Continued)

### *Volatile Organics*
**(Continued)**

Bromomethane
Carbon disulfide
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
Cyclohexane
Dibromochloromethane
Dichlorodifluoromethane
Ethylbenzene
Freon 113
Isopropylbenzene
m,p-Xylene
Methyl acetate
Methyl tert-butyl Ether
Methylcyclohexane
Methylene chloride
Naphthalene
n-Butylbenzene
n-Propylbenzene
o-Xylene
p-Isopropyltoluene
sec-Butylbenzene
Styrene
tert-Butylbenzene
Tetrachloroethene
Toluene
trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
Trichloroethene
Trichlorofluoromethane
Vinyl chloride

### *Volatiles-Air - TO-15*

Acetone
Benzene
Carbon disulfide
Chloromethane
Dichlorodifluoromethane
Ethanol
Ethylbenzene
Ethyl Acetate
4-Ethyltoluene
Heptane
Hexane
Isopropyl Alcohol
Methylene chloride
Methyl ethyl ketone
Propylene
1,1,1-Trichloroethane
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
2,2,4-Trimethylpentane
Tertiary Butyl Alcohol
Tetrachloroethylene
Toluene
Trichloroethylene
Trichlorofluoromethane
m,p-Xylene
o-Xylene
Xylenes (total)
Acetone
Benzene
Carbon disulfide
Chloromethane
Dichlorodifluoromethane
Ethanol
Ethylbenzene
Ethyl Acetate
4-Ethyltoluene
Heptane
Hexane
Isopropyl Alcohol
Methylene
Methyl ethyl ketone
Propylene
1,1,1-Trichloroethane

# TABLE 3
# PFAS ANALYTE LIST

| Group | Chemical Name | Abbreviation | CAS Number |
|---|---|---|---|
| Perfluoroalkyl sulfonates | Perfluorobutanesulfonic acid | PFBS | 375-73-5 |
| | Perfluorohexanesulfonic acid | PFHxS | 355-46-4 |
| | Perfluoroheptanesulfonic acid | PFHpS | 375-92-8 |
| | Perfluorooctanessulfonic acid | PFOS | 1763-23-1 |
| | Perfluorodecanesulfonic acid | PFDS | 335-77-3 |
| Perfluoroalkyl carboxylates | Perfluorobutanoic acid | PFBA | 375-22-4 |
| | Perfluoropentanoic acid | PFPeA | 2706-90-3 |
| | Perfluorohexanoic acid | PFHxA | 307-24-4 |
| | Perfluoroheptanoic acid | PFHpA | 375-85-9 |
| | Perfluorooctanoic acid | PFOA | 335-67-1 |
| | Perfluorononanoic acid | PFNA | 375-95-1 |
| | Perfluorodecanoic acid | PFDA | 335-76-2 |
| | Perfluoroundecanoic acid | PFUA/PFUdA | 2058-94-8 |
| | Perfluorododecanoic acid | PFDoA | 307-55-1 |
| | Perfluorotridecanoic acid | PFTriA/PFTrDA | 72629-94-8 |
| | Perfluorotetradecanoic acid | PFTA/PFTeDA | 376-06-7 |
| Fluorinated Telomer Sulfonates | 6:2 Fluorotelomer sulfonate | 6:2 FTS | 27619-97-2 |
| | 8:2 Fluorotelomer sulfonate | 8:2 FTS | 39108-34-4 |
| Perfluorooctane-sulfonamides | Perfluroroctanesulfonamide | FOSA | 754-91-6 |
| Perfluorooctane-sulfonamidoacetic acids | N-methyl perfluorooctanesulfonamidoacetic acid | N-MeFOSAA | 2355-31-9 |
| | N-ethyl perfluorooctanesulfonamidoacetic acid | N-EtFOSAA | 2991-50-6 |

**TABLE 4 - ANALYTICAL METHODS & PROCEDURES SUMMARY**

## Groundwaters

| Analyte(s) | Method | Preservation | Holding Time | Container |
|---|---|---|---|---|
| Volatile Organics | 8260 | HCl to pH <2, cool to ≤6°C | 14 days | 2 - 40 ml septum sealed vials |
| Semivolatile Organics | 8270 | cool to ≤6°C | Samples extracted within 7 days and extracts analyzed within 40 days following extraction | 1 liter amber with Teflon lined cap |
| Organochlorine Pesticides | 8081 | cool to ≤6°C | | 1 liter amber with Teflon lined cap |
| Chlorinated Herbicides (silvex) | 8151 | cool to ≤6°C | | 1 liter amber with Teflon lined cap |
| PCBs | 8082 | cool to ≤6°C | none | 1 liter amber with Teflon lined cap |
| ICP Metals | 6010 | HNO3 to pH <2 | 6 months | 250 ml. plastic |
| Mercury | 7470 | HNO3 to pH <2 | 28 days | 250 ml. plastic |
| Hexavalent Chromium | 7196 | cool to ≤6°C | 24 hours | 125 ml. plastic |
| Cyanide, Total | 9010 | NaOH to pH >12, cool to ≤6°C | 14 days | 250 ml. plastic |
| PFAS | 1633 | cool to ≤6°C | Samples extracted within 14 days and extracts analyzed within 28 days following extraction | 250 ml. HDPE |
| 1,4-Dioxane | 8270 SIM | cool to ≤6°C | Samples extracted within 7 days and extracts analyzed within 40 days following extraction | 1 liter amber with Teflon lined cap |

## Soils

| Analyte(s) | Method | Preservation | Holding Time | Container |
|---|---|---|---|---|
| Volatile Organics | 8260 | cool to ≤6°C | 14 days | 4 oz. widemouth glass with Teflon lined cap |
| Semivolatile Organics | 8270 | cool to ≤6°C | Samples extracted within 14 days and extracts analyzed within 40 days following extraction | 4 oz. widemouth glass with Teflon lined cap |
| Organochlorine Pesticides | 8081 | cool to ≤6°C | | 4 oz. widemouth glass with Teflon lined cap |
| Chlorinated Herbicides (silvex) | 8151 | cool to ≤6°C | | 4 oz. widemouth glass with Teflon lined cap |
| PCBs | 8082 | cool to ≤6°C | none | 4 oz. widemouth glass with Teflon lined cap |
| ICP Metals | 6010 | none | 6 months | 4 oz. widemouth glass with Teflon lined cap |
| Mercury | 7471 | cool to ≤6°C | 28 days | 4 oz. widemouth glass with Teflon lined cap |
| Hexavalent Chromium | 3060/7196 | cool to ≤6°C | 30 days to extraction 7 days from extraction to analysis | 4 oz. widemouth glass with Teflon lined cap |
| Cyanide, Total | 9012 | cool to ≤6°C | 14 days | 4 oz. widemouth glass with Teflon lined cap |
| PFAS | 1633 | cool to ≤6°C | Samples extracted within 14 days and extracts analyzed within 40 days following extraction | 250 ml.HDPE |
| 1,4-Dioxane | 8270 SIM | cool to ≤6°C | Samples extracted within 7 days and extracts analyzed within 40 days following extraction | 4 oz. widemouth glass with Teflon lined cap |

## TABLE 4 - ANALYTICAL METHODS & PROCEDURES SUMMARY CONT.

**Soil Gas**

| Analytes | Method | Preservation | Holding Time | Container |
|---|---|---|---|---|
| VOCs | EPA Method TO-15 | None | 14 Days | Evacuated 6-Liter SUMMA® Canister |

# STANDARD WELL DETAIL

**Geologist:**

**Contractor:**

**Operator:**

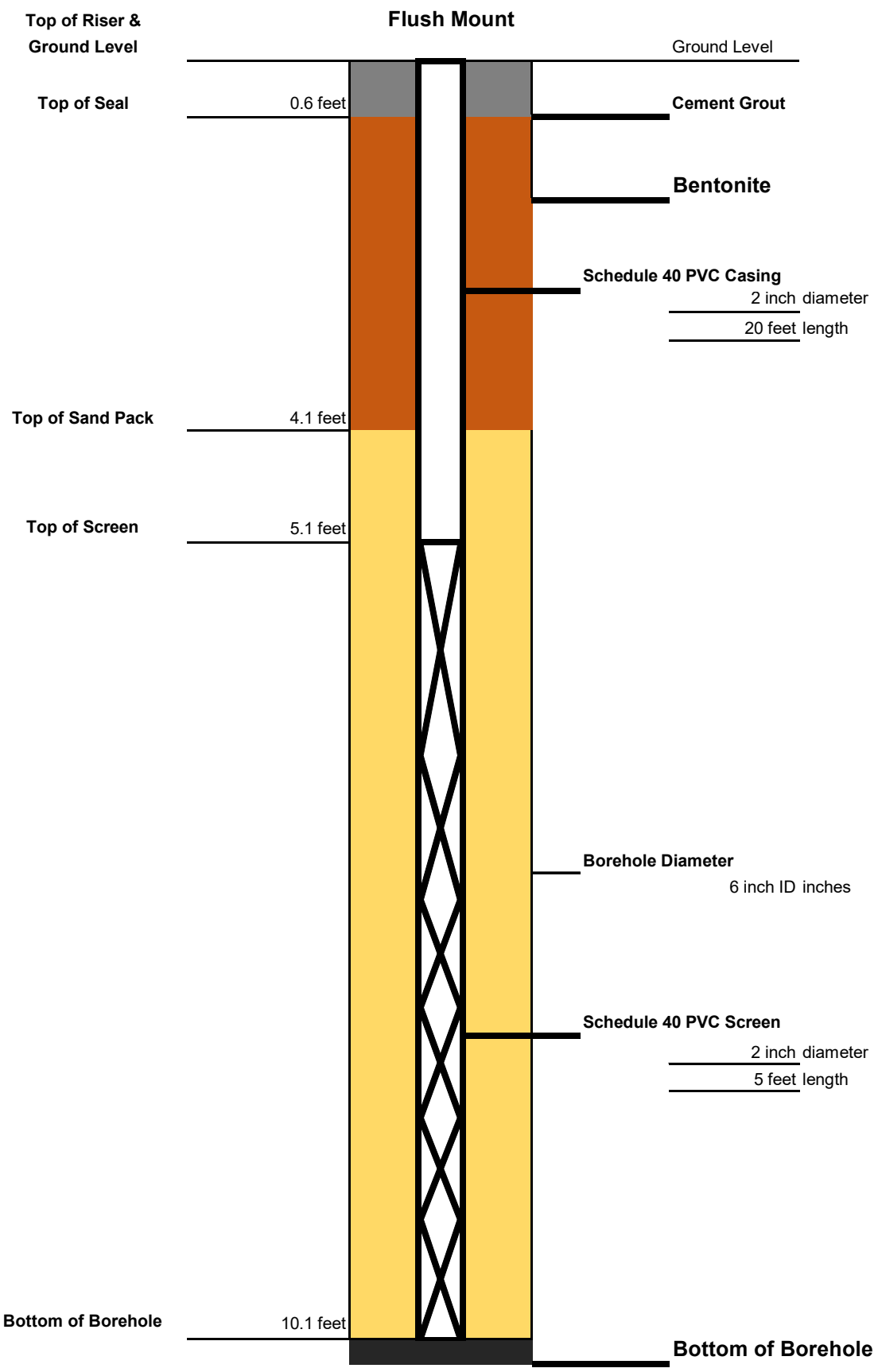
**Model:**

**Date:**

## GEOLOGIC LOG

| Depth(ft.) | Description |
|---|---|
| 0-6" | |
| 6"-1' | |
| 1'-2' | |
| 2-8' | |
| 8-10.1' | |

## WELL DESIGN




### CASING MATERIAL

**Surface** Flush Mount and Cover

**Monitor:** 2" Schedule 40 PVC

### SCREEN MATERIAL

**Type:** 2" Schedule 40 PVC

**Slot Size:** 0.010"

**Setting:** 5.1' - 10.1' bgs

### FILTER MATERIAL

**Type:** Sand Pack #0
**Setting:** 4.1-10.1'

### SEAL MATERIAL

**Type 1:** Grout
**Setting:** 0.6-1'
**Type 1:** Bentonite
**Setting:** 0.6-4.1'

**COMMENTS:**

### LEGEND

- Cement Grout
- Bentonite Seal
- Sand Pack
- Bottom of Borehole
- PVC Riser Pipe
- PVC Screen

**Client:**

**Location:**

**Project No.:**

BE3 BRYDGES ENGINEERING IN ENVIRONMENT AND ENERGY, DPC

**MONITORING WELL CONSTRUCTION DETAILS**

**Well Number: STANDARD DETAIL**

## STANDARD DETAIL

**Geologist:**

**Contractor:**

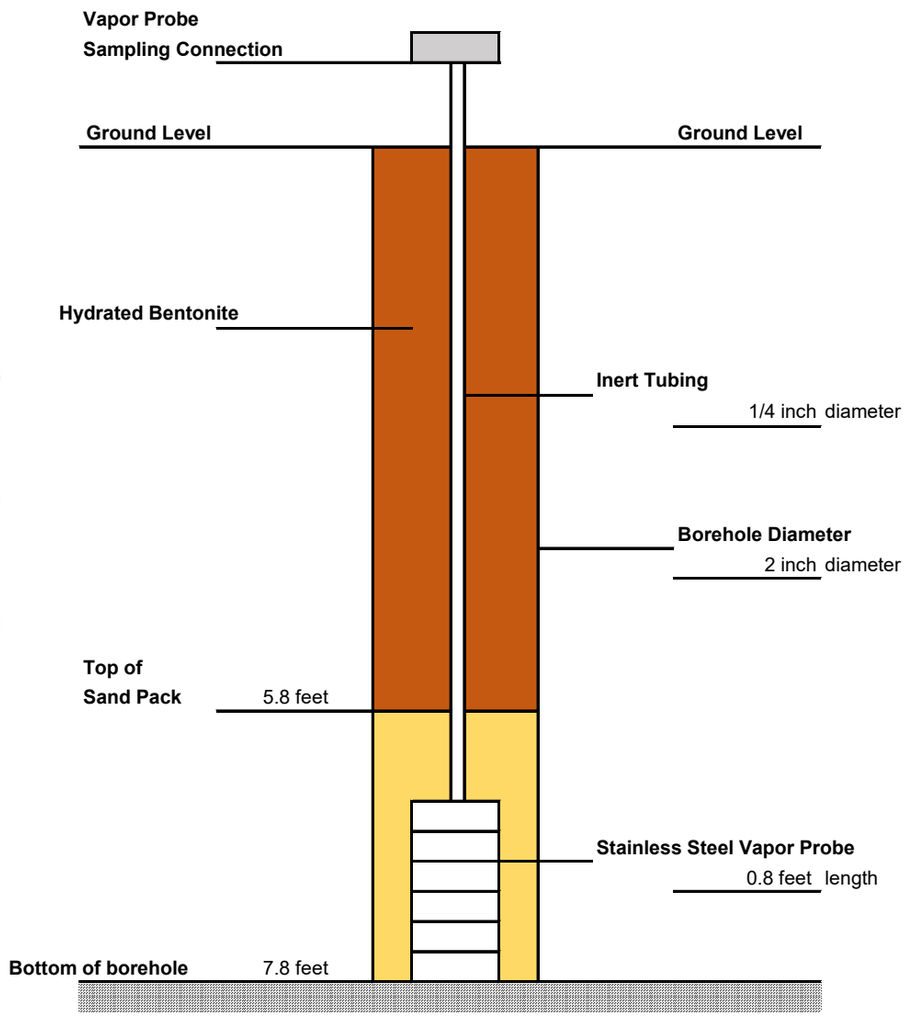
**Operator:**

**Date:**

## GEOLOGIC LOG

| Depth(ft.) | Description |
|---|---|
| 0-5" | |
| 0.5-1' | |
| 1-8' | |
| 8-9.5' | |

DEPTH




## PROBE DESIGN

| CASING MATERIAL | SEAL MATERIAL | FILTER MATERIAL |
|---|---|---|
| **Surface:** N/A | **Type:** Bentonite Chips | **Type:** No. 0 Sand |
| | **Setting:** 0' - 5.8' bgs | **Setting:** 5.8' - 7.8' |

**COMMENTS:**

**LEGEND**

- Bentonite Chip Seal
- Sand Pack

| Client: | Location: | Project No. |
|---|---|---|
| BE3 BRYDGES ENGINEERING IN ENVIRONMENT AND ENERGY, DPC | STANDARD SOIL VAPOR PROBE CONSTRUCTION DETAILS | Probe Number: |

# APPENDIX D

# FIELD SAMPLING PLAN

# FIELD SAMPLING PLAN

## 11 PARCELS
## BLOCK OF WASHINGTON, E. SECOND & PARK
## CITY OF DUNKIRK, CHAUTAUQUA COUNTY, NEW YORK

Prepared For:

**Regan Development Corporation**
**1055 Saw Mill River Road #204**
**Ardsley, NY 10502**

Prepared By:

960 Busti Ave. Suite B-150
Buffalo, New York 14213

**JULY 2025**

# Table of Contents

# 1.0 INTRODUCTION

This Field Sampling Plan (FSP) provides procedures for the field activities designed in the Work Plan where soil, groundwater, and vapor sampling are required at the Site. The field procedures presented in this manual should be followed by all field personnel, as adherence can help to ensure the quality and usability of the data collected. The FSP should be used collectively with and comply with the following documents:

- The HASP.
- The QA/QC Plan.
- The RI Work Plan.

Sampling for emerging contaminants will be conducted in accordance with the NYSDEC Guidance Sampling, Analysis, and Assessment of Per-And Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs – April 2023.. As part of a site investigation or remedial action compliance program, whenever samples of potentially affected media are collected and analyzed for the standard Target Analyte List/Target Compound List (TAL/TCL), PFAS analysis should also be performed. Field sampling for PFAS performed should follow the appropriate procedures outlined for soils, sediments, or other solids (Appendix B), non-potable groundwater (Appendix C), surface water (Appendix D), public or private water supply wells (Appendix E), and fish tissue (Appendix F). QA/QC samples (e.g. duplicates, MS/MSD) should be collected as specified in DER-10, Section 2.3(c).

As detailed in the guidance document, EPA Method 1633 is the procedure to use for environmental samples. Reporting limits for PFOA and PFOS in aqueous samples should not exceed 2 ng/L. Reporting limits for PFOA and PFOS in solid samples should not exceed 0.5 µg/kg. Reporting limits for all other PFAS in aqueous and solid media should be as close to these limits as possible. . The analytical laboratory proposed for use for the analysis of samples will be a certified NYSDOH ELAP laboratory.

All field equipment requiring calibration will be calibrated per, and at the frequency, recommended by the equipment manufacturer.

# 2.0 SOIL SAMPLING

Soil samples are obtained as outlined in the Work Plan, considering the following general protocol:

1. Inspect newly created test pit or boring core stratigraphy once obtained in/from the subsurface.
2. Sample soil, and record depth and any physical characteristics (e.g., contamination, odor, discoloration, debris, etc.) in the logbook.
3. Quickly place the calibrated PID into the exposed soil and record the instrument readings in the logbook.
4. Samples should be collected at locations and frequency per the Work Plan and QA/QC Plan.
5. Decontaminate sampling implements after use and between sample locations. In most cases, dedicated sampling equipment is utilized thereby eliminating equipment decontamination. If dedicated equipment is not used, "dry" decontamination will be

applied and “wet” as necessary. Procedures for dry and wet decontamination are provided below.
6. Label each sample container with the appropriate sample identification and place samples in a cooler (cooled to 4 degrees C.) for shipment to the laboratory.
7. Initiate chain-of-custody procedures.

Dry decontamination procedures may include the use of stiff brushes or scrappers to remove debris off of sampling equipment. Dry decontamination methods are typically used with solid contaminants and prior to wet decontamination methods.

Wet decontamination procedures may include the use of Alconox water or a steam cleaner to rinse and scrub contamination away from sampling equipment. If necessary, a decontamination station with wash water and wash water containment will be used. Wash water will be drummed and characterized prior to proper disposal/discharge.

## 2.1 GEOPROBE PROCEDURES

Geoprobe direct push sampling is a standard method of soil sampling to obtain representative samples from the subsurface. Field preparation, sample collection, and data logging activities for Geoprobe sampling are identical to that of test pitting/trenching listed above. The following procedures detail activities, as directed by the field technician, for the execution of Macro Core drilling operations:

1. Startup drill rig and raise mast.
2. Use star bit with rig in rotary setting to penetrate pavement (if applicable).
3. Excavate a hole large enough to set a road box before you advance the borehole (if applicable).
4. Unthread the shoe from the bottom of the sample tube and inset a sample liner and rethread the shoe on the bottom of the sample tube.
5. Thread the drive cap on the top of the sample tube.
6. Align the sample tube so it is plumb in both directions to ensure a straight borehole is drilled.
7. Drive the top of the sample tube into ground surface to a depth of 4-feet for the first 4-foot sample.
8. Unthread the drive cap from the top of the sample tube and thread the pull cap in its place.
9. Pull the sample tube from the ground using caution to not pinch your hand between the drill rods, pull cap, or rig.
10. Unthread the cutting shoe and pull the sample liner from the bottom of the sample tube. Use pliers to reach in the sample tube and grab the liner, if needed.
11. Cut the sample liner lengthwise in two places and present the sample on a table or plastic sheeting (or similar) to ensure all sample material is contained. Quickly screen the soil for volatile organic vapors using a PID. Describe the soil and collect any necessary samples into appropriate containers and label the containers.
12. Insert a new liner and thread on the cutting shoe and repeat steps from #4 to #11 with the addition of a 4-foot long drill rod onto the top of the sample tube to advance a second 4-foot interval.
13. Proceed with this procedure until the desired depth or refusal is reached.

14. Upon completion of probing, decontaminate all equipment in contact with the soil/fill in a decontamination area using Alconox and water.
15. Backfill borings with indigenous soil in the order in which the material was removed with the topsoil/sand/cover soil placed last to cover the hole. Soil samples that exhibit detectable vapors or exhibit grossly other contaminated characteristics shall not be placed back into the borehole but shall be containerized for proper disposal.
16. Soil cuttings from borings will be left in their original plastic liners until they can be put back into their respective boreholes the order they came out.
17. Any cuttings that cannot be returned to their original borehole will be placed in sealed NYSDOT approved 55-gallon drums.

Reference: American Society for Testing Material (ASTM), 1992, ASTM D1586-84, Standard Method for Penetration Test and Split Barrel Sampling of Soils.

## 2.2 HOLLOW-STEM AUGER DRILLING AND SAMPLING PROCEDURES

Drilling with Hollow Stem Augers (HSAs) is a standard method for collecting undisturbed soil samples at depths that can exceed 100 feet below ground surface (bgs). This drilling and sampling method uses auger flights with a hollow center that can be used for sample collection during the drilling program. For environmental soil investigations, augers are typically 5-feet in length with a 4 1/4-inch hollow center section.

While drilling with HSAs, a plug is placed at the base of the auger string to prevent soil from entering the augers. When the sampling depth is reached, the center plug is removed and replaced with a 2-foot-long split-spoon soil sampler. A 140-pound hammer, mounted on the drill rig, is then used to drive the soil sampler and connect drill rods 2 feet into the undisturbed soil at the base of the augers. Removal of the soil sampler from the augers allows description and sampling of the collected soil. To sample the next lower 2-foot soil sample, the center plug is again placed at the base of the auger string and drilling and then sampling is continued. Continuous soil samples can be collected using HSAs to any drillable depths.

Field procedures.

1. HSAs, drill rods and the drilling rig will be thoroughly decontaminated prior to initial borehole installation, and between each borehole, at the centralized decontamination area. All decontamination liquids and solids will be collected and placed in DOT approved 55-gallon drums. Refer to section 2.0 Soil Sampling for decontamination procedures.
2. The drill rig will be inspected for oil leaks and any other leaks prior to starting drilling operations.
3. Lower the center plug to the bottom of the augers. Advance the boring by rotating and advancing the HSAs to the desired depth. The boring will be advanced incrementally to permit continuous or intermittent subsurface soil sampling, as required.
4. Remove the center plug from the HSAs and lower the 2-foot-long split-spoon sampler to the base of the augers. Use the rigs 140 hammer to drive the split-spoon sampler 2-feet into the undisturbed soil. Record the number of hammer blows (blow counts) for each 6-inches of sampler penetration.

5. Remove the split-spoon sampler from the borehole, open the split-spoon and quickly scan the soil for VOCs with a PID or FID. Describe the soil, collect the project required samples, place in the proper containers, label the containers and place on ice.
6. Continue the above drilling and sampling steps until the final desired depth is reached.
7. If a monitoring well will not be constructed in the borehole, backfill the borehole with either soil cuttings, unless grossly contaminated, to within 12 inches of the surface for non-residential sites, or grout, as specified by the project work plan.
8. Unless cuttings are grossly contaminated, they will be stored on poly liner before being put back into their original boreholes in the order they came out. If cuttings cannot be placed back into the borehole before the end of the day, they must be covered with poly liner and properly ballasted.
9. If cuttings cannot be placed back into the borehole that generated them or are grossly contaminated upon inspection, they will be drummed and characterized before proper disposal.

Reference: American Society for Testing Material (ASTM), ASTM D5784, Standard Guide for Use of Hollow-Stem Augers for Geoenvironmental Exploration and the Installation of Subsurface Water Quality Monitoring Devices

# 3.0 GROUNDWATER SAMPLING

## 3.1 WELL INSTALLATION PROCEDURES

The following procedure outlines a NYSDEC-approved method of constructing groundwater wells within unconsolidated material to monitor groundwater elevation and acquiring groundwater samples for laboratory testing. The well screen is 2” Schedule 40 pipe with 0.010 slot size. 2” diameter wells will be installed in 4.25” diameter borings. The following is a step-by-step method for the open-hole method of installing a groundwater well once a boring or augured hole has been drilled to a desired depth within the subsurface:

1. Thread a cap on the bottom section of well screen. If more than one section of well screen is required, thread the last section.
2. Lower the screen into the borehole with the riser section ready.
3. Add the riser sections to the screen. Do not drop the screen in the borehole.
4. Add riser sections as required until the bottom screen section touches the bottom of the borehole.
5. If completing the well with a road box, mark the riser two inches below the lid of the road box and then cut the riser. The road box will have an approximate diameter of 6” and a length of 1 to 2 feet.
6. Place a slip cap over the top of the rise section.
7. Place sand in the space between the borehole and the PVC screen and riser to the required depth. Place the sand in very slowly so it does not bridge in the well bore.
8. Place bentonite and cement above the sand-pack.
9. Grout in the road box with concrete mix.

If installing bedrock monitoring wells is required, the following procedure should be followed:

1. The overburden at each well location will be drilled using a 10-inch outer diameter hollow stem auger until bedrock is encountered.
2. A roller bit attachment will then be utilized to complete 5 7/8-inch diameter rock socket 3 feet into bedrock.
3. A 4-inch diameter steel casing will then be grouted into place to at least 3 feet into competent bedrock. The grouted case will be allowed to sit for a minimum of 24 hours (or grout manufacturers specification) to allow the grout to cure before bedrock coring.
4. The bedrock will then be cored using an HQ-size core drill bit (3 7/8-inch diameter) to a depth of approximately 20 feet bgs.
5. A 2-inch diameter schedule 40 polyvinyl chloride (PVC) monitoring well will then be installed into the open hole. PVC wells will be 10-foot long and have 0.010-inch slot screens.
6. Bedrock Coring logs will be generated detailing characteristics of encountered bedrock.
7. All IDW will be managed in accordance with Section 2.2 Hollow Stem Auger Drilling and Sampling Techniques.

## 3.2 WELL DEVELOPMENT PROCEDURES

At least 24 hours after completion of drilling and installation, well development is completed through pumping or bailing until the discharged water is relatively sediment free and the indicator parameters (e.g., pH, temperature, specific conductivity, etc.) have reached steady-state. Development removes sediment and can improve the hydraulic properties of the sand pack. The effectiveness of this process is monitored to minimize the volume of discharged waters to obtain sediment-free samples. As approved by the regulatory agency, if well development water is free from NAPL, visual or olfactory contamination, and has a concentration of contaminants below applicable guideline values, it can be recharged to unpaved ground into the same groundwater unit, within or directly adjacent to a source area in a manner which does not result in surface water runoff, with DER approval. Otherwise, this water must be containerized in labeled containers and sampled prior to discharge or disposal.

1. Select an appropriate well development method based upon water depth, well productivity, and sediment content of the water. Well development options include: (a) bailing; (b) manual pumping; and (c) submersible pumps. These options utilized with surging of the well screen using an appropriately sized surge block.
2. Decontaminate, as needed, and assemble equipment in the monitoring well based upon the method selected. Care should be taken not to introduce contaminants into the equipment or well during installation. Refer to the contamination procedures outlined in Section 2.0 Soil Sampling.
3. Proceed with development by repeated removal of water from the well until the discharged water is relatively sediment-free (i.e., < 50 NTUs). Volume of water removed, pH, temperature and conductivity measurements are recorded on the Well Development/Purging Logs.

The same general procedures as listed above will be used during the development of a bedrock well for water removal, storage, disposal, and equipment decontamination. However, when Bedrock wells are installed, water is often used during drilling. In the event that water is lost to the subsurface, the same amount of water lost will be removed from the aquifer during development.

## 3.3 WELL PURGING PROCEDURES

To collect representative samples, groundwater wells must be adequately purged prior to sampling. Purging will require removing three to five volumes of standing water in rapidly recharging wells and at least one volume from wells with slow recharge rate. In addition to the required well volumes, water quality parameters (pH, temperature, specific conductivity and turbidity) should have stabilized prior to sampling. Sampling should commence as soon as adequate recharge has occurred. Although not required, it is recommended that purging and sampling occur at least 24 hours after development.

1. Remove well cover ensuring no foreign material enters the well.
2. Monitor the interior of the riser pipe for organic vapors using a PID. If a sustained reading of greater than 5 ppm above background is recorded, the well will be vented until levels are below 5 ppm before pumping is started.
3. If levels do not fall below 5 ppm after venting, work will be halted and personnel will evacuate the work area. Levels will be allowed to stabilize, and another reading will be taken in the breathing zone.
4. If background levels continue to be exceeded, then work will not continue at that location and the project manager will be notified of the situation. See Section 3.3 of the HASP.
5. Measure the water level below top of casing and the entire well depth using an electronic water level indicator.
6. Determine the volume of water within the well by knowing the total depth of the well.
7. Wash the end of the probe with soap and rinse with deionized water between wells.
8. Calibrate field instruments for measuring water quality parameters (e.g., pH, specific conductance, turbidity, etc.)
9. In all wells, a peristaltic pump will be used to purge the required water volume (i.e., until stabilization of pH, temperature specific conductivity and turbidity). If depths to water exceed about 25 feet below ground, bailers and/or submersible pumps may be used.
10. Utilize dedicated, new polyethylene bailers and tubing for sampling. If sampling for emerging contaminants such a PFAS, HDPE bailers and tubing must be used.
11. Purge until the required volume is removed. If the well purges to dryness and recharges within 15 minutes, purging can continue as it recharges. If the well purges to dryness and recharge is greater than 15 minutes, purging is terminated and sampling can occur as soon as the well recharges.
12. Calculate well volumes and record measurements for pH, temperature, turbidity, and conductivity during the purging along with physical observations.
13. All wash, purge, and sampling related liquids will be containerized in NYSDOT approved 55-gallon drums upon generation. Contents will be characterized before proper disposal.

### 3.4 WELL SAMPLING PROCEDURES

1. Perform well sampling within 24 hours of purging if well has recovered sufficiently to sample. If sufficient volume for analytical testing cannot be obtained from a well or if recharge exceeds 24 hours, then DEC should be consulted on analytical priorities and validity of the sample.
2. Collect sample using appropriate containers.
3. Label sample bottles using a waterproof permanent marker per procedures outlined below.
4. Use verifiably clean sample bottles (containing required preservatives) and place samples on ice in coolers for transport to the analytical laboratory, who will certify bottles are analyte-free.
5. Initiate chain-of-custody.
6. Record well sampling data field notebook and on the Well Development/Purging Log.

## 4.0 SAMPLE DOCUMENTATION

Each soil and groundwater sample is logged in a bound field notebook by the technician or geologist. Field notes should include, but are not limited to the following:

- descriptions of subsurface material encountered during sampling,
- sample numbers and types of samples recovered, and
- date and time of sampling event.

The technician or geologist also completes a daily drilling or sampling record and chains-of-custody for all samples collected that are being transported to the laboratory. Once sampling program is complete, the geologist or technician transfers field notes/logs onto standard forms (e.g., boring logs, sampling logs, daily reports, etc.) to be included with the formal investigation report.

## 5.0 SAMPLING CONTAINER SELECTION

The selection of sample containers is based on the media being sampled and the required analysis. Container selection should be completed in advance of mobilizing into the field with close communications with the laboratory.

## 6.0 SAMPLE LABELING

The following procedure helps to prevent misidentification of samples and to clarify the location and purpose of environmental samples collected during the investigation:

1. Fix a non-removable (when wet) label to each container.
2. Wrap each sample bottle within 2-inch cellophane tape.
3. Write the following information with permanent marker on each label:
    A. Site name
    B. Sample identification
    C. Project number
    D. Date/time
    E. Sampler's initials

F. Sample preservation
G. Analysis required

Each sample is assigned a unique identification alpha-numeric code, such as RR-ss1 or WS-TP1 (2-3'), where the abbreviations represent RR – River Road (site), surface sample 1 and Waste Site, test pit 1, obtained at 2-3' bgs. Other common abbreviations include the following:

- BH = Geoprobe Borehole
- SW = Surface Water
- SED = Sediment
- SB = Soil Boring
- MSB = Matrix Spike Blank
- NSS = Near Surface Soil (1' - 2' depth)
- EB = Equipment Rinse Blank
- HW = Hydrant Water (Decon/Drilling Water)
- GW = Groundwater
- TB = Trip Blank
- RB = Rinse Blank
- MS/MSD =Matrix Spike/Matrix Spike Duplicate

## 7.0 SAMPLE SHIPPING

Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for (1) presenting analytical results in a legal or regulatory forum (e.g., evidence in litigation or administrative hearings), (2) minimizing loss or misidentification of samples, and (3) ensuring that unauthorized persons do not tamper with collected samples.

The following chain-of-custody guidelines should be utilized during sample collection as outlined in and prepared by the National Enforcement Investigations Center (NEIC) Policies and Procedures of the USEPA Office of Enforcement:

1) Complete chain-of-custody record with all relevant information.
2) Send original chain with the samples in a sealed, waterproof bag taped inside the sample cooler.
3) Place adequate inert cushioning material (e.g., corrugated plastic, polypropylene foam wrap, etc.) in bottom of cooler.
4) Place bottles in cooler so they do not touch (use cushioning material for dividers).
5) Place VOA vials in sealed/waterproof bags in the center of the cooler.
6) Pack cooler with ice in sealed/waterproof plastic bags.
7) Pack cooler with cushioning material.
8) Place any additional paperwork in sealed bag with original chain.
9) Tape cooler drain shut.
10) Wrap cooler with packing tape at two locations to secure lid. Do not cover labels.
11) Place lab address on top of cooler.
12) Ship samples via overnight carrier the same day that they are collected.
13) Label cooler with "This side up" on all sides and "Fragile" on at least two sides.
14) Fix custody seals on front right and left of cooler and cover with packaging tape.

# 8.0 SOIL VAPOR INTRUSION SAMPLING

Soil vapor intrusion (SVI) investigation consist of sampling contaminant vapors that may exist beneath the building slabs, inside the buildings, and outside the buildings. Sample collection includes the following procedures per New York State Department of Health *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*.

## 8.1 SUB-SLAB AIR SAMPLING PROCEDURES

### *8.1.1 Sampling Locations*

Select the sub-slab sample collection points by observing the condition of the building floor slab for apparent penetrations such as concrete floor cracks, floor drains, or sump holes. The floor conditions will be noted, and potential locations of subsurface probes will be selected. The locations will ideally be away from the foundation walls, apparent penetrations, and buried pipes.

### *8.1.2 Sampling Probes*

Drill a 5/8-inch diameter hole approximately one inch deep into the concrete floor using a 5/8-inch diameter drill bit and a hammer drill. Extend the hole through the remaining thickness of the slab and about three inches below the base of the slab using a ½-inch diameter drill bit. Remove the concrete cuttings using the ½-inch drill bit in an up-down motion. Clean out the shallow 5/8-inch drilled hole using a round steel wire brush. Carefully clean the surface of the concrete adjacent to the 5/8-inch hole using a flat wire brush to remove any residual concrete dust from the floor's surface. Dabbing the surface with clay can also remove the dust. These steps will allow the clay seal (see below) to better adhere to the concrete surface.

Insert one end of a 1.5-foot length of ¼-inch diameter (OD) Teflon or HDPE tubing through the center hole of a 5/8-inch diameter rubber stopper. About two inches of the tubing should extend beyond and below the narrow end of the stopper. Insert the tubing into the 5/8-inch diameter borehole so that the bottom of the stopper rests on top of the 1/2-inch diameter drilled hole. Pack the annulus of the 5/8-inch diameter hole with Sculpy modeling clay and extend the clay about 1.5-inches above the floor adhering tightly to the tubing. The clay should be in a volcano-like shape with a wide base adhering to the concrete floor and narrowing at the upper end of contact with the tubing. This shape allows the tubing to move without disturbing the contact of the clay with the floor and the tubing. The clay should cover and adhere to a minimum of one-half inch of the concrete surface beyond the borehole.

### *8.1.3 Helium Tracer Gas Testing*

Place a 1-quart (or similar size) container over the sample probe after threading the sample tube through a hole in the top of the bucket. Seal the tube to the bucket with clay. The bucket should also have another hole drilled in the top for the injection of helium, and a hole in the side near the floor for the measurement of helium gas concentrations.

Connect a helium (99.999% pure) cylinder tubing to the top port of bucket enclosure and seal with clay or other sealing material. Insert a helium detector probe in the bottom port of the bucket. Release enough helium to displace any ambient air in the bucket until the concentration of helium reaches a minimum of 90%. Maintain this minimum concentration by testing with a helium detector. The Helium cylinder should be open during the purge time to cause a slight positive pressure within the enclosure.

Connect the sample tubing to a GilAir vacuum pump or equivalent using 3/8-inch O.D. silicone tubing. Connect a 1-liter Tedlar bag to the outlet of the pump using silicone tubing and collect a 1-liter sample. Purging flow rates must not exceed 0.2 liters per minute (L/min). Analyze the Tedlar bag for helium using a helium detector and record the results on the Summa Canister Data Sheet. A concentration of helium 10% or greater indicates a poor seal of the sample probe and it must be reinstalled and retested. After purging, remove the bucket enclosure from over the sample probe.

### *8.1.4 Sample Collection*

Assign sample identification to the Summa canister sample identification tag and record on chain of custody (COC), and the Summa Canister Data Sheet. Also record the Summa canister and flow controller (regulator) serial numbers on the COC and Summa Canister Data Sheet. Attach a pre-calibrated/certified 8-hour or 24-hour flow controller, and particulate filter to the Summa canister. Attach the sample tube to the Summa canister using a ¼-inch Swagelok nut with appropriate ferrules, to the end of the flow controller/particulate filter assembly. The sampling period will be 8 hours for most commercial facilities and 24 hours for mixed use residential/commercial.

Open canister valve to initiate sample collection and record sample start time, date, and initial canister vacuum on the canister identification tag and on the Summa Canister Data Sheet. If the canister does not show sufficient vacuum (generally less than 25“Hg), do not use. Take a digital photograph of canister setup and surrounding area. Include in the photograph a dry erase board or similar display which presents sample ID, location, and date.

After 8 or 24 hours, record sample end time and canister pressure on the Summa Canister Data Sheet, and close valve. Disconnect the Teflon tubing and remove flow controller/particulate filter assembly from canister. Seal canister with laboratory supplied brass plug. Ship the samples, with COCs, overnight, to the selected laboratory for standard TO-15 analysis.

## 8.2 INDOOR/OUTDOOR AIR SAMPLING PROCEDURES

Place the indoor air Summa canister/flow controller inlet at breathing height in the approximate center of the space being sampled, or, for the outdoor air sample, elevated on a table or other object in a location upwind of the building being sampled. The breathing height is defined as four to six feet above the floor or ground. As an option, a length of Teflon tubing can be attached to the Summa canister/flow controller inlet and raised to breathing zone height.

Record the canister and flow controller serial numbers on the canister identification tag, COC and the Summa Canister Data Sheet. Assign sample identification to the canister identification tag, and record on the COC and the Summa Canister Data Sheet. Remove brass plug from canister fitting and save.

Attach a pre-calibrated/certified 8 or 24-hour flow controller and particulate filter to the Summa canister. For the outside air sample, also connect the laboratory supplied "candy cane" fitting to the flow controller. Open canister valve to initiate sample collection and record start time, date, and gauge vacuum reading on the canister identification tag and on the Summa Canister Data Sheet. Take a photograph of canister setup and surrounding area.

After 8 or 24 hours, record the gauge vacuum reading, close the Summa canister valve completely and record the end time on the Summa Canister Data Sheet. There should still be a slight vacuum in the Summa canister. If no vacuum remains in the canister, or the canister does not show a significant net loss in vacuum after sampling, the sample should be re-collected using a new Summa canister and flow controller. Disconnect any tubing and candy cane fittings from the Summa canister and remove the flow controller. Replace the brass plug on the canister. Ship canister, with COCs, overnight, to the selected laboratory.

### 8.3 SOIL VAPOR SAMPLING

A soil vapor assessment can be completed outside of buildings in the subsurface to assess potential vapor concerns across the site. Soil vapor sampling and probe installation will be conducted in accordance with NYSDOH guidance for evaluating soil vapor intrusion (NYSDOH Soil Vapor Intrusion Guidance-October 2006).

- Vapor Points are typically installed at a depth above native soil, groundwater level, top of bedrock, or at a depth comparable to building foundations.
- A unique boring should be bored to be converted to vapor point locations.
- Vapor Point Installation diagrams should be developed.
- Vapor probe holes are completed as follows:
    - A ¼ inch PVC tube with a 3/8-inch stainless steel screen at the bottom is installed at the bottom of each probe hole.
    - Porous sand is backfilled around the screen to a two-foot depth (or less depending on total depth of the borehole) of each hole
    - A bentonite seal will be placed above the sand layer to seal off the hole around the tubing.
    - Air samples are collected in regulated summa canisters over a 24-hour period in a 6 Liter Summa® Canister.
    - Samples will be analyzed for USEPA TO- 15 compounds.

### 8.4 QUALITY CONTROL

The number of Quality Control samples (duplicates) to be taken during sub-slab sampling may be found in the QA/QC Plan. The duplicate sample rate is usually 10 percent. Field duplicates for sub-slab, indoor air and outdoor air samples will be collected by attaching the T-fitting supplied by the laboratory to two Summa canisters with attached regulators. For sub-slab samples, the inlet of the T-fitting will then be attached to the sub-slab sample tubing using a

Swagelok fitting. For indoor and outdoor air samples, any tubing used to raise the sampling height will also be attached to the inlet of the T fitting. For sampling, both Summa canister valves are opened and closed simultaneously.

## 8.5 SAMPLE LABELING

Each sub-slab sample should have the following information at a minimum placed on the laboratory supplied sample label:

- Site name
- Sample identification – see below
- Date/time
- Sampler's initials
- Analysis required – TO-15

The serial number of the canister and regulator used during sampling is also noted on the Summa canister identification tag and on the COC. Each sub-slab, indoor air and outdoor air sample will be assigned a unique alpha-numeric code. An example of this code and a description of its components are presented below. Field duplicate samples will be assigned a unique identification alphanumeric code that specifies the date of collection, the letters FD (for field duplicate) and an ascending number that records the number of duplicate samples collected that day. For example, the first field duplicate collected on February 22, 2023 would be assigned the sample number in the format YYYYMMDD-FD-1 = 20230222-FD-1.

Subsequent duplicates collected on the same day will be assigned FD-2, FD-3 etc. Field sampling crew will record the duplicate sample information on the Summa Canister Data Sheets and in the field book.

## 8.6 FIELD DOCUMENTATION

Field notebooks are used during all on-site work. A dedicated field notebook is maintained by the field technician overseeing the site activities. Sub-slab sampling procedures should be photo-documented. The field sampling team will maintain sampling records that include the following data:

- Sample Identification
- Date and time of sample collection
- Identity of samplers
- Sampling methods and devices
- Purge volumes (soil vapor)
- Volume of soil vapor sample extracted
- The Summa canister vacuum before and after samples collected
- Chain of Custody and shipping information

The proper completion of the following forms/logs is considered correct procedure for documentation during the indoor air-sampling program:

1. Field Logbook - weather-proof hand-bound field book
2. Summa Canister Data Sheet
3. Chain of Custody Form

## 8.7 SAMPLE SHIPPING

Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for presentation of sample analytical chemistry results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The following chain-of-custody guidelines should be utilized during sample collection as outlined in and prepared by the National Enforcement Investigations Center (NEIC) Policies and Procedures of the USEPA Office of Enforcement:

- Complete the chain-of-custody (COC) record with all relevant information.
- Ship original COC with the samples in a sealed waterproof plastic bag and place inside the box containing a Summa canister.
- Retain a copy of the COC for field records.
- Ship Summa canisters in the same boxes the laboratory used for shipping.
- Place the lab address on top of sample box/cooler.
- Fix numbered custody seals across box lid flaps and cooler lid.
- Cover seals with wide, clear tape.
- Ship samples via overnight carrier within three days of sample collection if possible.

# APPENDIX E

# DER-10 APPENDIX 3C
# FISH & WILDLIFE DECISION KEY

| Appendix 3C<br>Fish and Wildlife Resources Impact Analysis Decision Key | If YES Go to: | If NO Go to: |
|---|---|---|
| 1. Is the site or area of concern a discharge or spill event? | 13 | 2 |
| 2. Is the site or area of concern a point source of contamination to the groundwater which will be prevented from discharging to surface water? Soil contamination is not widespread, or if widespread, is confined under buildings and paved areas. | 13 | 3 |
| 3. Is the site and all adjacent property a developed area with buildings, paved surfaces and little or no vegetation? | 4 | 9 |
| 4. Does the site contain habitat of an endangered, threatened or special concern species? | Section 3.10.1 | 5 |
| 5. Has the contamination gone off-site? | 6 | 14 |
| 6. Is there any discharge or erosion of contamination to surface water or the potential for discharge or erosion of contamination? | 7 | 14 |
| 7. Are the site contaminants PCBs, pesticides or other persistent, bioaccumulable substances? | Section 3.10.1 | 8 |
| 8. Does contamination exist at concentrations that could exceed ecological impact SCGs or be toxic to aquatic life if discharged to surface water? | Section 3.10.1 | 14 |
| 9. Does the site or any adjacent or downgradient property contain any of the following resources?<br>i. Any endangered, threatened or special concern species or rare plants or their habitat<br>ii. Any DEC designated significant habitats or rare NYS Ecological Communities<br>iii. Tidal or freshwater wetlands<br>iv. Stream, creek or river<br>v. Pond, lake, lagoon<br>vi. Drainage ditch or channel<br>vii. Other surface water feature<br>viii. Other marine or freshwater habitat<br>ix. Forest<br>x. Grassland or grassy field<br>xi. Parkland or woodland<br>xii. Shrubby area<br>xiii. Urban wildlife habitat<br>xiv. Other terrestrial habitat | 11 | 10 |
| 10. Is the lack of resources due to the contamination? | 3.10.1 | 14 |
| 11. Is the contamination a localized source which has not migrated and will not migrate from the source to impact any on-site or off-site resources? | 14 | 12 |
| 12. Does the site have widespread surface soil contamination that is not confined under and around buildings or paved areas? | Section 3.10.1 | 12 |
| 13. Does the contamination at the site or area of concern have the potential to migrate to, erode into or otherwise impact any on-site or off-site habitat of endangered, threatened or special concern species or other fish and wildlife resource? (See #9 for list of potential resources. Contact DEC for information regarding endangered species.) | Section 3.10.1 | 14 |
| 14. No Fish and Wildlife Resources Impact Analysis needed. | | |

# APPENDIX F

# LAB DATA FROM PREVIOUS INVESTIGATIONS

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT


TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600


TestAmerica Job ID: 480-17418-1

Client Project/Site: Turnkey - 208-214 Washington St, Dunkirk

For:

Turnkey Environmental Restoration, LLC
2558 Hamburg Turnpike
Suite 300
Lackawanna, New York 14218

Attn: Mr. Michael Lesakowski

Joseph V. Giacomazza

*Authorized for release by:*
*3/29/2012 3:54:15 PM*
Joe Giacomazza
Project Administrator
joe.giacomazza@testamericainc.com

Designee for

Brian Fischer
Project Manager II
brian.fischer@testamericainc.com



LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

# Table of Contents

## Qualifiers

### GC/MS VOA

| Qualifier | Qualifier Description |
|---|---|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| F | MS or MSD exceeds the control limits |

### GC/MS Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| F | MS or MSD exceeds the control limits |
| E | Result exceeded calibration range. |
| 4 | MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable. |
| F | RPD of the MS and MSD exceeds the control limits |

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| B7 | Target analyte detected in method blank at or above method reporting limit. Concentration found in the sample was 10 times above the concentration found in the blank. |
| F | MS or MSD exceeds the control limits |
| F | RPD of the MS and MSD exceeds the control limits |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ☼ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CNF | Contains no Free Liquid |
| DL, RA, RE, IN | Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| EDL | Estimated Detection Limit |
| EPA | United States Environmental Protection Agency |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| ND | Not detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RL | Reporting Limit |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

## Job ID: 480-17418-1

### Laboratory: TestAmerica Buffalo

**Narrative**

**Job Narrative**
**480-17418-1**

**Receipt**
COC and bottle labels all state 2-16-12 as sample date. After consulting PM, it was determined that the probable sampling date was 3-16-12, and was logged in as such.

All other samples were received in good condition within temperature requirements.

**GC/MS VOA**
Method 8260B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 55911 were outside control limits. The associated laboratory control sample (LCS) recovery met acceptance criteria.

No other analytical or quality issues were noted.

**GC/MS Semi VOA**
Method 8270C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 55961 were outside control limits. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method 8270C: The following samples were diluted due to the nature of the sample matrix: (480-17418-4 MS), (480-17418-4 MSD), SS-2 (480-17418-1), SS-3 (480-17418-2), SS-4 (480-17418-3), SS-5 (480-17418-4). Elevated reporting limits (RLs) are provided.

No other analytical or quality issues were noted.

**GC Semi VOA**
No analytical or quality issues were noted.

**Metals**
Method 7471A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 55903 were outside control limits for mercury. The associated laboratory control sample (LCS) recovery met acceptance criteria. Matrix interference is suspected. (480-17418-8 MS), (480-17418-8 MSD)

Method 7471A: The matrix spike duplicate (MSD) precision for batch 55903 was outside control limits for total mercury. Non-homogeneity of the sample matrix is suspected. The associated laboratory control sample precision met acceptance criteria.

No other analytical or quality issues were noted.

**Organic Prep**
Method(s) 3550B: A significant amount of liquid was present in the following sample: SB-6 (480-17418-7). This sample was decanted prior to preparation.

No other analytical or quality issues were noted.

# Detection Summary

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

## Client Sample ID: SS-2 — Lab Sample ID: 480-17418-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 100 | J | 1000 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Acenaphthylene | 290 | J | 1000 | 8.4 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Anthracene | 560 | J | 1000 | 26 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benz(a)anthracene | 2900 | | 1000 | 18 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(a)pyrene | 2200 | | 1000 | 25 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(b)fluoranthene | 3300 | | 1000 | 20 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(g,h,i)perylene | 470 | J | 1000 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(k)fluoranthene | 1300 | | 1000 | 11 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Chrysene | 3300 | | 1000 | 10 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Dibenz(a,h)anthracene | 130 | J | 1000 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Fluoranthene | 5400 | | 1000 | 15 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Indeno(1,2,3-c,d)pyrene | 530 | J | 1000 | 28 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Naphthalene | 460 | J | 1000 | 17 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Phenanthrene | 2500 | | 1000 | 21 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Pyrene | 4700 | | 1000 | 6.6 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Arsenic | 21.3 | | 2.4 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Barium | 133 | | 0.61 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Cadmium | 1.2 | | 0.24 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Chromium | 20.4 | B7 | 0.61 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Lead | 985 | | 1.2 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Mercury | 0.19 | | 0.026 | | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: SS-3 — Lab Sample ID: 480-17418-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 270 | J | 990 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Acenaphthylene | 170 | J | 990 | 8.0 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Anthracene | 680 | J | 990 | 25 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benz(a)anthracene | 2400 | | 990 | 17 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(a)pyrene | 1900 | | 990 | 24 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(b)fluoranthene | 2900 | | 990 | 19 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(g,h,i)perylene | 460 | J | 990 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(k)fluoranthene | 1200 | | 990 | 11 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Chrysene | 2400 | | 990 | 9.8 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Dibenz(a,h)anthracene | 190 | J | 990 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Fluoranthene | 5700 | | 990 | 14 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Fluorene | 220 | J | 990 | 23 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Indeno(1,2,3-c,d)pyrene | 500 | J | 990 | 27 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Naphthalene | 210 | J | 990 | 16 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Phenanthrene | 3700 | | 990 | 21 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Pyrene | 3900 | | 990 | 6.3 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| PCB-1221 | 310 | | 250 | 49 | ug/Kg | 1 | ☼ | 8082 | Total/NA |
| Arsenic | 32.2 | | 2.2 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Barium | 184 | | 0.55 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Cadmium | 0.44 | | 0.22 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Chromium | 16.3 | B7 | 0.55 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Lead | 289 | | 1.1 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Mercury | 0.090 | | 0.024 | | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: SS-4 — Lab Sample ID: 480-17418-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 130 | J | 980 | 11 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Acenaphthylene | 140 | J | 980 | 8.0 | ug/Kg | 5 | ☼ | 8270C | Total/NA |

## Client Sample ID: SS-4 (Continued) — Lab Sample ID: 480-17418-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Anthracene | 390 | J | 980 | 25 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benz(a)anthracene | 1500 | | 980 | 17 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(a)pyrene | 1300 | | 980 | 24 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(b)fluoranthene | 2100 | | 980 | 19 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(g,h,i)perylene | 410 | J | 980 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(k)fluoranthene | 1200 | | 980 | 11 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Chrysene | 1800 | | 980 | 9.8 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Dibenz(a,h)anthracene | 170 | J | 980 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Fluoranthene | 3400 | | 980 | 14 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Fluorene | 120 | J | 980 | 23 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Indeno(1,2,3-c,d)pyrene | 400 | J | 980 | 27 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Naphthalene | 130 | J | 980 | 16 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Phenanthrene | 2000 | | 980 | 21 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Pyrene | 2500 | | 980 | 6.3 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| PCB-1254 | 180 | J | 260 | 55 | ug/Kg | 1 | ☼ | 8082 | Total/NA |
| PCB-1260 | 130 | J | 260 | 120 | ug/Kg | 1 | ☼ | 8082 | Total/NA |
| Arsenic | 10.6 | | 2.5 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Barium | 153 | | 0.62 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Cadmium | 1.3 | | 0.25 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Chromium | 23.2 | B7 | 0.62 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Lead | 353 | | 1.2 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Mercury | 0.072 | | 0.023 | | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: SS-5 — Lab Sample ID: 480-17418-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 390 | J | 1100 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Acenaphthylene | 92 | J | 1100 | 8.6 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Anthracene | 3600 | | 1100 | 27 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benz(a)anthracene | 11000 | | 1100 | 18 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(a)pyrene | 7100 | | 1100 | 25 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(b)fluoranthene | 12000 | | 1100 | 20 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(g,h,i)perylene | 1700 | | 1100 | 13 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Benzo(k)fluoranthene | 5800 | | 1100 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Chrysene | 8400 | | 1100 | 10 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Dibenz(a,h)anthracene | 690 | J | 1100 | 12 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Fluoranthene | 25000 | | 1100 | 15 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Fluorene | 560 | J | 1100 | 24 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Indeno(1,2,3-c,d)pyrene | 2000 | | 1100 | 29 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Naphthalene | 250 | J | 1100 | 17 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Phenanthrene | 15000 | | 1100 | 22 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Pyrene | 17000 | | 1100 | 6.8 | ug/Kg | 5 | ☼ | 8270C | Total/NA |
| Arsenic | 13.2 | | 2.4 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Barium | 490 | | 0.60 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Cadmium | 1.9 | | 0.24 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Chromium | 28.9 | B7 | 0.60 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Lead | 1020 | | 1.2 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Mercury | 0.093 | | 0.024 | | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: SB-1 — Lab Sample ID: 480-17418-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 830 | | 220 | 2.6 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Acenaphthylene | 300 | | 220 | 1.8 | ug/Kg | 1 | ☼ | 8270C | Total/NA |

## Client Sample ID: SB-1 (Continued)

## Lab Sample ID: 480-17418-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Anthracene | 2000 | | 220 | 5.7 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benz(a)anthracene | 2900 | | 220 | 3.8 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(a)pyrene | 1700 | | 220 | 5.4 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(b)fluoranthene | 2500 | | 220 | 4.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(g,h,i)perylene | 270 | | 220 | 2.7 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(k)fluoranthene | 1100 | | 220 | 2.4 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Chrysene | 2600 | | 220 | 2.2 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Dibenz(a,h)anthracene | 160 | J | 220 | 2.6 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Fluoranthene | 6100 | | 220 | 3.2 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Fluorene | 970 | | 220 | 5.1 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Indeno(1,2,3-c,d)pyrene | 340 | | 220 | 6.2 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Naphthalene | 510 | | 220 | 3.7 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Phenanthrene | 6500 | | 220 | 4.7 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Pyrene | 4100 | | 220 | 1.4 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Arsenic | 13.1 | | 2.6 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Barium | 400 | | 0.64 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Cadmium | 1.7 | | 0.26 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Chromium | 16.0 | B7 | 0.64 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Lead | 359 | | 1.3 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Mercury | 0.30 | | 0.024 | | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: SB-4

## Lab Sample ID: 480-17418-6

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | 23 | J | 230 | 1.9 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Anthracene | 25 | J | 230 | 5.8 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benz(a)anthracene | 140 | J | 230 | 3.9 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(a)pyrene | 100 | J | 230 | 5.5 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(b)fluoranthene | 200 | J | 230 | 4.4 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(g,h,i)perylene | 34 | J | 230 | 2.7 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(k)fluoranthene | 57 | J | 230 | 2.5 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Chrysene | 160 | J | 230 | 2.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Fluoranthene | 280 | | 230 | 3.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Indeno(1,2,3-c,d)pyrene | 38 | J | 230 | 6.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Naphthalene | 31 | J | 230 | 3.8 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Phenanthrene | 150 | J | 230 | 4.8 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Pyrene | 200 | J | 230 | 1.5 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Arsenic | 14.0 | | 2.5 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Barium | 162 | | 0.63 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Cadmium | 1.3 | | 0.25 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Chromium | 17.0 | B7 | 0.63 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Lead | 353 | | 1.3 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Mercury | 0.041 | | 0.029 | | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: SB-6

## Lab Sample ID: 480-17418-7

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | 13 | J | 210 | 1.7 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Anthracene | 48 | J | 210 | 5.4 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benz(a)anthracene | 190 | J | 210 | 3.7 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(a)pyrene | 150 | J | 210 | 5.1 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(b)fluoranthene | 200 | J | 210 | 4.1 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(g,h,i)perylene | 38 | J | 210 | 2.5 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(k)fluoranthene | 100 | J | 210 | 2.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |

## Client Sample ID: SB-6 (Continued)

**Lab Sample ID: 480-17418-7**

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Chrysene | 190 | J | 210 | 2.1 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Dibenz(a,h)anthracene | 22 | J | 210 | 2.5 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Fluoranthene | 380 | | 210 | 3.1 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Fluorene | 16 | J | 210 | 4.9 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Indeno(1,2,3-c,d)pyrene | 39 | J | 210 | 5.9 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Naphthalene | 35 | J | 210 | 3.5 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Phenanthrene | 220 | | 210 | 4.5 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Pyrene | 270 | | 210 | 1.4 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Arsenic | 9.8 | | 2.8 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Barium | 93.9 | | 0.70 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Chromium | 7.5 | B7 | 0.70 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Lead | 78.0 | | 1.4 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Mercury | 0.046 | | 0.024 | | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: SB-9

**Lab Sample ID: 480-17418-8**

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 140 | J | 190 | 2.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Acenaphthylene | 37 | J | 190 | 1.6 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Anthracene | 390 | | 190 | 4.9 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benz(a)anthracene | 880 | | 190 | 3.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(a)pyrene | 610 | | 190 | 4.7 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(b)fluoranthene | 980 | | 190 | 3.8 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(g,h,i)perylene | 160 | J | 190 | 2.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Benzo(k)fluoranthene | 340 | | 190 | 2.1 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Chrysene | 890 | | 190 | 1.9 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Dibenz(a,h)anthracene | 58 | J | 190 | 2.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Fluoranthene | 2000 | | 190 | 2.8 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Fluorene | 140 | J | 190 | 4.5 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Indeno(1,2,3-c,d)pyrene | 160 | J | 190 | 5.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Naphthalene | 60 | J | 190 | 3.2 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Phenanthrene | 1800 | | 190 | 4.1 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Pyrene | 1500 | | 190 | 1.3 | ug/Kg | 1 | ☼ | 8270C | Total/NA |
| Arsenic | 8.3 | | 2.4 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Barium | 55.7 | | 0.60 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Cadmium | 0.26 | | 0.24 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Chromium | 9.7 | B7 | 0.60 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Lead | 483 | | 1.2 | | mg/Kg | 1 | ☼ | 6010B | Total/NA |
| Mercury | 0.068 | | 0.022 | | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: SB-9 12'-14'

**Lab Sample ID: 480-17418-9**

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 14 | J | 29 | 4.9 | ug/Kg | 1 | ☼ | 8260B | Total/NA |
| Cyclohexane | 0.92 | J | 5.8 | 0.81 | ug/Kg | 1 | ☼ | 8260B | Total/NA |
| Methylcyclohexane | 1.8 | J | 5.8 | 0.88 | ug/Kg | 1 | ☼ | 8260B | Total/NA |

## Client Sample ID: TMW-1

**Lab Sample ID: 480-17418-10**

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trimethylbenzene | 3.9 | | 1.0 | 0.75 | ug/L | 1 | | 8260B | Total/NA |
| 1,3,5-Trimethylbenzene | 1.1 | | 1.0 | 0.77 | ug/L | 1 | | 8260B | Total/NA |
| 2-Hexanone | 1.4 | J | 5.0 | 1.2 | ug/L | 1 | | 8260B | Total/NA |
| Acetone | 4.8 | J | 10 | 3.0 | ug/L | 1 | | 8260B | Total/NA |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

## Client Sample ID: TMW-1 (Continued) — Lab Sample ID: 480-17418-10

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Carbon disulfide | 0.85 | J | 1.0 | 0.19 | ug/L | 1 | | 8260B | Total/NA |
| Cyclohexane | 9.3 | | 1.0 | 0.18 | ug/L | 1 | | 8260B | Total/NA |
| m,p-Xylene | 2.1 | | 2.0 | 0.66 | ug/L | 1 | | 8260B | Total/NA |
| Methylcyclohexane | 15 | | 1.0 | 0.16 | ug/L | 1 | | 8260B | Total/NA |
| o-Xylene | 1.2 | | 1.0 | 0.76 | ug/L | 1 | | 8260B | Total/NA |
| Xylenes, Total | 3.3 | | 2.0 | 0.66 | ug/L | 1 | | 8260B | Total/NA |

## Client Sample ID: TMW-2 — Lab Sample ID: 480-17418-11

No Detections

## Client Sample ID: TMW-3 — Lab Sample ID: 480-17418-12

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 3.7 | J | 10 | 3.0 | ug/L | 1 | | 8260B | Total/NA |
| Carbon disulfide | 0.68 | J | 1.0 | 0.19 | ug/L | 1 | | 8260B | Total/NA |
| Cyclohexane | 1.7 | | 1.0 | 0.18 | ug/L | 1 | | 8260B | Total/NA |
| Methylcyclohexane | 3.5 | | 1.0 | 0.16 | ug/L | 1 | | 8260B | Total/NA |

## Client Sample ID: SS-2

**Date Collected: 03/16/12 12:00**
**Date Received: 03/19/12 13:05**

## Lab Sample ID: 480-17418-1

**Matrix: Solid**
**Percent Solids: 81.6**

### Method: 8270C - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 100 | J | 1000 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Acenaphthylene | 290 | J | 1000 | 8.4 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Anthracene | 560 | J | 1000 | 26 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Benz(a)anthracene | 2900 | | 1000 | 18 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Benzo(a)pyrene | 2200 | | 1000 | 25 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Benzo(b)fluoranthene | 3300 | | 1000 | 20 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Benzo(g,h,i)perylene | 470 | J | 1000 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Benzo(k)fluoranthene | 1300 | | 1000 | 11 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Chrysene | 3300 | | 1000 | 10 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Dibenz(a,h)anthracene | 130 | J | 1000 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Fluoranthene | 5400 | | 1000 | 15 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Fluorene | ND | | 1000 | 24 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Indeno(1,2,3-c,d)pyrene | 530 | J | 1000 | 28 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Naphthalene | 460 | J | 1000 | 17 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Phenanthrene | 2500 | | 1000 | 21 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |
| Pyrene | 4700 | | 1000 | 6.6 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:34 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5* | *94* | | *34 - 132* | *03/20/12 10:52* | *03/21/12 16:34* | *5* |
| *2-Fluorobiphenyl* | *92* | | *37 - 120* | *03/20/12 10:52* | *03/21/12 16:34* | *5* |
| *p-Terphenyl-d14* | *90* | | *65 - 153* | *03/20/12 10:52* | *03/21/12 16:34* | *5* |

### Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | | 250 | 49 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:15 | 1 |
| PCB-1221 | ND | | 250 | 49 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:15 | 1 |
| PCB-1232 | ND | | 250 | 49 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:15 | 1 |
| PCB-1242 | ND | | 250 | 55 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:15 | 1 |
| PCB-1248 | ND | | 250 | 50 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:15 | 1 |
| PCB-1254 | ND | | 250 | 53 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:15 | 1 |
| PCB-1260 | ND | | 250 | 120 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:15 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *DCB Decachlorobiphenyl* | *125* | | *36 - 182* | *03/21/12 08:56* | *03/21/12 23:15* | *1* |
| *Tetrachloro-m-xylene* | *106* | | *24 - 172* | *03/21/12 08:56* | *03/21/12 23:15* | *1* |

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 21.3 | | 2.4 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:21 | 1 |
| Barium | 133 | | 0.61 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:21 | 1 |
| Cadmium | 1.2 | | 0.24 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:21 | 1 |
| Chromium | 20.4 | B7 | 0.61 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:21 | 1 |
| Lead | 985 | | 1.2 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:21 | 1 |
| Selenium | ND | | 4.9 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:21 | 1 |
| Silver | ND | | 0.61 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:21 | 1 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.19 | | 0.026 | | mg/Kg | ☼ | 03/20/12 08:30 | 03/20/12 11:03 | 1 |

## Client Sample ID: SS-3

**Date Collected: 03/16/12 12:15**
**Date Received: 03/19/12 13:05**

## Lab Sample ID: 480-17418-2

**Matrix: Solid**
**Percent Solids: 84.8**

### Method: 8270C - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 270 | J | 990 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Acenaphthylene | 170 | J | 990 | 8.0 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Anthracene | 680 | J | 990 | 25 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Benz(a)anthracene | 2400 | | 990 | 17 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Benzo(a)pyrene | 1900 | | 990 | 24 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Benzo(b)fluoranthene | 2900 | | 990 | 19 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Benzo(g,h,i)perylene | 460 | J | 990 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Benzo(k)fluoranthene | 1200 | | 990 | 11 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Chrysene | 2400 | | 990 | 9.8 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Dibenz(a,h)anthracene | 190 | J | 990 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Fluoranthene | 5700 | | 990 | 14 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Fluorene | 220 | J | 990 | 23 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Indeno(1,2,3-c,d)pyrene | 500 | J | 990 | 27 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Naphthalene | 210 | J | 990 | 16 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Phenanthrene | 3700 | | 990 | 21 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |
| Pyrene | 3900 | | 990 | 6.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 16:57 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5* | *91* | | *34 - 132* | *03/20/12 10:52* | *03/21/12 16:57* | *5* |
| *2-Fluorobiphenyl* | *100* | | *37 - 120* | *03/20/12 10:52* | *03/21/12 16:57* | *5* |
| *p-Terphenyl-d14* | *98* | | *65 - 153* | *03/20/12 10:52* | *03/21/12 16:57* | *5* |

### Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | | 250 | 49 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:30 | 1 |
| PCB-1221 | 310 | | 250 | 49 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:30 | 1 |
| PCB-1232 | ND | | 250 | 49 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:30 | 1 |
| PCB-1242 | ND | | 250 | 55 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:30 | 1 |
| PCB-1248 | ND | | 250 | 50 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:30 | 1 |
| PCB-1254 | ND | | 250 | 53 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:30 | 1 |
| PCB-1260 | ND | | 250 | 120 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:30 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *DCB Decachlorobiphenyl* | *118* | | *36 - 182* | *03/21/12 08:56* | *03/21/12 23:30* | *1* |
| *Tetrachloro-m-xylene* | *107* | | *24 - 172* | *03/21/12 08:56* | *03/21/12 23:30* | *1* |

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 32.2 | | 2.2 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:28 | 1 |
| Barium | 184 | | 0.55 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:28 | 1 |
| Cadmium | 0.44 | | 0.22 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:28 | 1 |
| Chromium | 16.3 | B7 | 0.55 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:28 | 1 |
| Lead | 289 | | 1.1 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:28 | 1 |
| Selenium | ND | | 4.4 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:28 | 1 |
| Silver | ND | | 0.55 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:28 | 1 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.090 | | 0.024 | | mg/Kg | ☼ | 03/20/12 08:30 | 03/20/12 11:05 | 1 |

**Client Sample ID: SS-4**
**Lab Sample ID: 480-17418-3**
**Date Collected: 03/16/12 12:30**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 85.5**

## Method: 8270C - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 130 | J | 980 | 11 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Acenaphthylene | 140 | J | 980 | 8.0 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Anthracene | 390 | J | 980 | 25 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Benz(a)anthracene | 1500 | | 980 | 17 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Benzo(a)pyrene | 1300 | | 980 | 24 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Benzo(b)fluoranthene | 2100 | | 980 | 19 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Benzo(g,h,i)perylene | 410 | J | 980 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Benzo(k)fluoranthene | 1200 | | 980 | 11 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Chrysene | 1800 | | 980 | 9.8 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Dibenz(a,h)anthracene | 170 | J | 980 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Fluoranthene | 3400 | | 980 | 14 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Fluorene | 120 | J | 980 | 23 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Indeno(1,2,3-c,d)pyrene | 400 | J | 980 | 27 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Naphthalene | 130 | J | 980 | 16 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Phenanthrene | 2000 | | 980 | 21 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |
| Pyrene | 2500 | | 980 | 6.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:21 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5* | *90* | | *34 - 132* | *03/20/12 10:52* | *03/21/12 17:21* | *5* |
| *2-Fluorobiphenyl* | *91* | | *37 - 120* | *03/20/12 10:52* | *03/21/12 17:21* | *5* |
| *p-Terphenyl-d14* | *91* | | *65 - 153* | *03/20/12 10:52* | *03/21/12 17:21* | *5* |

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | | 260 | 51 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:45 | 1 |
| PCB-1221 | ND | | 260 | 51 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:45 | 1 |
| PCB-1232 | ND | | 260 | 51 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:45 | 1 |
| PCB-1242 | ND | | 260 | 57 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:45 | 1 |
| PCB-1248 | ND | | 260 | 51 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:45 | 1 |
| PCB-1254 | 180 | J | 260 | 55 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:45 | 1 |
| PCB-1260 | 130 | J | 260 | 120 | ug/Kg | ☼ | 03/21/12 08:56 | 03/21/12 23:45 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *DCB Decachlorobiphenyl* | *123* | | *36 - 182* | *03/21/12 08:56* | *03/21/12 23:45* | *1* |
| *Tetrachloro-m-xylene* | *115* | | *24 - 172* | *03/21/12 08:56* | *03/21/12 23:45* | *1* |

## Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 10.6 | | 2.5 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:31 | 1 |
| Barium | 153 | | 0.62 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:31 | 1 |
| Cadmium | 1.3 | | 0.25 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:31 | 1 |
| Chromium | 23.2 | B7 | 0.62 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:31 | 1 |
| Lead | 353 | | 1.2 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:31 | 1 |
| Selenium | ND | | 5.0 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:31 | 1 |
| Silver | ND | | 0.62 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:31 | 1 |

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.072 | | 0.023 | | mg/Kg | ☼ | 03/20/12 08:30 | 03/20/12 11:07 | 1 |

**Client Sample ID: SS-5**
**Lab Sample ID: 480-17418-4**
**Date Collected: 03/16/12 12:45**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 80.1**

## Method: 8270C - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 390 | J | 1100 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Acenaphthylene | 92 | J | 1100 | 8.6 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Anthracene | 3600 | | 1100 | 27 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Benz(a)anthracene | 11000 | | 1100 | 18 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Benzo(a)pyrene | 7100 | | 1100 | 25 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Benzo(b)fluoranthene | 12000 | | 1100 | 20 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Benzo(g,h,i)perylene | 1700 | | 1100 | 13 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Benzo(k)fluoranthene | 5800 | | 1100 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Chrysene | 8400 | | 1100 | 10 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Dibenz(a,h)anthracene | 690 | J | 1100 | 12 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Fluoranthene | 25000 | | 1100 | 15 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Fluorene | 560 | J | 1100 | 24 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Indeno(1,2,3-c,d)pyrene | 2000 | | 1100 | 29 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Naphthalene | 250 | J | 1100 | 17 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Phenanthrene | 15000 | | 1100 | 22 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |
| Pyrene | 17000 | | 1100 | 6.8 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 17:44 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5* | *89* | | *34 - 132* | *03/20/12 10:52* | *03/21/12 17:44* | *5* |
| *2-Fluorobiphenyl* | *89* | | *37 - 120* | *03/20/12 10:52* | *03/21/12 17:44* | *5* |
| *p-Terphenyl-d14* | *87* | | *65 - 153* | *03/20/12 10:52* | *03/21/12 17:44* | *5* |

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | | 270 | 54 | ug/Kg | ☼ | 03/21/12 09:04 | 03/22/12 00:00 | 1 |
| PCB-1221 | ND | | 270 | 54 | ug/Kg | ☼ | 03/21/12 09:04 | 03/22/12 00:00 | 1 |
| PCB-1232 | ND | | 270 | 54 | ug/Kg | ☼ | 03/21/12 09:04 | 03/22/12 00:00 | 1 |
| PCB-1242 | ND | | 270 | 59 | ug/Kg | ☼ | 03/21/12 09:04 | 03/22/12 00:00 | 1 |
| PCB-1248 | ND | | 270 | 54 | ug/Kg | ☼ | 03/21/12 09:04 | 03/22/12 00:00 | 1 |
| PCB-1254 | ND | | 270 | 58 | ug/Kg | ☼ | 03/21/12 09:04 | 03/22/12 00:00 | 1 |
| PCB-1260 | ND | | 270 | 130 | ug/Kg | ☼ | 03/21/12 09:04 | 03/22/12 00:00 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *DCB Decachlorobiphenyl* | *120* | | *36 - 182* | *03/21/12 09:04* | *03/22/12 00:00* | *1* |
| *Tetrachloro-m-xylene* | *106* | | *24 - 172* | *03/21/12 09:04* | *03/22/12 00:00* | *1* |

## Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 13.2 | | 2.4 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:33 | 1 |
| Barium | 490 | | 0.60 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:33 | 1 |
| Cadmium | 1.9 | | 0.24 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:33 | 1 |
| Chromium | 28.9 | B7 | 0.60 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:33 | 1 |
| Lead | 1020 | | 1.2 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:33 | 1 |
| Selenium | ND | | 4.8 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:33 | 1 |
| Silver | ND | | 0.60 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:33 | 1 |

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.093 | | 0.024 | | mg/Kg | ☼ | 03/20/12 08:30 | 03/20/12 11:10 | 1 |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: SB-1**
**Date Collected: 03/16/12 08:30**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-5**
**Matrix: Solid**
**Percent Solids: 75.0**

### Method: 8270C - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 830 | | 220 | 2.6 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Acenaphthylene | 300 | | 220 | 1.8 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Anthracene | 2000 | | 220 | 5.7 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Benz(a)anthracene | 2900 | | 220 | 3.8 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Benzo(a)pyrene | 1700 | | 220 | 5.4 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Benzo(b)fluoranthene | 2500 | | 220 | 4.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Benzo(g,h,i)perylene | 270 | | 220 | 2.7 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Benzo(k)fluoranthene | 1100 | | 220 | 2.4 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Chrysene | 2600 | | 220 | 2.2 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Dibenz(a,h)anthracene | 160 | J | 220 | 2.6 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Fluoranthene | 6100 | | 220 | 3.2 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Fluorene | 970 | | 220 | 5.1 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Indeno(1,2,3-c,d)pyrene | 340 | | 220 | 6.2 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Naphthalene | 510 | | 220 | 3.7 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Phenanthrene | 6500 | | 220 | 4.7 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |
| Pyrene | 4100 | | 220 | 1.4 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:07 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5* | *76* | | *34 - 132* | *03/20/12 10:52* | *03/21/12 18:07* | *1* |
| *2-Fluorobiphenyl* | *77* | | *37 - 120* | *03/20/12 10:52* | *03/21/12 18:07* | *1* |
| *p-Terphenyl-d14* | *79* | | *65 - 153* | *03/20/12 10:52* | *03/21/12 18:07* | *1* |

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 13.1 | | 2.6 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:36 | 1 |
| Barium | 400 | | 0.64 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:36 | 1 |
| Cadmium | 1.7 | | 0.26 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:36 | 1 |
| Chromium | 16.0 | B7 | 0.64 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:36 | 1 |
| Lead | 359 | | 1.3 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:36 | 1 |
| Selenium | ND | | 5.1 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:36 | 1 |
| Silver | ND | | 0.64 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:36 | 1 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.30 | | 0.024 | | mg/Kg | ☼ | 03/20/12 08:30 | 03/20/12 11:12 | 1 |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: SB-4**
**Date Collected: 03/16/12 09:00**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-6**
**Matrix: Solid**
**Percent Solids: 73.5**

### Method: 8270C - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | | 230 | 2.7 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Acenaphthylene** | **23** | **J** | 230 | 1.9 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Anthracene** | **25** | **J** | 230 | 5.8 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Benz(a)anthracene** | **140** | **J** | 230 | 3.9 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Benzo(a)pyrene** | **100** | **J** | 230 | 5.5 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Benzo(b)fluoranthene** | **200** | **J** | 230 | 4.4 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Benzo(g,h,i)perylene** | **34** | **J** | 230 | 2.7 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Benzo(k)fluoranthene** | **57** | **J** | 230 | 2.5 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Chrysene** | **160** | **J** | 230 | 2.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| Dibenz(a,h)anthracene | ND | | 230 | 2.7 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Fluoranthene** | **280** | | 230 | 3.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| Fluorene | ND | | 230 | 5.2 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Indeno(1,2,3-c,d)pyrene** | **38** | **J** | 230 | 6.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Naphthalene** | **31** | **J** | 230 | 3.8 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Phenanthrene** | **150** | **J** | 230 | 4.8 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |
| **Pyrene** | **200** | **J** | 230 | 1.5 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:31 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5* | *76* | | *34 - 132* | *03/20/12 10:52* | *03/21/12 18:31* | *1* |
| *2-Fluorobiphenyl* | *79* | | *37 - 120* | *03/20/12 10:52* | *03/21/12 18:31* | *1* |
| *p-Terphenyl-d14* | *87* | | *65 - 153* | *03/20/12 10:52* | *03/21/12 18:31* | *1* |

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **14.0** | | 2.5 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:38 | 1 |
| **Barium** | **162** | | 0.63 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:38 | 1 |
| **Cadmium** | **1.3** | | 0.25 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:38 | 1 |
| **Chromium** | **17.0** | **B7** | 0.63 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:38 | 1 |
| **Lead** | **353** | | 1.3 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:38 | 1 |
| Selenium | ND | | 5.1 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:38 | 1 |
| Silver | ND | | 0.63 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:38 | 1 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.041** | | 0.029 | | mg/Kg | ☼ | 03/20/12 08:30 | 03/20/12 11:14 | 1 |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: SB-6**
**Date Collected: 03/16/12 09:30**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-7**
**Matrix: Solid**
**Percent Solids: 78.5**

### Method: 8270C - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | | 210 | 2.5 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Acenaphthylene** | **13** | **J** | 210 | 1.7 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Anthracene** | **48** | **J** | 210 | 5.4 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Benz(a)anthracene** | **190** | **J** | 210 | 3.7 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Benzo(a)pyrene** | **150** | **J** | 210 | 5.1 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Benzo(b)fluoranthene** | **200** | **J** | 210 | 4.1 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Benzo(g,h,i)perylene** | **38** | **J** | 210 | 2.5 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Benzo(k)fluoranthene** | **100** | **J** | 210 | 2.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Chrysene** | **190** | **J** | 210 | 2.1 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Dibenz(a,h)anthracene** | **22** | **J** | 210 | 2.5 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Fluoranthene** | **380** | | 210 | 3.1 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Fluorene** | **16** | **J** | 210 | 4.9 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Indeno(1,2,3-c,d)pyrene** | **39** | **J** | 210 | 5.9 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Naphthalene** | **35** | **J** | 210 | 3.5 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Phenanthrene** | **220** | | 210 | 4.5 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |
| **Pyrene** | **270** | | 210 | 1.4 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 18:54 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5* | *68* | | *34 - 132* | *03/20/12 10:52* | *03/21/12 18:54* | *1* |
| *2-Fluorobiphenyl* | *74* | | *37 - 120* | *03/20/12 10:52* | *03/21/12 18:54* | *1* |
| *p-Terphenyl-d14* | *83* | | *65 - 153* | *03/20/12 10:52* | *03/21/12 18:54* | *1* |

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **9.8** | | 2.8 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:41 | 1 |
| **Barium** | **93.9** | | 0.70 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:41 | 1 |
| Cadmium | ND | | 0.28 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:41 | 1 |
| **Chromium** | **7.5** | **B7** | 0.70 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:41 | 1 |
| **Lead** | **78.0** | | 1.4 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:41 | 1 |
| Selenium | ND | | 5.6 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:41 | 1 |
| Silver | ND | | 0.70 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:41 | 1 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.046** | | 0.024 | | mg/Kg | ☼ | 03/20/12 08:30 | 03/20/12 11:15 | 1 |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: SB-9**
**Date Collected: 03/16/12 10:30**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-8**
**Matrix: Solid**
**Percent Solids: 86.6**

### Method: 8270C - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 140 | J | 190 | 2.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Acenaphthylene | 37 | J | 190 | 1.6 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Anthracene | 390 | | 190 | 4.9 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Benz(a)anthracene | 880 | | 190 | 3.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Benzo(a)pyrene | 610 | | 190 | 4.7 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Benzo(b)fluoranthene | 980 | | 190 | 3.8 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Benzo(g,h,i)perylene | 160 | J | 190 | 2.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Benzo(k)fluoranthene | 340 | | 190 | 2.1 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Chrysene | 890 | | 190 | 1.9 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Dibenz(a,h)anthracene | 58 | J | 190 | 2.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Fluoranthene | 2000 | | 190 | 2.8 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Fluorene | 140 | J | 190 | 4.5 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Indeno(1,2,3-c,d)pyrene | 160 | J | 190 | 5.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Naphthalene | 60 | J | 190 | 3.2 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Phenanthrene | 1800 | | 190 | 4.1 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |
| Pyrene | 1500 | | 190 | 1.3 | ug/Kg | ☼ | 03/20/12 10:52 | 03/21/12 19:18 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5* | *77* | | *34 - 132* | *03/20/12 10:52* | *03/21/12 19:18* | *1* |
| *2-Fluorobiphenyl* | *84* | | *37 - 120* | *03/20/12 10:52* | *03/21/12 19:18* | *1* |
| *p-Terphenyl-d14* | *83* | | *65 - 153* | *03/20/12 10:52* | *03/21/12 19:18* | *1* |

### Method: 6010B - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 8.3 | | 2.4 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:43 | 1 |
| Barium | 55.7 | | 0.60 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:43 | 1 |
| Cadmium | 0.26 | | 0.24 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:43 | 1 |
| Chromium | 9.7 | B7 | 0.60 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:43 | 1 |
| Lead | 483 | | 1.2 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:43 | 1 |
| Selenium | ND | | 4.8 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:43 | 1 |
| Silver | ND | | 0.60 | | mg/Kg | ☼ | 03/20/12 10:30 | 03/20/12 21:43 | 1 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.068 | | 0.022 | | mg/Kg | ☼ | 03/20/12 08:30 | 03/20/12 11:17 | 1 |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: SB-9 12'-14'**
**Date Collected: 03/16/12 10:30**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-9**
**Matrix: Solid**
**Percent Solids: 84.0**

**Method: 8260B - Volatile Organic Compounds (GC/MS)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | | 5.8 | 0.42 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 5.8 | 0.94 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 5.8 | 1.3 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,1,2-Trichloroethane | ND | | 5.8 | 0.75 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,1-Dichloroethane | ND | | 5.8 | 0.71 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,1-Dichloroethene | ND | | 5.8 | 0.71 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 5.8 | 0.35 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 5.8 | 1.1 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 5.8 | 2.9 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,2-Dibromoethane | ND | | 5.8 | 0.74 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,2-Dichlorobenzene | ND | | 5.8 | 0.45 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,2-Dichloroethane | ND | | 5.8 | 0.29 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,2-Dichloropropane | ND | | 5.8 | 2.9 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 5.8 | 0.37 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,3-Dichlorobenzene | ND | | 5.8 | 0.30 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 1,4-Dichlorobenzene | ND | | 5.8 | 0.81 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 2-Butanone (MEK) | ND | | 29 | 2.1 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 2-Hexanone | ND | | 29 | 2.9 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 4-Isopropyltoluene | ND | | 5.8 | 0.46 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 29 | 1.9 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| **Acetone** | **14** | **J** | 29 | 4.9 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Benzene | ND | | 5.8 | 0.28 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Bromodichloromethane | ND | | 5.8 | 0.78 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Bromoform | ND | | 5.8 | 2.9 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Bromomethane | ND | | 5.8 | 0.52 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Carbon disulfide | ND | | 5.8 | 2.9 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Carbon tetrachloride | ND | | 5.8 | 0.56 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Chlorobenzene | ND | | 5.8 | 0.76 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Chloroethane | ND | | 5.8 | 1.3 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Chloroform | ND | | 5.8 | 0.36 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Chloromethane | ND | | 5.8 | 0.35 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| cis-1,2-Dichloroethene | ND | | 5.8 | 0.74 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| cis-1,3-Dichloropropene | ND | | 5.8 | 0.83 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| **Cyclohexane** | **0.92** | **J** | 5.8 | 0.81 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Dibromochloromethane | ND | | 5.8 | 0.74 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Dichlorodifluoromethane | ND | | 5.8 | 0.48 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Ethylbenzene | ND | | 5.8 | 0.40 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Isopropylbenzene | ND | | 5.8 | 0.87 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| m,p-Xylene | ND | | 12 | 0.97 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Methyl acetate | ND | | 5.8 | 1.1 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Methyl tert-butyl ether | ND | | 5.8 | 0.57 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| **Methylcyclohexane** | **1.8** | **J** | 5.8 | 0.88 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Methylene Chloride | ND | | 5.8 | 2.7 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| n-Butylbenzene | ND | | 5.8 | 0.50 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| N-Propylbenzene | ND | | 5.8 | 0.46 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| o-Xylene | ND | | 5.8 | 0.76 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| sec-Butylbenzene | ND | | 5.8 | 0.50 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Styrene | ND | | 5.8 | 0.29 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| tert-Butylbenzene | ND | | 5.8 | 0.60 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Tetrachloroethene | ND | | 5.8 | 0.78 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Toluene | ND | | 5.8 | 0.44 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: SB-9 12'-14'**
**Date Collected: 03/16/12 10:30**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-9**
**Matrix: Solid**
**Percent Solids: 84.0**

**Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| trans-1,2-Dichloroethene | ND | | 5.8 | 0.60 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| trans-1,3-Dichloropropene | ND | | 5.8 | 2.5 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Trichloroethene | ND | | 5.8 | 1.3 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Trichlorofluoromethane | ND | | 5.8 | 0.55 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Vinyl chloride | ND | | 5.8 | 0.71 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |
| Xylenes, Total | ND | | 12 | 0.97 | ug/Kg | ☼ | 03/20/12 10:36 | 03/20/12 14:50 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *107* | | *64 - 126* | *03/20/12 10:36* | *03/20/12 14:50* | *1* |
| *4-Bromofluorobenzene (Surr)* | *96* | | *72 - 126* | *03/20/12 10:36* | *03/20/12 14:50* | *1* |
| *Toluene-d8 (Surr)* | *112* | | *71 - 125* | *03/20/12 10:36* | *03/20/12 14:50* | *1* |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: TMW-1**
**Date Collected: 03/16/12 13:30**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-10**
**Matrix: Water**

**Method: 8260B - Volatile Organic Compounds (GC/MS)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | | 1.0 | 0.82 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 | 0.21 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 1.0 | 0.31 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,1,2-Trichloroethane | ND | | 1.0 | 0.23 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,1-Dichloroethane | ND | | 1.0 | 0.38 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,1-Dichloroethene | ND | | 1.0 | 0.29 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 | 0.41 | ug/L | | | 03/20/12 17:51 | 1 |
| **1,2,4-Trimethylbenzene** | **3.9** | | 1.0 | 0.75 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 1.0 | 0.39 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,2-Dibromoethane | ND | | 1.0 | 0.73 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,2-Dichlorobenzene | ND | | 1.0 | 0.79 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,2-Dichloroethane | ND | | 1.0 | 0.21 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,2-Dichloropropane | ND | | 1.0 | 0.72 | ug/L | | | 03/20/12 17:51 | 1 |
| **1,3,5-Trimethylbenzene** | **1.1** | | 1.0 | 0.77 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,3-Dichlorobenzene | ND | | 1.0 | 0.78 | ug/L | | | 03/20/12 17:51 | 1 |
| 1,4-Dichlorobenzene | ND | | 1.0 | 0.84 | ug/L | | | 03/20/12 17:51 | 1 |
| 2-Butanone (MEK) | ND | | 10 | 1.3 | ug/L | | | 03/20/12 17:51 | 1 |
| **2-Hexanone** | **1.4** | **J** | 5.0 | 1.2 | ug/L | | | 03/20/12 17:51 | 1 |
| 4-Isopropyltoluene | ND | | 1.0 | 0.31 | ug/L | | | 03/20/12 17:51 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 5.0 | 2.1 | ug/L | | | 03/20/12 17:51 | 1 |
| **Acetone** | **4.8** | **J** | 10 | 3.0 | ug/L | | | 03/20/12 17:51 | 1 |
| Benzene | ND | | 1.0 | 0.41 | ug/L | | | 03/20/12 17:51 | 1 |
| Bromodichloromethane | ND | | 1.0 | 0.39 | ug/L | | | 03/20/12 17:51 | 1 |
| Bromoform | ND | | 1.0 | 0.26 | ug/L | | | 03/20/12 17:51 | 1 |
| Bromomethane | ND | | 1.0 | 0.69 | ug/L | | | 03/20/12 17:51 | 1 |
| **Carbon disulfide** | **0.85** | **J** | 1.0 | 0.19 | ug/L | | | 03/20/12 17:51 | 1 |
| Carbon tetrachloride | ND | | 1.0 | 0.27 | ug/L | | | 03/20/12 17:51 | 1 |
| Chlorobenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 17:51 | 1 |
| Chloroethane | ND | | 1.0 | 0.32 | ug/L | | | 03/20/12 17:51 | 1 |
| Chloroform | ND | | 1.0 | 0.34 | ug/L | | | 03/20/12 17:51 | 1 |
| Chloromethane | ND | | 1.0 | 0.35 | ug/L | | | 03/20/12 17:51 | 1 |
| cis-1,2-Dichloroethene | ND | | 1.0 | 0.81 | ug/L | | | 03/20/12 17:51 | 1 |
| cis-1,3-Dichloropropene | ND | | 1.0 | 0.36 | ug/L | | | 03/20/12 17:51 | 1 |
| **Cyclohexane** | **9.3** | | 1.0 | 0.18 | ug/L | | | 03/20/12 17:51 | 1 |
| Dibromochloromethane | ND | | 1.0 | 0.32 | ug/L | | | 03/20/12 17:51 | 1 |
| Dichlorodifluoromethane | ND | | 1.0 | 0.68 | ug/L | | | 03/20/12 17:51 | 1 |
| Ethylbenzene | ND | | 1.0 | 0.74 | ug/L | | | 03/20/12 17:51 | 1 |
| Isopropylbenzene | ND | | 1.0 | 0.79 | ug/L | | | 03/20/12 17:51 | 1 |
| **m,p-Xylene** | **2.1** | | 2.0 | 0.66 | ug/L | | | 03/20/12 17:51 | 1 |
| Methyl acetate | ND | | 1.0 | 0.50 | ug/L | | | 03/20/12 17:51 | 1 |
| Methyl tert-butyl ether | ND | | 1.0 | 0.16 | ug/L | | | 03/20/12 17:51 | 1 |
| **Methylcyclohexane** | **15** | | 1.0 | 0.16 | ug/L | | | 03/20/12 17:51 | 1 |
| Methylene Chloride | ND | | 1.0 | 0.44 | ug/L | | | 03/20/12 17:51 | 1 |
| n-Butylbenzene | ND | | 1.0 | 0.64 | ug/L | | | 03/20/12 17:51 | 1 |
| N-Propylbenzene | ND | | 1.0 | 0.69 | ug/L | | | 03/20/12 17:51 | 1 |
| **o-Xylene** | **1.2** | | 1.0 | 0.76 | ug/L | | | 03/20/12 17:51 | 1 |
| sec-Butylbenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 17:51 | 1 |
| Styrene | ND | | 1.0 | 0.73 | ug/L | | | 03/20/12 17:51 | 1 |
| tert-Butylbenzene | ND | | 1.0 | 0.81 | ug/L | | | 03/20/12 17:51 | 1 |
| Tetrachloroethene | ND | | 1.0 | 0.36 | ug/L | | | 03/20/12 17:51 | 1 |
| Toluene | ND | | 1.0 | 0.51 | ug/L | | | 03/20/12 17:51 | 1 |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: TMW-1**
**Date Collected: 03/16/12 13:30**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-10**
**Matrix: Water**

**Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| trans-1,2-Dichloroethene | ND | | 1.0 | 0.90 | ug/L | | | 03/20/12 17:51 | 1 |
| trans-1,3-Dichloropropene | ND | | 1.0 | 0.37 | ug/L | | | 03/20/12 17:51 | 1 |
| Trichloroethene | ND | | 1.0 | 0.46 | ug/L | | | 03/20/12 17:51 | 1 |
| Trichlorofluoromethane | ND | | 1.0 | 0.88 | ug/L | | | 03/20/12 17:51 | 1 |
| Vinyl chloride | ND | | 1.0 | 0.90 | ug/L | | | 03/20/12 17:51 | 1 |
| **Xylenes, Total** | **3.3** | | 2.0 | 0.66 | ug/L | | | 03/20/12 17:51 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *105* | | *66 - 137* | | *03/20/12 17:51* | *1* |
| *4-Bromofluorobenzene (Surr)* | *95* | | *73 - 120* | | *03/20/12 17:51* | *1* |
| *Toluene-d8 (Surr)* | *99* | | *71 - 126* | | *03/20/12 17:51* | *1* |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: TMW-2**
**Date Collected: 03/16/12 14:00**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-11**
**Matrix: Water**

**Method: 8260B - Volatile Organic Compounds (GC/MS)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | | 1.0 | 0.82 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 | 0.21 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 1.0 | 0.31 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,1,2-Trichloroethane | ND | | 1.0 | 0.23 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,1-Dichloroethane | ND | | 1.0 | 0.38 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,1-Dichloroethene | ND | | 1.0 | 0.29 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 | 0.41 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 1.0 | 0.39 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,2-Dibromoethane | ND | | 1.0 | 0.73 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,2-Dichlorobenzene | ND | | 1.0 | 0.79 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,2-Dichloroethane | ND | | 1.0 | 0.21 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,2-Dichloropropane | ND | | 1.0 | 0.72 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 1.0 | 0.77 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,3-Dichlorobenzene | ND | | 1.0 | 0.78 | ug/L | | | 03/20/12 18:17 | 1 |
| 1,4-Dichlorobenzene | ND | | 1.0 | 0.84 | ug/L | | | 03/20/12 18:17 | 1 |
| 2-Butanone (MEK) | ND | | 10 | 1.3 | ug/L | | | 03/20/12 18:17 | 1 |
| 2-Hexanone | ND | | 5.0 | 1.2 | ug/L | | | 03/20/12 18:17 | 1 |
| 4-Isopropyltoluene | ND | | 1.0 | 0.31 | ug/L | | | 03/20/12 18:17 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 5.0 | 2.1 | ug/L | | | 03/20/12 18:17 | 1 |
| Acetone | ND | | 10 | 3.0 | ug/L | | | 03/20/12 18:17 | 1 |
| Benzene | ND | | 1.0 | 0.41 | ug/L | | | 03/20/12 18:17 | 1 |
| Bromodichloromethane | ND | | 1.0 | 0.39 | ug/L | | | 03/20/12 18:17 | 1 |
| Bromoform | ND | | 1.0 | 0.26 | ug/L | | | 03/20/12 18:17 | 1 |
| Bromomethane | ND | | 1.0 | 0.69 | ug/L | | | 03/20/12 18:17 | 1 |
| Carbon disulfide | ND | | 1.0 | 0.19 | ug/L | | | 03/20/12 18:17 | 1 |
| Carbon tetrachloride | ND | | 1.0 | 0.27 | ug/L | | | 03/20/12 18:17 | 1 |
| Chlorobenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 18:17 | 1 |
| Chloroethane | ND | | 1.0 | 0.32 | ug/L | | | 03/20/12 18:17 | 1 |
| Chloroform | ND | | 1.0 | 0.34 | ug/L | | | 03/20/12 18:17 | 1 |
| Chloromethane | ND | | 1.0 | 0.35 | ug/L | | | 03/20/12 18:17 | 1 |
| cis-1,2-Dichloroethene | ND | | 1.0 | 0.81 | ug/L | | | 03/20/12 18:17 | 1 |
| cis-1,3-Dichloropropene | ND | | 1.0 | 0.36 | ug/L | | | 03/20/12 18:17 | 1 |
| Cyclohexane | ND | | 1.0 | 0.18 | ug/L | | | 03/20/12 18:17 | 1 |
| Dibromochloromethane | ND | | 1.0 | 0.32 | ug/L | | | 03/20/12 18:17 | 1 |
| Dichlorodifluoromethane | ND | | 1.0 | 0.68 | ug/L | | | 03/20/12 18:17 | 1 |
| Ethylbenzene | ND | | 1.0 | 0.74 | ug/L | | | 03/20/12 18:17 | 1 |
| Isopropylbenzene | ND | | 1.0 | 0.79 | ug/L | | | 03/20/12 18:17 | 1 |
| m,p-Xylene | ND | | 2.0 | 0.66 | ug/L | | | 03/20/12 18:17 | 1 |
| Methyl acetate | ND | | 1.0 | 0.50 | ug/L | | | 03/20/12 18:17 | 1 |
| Methyl tert-butyl ether | ND | | 1.0 | 0.16 | ug/L | | | 03/20/12 18:17 | 1 |
| Methylcyclohexane | ND | | 1.0 | 0.16 | ug/L | | | 03/20/12 18:17 | 1 |
| Methylene Chloride | ND | | 1.0 | 0.44 | ug/L | | | 03/20/12 18:17 | 1 |
| n-Butylbenzene | ND | | 1.0 | 0.64 | ug/L | | | 03/20/12 18:17 | 1 |
| N-Propylbenzene | ND | | 1.0 | 0.69 | ug/L | | | 03/20/12 18:17 | 1 |
| o-Xylene | ND | | 1.0 | 0.76 | ug/L | | | 03/20/12 18:17 | 1 |
| sec-Butylbenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 18:17 | 1 |
| Styrene | ND | | 1.0 | 0.73 | ug/L | | | 03/20/12 18:17 | 1 |
| tert-Butylbenzene | ND | | 1.0 | 0.81 | ug/L | | | 03/20/12 18:17 | 1 |
| Tetrachloroethene | ND | | 1.0 | 0.36 | ug/L | | | 03/20/12 18:17 | 1 |
| Toluene | ND | | 1.0 | 0.51 | ug/L | | | 03/20/12 18:17 | 1 |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: TMW-2**
**Date Collected: 03/16/12 14:00**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-11**
**Matrix: Water**

**Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| trans-1,2-Dichloroethene | ND | | 1.0 | 0.90 | ug/L | | | 03/20/12 18:17 | 1 |
| trans-1,3-Dichloropropene | ND | | 1.0 | 0.37 | ug/L | | | 03/20/12 18:17 | 1 |
| Trichloroethene | ND | | 1.0 | 0.46 | ug/L | | | 03/20/12 18:17 | 1 |
| Trichlorofluoromethane | ND | | 1.0 | 0.88 | ug/L | | | 03/20/12 18:17 | 1 |
| Vinyl chloride | ND | | 1.0 | 0.90 | ug/L | | | 03/20/12 18:17 | 1 |
| Xylenes, Total | ND | | 2.0 | 0.66 | ug/L | | | 03/20/12 18:17 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *107* | | *66 - 137* | | *03/20/12 18:17* | *1* |
| *4-Bromofluorobenzene (Surr)* | *101* | | *73 - 120* | | *03/20/12 18:17* | *1* |
| *Toluene-d8 (Surr)* | *108* | | *71 - 126* | | *03/20/12 18:17* | *1* |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: TMW-3**
**Date Collected: 03/16/12 14:30**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-12**
**Matrix: Water**

**Method: 8260B - Volatile Organic Compounds (GC/MS)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | | 1.0 | 0.82 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 | 0.21 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 1.0 | 0.31 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,1,2-Trichloroethane | ND | | 1.0 | 0.23 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,1-Dichloroethane | ND | | 1.0 | 0.38 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,1-Dichloroethene | ND | | 1.0 | 0.29 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 | 0.41 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 1.0 | 0.39 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,2-Dibromoethane | ND | | 1.0 | 0.73 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,2-Dichlorobenzene | ND | | 1.0 | 0.79 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,2-Dichloroethane | ND | | 1.0 | 0.21 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,2-Dichloropropane | ND | | 1.0 | 0.72 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 1.0 | 0.77 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,3-Dichlorobenzene | ND | | 1.0 | 0.78 | ug/L | | | 03/20/12 18:41 | 1 |
| 1,4-Dichlorobenzene | ND | | 1.0 | 0.84 | ug/L | | | 03/20/12 18:41 | 1 |
| 2-Butanone (MEK) | ND | | 10 | 1.3 | ug/L | | | 03/20/12 18:41 | 1 |
| 2-Hexanone | ND | | 5.0 | 1.2 | ug/L | | | 03/20/12 18:41 | 1 |
| 4-Isopropyltoluene | ND | | 1.0 | 0.31 | ug/L | | | 03/20/12 18:41 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 5.0 | 2.1 | ug/L | | | 03/20/12 18:41 | 1 |
| **Acetone** | **3.7** | **J** | 10 | 3.0 | ug/L | | | 03/20/12 18:41 | 1 |
| Benzene | ND | | 1.0 | 0.41 | ug/L | | | 03/20/12 18:41 | 1 |
| Bromodichloromethane | ND | | 1.0 | 0.39 | ug/L | | | 03/20/12 18:41 | 1 |
| Bromoform | ND | | 1.0 | 0.26 | ug/L | | | 03/20/12 18:41 | 1 |
| Bromomethane | ND | | 1.0 | 0.69 | ug/L | | | 03/20/12 18:41 | 1 |
| **Carbon disulfide** | **0.68** | **J** | 1.0 | 0.19 | ug/L | | | 03/20/12 18:41 | 1 |
| Carbon tetrachloride | ND | | 1.0 | 0.27 | ug/L | | | 03/20/12 18:41 | 1 |
| Chlorobenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 18:41 | 1 |
| Chloroethane | ND | | 1.0 | 0.32 | ug/L | | | 03/20/12 18:41 | 1 |
| Chloroform | ND | | 1.0 | 0.34 | ug/L | | | 03/20/12 18:41 | 1 |
| Chloromethane | ND | | 1.0 | 0.35 | ug/L | | | 03/20/12 18:41 | 1 |
| cis-1,2-Dichloroethene | ND | | 1.0 | 0.81 | ug/L | | | 03/20/12 18:41 | 1 |
| cis-1,3-Dichloropropene | ND | | 1.0 | 0.36 | ug/L | | | 03/20/12 18:41 | 1 |
| **Cyclohexane** | **1.7** | | 1.0 | 0.18 | ug/L | | | 03/20/12 18:41 | 1 |
| Dibromochloromethane | ND | | 1.0 | 0.32 | ug/L | | | 03/20/12 18:41 | 1 |
| Dichlorodifluoromethane | ND | | 1.0 | 0.68 | ug/L | | | 03/20/12 18:41 | 1 |
| Ethylbenzene | ND | | 1.0 | 0.74 | ug/L | | | 03/20/12 18:41 | 1 |
| Isopropylbenzene | ND | | 1.0 | 0.79 | ug/L | | | 03/20/12 18:41 | 1 |
| m,p-Xylene | ND | | 2.0 | 0.66 | ug/L | | | 03/20/12 18:41 | 1 |
| Methyl acetate | ND | | 1.0 | 0.50 | ug/L | | | 03/20/12 18:41 | 1 |
| Methyl tert-butyl ether | ND | | 1.0 | 0.16 | ug/L | | | 03/20/12 18:41 | 1 |
| **Methylcyclohexane** | **3.5** | | 1.0 | 0.16 | ug/L | | | 03/20/12 18:41 | 1 |
| Methylene Chloride | ND | | 1.0 | 0.44 | ug/L | | | 03/20/12 18:41 | 1 |
| n-Butylbenzene | ND | | 1.0 | 0.64 | ug/L | | | 03/20/12 18:41 | 1 |
| N-Propylbenzene | ND | | 1.0 | 0.69 | ug/L | | | 03/20/12 18:41 | 1 |
| o-Xylene | ND | | 1.0 | 0.76 | ug/L | | | 03/20/12 18:41 | 1 |
| sec-Butylbenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 18:41 | 1 |
| Styrene | ND | | 1.0 | 0.73 | ug/L | | | 03/20/12 18:41 | 1 |
| tert-Butylbenzene | ND | | 1.0 | 0.81 | ug/L | | | 03/20/12 18:41 | 1 |
| Tetrachloroethene | ND | | 1.0 | 0.36 | ug/L | | | 03/20/12 18:41 | 1 |
| Toluene | ND | | 1.0 | 0.51 | ug/L | | | 03/20/12 18:41 | 1 |

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: TMW-3**
**Date Collected: 03/16/12 14:30**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-12**
**Matrix: Water**

**Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| trans-1,2-Dichloroethene | ND | | 1.0 | 0.90 | ug/L | | | 03/20/12 18:41 | 1 |
| trans-1,3-Dichloropropene | ND | | 1.0 | 0.37 | ug/L | | | 03/20/12 18:41 | 1 |
| Trichloroethene | ND | | 1.0 | 0.46 | ug/L | | | 03/20/12 18:41 | 1 |
| Trichlorofluoromethane | ND | | 1.0 | 0.88 | ug/L | | | 03/20/12 18:41 | 1 |
| Vinyl chloride | ND | | 1.0 | 0.90 | ug/L | | | 03/20/12 18:41 | 1 |
| Xylenes, Total | ND | | 2.0 | 0.66 | ug/L | | | 03/20/12 18:41 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *108* | | *66 - 137* | | *03/20/12 18:41* | *1* |
| *4-Bromofluorobenzene (Surr)* | *103* | | *73 - 120* | | *03/20/12 18:41* | *1* |
| *Toluene-d8 (Surr)* | *108* | | *71 - 126* | | *03/20/12 18:41* | *1* |

# Surrogate Summary

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

## Method: 8260B - Volatile Organic Compounds (GC/MS)

**Matrix: Solid** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | 12DCE | BFB | TOL |
| Lab Sample ID | Client Sample ID | (64-126) | (72-126) | (71-125) |
| 480-17418-9 | SB-9 12'-14' | 107 | 96 | 112 |
| 480-17418-9 MS | SB-9 12'-14' | 110 | 103 | 109 |
| 480-17418-9 MSD | SB-9 12'-14' | 111 | 103 | 109 |
| LCS 480-55923/1-A | Lab Control Sample | 107 | 104 | 108 |
| MB 480-55923/2-A | Method Blank | 92 | 98 | 107 |

**Surrogate Legend**

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

## Method: 8260B - Volatile Organic Compounds (GC/MS)

**Matrix: Water** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | 12DCE | BFB | TOL |
| Lab Sample ID | Client Sample ID | (66-137) | (73-120) | (71-126) |
| 480-17418-10 | TMW-1 | 105 | 95 | 99 |
| 480-17418-11 | TMW-2 | 107 | 101 | 108 |
| 480-17418-12 | TMW-3 | 108 | 103 | 108 |
| LCS 480-55949/4 | Lab Control Sample | 106 | 103 | 109 |
| MB 480-55949/5 | Method Blank | 107 | 102 | 109 |

**Surrogate Legend**

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)

## Method: 8270C - Semivolatile Organic Compounds (GC/MS)

**Matrix: Solid** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | NBZ | FBP | TPH |
| Lab Sample ID | Client Sample ID | (34-132) | (37-120) | (65-153) |
| 480-17418-1 | SS-2 | 94 | 92 | 90 |
| 480-17418-2 | SS-3 | 91 | 100 | 98 |
| 480-17418-3 | SS-4 | 90 | 91 | 91 |
| 480-17418-4 | SS-5 | 89 | 89 | 87 |
| 480-17418-4 MS | SS-5 | 104 | 103 | 98 |
| 480-17418-4 MSD | SS-5 | 100 | 97 | 93 |
| 480-17418-5 | SB-1 | 76 | 77 | 79 |
| 480-17418-6 | SB-4 | 76 | 79 | 87 |
| 480-17418-7 | SB-6 | 68 | 74 | 83 |
| 480-17418-8 | SB-9 | 77 | 84 | 83 |
| LCS 480-55961/2-A | Lab Control Sample | 84 | 92 | 120 |
| MB 480-55961/1-A | Method Blank | 77 | 80 | 95 |

**Surrogate Legend**

NBZ = Nitrobenzene-d5
FBP = 2-Fluorobiphenyl
TPH = p-Terphenyl-d14

# Surrogate Summary

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

**Matrix: Solid** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DCB2 | TCX2 | | | | | | | | |
| Lab Sample ID | Client Sample ID | (36-182) | (24-172) | | | | | | | | |
| 480-17418-1 | SS-2 | 125 | 106 | | | | | | | | |
| 480-17418-2 | SS-3 | 118 | 107 | | | | | | | | |
| 480-17418-3 | SS-4 | 123 | 115 | | | | | | | | |
| 480-17418-4 | SS-5 | 120 | 106 | | | | | | | | |
| LCS 480-56111/2-A | Lab Control Sample | 146 | 140 | | | | | | | | |
| MB 480-56111/1-A | Method Blank | 126 | 125 | | | | | | | | |

**Surrogate Legend**

DCB = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

## Method: 8260B - Volatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 480-55923/2-A**
**Matrix: Solid**
**Analysis Batch: 55911**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 55923**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | | 5.0 | 0.36 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 5.0 | 0.81 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 5.0 | 1.1 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,1,2-Trichloroethane | ND | | 5.0 | 0.65 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,1-Dichloroethane | ND | | 5.0 | 0.61 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,1-Dichloroethene | ND | | 5.0 | 0.61 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 5.0 | 0.30 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 5.0 | 0.96 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 5.0 | 2.5 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,2-Dibromoethane | ND | | 5.0 | 0.64 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,2-Dichlorobenzene | ND | | 5.0 | 0.39 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,2-Dichloroethane | ND | | 5.0 | 0.25 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,2-Dichloropropane | ND | | 5.0 | 2.5 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 5.0 | 0.32 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,3-Dichlorobenzene | ND | | 5.0 | 0.26 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 1,4-Dichlorobenzene | ND | | 5.0 | 0.70 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 2-Butanone (MEK) | ND | | 25 | 1.8 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 2-Hexanone | ND | | 25 | 2.5 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 4-Isopropyltoluene | ND | | 5.0 | 0.40 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 25 | 1.6 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Acetone | ND | | 25 | 4.2 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Benzene | ND | | 5.0 | 0.25 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Bromodichloromethane | ND | | 5.0 | 0.67 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Bromoform | ND | | 5.0 | 2.5 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Bromomethane | ND | | 5.0 | 0.45 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Carbon disulfide | ND | | 5.0 | 2.5 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Carbon tetrachloride | ND | | 5.0 | 0.48 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Chlorobenzene | ND | | 5.0 | 0.66 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Chloroethane | ND | | 5.0 | 1.1 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Chloroform | ND | | 5.0 | 0.31 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Chloromethane | ND | | 5.0 | 0.30 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| cis-1,2-Dichloroethene | ND | | 5.0 | 0.64 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| cis-1,3-Dichloropropene | ND | | 5.0 | 0.72 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Cyclohexane | ND | | 5.0 | 0.70 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Dibromochloromethane | ND | | 5.0 | 0.64 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Dichlorodifluoromethane | ND | | 5.0 | 0.41 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Ethylbenzene | ND | | 5.0 | 0.35 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Isopropylbenzene | ND | | 5.0 | 0.75 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| m,p-Xylene | ND | | 10 | 0.84 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Methyl acetate | ND | | 5.0 | 0.93 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 0.49 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Methylcyclohexane | ND | | 5.0 | 0.76 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Methylene Chloride | ND | | 5.0 | 2.3 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| n-Butylbenzene | ND | | 5.0 | 0.44 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| N-Propylbenzene | ND | | 5.0 | 0.40 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| o-Xylene | ND | | 5.0 | 0.65 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| sec-Butylbenzene | ND | | 5.0 | 0.44 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Styrene | ND | | 5.0 | 0.25 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| tert-Butylbenzene | ND | | 5.0 | 0.52 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 480-55923/2-A**
**Matrix: Solid**
**Analysis Batch: 55911**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 55923**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Tetrachloroethene | ND | | 5.0 | 0.67 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Toluene | ND | | 5.0 | 0.38 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| trans-1,2-Dichloroethene | ND | | 5.0 | 0.52 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| trans-1,3-Dichloropropene | ND | | 5.0 | 2.2 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Trichloroethene | ND | | 5.0 | 1.1 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Trichlorofluoromethane | ND | | 5.0 | 0.47 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Vinyl chloride | ND | | 5.0 | 0.61 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |
| Xylenes, Total | ND | | 10 | 0.84 | ug/Kg | | 03/20/12 08:11 | 03/20/12 10:42 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *92* | | *64 - 126* | *03/20/12 08:11* | *03/20/12 10:42* | *1* |
| *4-Bromofluorobenzene (Surr)* | *98* | | *72 - 126* | *03/20/12 08:11* | *03/20/12 10:42* | *1* |
| *Toluene-d8 (Surr)* | *107* | | *71 - 125* | *03/20/12 08:11* | *03/20/12 10:42* | *1* |

**Lab Sample ID: LCS 480-55923/1-A**
**Matrix: Solid**
**Analysis Batch: 55911**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 55923**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethane | 50.0 | 42.8 | | ug/Kg | | 86 | 79 - 126 |
| 1,1-Dichloroethene | 50.0 | 38.2 | | ug/Kg | | 76 | 65 - 153 |
| 1,2,4-Trimethylbenzene | 50.0 | 43.7 | | ug/Kg | | 87 | 74 - 120 |
| 1,2-Dichlorobenzene | 50.0 | 44.1 | | ug/Kg | | 88 | 75 - 120 |
| 1,2-Dichloroethane | 50.0 | 44.9 | | ug/Kg | | 90 | 77 - 122 |
| Benzene | 50.0 | 43.6 | | ug/Kg | | 87 | 79 - 127 |
| Chlorobenzene | 50.0 | 45.3 | | ug/Kg | | 91 | 76 - 124 |
| cis-1,2-Dichloroethene | 50.0 | 42.8 | | ug/Kg | | 86 | 81 - 117 |
| Ethylbenzene | 50.0 | 45.1 | | ug/Kg | | 90 | 80 - 120 |
| m,p-Xylene | 100 | 90.7 | | ug/Kg | | 91 | 70 - 130 |
| Methyl tert-butyl ether | 50.0 | 41.1 | | ug/Kg | | 82 | 63 - 125 |
| o-Xylene | 50.0 | 45.2 | | ug/Kg | | 90 | 70 - 130 |
| Tetrachloroethene | 50.0 | 45.5 | | ug/Kg | | 91 | 74 - 122 |
| Toluene | 50.0 | 44.9 | | ug/Kg | | 90 | 74 - 128 |
| trans-1,2-Dichloroethene | 50.0 | 44.3 | | ug/Kg | | 89 | 78 - 126 |
| Trichloroethene | 50.0 | 42.9 | | ug/Kg | | 86 | 77 - 129 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *107* | | *64 - 126* |
| *4-Bromofluorobenzene (Surr)* | *104* | | *72 - 126* |
| *Toluene-d8 (Surr)* | *108* | | *71 - 125* |

**Lab Sample ID: 480-17418-9 MS**
**Matrix: Solid**
**Analysis Batch: 55911**

**Client Sample ID: SB-9 12'-14'**
**Prep Type: Total/NA**
**Prep Batch: 55923**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethane | ND | | 60.5 | 34.4 | F | ug/Kg | ☼ | 57 | 79 - 126 |
| 1,1-Dichloroethene | ND | | 60.5 | 28.7 | F | ug/Kg | ☼ | 47 | 65 - 153 |
| 1,2,4-Trimethylbenzene | ND | | 60.5 | 9.42 | F | ug/Kg | ☼ | 16 | 74 - 120 |

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: 480-17418-9 MS**
**Matrix: Solid**
**Analysis Batch: 55911**

**Client Sample ID: SB-9 12'-14'**
**Prep Type: Total/NA**
**Prep Batch: 55923**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichlorobenzene | ND | | 60.5 | 6.11 | F | ug/Kg | ☼ | 10 | 75 - 120 |
| 1,2-Dichloroethane | ND | | 60.5 | 33.3 | F | ug/Kg | ☼ | 55 | 77 - 122 |
| Benzene | ND | | 60.5 | 31.4 | F | ug/Kg | ☼ | 52 | 79 - 127 |
| Chlorobenzene | ND | | 60.5 | 16.8 | F | ug/Kg | ☼ | 28 | 76 - 124 |
| cis-1,2-Dichloroethene | ND | | 60.5 | 31.1 | F | ug/Kg | ☼ | 51 | 81 - 117 |
| Ethylbenzene | ND | | 60.5 | 17.2 | F | ug/Kg | ☼ | 28 | 80 - 120 |
| m,p-Xylene | ND | | 121 | 32.3 | F | ug/Kg | ☼ | 27 | 70 - 130 |
| Methyl tert-butyl ether | ND | | 60.5 | 38.9 | | ug/Kg | ☼ | 64 | 63 - 125 |
| o-Xylene | ND | | 60.5 | 16.3 | F | ug/Kg | ☼ | 27 | 70 - 130 |
| Tetrachloroethene | ND | | 60.5 | 18.1 | F | ug/Kg | ☼ | 30 | 74 - 122 |
| Toluene | ND | | 60.5 | 23.8 | F | ug/Kg | ☼ | 39 | 74 - 128 |
| trans-1,2-Dichloroethene | ND | | 60.5 | 32.9 | F | ug/Kg | ☼ | 54 | 78 - 126 |
| Trichloroethene | ND | | 60.5 | 23.6 | F | ug/Kg | ☼ | 39 | 77 - 129 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *110* | | *64 - 126* |
| *4-Bromofluorobenzene (Surr)* | *103* | | *72 - 126* |
| *Toluene-d8 (Surr)* | *109* | | *71 - 125* |

**Lab Sample ID: 480-17418-9 MSD**
**Matrix: Solid**
**Analysis Batch: 55911**

**Client Sample ID: SB-9 12'-14'**
**Prep Type: Total/NA**
**Prep Batch: 55923**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethane | ND | | 59.0 | 34.2 | F | ug/Kg | ☼ | 58 | 79 - 126 | 0 | 30 |
| 1,1-Dichloroethene | ND | | 59.0 | 26.9 | F | ug/Kg | ☼ | 46 | 65 - 153 | 6 | 30 |
| 1,2,4-Trimethylbenzene | ND | | 59.0 | 10.9 | F | ug/Kg | ☼ | 18 | 74 - 120 | 14 | 30 |
| 1,2-Dichlorobenzene | ND | | 59.0 | 7.89 | F | ug/Kg | ☼ | 13 | 75 - 120 | 25 | 30 |
| 1,2-Dichloroethane | ND | | 59.0 | 34.2 | F | ug/Kg | ☼ | 58 | 77 - 122 | 3 | 30 |
| Benzene | ND | | 59.0 | 31.4 | F | ug/Kg | ☼ | 53 | 79 - 127 | 0 | 30 |
| Chlorobenzene | ND | | 59.0 | 17.9 | F | ug/Kg | ☼ | 30 | 76 - 124 | 7 | 30 |
| cis-1,2-Dichloroethene | ND | | 59.0 | 31.1 | F | ug/Kg | ☼ | 53 | 81 - 117 | 0 | 30 |
| Ethylbenzene | ND | | 59.0 | 17.9 | F | ug/Kg | ☼ | 30 | 80 - 120 | 4 | 30 |
| m,p-Xylene | ND | | 118 | 34.0 | F | ug/Kg | ☼ | 29 | 70 - 130 | 5 | 30 |
| Methyl tert-butyl ether | ND | | 59.0 | 41.8 | | ug/Kg | ☼ | 71 | 63 - 125 | 7 | 30 |
| o-Xylene | ND | | 59.0 | 17.8 | F | ug/Kg | ☼ | 30 | 70 - 130 | 9 | 30 |
| Tetrachloroethene | ND | | 59.0 | 18.4 | F | ug/Kg | ☼ | 31 | 74 - 122 | 2 | 30 |
| Toluene | ND | | 59.0 | 24.4 | F | ug/Kg | ☼ | 41 | 74 - 128 | 3 | 30 |
| trans-1,2-Dichloroethene | ND | | 59.0 | 32.4 | F | ug/Kg | ☼ | 55 | 78 - 126 | 2 | 30 |
| Trichloroethene | ND | | 59.0 | 23.9 | F | ug/Kg | ☼ | 40 | 77 - 129 | 1 | 30 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *111* | | *64 - 126* |
| *4-Bromofluorobenzene (Surr)* | *103* | | *72 - 126* |
| *Toluene-d8 (Surr)* | *109* | | *71 - 125* |

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 480-55949/5**
**Matrix: Water**
**Analysis Batch: 55949**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | | 1.0 | 0.82 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 | 0.21 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 1.0 | 0.31 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,1,2-Trichloroethane | ND | | 1.0 | 0.23 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,1-Dichloroethane | ND | | 1.0 | 0.38 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,1-Dichloroethene | ND | | 1.0 | 0.29 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 | 0.41 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 1.0 | 0.39 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,2-Dibromoethane | ND | | 1.0 | 0.73 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,2-Dichlorobenzene | ND | | 1.0 | 0.79 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,2-Dichloroethane | ND | | 1.0 | 0.21 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,2-Dichloropropane | ND | | 1.0 | 0.72 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 1.0 | 0.77 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,3-Dichlorobenzene | ND | | 1.0 | 0.78 | ug/L | | | 03/20/12 12:37 | 1 |
| 1,4-Dichlorobenzene | ND | | 1.0 | 0.84 | ug/L | | | 03/20/12 12:37 | 1 |
| 2-Butanone (MEK) | ND | | 10 | 1.3 | ug/L | | | 03/20/12 12:37 | 1 |
| 2-Hexanone | ND | | 5.0 | 1.2 | ug/L | | | 03/20/12 12:37 | 1 |
| 4-Isopropyltoluene | ND | | 1.0 | 0.31 | ug/L | | | 03/20/12 12:37 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 5.0 | 2.1 | ug/L | | | 03/20/12 12:37 | 1 |
| Acetone | ND | | 10 | 3.0 | ug/L | | | 03/20/12 12:37 | 1 |
| Benzene | ND | | 1.0 | 0.41 | ug/L | | | 03/20/12 12:37 | 1 |
| Bromodichloromethane | ND | | 1.0 | 0.39 | ug/L | | | 03/20/12 12:37 | 1 |
| Bromoform | ND | | 1.0 | 0.26 | ug/L | | | 03/20/12 12:37 | 1 |
| Bromomethane | ND | | 1.0 | 0.69 | ug/L | | | 03/20/12 12:37 | 1 |
| Carbon disulfide | ND | | 1.0 | 0.19 | ug/L | | | 03/20/12 12:37 | 1 |
| Carbon tetrachloride | ND | | 1.0 | 0.27 | ug/L | | | 03/20/12 12:37 | 1 |
| Chlorobenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 12:37 | 1 |
| Chloroethane | ND | | 1.0 | 0.32 | ug/L | | | 03/20/12 12:37 | 1 |
| Chloroform | ND | | 1.0 | 0.34 | ug/L | | | 03/20/12 12:37 | 1 |
| Chloromethane | ND | | 1.0 | 0.35 | ug/L | | | 03/20/12 12:37 | 1 |
| cis-1,2-Dichloroethene | ND | | 1.0 | 0.81 | ug/L | | | 03/20/12 12:37 | 1 |
| cis-1,3-Dichloropropene | ND | | 1.0 | 0.36 | ug/L | | | 03/20/12 12:37 | 1 |
| Cyclohexane | ND | | 1.0 | 0.18 | ug/L | | | 03/20/12 12:37 | 1 |
| Dibromochloromethane | ND | | 1.0 | 0.32 | ug/L | | | 03/20/12 12:37 | 1 |
| Dichlorodifluoromethane | ND | | 1.0 | 0.68 | ug/L | | | 03/20/12 12:37 | 1 |
| Ethylbenzene | ND | | 1.0 | 0.74 | ug/L | | | 03/20/12 12:37 | 1 |
| Isopropylbenzene | ND | | 1.0 | 0.79 | ug/L | | | 03/20/12 12:37 | 1 |
| m,p-Xylene | ND | | 2.0 | 0.66 | ug/L | | | 03/20/12 12:37 | 1 |
| Methyl acetate | ND | | 1.0 | 0.50 | ug/L | | | 03/20/12 12:37 | 1 |
| Methyl tert-butyl ether | ND | | 1.0 | 0.16 | ug/L | | | 03/20/12 12:37 | 1 |
| Methylcyclohexane | ND | | 1.0 | 0.16 | ug/L | | | 03/20/12 12:37 | 1 |
| Methylene Chloride | ND | | 1.0 | 0.44 | ug/L | | | 03/20/12 12:37 | 1 |
| n-Butylbenzene | ND | | 1.0 | 0.64 | ug/L | | | 03/20/12 12:37 | 1 |
| N-Propylbenzene | ND | | 1.0 | 0.69 | ug/L | | | 03/20/12 12:37 | 1 |
| o-Xylene | ND | | 1.0 | 0.76 | ug/L | | | 03/20/12 12:37 | 1 |
| sec-Butylbenzene | ND | | 1.0 | 0.75 | ug/L | | | 03/20/12 12:37 | 1 |
| Styrene | ND | | 1.0 | 0.73 | ug/L | | | 03/20/12 12:37 | 1 |
| tert-Butylbenzene | ND | | 1.0 | 0.81 | ug/L | | | 03/20/12 12:37 | 1 |

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 480-55949/5**
**Matrix: Water**
**Analysis Batch: 55949**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Tetrachloroethene | ND | | 1.0 | 0.36 | ug/L | | | 03/20/12 12:37 | 1 |
| Toluene | ND | | 1.0 | 0.51 | ug/L | | | 03/20/12 12:37 | 1 |
| trans-1,2-Dichloroethene | ND | | 1.0 | 0.90 | ug/L | | | 03/20/12 12:37 | 1 |
| trans-1,3-Dichloropropene | ND | | 1.0 | 0.37 | ug/L | | | 03/20/12 12:37 | 1 |
| Trichloroethene | ND | | 1.0 | 0.46 | ug/L | | | 03/20/12 12:37 | 1 |
| Trichlorofluoromethane | ND | | 1.0 | 0.88 | ug/L | | | 03/20/12 12:37 | 1 |
| Vinyl chloride | ND | | 1.0 | 0.90 | ug/L | | | 03/20/12 12:37 | 1 |
| Xylenes, Total | ND | | 2.0 | 0.66 | ug/L | | | 03/20/12 12:37 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *107* | | *66 - 137* | | *03/20/12 12:37* | *1* |
| *4-Bromofluorobenzene (Surr)* | *102* | | *73 - 120* | | *03/20/12 12:37* | *1* |
| *Toluene-d8 (Surr)* | *109* | | *71 - 126* | | *03/20/12 12:37* | *1* |

**Lab Sample ID: LCS 480-55949/4**
**Matrix: Water**
**Analysis Batch: 55949**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethane | 25.0 | 25.1 | | ug/L | | 100 | 71 - 129 |
| 1,1-Dichloroethene | 25.0 | 21.4 | | ug/L | | 86 | 65 - 138 |
| 1,2,4-Trimethylbenzene | 25.0 | 24.1 | | ug/L | | 96 | 76 - 121 |
| 1,2-Dichlorobenzene | 25.0 | 25.1 | | ug/L | | 100 | 77 - 120 |
| 1,2-Dichloroethane | 25.0 | 26.0 | | ug/L | | 104 | 75 - 127 |
| Benzene | 25.0 | 25.6 | | ug/L | | 102 | 71 - 124 |
| Chlorobenzene | 25.0 | 25.9 | | ug/L | | 104 | 72 - 120 |
| cis-1,2-Dichloroethene | 25.0 | 24.7 | | ug/L | | 99 | 74 - 124 |
| Ethylbenzene | 25.0 | 25.2 | | ug/L | | 101 | 77 - 123 |
| m,p-Xylene | 50.0 | 52.1 | | ug/L | | 104 | 76 - 122 |
| Methyl tert-butyl ether | 25.0 | 25.5 | | ug/L | | 102 | 64 - 127 |
| o-Xylene | 25.0 | 25.3 | | ug/L | | 101 | 76 - 122 |
| Tetrachloroethene | 25.0 | 25.8 | | ug/L | | 103 | 74 - 122 |
| Toluene | 25.0 | 25.4 | | ug/L | | 102 | 70 - 122 |
| trans-1,2-Dichloroethene | 25.0 | 25.0 | | ug/L | | 100 | 73 - 127 |
| Trichloroethene | 25.0 | 25.3 | | ug/L | | 101 | 74 - 123 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *106* | | *66 - 137* |
| *4-Bromofluorobenzene (Surr)* | *103* | | *73 - 120* |
| *Toluene-d8 (Surr)* | *109* | | *71 - 126* |

## Method: 8270C - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 480-55961/1-A**
**Matrix: Solid**
**Analysis Batch: 56149**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 55961**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | | 170 | 2.0 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |

## Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 480-55961/1-A**
**Matrix: Solid**
**Analysis Batch: 56149**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 55961**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | ND | | 170 | 1.4 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Anthracene | ND | | 170 | 4.3 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Benz(a)anthracene | ND | | 170 | 2.9 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Benzo(a)pyrene | ND | | 170 | 4.0 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Benzo(b)fluoranthene | ND | | 170 | 3.2 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Benzo(g,h,i)perylene | ND | | 170 | 2.0 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Benzo(k)fluoranthene | ND | | 170 | 1.8 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Chrysene | ND | | 170 | 1.7 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Dibenz(a,h)anthracene | ND | | 170 | 2.0 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Fluoranthene | ND | | 170 | 2.4 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Fluorene | ND | | 170 | 3.8 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Indeno(1,2,3-c,d)pyrene | ND | | 170 | 4.6 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Naphthalene | ND | | 170 | 2.8 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Phenanthrene | ND | | 170 | 3.5 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |
| Pyrene | ND | | 170 | 1.1 | ug/Kg | | 03/20/12 10:52 | 03/21/12 15:00 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5* | *77* | | *34 - 132* | *03/20/12 10:52* | *03/21/12 15:00* | *1* |
| *2-Fluorobiphenyl* | *80* | | *37 - 120* | *03/20/12 10:52* | *03/21/12 15:00* | *1* |
| *p-Terphenyl-d14* | *95* | | *65 - 153* | *03/20/12 10:52* | *03/21/12 15:00* | *1* |

**Lab Sample ID: LCS 480-55961/2-A**
**Matrix: Solid**
**Analysis Batch: 56464**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 55961**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Acenaphthene | 3290 | 3190 | | ug/Kg | | 97 | 53 - 120 |
| Acenaphthylene | 3290 | 3240 | | ug/Kg | | 98 | 58 - 121 |
| Anthracene | 3290 | 3350 | | ug/Kg | | 102 | 62 - 129 |
| Benz(a)anthracene | 3290 | 3410 | | ug/Kg | | 104 | 65 - 133 |
| Benzo(a)pyrene | 3290 | 3500 | | ug/Kg | | 106 | 64 - 127 |
| Benzo(b)fluoranthene | 3290 | 3320 | | ug/Kg | | 101 | 64 - 135 |
| Benzo(g,h,i)perylene | 3290 | 3860 | | ug/Kg | | 117 | 50 - 152 |
| Benzo(k)fluoranthene | 3290 | 3960 | | ug/Kg | | 120 | 58 - 138 |
| Chrysene | 3290 | 3410 | | ug/Kg | | 104 | 64 - 131 |
| Dibenz(a,h)anthracene | 3290 | 3950 | | ug/Kg | | 120 | 54 - 148 |
| Fluoranthene | 3290 | 3640 | | ug/Kg | | 111 | 62 - 131 |
| Fluorene | 3290 | 3360 | | ug/Kg | | 102 | 63 - 126 |
| Indeno(1,2,3-c,d)pyrene | 3290 | 4050 | | ug/Kg | | 123 | 56 - 149 |
| Naphthalene | 3290 | 2870 | | ug/Kg | | 87 | 46 - 120 |
| Phenanthrene | 3290 | 3470 | | ug/Kg | | 105 | 60 - 130 |
| Pyrene | 3290 | 3750 | | ug/Kg | | 114 | 51 - 133 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *Nitrobenzene-d5* | *84* | | *34 - 132* |
| *2-Fluorobiphenyl* | *92* | | *37 - 120* |
| *p-Terphenyl-d14* | *120* | | *65 - 153* |

## Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: 480-17418-4 MS**
**Matrix: Solid**
**Analysis Batch: 56149**

**Client Sample ID: SS-5**
**Prep Type: Total/NA**
**Prep Batch: 55961**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 390 | J | 4090 | 5090 | | ug/Kg | ☼ | 115 | 53 - 120 |
| Acenaphthylene | 92 | J | 4090 | 4770 | | ug/Kg | ☼ | 114 | 58 - 121 |
| Anthracene | 3600 | | 4090 | 11000 | F | ug/Kg | ☼ | 181 | 62 - 129 |
| Benz(a)anthracene | 11000 | | 4090 | 28000 | F | ug/Kg | ☼ | 427 | 65 - 133 |
| Benzo(a)pyrene | 7100 | | 4090 | 23100 | F | ug/Kg | ☼ | 391 | 64 - 127 |
| Benzo(b)fluoranthene | 12000 | | 4090 | 41700 | E F | ug/Kg | ☼ | 716 | 64 - 135 |
| Benzo(g,h,i)perylene | 1700 | | 4090 | 5500 | | ug/Kg | ☼ | 93 | 50 - 152 |
| Benzo(k)fluoranthene | 5800 | | 4090 | 16600 | F | ug/Kg | ☼ | 262 | 58 - 138 |
| Chrysene | 8400 | | 4090 | 25600 | F | ug/Kg | ☼ | 420 | 64 - 131 |
| Dibenz(a,h)anthracene | 690 | J | 4090 | 3780 | | ug/Kg | ☼ | 76 | 54 - 148 |
| Fluoranthene | 25000 | | 4090 | 61900 | E 4 | ug/Kg | ☼ | 894 | 62 - 131 |
| Fluorene | 560 | J | 4090 | 5220 | | ug/Kg | ☼ | 114 | 63 - 126 |
| Indeno(1,2,3-c,d)pyrene | 2000 | | 4090 | 6790 | | ug/Kg | ☼ | 118 | 56 - 149 |
| Naphthalene | 250 | J | 4090 | 4320 | | ug/Kg | ☼ | 99 | 46 - 120 |
| Phenanthrene | 15000 | | 4090 | 34900 | E F | ug/Kg | ☼ | 486 | 60 - 130 |
| Pyrene | 17000 | | 4090 | 39800 | E 4 | ug/Kg | ☼ | 566 | 51 - 133 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *Nitrobenzene-d5* | *104* | | *34 - 132* |
| *2-Fluorobiphenyl* | *103* | | *37 - 120* |
| *p-Terphenyl-d14* | *98* | | *65 - 153* |

**Lab Sample ID: 480-17418-4 MSD**
**Matrix: Solid**
**Analysis Batch: 56149**

**Client Sample ID: SS-5**
**Prep Type: Total/NA**
**Prep Batch: 55961**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 390 | J | 4130 | 4560 | | ug/Kg | ☼ | 101 | 53 - 120 | 11 | 35 |
| Acenaphthylene | 92 | J | 4130 | 4320 | | ug/Kg | ☼ | 102 | 58 - 121 | 10 | 18 |
| Anthracene | 3600 | | 4130 | 7910 | F | ug/Kg | ☼ | 105 | 62 - 129 | 33 | 15 |
| Benz(a)anthracene | 11000 | | 4130 | 18200 | F | ug/Kg | ☼ | 185 | 65 - 133 | 42 | 15 |
| Benzo(a)pyrene | 7100 | | 4130 | 13500 | F | ug/Kg | ☼ | 155 | 64 - 127 | 52 | 15 |
| Benzo(b)fluoranthene | 12000 | | 4130 | 22700 | F | ug/Kg | ☼ | 250 | 64 - 135 | 59 | 15 |
| Benzo(g,h,i)perylene | 1700 | | 4130 | 3550 | F | ug/Kg | ☼ | 45 | 50 - 152 | 43 | 15 |
| Benzo(k)fluoranthene | 5800 | | 4130 | 10600 | F | ug/Kg | ☼ | 115 | 58 - 138 | 44 | 22 |
| Chrysene | 8400 | | 4130 | 14800 | F | ug/Kg | ☼ | 155 | 64 - 131 | 53 | 15 |
| Dibenz(a,h)anthracene | 690 | J | 4130 | 2440 | F | ug/Kg | ☼ | 42 | 54 - 148 | 43 | 15 |
| Fluoranthene | 25000 | | 4130 | 35300 | E 4 F | ug/Kg | ☼ | 243 | 62 - 131 | 55 | 15 |
| Fluorene | 560 | J | 4130 | 4690 | | ug/Kg | ☼ | 100 | 63 - 126 | 11 | 15 |
| Indeno(1,2,3-c,d)pyrene | 2000 | | 4130 | 4300 | F | ug/Kg | ☼ | 56 | 56 - 149 | 45 | 15 |
| Naphthalene | 250 | J | 4130 | 4170 | | ug/Kg | ☼ | 95 | 46 - 120 | 3 | 29 |
| Phenanthrene | 15000 | | 4130 | 20400 | F | ug/Kg | ☼ | 131 | 60 - 130 | 52 | 15 |
| Pyrene | 17000 | | 4130 | 24400 | 4 F | ug/Kg | ☼ | 186 | 51 - 133 | 48 | 35 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *Nitrobenzene-d5* | *100* | | *34 - 132* |
| *2-Fluorobiphenyl* | *97* | | *37 - 120* |
| *p-Terphenyl-d14* | *93* | | *65 - 153* |

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

**Lab Sample ID: MB 480-56111/1-A**
**Matrix: Solid**
**Analysis Batch: 56205**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 56111**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | | 220 | 44 | ug/Kg | | 03/21/12 08:56 | 03/21/12 16:34 | 1 |
| PCB-1221 | ND | | 220 | 44 | ug/Kg | | 03/21/12 08:56 | 03/21/12 16:34 | 1 |
| PCB-1232 | ND | | 220 | 44 | ug/Kg | | 03/21/12 08:56 | 03/21/12 16:34 | 1 |
| PCB-1242 | ND | | 220 | 48 | ug/Kg | | 03/21/12 08:56 | 03/21/12 16:34 | 1 |
| PCB-1248 | ND | | 220 | 44 | ug/Kg | | 03/21/12 08:56 | 03/21/12 16:34 | 1 |
| PCB-1254 | ND | | 220 | 47 | ug/Kg | | 03/21/12 08:56 | 03/21/12 16:34 | 1 |
| PCB-1260 | ND | | 220 | 100 | ug/Kg | | 03/21/12 08:56 | 03/21/12 16:34 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *DCB Decachlorobiphenyl* | *126* | | *36 - 182* | *03/21/12 08:56* | *03/21/12 16:34* | *1* |
| *Tetrachloro-m-xylene* | *125* | | *24 - 172* | *03/21/12 08:56* | *03/21/12 16:34* | *1* |

**Lab Sample ID: LCS 480-56111/2-A**
**Matrix: Solid**
**Analysis Batch: 56205**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 56111**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| PCB-1016 | 2380 | 3070 | | ug/Kg | | 129 | 51 - 185 |
| PCB-1260 | 2380 | 3280 | | ug/Kg | | 138 | 61 - 184 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *DCB Decachlorobiphenyl* | *146* | | *36 - 182* |
| *Tetrachloro-m-xylene* | *140* | | *24 - 172* |

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 480-55948/1-A**
**Matrix: Solid**
**Analysis Batch: 56100**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 55948**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 2.2 | | mg/Kg | | 03/20/12 10:30 | 03/20/12 21:02 | 1 |
| Barium | ND | | 0.55 | | mg/Kg | | 03/20/12 10:30 | 03/20/12 21:02 | 1 |
| Cadmium | ND | | 0.22 | | mg/Kg | | 03/20/12 10:30 | 03/20/12 21:02 | 1 |
| Chromium | 0.580 | | 0.55 | | mg/Kg | | 03/20/12 10:30 | 03/20/12 21:02 | 1 |
| Lead | ND | | 1.1 | | mg/Kg | | 03/20/12 10:30 | 03/20/12 21:02 | 1 |
| Selenium | ND | | 4.4 | | mg/Kg | | 03/20/12 10:30 | 03/20/12 21:02 | 1 |
| Silver | ND | | 0.55 | | mg/Kg | | 03/20/12 10:30 | 03/20/12 21:02 | 1 |

**Lab Sample ID: LCSSRM 480-55948/2-A**
**Matrix: Solid**
**Analysis Batch: 56100**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 55948**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Arsenic | 109 | 102.2 | | mg/Kg | | 94 | 70 - 134 |
| Barium | 206 | 195.8 | | mg/Kg | | 95 | 73 - 127 |
| Cadmium | 80.2 | 85.41 | | mg/Kg | | 106 | 73 - 127 |
| Chromium | 117 | 115.7 | | mg/Kg | | 99 | 70 - 130 |
| Lead | 76.2 | 74.30 | | mg/Kg | | 97 | 69 - 131 |

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: LCSSRM 480-55948/2-A**
**Matrix: Solid**
**Analysis Batch: 56100**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 55948**

| Analyte | | | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Selenium | | | 127 | 124.5 | | mg/Kg | | 98 | 67 - 134 | | |
| Silver | | | 41.0 | 38.32 | | mg/Kg | | 93 | 66 - 134 | | |

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 480-55903/1-A**
**Matrix: Solid**
**Analysis Batch: 55971**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 55903**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.021 | | mg/Kg | | 03/20/12 08:30 | 03/20/12 11:00 | 1 |

**Lab Sample ID: LCSSRM 480-55903/2-A**
**Matrix: Solid**
**Analysis Batch: 55971**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 55903**

| Analyte | | | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 3.77 | 4.79 | | mg/Kg | | 127 | 51 - 149 | | |

**Lab Sample ID: 480-17418-8 MS**
**Matrix: Solid**
**Analysis Batch: 55997**

**Client Sample ID: SB-9**
**Prep Type: Total/NA**
**Prep Batch: 55903**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.068 | | 0.352 | 0.155 | F | mg/Kg | ☼ | 25 | 75 - 125 | | |

**Lab Sample ID: 480-17418-8 MSD**
**Matrix: Solid**
**Analysis Batch: 55997**

**Client Sample ID: SB-9**
**Prep Type: Total/NA**
**Prep Batch: 55903**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.068 | | 0.377 | 0.192 | F | mg/Kg | ☼ | 33 | 75 - 125 | 22 | 20 |

## GC/MS VOA

### Analysis Batch: 55911

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-9 | SB-9 12'-14' | Total/NA | Solid | 8260B | 55923 |
| 480-17418-9 MS | SB-9 12'-14' | Total/NA | Solid | 8260B | 55923 |
| 480-17418-9 MSD | SB-9 12'-14' | Total/NA | Solid | 8260B | 55923 |
| LCS 480-55923/1-A | Lab Control Sample | Total/NA | Solid | 8260B | 55923 |
| MB 480-55923/2-A | Method Blank | Total/NA | Solid | 8260B | 55923 |

### Prep Batch: 55923

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-9 | SB-9 12'-14' | Total/NA | Solid | 5035 | |
| 480-17418-9 MS | SB-9 12'-14' | Total/NA | Solid | 5035 | |
| 480-17418-9 MSD | SB-9 12'-14' | Total/NA | Solid | 5035 | |
| LCS 480-55923/1-A | Lab Control Sample | Total/NA | Solid | 5035 | |
| MB 480-55923/2-A | Method Blank | Total/NA | Solid | 5035 | |

### Analysis Batch: 55949

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-10 | TMW-1 | Total/NA | Water | 8260B | |
| 480-17418-11 | TMW-2 | Total/NA | Water | 8260B | |
| 480-17418-12 | TMW-3 | Total/NA | Water | 8260B | |
| LCS 480-55949/4 | Lab Control Sample | Total/NA | Water | 8260B | |
| MB 480-55949/5 | Method Blank | Total/NA | Water | 8260B | |

## GC/MS Semi VOA

### Prep Batch: 55961

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-1 | SS-2 | Total/NA | Solid | 3550B | |
| 480-17418-2 | SS-3 | Total/NA | Solid | 3550B | |
| 480-17418-3 | SS-4 | Total/NA | Solid | 3550B | |
| 480-17418-4 | SS-5 | Total/NA | Solid | 3550B | |
| 480-17418-4 MS | SS-5 | Total/NA | Solid | 3550B | |
| 480-17418-4 MSD | SS-5 | Total/NA | Solid | 3550B | |
| 480-17418-5 | SB-1 | Total/NA | Solid | 3550B | |
| 480-17418-6 | SB-4 | Total/NA | Solid | 3550B | |
| 480-17418-7 | SB-6 | Total/NA | Solid | 3550B | |
| 480-17418-8 | SB-9 | Total/NA | Solid | 3550B | |
| LCS 480-55961/2-A | Lab Control Sample | Total/NA | Solid | 3550B | |
| MB 480-55961/1-A | Method Blank | Total/NA | Solid | 3550B | |

### Analysis Batch: 56149

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-1 | SS-2 | Total/NA | Solid | 8270C | 55961 |
| 480-17418-2 | SS-3 | Total/NA | Solid | 8270C | 55961 |
| 480-17418-3 | SS-4 | Total/NA | Solid | 8270C | 55961 |
| 480-17418-4 | SS-5 | Total/NA | Solid | 8270C | 55961 |
| 480-17418-4 MS | SS-5 | Total/NA | Solid | 8270C | 55961 |
| 480-17418-4 MSD | SS-5 | Total/NA | Solid | 8270C | 55961 |
| 480-17418-5 | SB-1 | Total/NA | Solid | 8270C | 55961 |
| 480-17418-6 | SB-4 | Total/NA | Solid | 8270C | 55961 |
| 480-17418-7 | SB-6 | Total/NA | Solid | 8270C | 55961 |
| 480-17418-8 | SB-9 | Total/NA | Solid | 8270C | 55961 |
| MB 480-55961/1-A | Method Blank | Total/NA | Solid | 8270C | 55961 |

## GC/MS Semi VOA (Continued)

### Analysis Batch: 56464

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| LCS 480-55961/2-A | Lab Control Sample | Total/NA | Solid | 8270C | 55961 |

## GC Semi VOA

### Prep Batch: 56111

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-1 | SS-2 | Total/NA | Solid | 3550B | |
| 480-17418-2 | SS-3 | Total/NA | Solid | 3550B | |
| 480-17418-3 | SS-4 | Total/NA | Solid | 3550B | |
| 480-17418-4 | SS-5 | Total/NA | Solid | 3550B | |
| LCS 480-56111/2-A | Lab Control Sample | Total/NA | Solid | 3550B | |
| MB 480-56111/1-A | Method Blank | Total/NA | Solid | 3550B | |

### Analysis Batch: 56205

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-1 | SS-2 | Total/NA | Solid | 8082 | 56111 |
| 480-17418-2 | SS-3 | Total/NA | Solid | 8082 | 56111 |
| 480-17418-3 | SS-4 | Total/NA | Solid | 8082 | 56111 |
| 480-17418-4 | SS-5 | Total/NA | Solid | 8082 | 56111 |
| LCS 480-56111/2-A | Lab Control Sample | Total/NA | Solid | 8082 | 56111 |
| MB 480-56111/1-A | Method Blank | Total/NA | Solid | 8082 | 56111 |

## Metals

### Prep Batch: 55903

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-1 | SS-2 | Total/NA | Solid | 7471A | |
| 480-17418-2 | SS-3 | Total/NA | Solid | 7471A | |
| 480-17418-3 | SS-4 | Total/NA | Solid | 7471A | |
| 480-17418-4 | SS-5 | Total/NA | Solid | 7471A | |
| 480-17418-5 | SB-1 | Total/NA | Solid | 7471A | |
| 480-17418-6 | SB-4 | Total/NA | Solid | 7471A | |
| 480-17418-7 | SB-6 | Total/NA | Solid | 7471A | |
| 480-17418-8 | SB-9 | Total/NA | Solid | 7471A | |
| 480-17418-8 MS | SB-9 | Total/NA | Solid | 7471A | |
| 480-17418-8 MSD | SB-9 | Total/NA | Solid | 7471A | |
| LCSSRM 480-55903/2-A | Lab Control Sample | Total/NA | Solid | 7471A | |
| MB 480-55903/1-A | Method Blank | Total/NA | Solid | 7471A | |

### Prep Batch: 55948

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-1 | SS-2 | Total/NA | Solid | 3050B | |
| 480-17418-2 | SS-3 | Total/NA | Solid | 3050B | |
| 480-17418-3 | SS-4 | Total/NA | Solid | 3050B | |
| 480-17418-4 | SS-5 | Total/NA | Solid | 3050B | |
| 480-17418-5 | SB-1 | Total/NA | Solid | 3050B | |
| 480-17418-6 | SB-4 | Total/NA | Solid | 3050B | |
| 480-17418-7 | SB-6 | Total/NA | Solid | 3050B | |
| 480-17418-8 | SB-9 | Total/NA | Solid | 3050B | |
| LCSSRM 480-55948/2-A | Lab Control Sample | Total/NA | Solid | 3050B | |
| MB 480-55948/1-A | Method Blank | Total/NA | Solid | 3050B | |

## Metals (Continued)

### Analysis Batch: 55971

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-1 | SS-2 | Total/NA | Solid | 7471A | 55903 |
| 480-17418-2 | SS-3 | Total/NA | Solid | 7471A | 55903 |
| 480-17418-3 | SS-4 | Total/NA | Solid | 7471A | 55903 |
| 480-17418-4 | SS-5 | Total/NA | Solid | 7471A | 55903 |
| 480-17418-5 | SB-1 | Total/NA | Solid | 7471A | 55903 |
| 480-17418-6 | SB-4 | Total/NA | Solid | 7471A | 55903 |
| 480-17418-7 | SB-6 | Total/NA | Solid | 7471A | 55903 |
| 480-17418-8 | SB-9 | Total/NA | Solid | 7471A | 55903 |
| LCSSRM 480-55903/2-A | Lab Control Sample | Total/NA | Solid | 7471A | 55903 |
| MB 480-55903/1-A | Method Blank | Total/NA | Solid | 7471A | 55903 |

### Analysis Batch: 55997

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-8 MS | SB-9 | Total/NA | Solid | 7471A | 55903 |
| 480-17418-8 MSD | SB-9 | Total/NA | Solid | 7471A | 55903 |

### Analysis Batch: 56100

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-1 | SS-2 | Total/NA | Solid | 6010B | 55948 |
| 480-17418-2 | SS-3 | Total/NA | Solid | 6010B | 55948 |
| 480-17418-3 | SS-4 | Total/NA | Solid | 6010B | 55948 |
| 480-17418-4 | SS-5 | Total/NA | Solid | 6010B | 55948 |
| 480-17418-5 | SB-1 | Total/NA | Solid | 6010B | 55948 |
| 480-17418-6 | SB-4 | Total/NA | Solid | 6010B | 55948 |
| 480-17418-7 | SB-6 | Total/NA | Solid | 6010B | 55948 |
| 480-17418-8 | SB-9 | Total/NA | Solid | 6010B | 55948 |
| LCSSRM 480-55948/2-A | Lab Control Sample | Total/NA | Solid | 6010B | 55948 |
| MB 480-55948/1-A | Method Blank | Total/NA | Solid | 6010B | 55948 |

## General Chemistry

### Analysis Batch: 55967

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-9 | SB-9 12'-14' | Total/NA | Solid | Moisture | |

### Analysis Batch: 56162

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-17418-1 | SS-2 | Total/NA | Solid | Moisture | |
| 480-17418-2 | SS-3 | Total/NA | Solid | Moisture | |
| 480-17418-3 | SS-4 | Total/NA | Solid | Moisture | |
| 480-17418-4 | SS-5 | Total/NA | Solid | Moisture | |
| 480-17418-5 | SB-1 | Total/NA | Solid | Moisture | |
| 480-17418-6 | SB-4 | Total/NA | Solid | Moisture | |
| 480-17418-7 | SB-6 | Total/NA | Solid | Moisture | |
| 480-17418-8 | SB-9 | Total/NA | Solid | Moisture | |

# Lab Chronicle

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

## Client Sample ID: SS-2

**Lab Sample ID: 480-17418-1**

**Date Collected: 03/16/12 12:00**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 81.6**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 55961 | 03/20/12 10:52 | CM | TAL BUF |
| Total/NA | Analysis | 8270C | | 5 | 56149 | 03/21/12 16:34 | RMM | TAL BUF |
| Total/NA | Prep | 3550B | | | 56111 | 03/21/12 08:56 | CM | TAL BUF |
| Total/NA | Analysis | 8082 | | 1 | 56205 | 03/21/12 23:15 | JM | TAL BUF |
| Total/NA | Prep | 7471A | | | 55903 | 03/20/12 08:30 | JM | TAL BUF |
| Total/NA | Analysis | 7471A | | 1 | 55971 | 03/20/12 11:03 | JM | TAL BUF |
| Total/NA | Prep | 3050B | | | 55948 | 03/20/12 10:30 | SS | TAL BUF |
| Total/NA | Analysis | 6010B | | 1 | 56100 | 03/20/12 21:21 | AH | TAL BUF |
| Total/NA | Analysis | Moisture | | 1 | 56162 | 03/21/12 11:38 | ZLR | TAL BUF |

## Client Sample ID: SS-3

**Lab Sample ID: 480-17418-2**

**Date Collected: 03/16/12 12:15**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 84.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 55961 | 03/20/12 10:52 | CM | TAL BUF |
| Total/NA | Analysis | 8270C | | 5 | 56149 | 03/21/12 16:57 | RMM | TAL BUF |
| Total/NA | Prep | 3550B | | | 56111 | 03/21/12 08:56 | CM | TAL BUF |
| Total/NA | Analysis | 8082 | | 1 | 56205 | 03/21/12 23:30 | JM | TAL BUF |
| Total/NA | Prep | 7471A | | | 55903 | 03/20/12 08:30 | JM | TAL BUF |
| Total/NA | Analysis | 7471A | | 1 | 55971 | 03/20/12 11:05 | JM | TAL BUF |
| Total/NA | Prep | 3050B | | | 55948 | 03/20/12 10:30 | SS | TAL BUF |
| Total/NA | Analysis | 6010B | | 1 | 56100 | 03/20/12 21:28 | AH | TAL BUF |
| Total/NA | Analysis | Moisture | | 1 | 56162 | 03/21/12 11:38 | ZLR | TAL BUF |

## Client Sample ID: SS-4

**Lab Sample ID: 480-17418-3**

**Date Collected: 03/16/12 12:30**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 85.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 55961 | 03/20/12 10:52 | CM | TAL BUF |
| Total/NA | Analysis | 8270C | | 5 | 56149 | 03/21/12 17:21 | RMM | TAL BUF |
| Total/NA | Prep | 3550B | | | 56111 | 03/21/12 08:56 | CM | TAL BUF |
| Total/NA | Analysis | 8082 | | 1 | 56205 | 03/21/12 23:45 | JM | TAL BUF |
| Total/NA | Prep | 7471A | | | 55903 | 03/20/12 08:30 | JM | TAL BUF |
| Total/NA | Analysis | 7471A | | 1 | 55971 | 03/20/12 11:07 | JM | TAL BUF |
| Total/NA | Prep | 3050B | | | 55948 | 03/20/12 10:30 | SS | TAL BUF |
| Total/NA | Analysis | 6010B | | 1 | 56100 | 03/20/12 21:31 | AH | TAL BUF |
| Total/NA | Analysis | Moisture | | 1 | 56162 | 03/21/12 11:38 | ZLR | TAL BUF |

## Client Sample ID: SS-5

**Lab Sample ID: 480-17418-4**

**Date Collected: 03/16/12 12:45**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 80.1**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 55961 | 03/20/12 10:52 | CM | TAL BUF |
| Total/NA | Analysis | 8270C | | 5 | 56149 | 03/21/12 17:44 | RMM | TAL BUF |
| Total/NA | Prep | 3550B | | | 56111 | 03/21/12 09:04 | CM | TAL BUF |
| Total/NA | Analysis | 8082 | | 1 | 56205 | 03/22/12 00:00 | JM | TAL BUF |
| Total/NA | Prep | 7471A | | | 55903 | 03/20/12 08:30 | JM | TAL BUF |
| Total/NA | Analysis | 7471A | | 1 | 55971 | 03/20/12 11:10 | JM | TAL BUF |
| Total/NA | Prep | 3050B | | | 55948 | 03/20/12 10:30 | SS | TAL BUF |
| Total/NA | Analysis | 6010B | | 1 | 56100 | 03/20/12 21:33 | AH | TAL BUF |
| Total/NA | Analysis | Moisture | | 1 | 56162 | 03/21/12 11:38 | ZLR | TAL BUF |

## Client Sample ID: SB-1

**Lab Sample ID: 480-17418-5**

**Date Collected: 03/16/12 08:30**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 75.0**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 55961 | 03/20/12 10:52 | CM | TAL BUF |
| Total/NA | Analysis | 8270C | | 1 | 56149 | 03/21/12 18:07 | RMM | TAL BUF |
| Total/NA | Prep | 7471A | | | 55903 | 03/20/12 08:30 | JM | TAL BUF |
| Total/NA | Analysis | 7471A | | 1 | 55971 | 03/20/12 11:12 | JM | TAL BUF |
| Total/NA | Prep | 3050B | | | 55948 | 03/20/12 10:30 | SS | TAL BUF |
| Total/NA | Analysis | 6010B | | 1 | 56100 | 03/20/12 21:36 | AH | TAL BUF |
| Total/NA | Analysis | Moisture | | 1 | 56162 | 03/21/12 11:38 | ZLR | TAL BUF |

## Client Sample ID: SB-4

**Lab Sample ID: 480-17418-6**

**Date Collected: 03/16/12 09:00**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 73.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 55961 | 03/20/12 10:52 | CM | TAL BUF |
| Total/NA | Analysis | 8270C | | 1 | 56149 | 03/21/12 18:31 | RMM | TAL BUF |
| Total/NA | Prep | 7471A | | | 55903 | 03/20/12 08:30 | JM | TAL BUF |
| Total/NA | Analysis | 7471A | | 1 | 55971 | 03/20/12 11:14 | JM | TAL BUF |
| Total/NA | Prep | 3050B | | | 55948 | 03/20/12 10:30 | SS | TAL BUF |
| Total/NA | Analysis | 6010B | | 1 | 56100 | 03/20/12 21:38 | AH | TAL BUF |
| Total/NA | Analysis | Moisture | | 1 | 56162 | 03/21/12 11:38 | ZLR | TAL BUF |

## Client Sample ID: SB-6

**Lab Sample ID: 480-17418-7**

**Date Collected: 03/16/12 09:30**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 78.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 55961 | 03/20/12 10:52 | CM | TAL BUF |
| Total/NA | Analysis | 8270C | | 1 | 56149 | 03/21/12 18:54 | RMM | TAL BUF |
| Total/NA | Prep | 7471A | | | 55903 | 03/20/12 08:30 | JM | TAL BUF |

## Client Sample ID: SB-6

**Lab Sample ID: 480-17418-7**

**Date Collected: 03/16/12 09:30**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 78.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 7471A | | 1 | 55971 | 03/20/12 11:15 | JM | TAL BUF |
| Total/NA | Prep | 3050B | | | 55948 | 03/20/12 10:30 | SS | TAL BUF |
| Total/NA | Analysis | 6010B | | 1 | 56100 | 03/20/12 21:41 | AH | TAL BUF |
| Total/NA | Analysis | Moisture | | 1 | 56162 | 03/21/12 11:38 | ZLR | TAL BUF |

## Client Sample ID: SB-9

**Lab Sample ID: 480-17418-8**

**Date Collected: 03/16/12 10:30**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 86.6**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 55961 | 03/20/12 10:52 | CM | TAL BUF |
| Total/NA | Analysis | 8270C | | 1 | 56149 | 03/21/12 19:18 | RMM | TAL BUF |
| Total/NA | Prep | 7471A | | | 55903 | 03/20/12 08:30 | JM | TAL BUF |
| Total/NA | Analysis | 7471A | | 1 | 55971 | 03/20/12 11:17 | JM | TAL BUF |
| Total/NA | Prep | 3050B | | | 55948 | 03/20/12 10:30 | SS | TAL BUF |
| Total/NA | Analysis | 6010B | | 1 | 56100 | 03/20/12 21:43 | AH | TAL BUF |
| Total/NA | Analysis | Moisture | | 1 | 56162 | 03/21/12 11:38 | ZLR | TAL BUF |

## Client Sample ID: SB-9 12'-14'

**Lab Sample ID: 480-17418-9**

**Date Collected: 03/16/12 10:30**
**Matrix: Solid**
**Date Received: 03/19/12 13:05**
**Percent Solids: 84.0**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 55923 | 03/20/12 10:36 | JMB | TAL BUF |
| Total/NA | Analysis | 8260B | | 1 | 55911 | 03/20/12 14:50 | JMB | TAL BUF |
| Total/NA | Analysis | Moisture | | 1 | 55967 | 03/20/12 11:24 | JMB | TAL BUF |

## Client Sample ID: TMW-1

**Lab Sample ID: 480-17418-10**

**Date Collected: 03/16/12 13:30**
**Matrix: Water**
**Date Received: 03/19/12 13:05**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8260B | | 1 | 55949 | 03/20/12 17:51 | LH | TAL BUF |

## Client Sample ID: TMW-2

**Lab Sample ID: 480-17418-11**

**Date Collected: 03/16/12 14:00**
**Matrix: Water**
**Date Received: 03/19/12 13:05**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8260B | | 1 | 55949 | 03/20/12 18:17 | LH | TAL BUF |

# Lab Chronicle

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

**Client Sample ID: TMW-3**
**Date Collected: 03/16/12 14:30**
**Date Received: 03/19/12 13:05**

**Lab Sample ID: 480-17418-12**
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8260B | | 1 | 55949 | 03/20/12 18:41 | LH | TAL BUF |

**Laboratory References:**

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

# Certification Summary

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

| Laboratory | Authority | Program | EPA Region | Certification ID |
|---|---|---|---|---|
| TestAmerica Buffalo | Arkansas DEQ | State Program | 6 | 88-0686 |
| TestAmerica Buffalo | California | NELAC | 9 | 1169CA |
| TestAmerica Buffalo | Connecticut | State Program | 1 | PH-0568 |
| TestAmerica Buffalo | Florida | NELAC | 4 | E87672 |
| TestAmerica Buffalo | Georgia | State Program | 4 | 956 |
| TestAmerica Buffalo | Georgia | State Program | 4 | N/A |
| TestAmerica Buffalo | Illinois | NELAC | 5 | 100325 / 200003 |
| TestAmerica Buffalo | Iowa | State Program | 7 | 374 |
| TestAmerica Buffalo | Kansas | NELAC | 7 | E-10187 |
| TestAmerica Buffalo | Kentucky | State Program | 4 | 90029 |
| TestAmerica Buffalo | Kentucky (UST) | State Program | 4 | 30 |
| TestAmerica Buffalo | Louisiana | NELAC | 6 | 02031 |
| TestAmerica Buffalo | Maine | State Program | 1 | NY0044 |
| TestAmerica Buffalo | Maryland | State Program | 3 | 294 |
| TestAmerica Buffalo | Massachusetts | State Program | 1 | M-NY044 |
| TestAmerica Buffalo | Michigan | State Program | 5 | 9937 |
| TestAmerica Buffalo | Minnesota | NELAC | 5 | 036-999-337 |
| TestAmerica Buffalo | New Hampshire | NELAC | 1 | 2337 |
| TestAmerica Buffalo | New Hampshire | NELAC | 1 | 68-00281 |
| TestAmerica Buffalo | New Jersey | NELAC | 2 | NY455 |
| TestAmerica Buffalo | New York | NELAC | 2 | 10026 |
| TestAmerica Buffalo | North Dakota | State Program | 8 | R-176 |
| TestAmerica Buffalo | Oklahoma | State Program | 6 | 9421 |
| TestAmerica Buffalo | Oregon | NELAC | 10 | NY200003 |
| TestAmerica Buffalo | Pennsylvania | NELAC | 3 | 68-00281 |
| TestAmerica Buffalo | Tennessee | State Program | 4 | TN02970 |
| TestAmerica Buffalo | Texas | NELAC | 6 | T104704412-08-TX |
| TestAmerica Buffalo | USDA | Federal | | P330-08-00242 |
| TestAmerica Buffalo | Virginia | NELAC Secondary AB | 3 | 460185 |
| TestAmerica Buffalo | Virginia | State Program | 3 | 278 |
| TestAmerica Buffalo | Washington | State Program | 10 | C1677 |
| TestAmerica Buffalo | West Virginia DEP | State Program | 3 | 252 |
| TestAmerica Buffalo | Wisconsin | State Program | 5 | 998310390 |

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

# Method Summary

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 8260B | Volatile Organic Compounds (GC/MS) | SW846 | TAL BUF |
| 8270C | Semivolatile Organic Compounds (GC/MS) | SW846 | TAL BUF |
| 8082 | Polychlorinated Biphenyls (PCBs) by Gas Chromatography | SW846 | TAL BUF |
| 6010B | Metals (ICP) | SW846 | TAL BUF |
| 7471A | Mercury (CVAA) | SW846 | TAL BUF |
| Moisture | Percent Moisture | EPA | TAL BUF |

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

# Sample Summary

Client: Turnkey Environmental Restoration, LLC
Project/Site: Turnkey - 208-214 Washington St, Dunkirk

TestAmerica Job ID: 480-17418-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 480-17418-1 | SS-2 | Solid | 03/16/12 12:00 | 03/19/12 13:05 |
| 480-17418-2 | SS-3 | Solid | 03/16/12 12:15 | 03/19/12 13:05 |
| 480-17418-3 | SS-4 | Solid | 03/16/12 12:30 | 03/19/12 13:05 |
| 480-17418-4 | SS-5 | Solid | 03/16/12 12:45 | 03/19/12 13:05 |
| 480-17418-5 | SB-1 | Solid | 03/16/12 08:30 | 03/19/12 13:05 |
| 480-17418-6 | SB-4 | Solid | 03/16/12 09:00 | 03/19/12 13:05 |
| 480-17418-7 | SB-6 | Solid | 03/16/12 09:30 | 03/19/12 13:05 |
| 480-17418-8 | SB-9 | Solid | 03/16/12 10:30 | 03/19/12 13:05 |
| 480-17418-9 | SB-9 12'-14' | Solid | 03/16/12 10:30 | 03/19/12 13:05 |
| 480-17418-10 | TMW-1 | Water | 03/16/12 13:30 | 03/19/12 13:05 |
| 480-17418-11 | TMW-2 | Water | 03/16/12 14:00 | 03/19/12 13:05 |
| 480-17418-12 | TMW-3 | Water | 03/16/12 14:30 | 03/19/12 13:05 |

# Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

| Client | Project Manager | Date | Chain of Custody Number |
|---|---|---|---|
| Turnkey Env Restoration, LLC | Mike Lesakowski | 2/19/12 | 149964 |
| **Address** | **Telephone Number (Area Code)/Fax Number** | **Lab Number** | **Page 1 of 1** |
| 2558 Hamburg Turnpike | 716-856-0599 | | |
| **City** / **State** / **Zip Code** | **Site Contact** | **Lab Contact** | |
| Buffalo / NY / 14218 | Rick Dubasz | B. Fischer | |
| **Project Name and Location (State)** | **Carrier/Waybill Number** | | |
| 208-214 Washington Ave - Dunkirk, NY PHASE II | | | |
| **Contract/Purchase Order/Quote No.** | | | |

| Sample I.D. No. and Description (Containers for each sample may be combined on one line) | Date | Time | Matrix: Air | Aqueous | Sed. | Soil | Containers & Preservatives: Unpres. | H2SO4 | HNO3 | HCl | NaOH | ZnAc/NaOH | Analysis: SVOCs, PAHs only | RCRA Metals | PCBs | TCL VOCs + STARS List | Special Instructions/ Conditions of Receipt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS-2 | 2/16/12 | 1200 | | | | V | V | | | | | | 1 | 1 | 1 | | |
| SS-3 | | 1215 | | | | V | V | | | | | | 1 | 1 | 1 | | |
| SS-4 | | 1230 | | | | V | V | | | | | | 1 | 1 | 1 | | |
| SS-5 | | 1245 | | | | V | V | | | | | | 1 | 1 | 1 | | |
| SB-1 | | 0830 | | | | V | V | | | | | | 1 | 1 | | | |
| SB-4 | 2/16/12 | 0900 | | | | V | V | | | | | | 1 | 1 | | | |
| SB-6 | | 0930 | | | | V | V | | | | | | 1 | 1 | | | |
| SB-9 | | 1030 | | | | V | V | | | | | | 1 | 1 | | | |
| SB-9 12-14' | | 1030 | | | | V | V | | | | | | | | | 1 | |
| Tmw-1 | | 1330 | | V | | | | | | | V | | | | | 1 | |
| Tmw-2 | | 1400 | | V | | | | | | | V | | | | | 1 | |
| Tmw-3 | | 1430 | | V | | | | | | | V | | | | | 1 | |

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

**Sample Disposal**
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

**Turn Around Time Required**
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☑ Other Standard

**QC Requirements (Specify)**

| | Relinquished By | Date | Time | Received By | Date | Time |
|---|---|---|---|---|---|---|
| 1. | | 2/19/12 | 1130 | | 3-19-12 | 12:20 |
| 2. | | 3-19-12 | 13:05 | | 3/19/12 | 1305 |
| 3. | | | | | | |

Comments

3.2 #

**DISTRIBUTION:** WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

# Login Sample Receipt Checklist

Client: Turnkey Environmental Restoration, LLC

Job Number: 480-17418-1

**Login Number: 17418**

**List Source: TestAmerica Buffalo**

**List Number: 1**

**Creator: Janish, Carl**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | True | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | N/A | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Sampling Company provided. | True | bmtk |
| Samples received within 48 hours of sampling. | False | |
| Samples requiring field filtration have been filtered in the field. | N/A | |
| Chlorine Residual checked. | N/A | |

eurofins | Environment Testing

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jason Brydges
Brydges Engineering in Environment & Energy DPC
960 Busti Ave
Suite B-150
Buffalo, New York 14213
Generated 1/25/2023 12:17:03 PM

## JOB DESCRIPTION

Regan Development - Dunkirk, NY

## JOB NUMBER

480-205498-1

Eurofins Buffalo
10 Hazelwood Drive
Amherst NY 14228-2298

See page two for job notes and contact information.

## Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing Northeast, LLC Buffalo and its client. All questions regarding this report should be directed to the Eurofins Environment Testing Northeast, LLC Buffalo Project Manager or designee who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization

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1/25/2023 12:17:03 PM

Authorized for release by
John Beninati, Project Manager
John.Beninati@et.eurofinsus.com
(716)504-9874

# Table of Contents

## Qualifiers

### GC/MS VOA

| Qualifier | Qualifier Description |
|---|---|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| U | Indicates the analyte was analyzed for but not detected. |

### GC/MS Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| S1- | Surrogate recovery exceeds control limits, low biased. |
| S1+ | Surrogate recovery exceeds control limits, high biased. |
| U | Indicates the analyte was analyzed for but not detected. |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| 4 | MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable. |
| B | Compound was found in the blank and sample. |
| F1 | MS and/or MSD recovery exceeds control limits. |
| F2 | MS/MSD RPD exceeds control limits |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| U | Indicates the analyte was analyzed for but not detected. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

## Glossary (Continued)

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| TNTC | Too Numerous To Count |

## Job ID: 480-205498-1

### Laboratory: Eurofins Buffalo

**Narrative**

**Job Narrative**
**480-205498-1**

**Comments**
No additional comments.

**Receipt**
The samples were received on 1/14/2023 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 6.3º C.

**GC/MS VOA**
Method 8260C: The following sample was collected in a properly preserved vial; however, the pH was outside the required criteria when verified by the laboratory. The sample was analyzed within the 7-day holding time specified for unpreserved samples: BH-4 4-5 (480-205498-18). pH is 7.

Method 8260C: The following sample was analyzed using medium level soil analysis and diluted due to the nature of the sample matrix: BH-4 4-5 (480-205498-5). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**GC/MS Semi VOA**
Method 8270D: The following samples were diluted due to color, appearance, and viscosity: BH-1 0-2 (480-205498-1), BH-2 0-3 (480-205498-2), BH-3 0-3 (480-205498-3), BH-8 0-3 (480-205498-9), BH-9 0-3 (480-205498-10), BH-11 0-2 (480-205498-12), BH-14 1-2 (480-205498-15), BH-16 0--4 (480-205498-17), (480-205498-A-10-A MS) and (480-205498-A-10-B MSD). Elevated reporting limits (RL) are provided.

Method 8270D: The following samples were diluted due to the nature of the sample matrix: BH-8 0-3 (480-205498-9), BH-11 0-2 (480-205498-12) and BH-16 0--4 (480-205498-17). As such, surrogate recoveries are below the calibration range or are not reported, and elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**Metals**
Method 6010C: The following samples were diluted due to the presence of Total Iron which interferes with Chromium, Manganese, Nickel, and Lead: BH-4 0-3 (480-205498-4), BH-5 0-3 (480-205498-6), BH-16 0--4 (480-205498-17) and BH-17 0-4 (480-205498-19). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**Organic Prep**
Method 3550C: Due to the matrix, the following samples could not be concentrated to the final method required volume: BH-8 0-3 (480-205498-9), BH-11 0-2 (480-205498-12) and BH-16 0--4 (480-205498-17). The reporting limits (RLs) are elevated proportionately.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

## Client Sample ID: BH-1 0-2
## Lab Sample ID: 480-205498-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 610 | J | 2200 | 320 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Anthracene | 1200 | J | 2200 | 540 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[a]anthracene | 2900 | | 2200 | 220 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 3200 | | 2200 | 320 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 3300 | | 2200 | 350 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 5400 | | 2200 | 230 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 1400 | J | 2200 | 280 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Chrysene | 3100 | | 2200 | 490 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Dibenz(a,h)anthracene | 1500 | J | 2200 | 390 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Dibenzofuran | 330 | J | 2200 | 260 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Fluoranthene | 7000 | | 2200 | 230 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Fluorene | 550 | J | 2200 | 260 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 2400 | | 2200 | 270 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Phenanthrene | 6000 | | 2200 | 320 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Pyrene | 6000 | | 2200 | 260 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Arsenic | 35.3 | | 2.6 | 0.52 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 501 | | 0.65 | 0.14 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 1.2 | | 0.26 | 0.036 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 1.2 | | 0.26 | 0.039 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 22.3 | | 0.65 | 0.26 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 114 | | 1.3 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 1200 | | 1.3 | 0.31 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 313 | B | 0.26 | 0.041 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 25.8 | | 6.5 | 0.30 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Selenium | 3.0 | J | 5.2 | 0.52 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Silver | 0.54 | J | 0.78 | 0.26 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 353 | | 2.6 | 0.83 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.52 | F1 F2 B | 0.026 | 0.0059 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-2 0-3
## Lab Sample ID: 480-205498-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Anthracene | 1300 | J | 2000 | 500 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[a]anthracene | 7500 | | 2000 | 200 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 7100 | | 2000 | 300 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 9900 | | 2000 | 320 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 4200 | | 2000 | 210 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 4300 | | 2000 | 260 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Chrysene | 9100 | | 2000 | 450 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Dibenz(a,h)anthracene | 2200 | | 2000 | 360 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Fluoranthene | 11000 | | 2000 | 210 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Fluorene | 370 | J | 2000 | 240 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 4400 | | 2000 | 250 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Phenanthrene | 4500 | | 2000 | 300 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Pyrene | 8200 | | 2000 | 240 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Arsenic | 17.0 | | 2.4 | 0.47 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 221 | | 0.59 | 0.13 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 2.1 | | 0.24 | 0.033 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.70 | | 0.24 | 0.035 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 18.7 | | 0.59 | 0.24 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 64.5 | | 1.2 | 0.25 | mg/Kg | 1 | ☼ | 6010C | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins Buffalo

## Client Sample ID: BH-2 0-3 (Continued)
## Lab Sample ID: 480-205498-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Lead | 245 | | 1.2 | 0.28 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 482 | B | 0.24 | 0.038 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 38.0 | | 5.9 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 146 | | 2.4 | 0.76 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.23 | B | 0.022 | 0.0051 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-3 0-3
## Lab Sample ID: 480-205498-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 380 | J | 970 | 140 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 470 | J | 970 | 150 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 310 | J | 970 | 100 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 160 | J | 970 | 130 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Chrysene | 300 | J | 970 | 220 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Fluoranthene | 490 | J | 970 | 100 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 270 | J | 970 | 120 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Phenanthrene | 270 | J | 970 | 140 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Pyrene | 460 | J | 970 | 110 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Arsenic | 3.6 | | 2.4 | 0.47 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 39.5 | | 0.59 | 0.13 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.23 | J | 0.24 | 0.033 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.094 | J | 0.24 | 0.036 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 6.1 | | 0.59 | 0.24 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 9.6 | | 1.2 | 0.25 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 60.6 | | 1.2 | 0.28 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 108 | B | 0.24 | 0.038 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 6.1 | | 5.9 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 54.4 | | 2.4 | 0.76 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.35 | B | 0.023 | 0.0053 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-4 0-3
## Lab Sample ID: 480-205498-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 32 | J | 190 | 28 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 40 | J | 190 | 31 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 38 | J | 190 | 20 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluoranthene | 29 | J | 190 | 20 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 34 | J | 190 | 24 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Phenanthrene | 36 | J | 190 | 28 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 37 | J | 190 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Arsenic | 11.4 | | 2.3 | 0.45 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 73.0 | | 0.57 | 0.12 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.52 | | 0.23 | 0.032 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.32 | | 0.23 | 0.034 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 28.1 | | 1.1 | 0.45 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Copper | 20.4 | | 1.1 | 0.24 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 10.6 | | 2.3 | 0.54 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Manganese | 3450 | | 0.45 | 0.072 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Nickel | 13.9 | | 11.3 | 0.52 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Selenium | 1.5 | J | 4.5 | 0.45 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 17.1 | | 2.3 | 0.72 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.040 | B | 0.022 | 0.0051 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: BH-4 4-5 — Lab Sample ID: 480-205498-5

No Detections.

## Client Sample ID: BH-5 0-3 — Lab Sample ID: 480-205498-6

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 380 | | 190 | 29 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Anthracene | 840 | | 190 | 48 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]anthracene | 1400 | | 190 | 19 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 1200 | | 190 | 29 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 1200 | | 190 | 31 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 830 | | 190 | 21 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 640 | | 190 | 25 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Chrysene | 1300 | | 190 | 43 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenz(a,h)anthracene | 240 | | 190 | 34 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenzofuran | 220 | | 190 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluoranthene | 2900 | | 190 | 21 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluorene | 390 | | 190 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 740 | | 190 | 24 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Naphthalene | 130 | J | 190 | 25 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Phenanthrene | 3100 | | 190 | 29 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 3100 | | 190 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Arsenic | 44.0 | | 2.4 | 0.47 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 141 | | 0.59 | 0.13 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.89 | | 0.24 | 0.033 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.35 | | 0.24 | 0.035 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 78.0 | | 1.2 | 0.47 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Copper | 63.7 | | 1.2 | 0.25 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 31.6 | | 2.4 | 0.57 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Manganese | 6080 | B | 0.47 | 0.076 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Nickel | 49.4 | | 11.8 | 0.54 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Selenium | 1.3 | J | 4.7 | 0.47 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Silver | 0.34 | J | 0.71 | 0.24 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 22.7 | | 2.4 | 0.76 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.051 | B | 0.024 | 0.0055 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-6 0-3 — Lab Sample ID: 480-205498-7

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 110 | J | 220 | 32 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Acenaphthylene | 36 | J | 220 | 28 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Anthracene | 370 | | 220 | 54 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]anthracene | 1300 | | 220 | 22 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 1300 | | 220 | 32 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 1300 | | 220 | 35 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 850 | | 220 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 720 | | 220 | 28 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Chrysene | 1400 | | 220 | 49 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenz(a,h)anthracene | 270 | | 220 | 39 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenzofuran | 74 | J | 220 | 26 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluoranthene | 2200 | | 220 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluorene | 110 | J | 220 | 26 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 800 | | 220 | 27 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Naphthalene | 71 | J | 220 | 28 | ug/Kg | 1 | ☼ | 8270D | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: BH-6 0-3 (Continued) — Lab Sample ID: 480-205498-7

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Phenanthrene | 1600 | | 220 | 32 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 2300 | | 220 | 26 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Arsenic | 10.2 | | 2.7 | 0.55 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 248 | | 0.68 | 0.15 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.78 | | 0.27 | 0.038 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.62 | | 0.27 | 0.041 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 13.6 | | 0.68 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 54.6 | | 1.4 | 0.29 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 386 | | 1.4 | 0.33 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 198 | B | 0.27 | 0.044 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 16.7 | | 6.8 | 0.32 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Selenium | 1.0 | J | 5.5 | 0.55 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Silver | 0.34 | J | 0.82 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 174 | | 2.7 | 0.88 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.28 | B | 0.026 | 0.0060 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-7 0-3 — Lab Sample ID: 480-205498-8

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]anthracene | 86 | J | 210 | 21 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 130 | J | 210 | 31 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 170 | J | 210 | 34 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 150 | J | 210 | 22 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 71 | J | 210 | 27 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Chrysene | 130 | J | 210 | 47 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenz(a,h)anthracene | 47 | J | 210 | 37 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluoranthene | 140 | J | 210 | 22 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 110 | J | 210 | 26 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Phenanthrene | 110 | J | 210 | 31 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 170 | J | 210 | 25 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Arsenic | 32.4 | F1 F2 | 2.6 | 0.52 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 109 | | 0.65 | 0.14 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 1.1 | | 0.26 | 0.036 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.37 | | 0.26 | 0.039 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 17.4 | F2 | 0.65 | 0.26 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 41.0 | F1 F2 | 1.3 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 90.1 | F1 F2 | 1.3 | 0.31 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 261 | B F2 | 0.26 | 0.042 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 23.3 | | 6.5 | 0.30 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Selenium | 1.1 | J | 5.2 | 0.52 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 91.4 | F1 F2 | 2.6 | 0.83 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.16 | B | 0.026 | 0.0060 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-8 0-3 — Lab Sample ID: 480-205498-9

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Fluoranthene | 3500 | J | 22000 | 2300 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Pyrene | 3200 | J | 22000 | 2500 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Arsenic | 4.2 | | 2.6 | 0.53 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 90.7 | | 0.66 | 0.14 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.85 | | 0.26 | 0.037 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.17 | J | 0.26 | 0.039 | mg/Kg | 1 | ☼ | 6010C | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: BH-8 0-3 (Continued) — Lab Sample ID: 480-205498-9

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Chromium | 6.5 | | 0.66 | 0.26 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 31.8 | | 1.3 | 0.28 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 47.9 | | 1.3 | 0.32 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 290 | B | 0.26 | 0.042 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 8.4 | | 6.6 | 0.30 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 39.8 | | 2.6 | 0.84 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.035 | B | 0.025 | 0.0058 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-9 0-3 — Lab Sample ID: 480-205498-10

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 180 | J | 1000 | 150 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 210 | J | 1000 | 160 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 150 | J | 1000 | 110 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 140 | J | 1000 | 130 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Fluoranthene | 390 | J | 1000 | 110 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 130 | J | 1000 | 130 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Phenanthrene | 250 | J | 1000 | 150 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Pyrene | 350 | J | 1000 | 120 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Arsenic | 10.7 | | 2.5 | 0.51 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 155 | | 0.63 | 0.14 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.80 | | 0.25 | 0.035 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.39 | | 0.25 | 0.038 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 26.8 | | 0.63 | 0.25 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 32.1 | | 1.3 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 104 | | 1.3 | 0.30 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 302 | B | 0.25 | 0.040 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 33.7 | | 6.3 | 0.29 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Selenium | 0.65 | J | 5.1 | 0.51 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 105 | | 2.5 | 0.81 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.15 | B | 0.021 | 0.0049 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-10 0-2 — Lab Sample ID: 480-205498-11

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 49 | J | 210 | 30 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Anthracene | 190 | J | 210 | 51 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]anthracene | 390 | | 210 | 21 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 380 | | 210 | 30 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 420 | | 210 | 33 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 260 | | 210 | 22 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 200 | J | 210 | 27 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Chrysene | 430 | | 210 | 46 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenz(a,h)anthracene | 84 | J | 210 | 36 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenzofuran | 51 | J | 210 | 24 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluoranthene | 800 | | 210 | 22 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluorene | 64 | J | 210 | 24 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 250 | | 210 | 25 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Naphthalene | 39 | J | 210 | 27 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Phenanthrene | 770 | | 210 | 30 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 830 | | 210 | 24 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Arsenic | 12.5 | | 2.5 | 0.49 | mg/Kg | 1 | ☼ | 6010C | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: BH-10 0-2 (Continued) — Lab Sample ID: 480-205498-11

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Barium | 180 | | 0.61 | 0.13 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.92 | | 0.25 | 0.034 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.46 | | 0.25 | 0.037 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 26.6 | | 0.61 | 0.25 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 33.2 | | 1.2 | 0.26 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 281 | | 1.2 | 0.29 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 375 | B | 0.25 | 0.039 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 31.6 | | 6.1 | 0.28 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 176 | | 2.5 | 0.79 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.15 | B | 0.022 | 0.0051 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-11 0-2 — Lab Sample ID: 480-205498-12

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Fluoranthene | 6300 | J | 24000 | 2500 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Phenanthrene | 5800 | J | 24000 | 3500 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Pyrene | 5000 | J | 24000 | 2800 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Arsenic | 10.0 | | 2.6 | 0.52 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 194 | | 0.65 | 0.14 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.74 | | 0.26 | 0.036 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.95 | | 0.26 | 0.039 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 33.1 | | 0.65 | 0.26 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 58.6 | | 1.3 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 393 | | 1.3 | 0.31 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 320 | B | 0.26 | 0.041 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 44.6 | | 6.5 | 0.30 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 261 | | 2.6 | 0.83 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.32 | B | 0.024 | 0.0056 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-12 0-2 — Lab Sample ID: 480-205498-13

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 420 | | 190 | 29 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Anthracene | 900 | | 190 | 48 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]anthracene | 1500 | | 190 | 19 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 1200 | | 190 | 29 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 1100 | | 190 | 31 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 740 | | 190 | 21 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 630 | | 190 | 25 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Chrysene | 1500 | | 190 | 44 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenz(a,h)anthracene | 180 | J | 190 | 34 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenzofuran | 160 | J | 190 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluoranthene | 2900 | | 190 | 21 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluorene | 340 | | 190 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 690 | | 190 | 24 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Phenanthrene | 3600 | | 190 | 29 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 3600 | | 190 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Arsenic | 9.4 | | 2.4 | 0.48 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 203 | | 0.60 | 0.13 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.50 | | 0.24 | 0.034 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.63 | | 0.24 | 0.036 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 16.5 | | 0.60 | 0.24 | mg/Kg | 1 | ☼ | 6010C | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: BH-12 0-2 (Continued)
## Lab Sample ID: 480-205498-13

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Copper | 30.9 | | 1.2 | 0.25 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 447 | | 1.2 | 0.29 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 365 | B | 0.24 | 0.038 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 15.6 | | 6.0 | 0.28 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Silver | 0.39 | J | 0.72 | 0.24 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 284 | | 2.4 | 0.77 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 1.0 | B | 0.022 | 0.0050 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-13 0-2
## Lab Sample ID: 480-205498-14

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]anthracene | 93 | J | 220 | 22 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 130 | J | 220 | 32 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 150 | J | 220 | 35 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 95 | J | 220 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 61 | J | 220 | 29 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Chrysene | 140 | J | 220 | 49 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluoranthene | 250 | | 220 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 95 | J | 220 | 27 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Phenanthrene | 190 | J | 220 | 32 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 260 | | 220 | 26 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Arsenic | 15.1 | | 2.7 | 0.55 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 633 | | 0.68 | 0.15 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.89 | | 0.27 | 0.038 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.67 | | 0.27 | 0.041 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 28.2 | | 0.68 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 70.8 | | 1.4 | 0.29 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 1120 | | 1.4 | 0.33 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 762 | B | 0.27 | 0.044 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 30.1 | | 6.8 | 0.31 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Selenium | 1.1 | J | 5.5 | 0.55 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Silver | 0.49 | J | 0.82 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 438 | | 2.7 | 0.87 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 6.7 | B | 0.27 | 0.062 | mg/Kg | 10 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-14 1-2
## Lab Sample ID: 480-205498-15

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | 130 | J | 980 | 130 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[a]anthracene | 440 | J | 980 | 98 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 570 | J | 980 | 140 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 830 | J | 980 | 160 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 380 | J | 980 | 100 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 290 | J | 980 | 130 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Chrysene | 520 | J | 980 | 220 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Fluoranthene | 610 | J | 980 | 100 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 370 | J | 980 | 120 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Phenanthrene | 200 | J | 980 | 140 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Pyrene | 510 | J | 980 | 120 | ug/Kg | 5 | ☼ | 8270D | Total/NA |
| Arsenic | 8.3 | | 2.5 | 0.49 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 89.7 | | 0.61 | 0.14 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.80 | | 0.25 | 0.034 | mg/Kg | 1 | ☼ | 6010C | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: BH-14 1-2 (Continued)
## Lab Sample ID: 480-205498-15

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Cadmium | 0.23 | J | 0.25 | 0.037 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 11.0 | | 0.61 | 0.25 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 49.0 | | 1.2 | 0.26 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 70.6 | | 1.2 | 0.29 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 288 | B | 0.25 | 0.039 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 20.7 | | 6.1 | 0.28 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 93.1 | | 2.5 | 0.79 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.44 | B | 0.024 | 0.0056 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-15 1-2
## Lab Sample ID: 480-205498-16

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | 28 | J | 200 | 26 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]anthracene | 280 | | 200 | 20 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 270 | | 200 | 29 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 340 | | 200 | 31 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 160 | J | 200 | 21 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 160 | J | 200 | 26 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Chrysene | 300 | | 200 | 44 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenz(a,h)anthracene | 51 | J | 200 | 35 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Dibenzofuran | 30 | J | 200 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluoranthene | 310 | | 200 | 21 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Indeno[1,2,3-cd]pyrene | 160 | J | 200 | 24 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Naphthalene | 41 | J | 200 | 26 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Phenanthrene | 230 | | 200 | 29 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 350 | | 200 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Arsenic | 16.9 | | 2.4 | 0.49 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 131 | | 0.61 | 0.13 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.95 | | 0.24 | 0.034 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.40 | | 0.24 | 0.036 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 12.9 | | 0.61 | 0.24 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Copper | 84.5 | | 1.2 | 0.25 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 192 | | 1.2 | 0.29 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Manganese | 336 | B | 0.24 | 0.039 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Nickel | 24.6 | | 6.1 | 0.28 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Selenium | 1.4 | J | 4.9 | 0.49 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 99.0 | | 2.4 | 0.78 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.27 | B | 0.023 | 0.0053 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-16 0--4
## Lab Sample ID: 480-205498-17

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]anthracene | 2300 | J | 21000 | 2100 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 3100 | J | 21000 | 3100 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Fluoranthene | 6000 | J | 21000 | 2200 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Phenanthrene | 4800 | J | 21000 | 3100 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Pyrene | 4500 | J | 21000 | 2500 | ug/Kg | 10 | ☼ | 8270D | Total/NA |
| Arsenic | 62.2 | | 2.5 | 0.51 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 603 | | 0.64 | 0.14 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 0.61 | | 0.25 | 0.036 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 1.6 | | 0.25 | 0.038 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 145 | | 3.2 | 1.3 | mg/Kg | 5 | ☼ | 6010C | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: BH-16 0--4 (Continued) — Lab Sample ID: 480-205498-17

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Copper | 114 | | 1.3 | 0.27 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 714 | | 6.4 | 1.5 | mg/Kg | 5 | ☼ | 6010C | Total/NA |
| Manganese | 1910 | B | 1.3 | 0.20 | mg/Kg | 5 | ☼ | 6010C | Total/NA |
| Nickel | 44.1 | | 31.9 | 1.5 | mg/Kg | 5 | ☼ | 6010C | Total/NA |
| Selenium | 3.9 | J | 5.1 | 0.51 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 376 | | 2.5 | 0.82 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.30 | B | 0.025 | 0.0057 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: BH-4 4-5 — Lab Sample ID: 480-205498-18

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 3.4 | J | 10 | 3.0 | ug/L | 1 | | 8260C | Total/NA |

## Client Sample ID: BH-17 0-4 — Lab Sample ID: 480-205498-19

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Fluoranthene | 27 | J | 190 | 20 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 27 | J | 190 | 23 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Arsenic | 11.5 | | 2.3 | 0.46 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Barium | 161 | | 0.57 | 0.13 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Beryllium | 1.2 | | 0.23 | 0.032 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Cadmium | 0.45 | | 0.23 | 0.034 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Chromium | 51.9 | | 1.1 | 0.46 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Copper | 37.1 | | 1.1 | 0.24 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Lead | 12.0 | | 2.3 | 0.55 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Manganese | 9770 | B | 0.46 | 0.073 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Nickel | 22.9 | | 11.4 | 0.53 | mg/Kg | 2 | ☼ | 6010C | Total/NA |
| Selenium | 3.5 | J | 4.6 | 0.46 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Silver | 0.38 | J | 0.69 | 0.23 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Zinc | 41.7 | | 2.3 | 0.73 | mg/Kg | 1 | ☼ | 6010C | Total/NA |
| Mercury | 0.0080 | J B | 0.024 | 0.0055 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: BH-1 0-2
**Date Collected: 01/13/23 09:10**
**Date Received: 01/14/23 09:15**

## Lab Sample ID: 480-205498-1
**Matrix: Solid**
**Percent Solids: 76.9**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 1300 | U | 1300 | 710 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| 2-Methylphenol | 2200 | U | 2200 | 260 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| 3-Methylphenol | 4200 | U | 4200 | 330 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| 4-Methylphenol | 4200 | U | 4200 | 260 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Acenaphthene** | **610** | **J** | 2200 | 320 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| Acenaphthylene | 2200 | U | 2200 | 280 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Anthracene** | **1200** | **J** | 2200 | 540 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Benzo[a]anthracene** | **2900** | | 2200 | 220 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Benzo[a]pyrene** | **3200** | | 2200 | 320 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Benzo[b]fluoranthene** | **3300** | | 2200 | 350 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Benzo[g,h,i]perylene** | **5400** | | 2200 | 230 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Benzo[k]fluoranthene** | **1400** | **J** | 2200 | 280 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Chrysene** | **3100** | | 2200 | 490 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Dibenz(a,h)anthracene** | **1500** | **J** | 2200 | 390 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Dibenzofuran** | **330** | **J** | 2200 | 260 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Fluoranthene** | **7000** | | 2200 | 230 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Fluorene** | **550** | **J** | 2200 | 260 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| Hexachlorobenzene | 2200 | U | 2200 | 300 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Indeno[1,2,3-cd]pyrene** | **2400** | | 2200 | 270 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| Naphthalene | 2200 | U | 2200 | 280 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| Pentachlorophenol | 4200 | U | 4200 | 2200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Phenanthrene** | **6000** | | 2200 | 320 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| Phenol | 2200 | U | 2200 | 330 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |
| **Pyrene** | **6000** | | 2200 | 260 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:52 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *87* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 15:52* | *10* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 15:52* | *10* |
| *2-Fluorophenol (Surr)* | *89* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 15:52* | *10* |
| *Nitrobenzene-d5 (Surr)* | *78* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 15:52* | *10* |
| *Phenol-d5 (Surr)* | *87* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 15:52* | *10* |
| *p-Terphenyl-d14 (Surr)* | *113* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 15:52* | *10* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **35.3** | | 2.6 | 0.52 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Barium** | **501** | | 0.65 | 0.14 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Beryllium** | **1.2** | | 0.26 | 0.036 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Cadmium** | **1.2** | | 0.26 | 0.039 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Chromium** | **22.3** | | 0.65 | 0.26 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Copper** | **114** | | 1.3 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Lead** | **1200** | | 1.3 | 0.31 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Manganese** | **313** | **B** | 0.26 | 0.041 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Nickel** | **25.8** | | 6.5 | 0.30 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Selenium** | **3.0** | **J** | 5.2 | 0.52 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Silver** | **0.54** | **J** | 0.78 | 0.26 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |
| **Zinc** | **353** | | 2.6 | 0.83 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:20 | 1 |

## Client Sample ID: BH-1 0-2
**Lab Sample ID: 480-205498-1**
**Date Collected: 01/13/23 09:10**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 76.9**

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.52** | **F1 F2 B** | 0.026 | 0.0059 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 14:49 | 1 |

## Client Sample ID: BH-2 0-3
**Lab Sample ID: 480-205498-2**
**Date Collected: 01/13/23 09:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 83.2**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 1200 | U | 1200 | 660 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| 2-Methylphenol | 2000 | U | 2000 | 240 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| 3-Methylphenol | 3900 | U | 3900 | 310 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| 4-Methylphenol | 3900 | U | 3900 | 240 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| Acenaphthene | 2000 | U | 2000 | 300 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| Acenaphthylene | 2000 | U | 2000 | 260 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Anthracene** | **1300** | **J** | 2000 | 500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Benzo[a]anthracene** | **7500** | | 2000 | 200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Benzo[a]pyrene** | **7100** | | 2000 | 300 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Benzo[b]fluoranthene** | **9900** | | 2000 | 320 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Benzo[g,h,i]perylene** | **4200** | | 2000 | 210 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Benzo[k]fluoranthene** | **4300** | | 2000 | 260 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Chrysene** | **9100** | | 2000 | 450 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Dibenz(a,h)anthracene** | **2200** | | 2000 | 360 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| Dibenzofuran | 2000 | U | 2000 | 240 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Fluoranthene** | **11000** | | 2000 | 210 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Fluorene** | **370** | **J** | 2000 | 240 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| Hexachlorobenzene | 2000 | U | 2000 | 270 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Indeno[1,2,3-cd]pyrene** | **4400** | | 2000 | 250 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| Naphthalene | 2000 | U | 2000 | 260 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| Pentachlorophenol | 3900 | U | 3900 | 2000 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Phenanthrene** | **4500** | | 2000 | 300 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| Phenol | 2000 | U | 2000 | 310 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |
| **Pyrene** | **8200** | | 2000 | 240 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:18 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *111* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 16:18* | *10* |
| *2-Fluorobiphenyl (Surr)* | *98* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 16:18* | *10* |
| *2-Fluorophenol (Surr)* | *83* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 16:18* | *10* |
| *Nitrobenzene-d5 (Surr)* | *83* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 16:18* | *10* |
| *Phenol-d5 (Surr)* | *94* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 16:18* | *10* |
| *p-Terphenyl-d14 (Surr)* | *108* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 16:18* | *10* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **17.0** | | 2.4 | 0.47 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |
| **Barium** | **221** | | 0.59 | 0.13 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |
| **Beryllium** | **2.1** | | 0.24 | 0.033 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |
| **Cadmium** | **0.70** | | 0.24 | 0.035 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |
| **Chromium** | **18.7** | | 0.59 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |
| **Copper** | **64.5** | | 1.2 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |
| **Lead** | **245** | | 1.2 | 0.28 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |

## Client Sample ID: BH-2 0-3

**Lab Sample ID: 480-205498-2**
**Date Collected: 01/13/23 09:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 83.2**

### Method: SW846 6010C - Metals (ICP) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Manganese** | **482** | **B** | 0.24 | 0.038 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |
| **Nickel** | **38.0** | | 5.9 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |
| Selenium | 4.7 | U | 4.7 | 0.47 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |
| Silver | 0.71 | U | 0.71 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |
| **Zinc** | **146** | | 2.4 | 0.76 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:24 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.23** | **B** | 0.022 | 0.0051 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 14:54 | 1 |

## Client Sample ID: BH-3 0-3

**Lab Sample ID: 480-205498-3**
**Date Collected: 01/13/23 09:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 86.1**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 570 | U | 570 | 310 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| 2-Methylphenol | 970 | U | 970 | 110 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| 3-Methylphenol | 1900 | U | 1900 | 150 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| 4-Methylphenol | 1900 | U | 1900 | 110 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Acenaphthene | 970 | U | 970 | 140 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Acenaphthylene | 970 | U | 970 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Anthracene | 970 | U | 970 | 240 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Benzo[a]anthracene | 970 | U | 970 | 97 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| **Benzo[a]pyrene** | **380** | **J** | 970 | 140 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| **Benzo[b]fluoranthene** | **470** | **J** | 970 | 150 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| **Benzo[g,h,i]perylene** | **310** | **J** | 970 | 100 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| **Benzo[k]fluoranthene** | **160** | **J** | 970 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| **Chrysene** | **300** | **J** | 970 | 220 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Dibenz(a,h)anthracene | 970 | U | 970 | 170 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Dibenzofuran | 970 | U | 970 | 110 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| **Fluoranthene** | **490** | **J** | 970 | 100 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Fluorene | 970 | U | 970 | 110 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Hexachlorobenzene | 970 | U | 970 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| **Indeno[1,2,3-cd]pyrene** | **270** | **J** | 970 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Naphthalene | 970 | U | 970 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Pentachlorophenol | 1900 | U | 1900 | 970 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| **Phenanthrene** | **270** | **J** | 970 | 140 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| Phenol | 970 | U | 970 | 150 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |
| **Pyrene** | **460** | **J** | 970 | 110 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 16:43 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *85* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 16:43* | *5* |
| *2-Fluorobiphenyl (Surr)* | *87* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 16:43* | *5* |
| *2-Fluorophenol (Surr)* | *75* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 16:43* | *5* |
| *Nitrobenzene-d5 (Surr)* | *80* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 16:43* | *5* |
| *Phenol-d5 (Surr)* | *86* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 16:43* | *5* |
| *p-Terphenyl-d14 (Surr)* | *106* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 16:43* | *5* |

## Client Sample ID: BH-3 0-3

**Lab Sample ID: 480-205498-3**
**Date Collected: 01/13/23 09:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 86.1**

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **3.6** | | 2.4 | 0.47 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| **Barium** | **39.5** | | 0.59 | 0.13 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| **Beryllium** | **0.23** | **J** | 0.24 | 0.033 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| **Cadmium** | **0.094** | **J** | 0.24 | 0.036 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| **Chromium** | **6.1** | | 0.59 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| **Copper** | **9.6** | | 1.2 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| **Lead** | **60.6** | | 1.2 | 0.28 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| **Manganese** | **108** | **B** | 0.24 | 0.038 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| **Nickel** | **6.1** | | 5.9 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| Selenium | 4.7 | U | 4.7 | 0.47 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| Silver | 0.71 | U | 0.71 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |
| **Zinc** | **54.4** | | 2.4 | 0.76 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:28 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.35** | **B** | 0.023 | 0.0053 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 14:55 | 1 |

## Client Sample ID: BH-4 0-3

**Lab Sample ID: 480-205498-4**
**Date Collected: 01/13/23 10:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 86.8**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 110 | U | 110 | 63 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| 2-Methylphenol | 190 | U | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| 3-Methylphenol | 380 | U | 380 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| 4-Methylphenol | 380 | U | 380 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Acenaphthene | 190 | U | 190 | 28 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Acenaphthylene | 190 | U | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Anthracene | 190 | U | 190 | 48 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Benzo[a]anthracene | 190 | U | 190 | 19 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| **Benzo[a]pyrene** | **32** | **J** | 190 | 28 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| **Benzo[b]fluoranthene** | **40** | **J** | 190 | 31 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| **Benzo[g,h,i]perylene** | **38** | **J** | 190 | 20 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Benzo[k]fluoranthene | 190 | U | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Chrysene | 190 | U | 190 | 43 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Dibenz(a,h)anthracene | 190 | U | 190 | 34 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Dibenzofuran | 190 | U | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| **Fluoranthene** | **29** | **J** | 190 | 20 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Fluorene | 190 | U | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Hexachlorobenzene | 190 | U | 190 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **34** | **J** | 190 | 24 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Naphthalene | 190 | U | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Pentachlorophenol | 380 | U | 380 | 190 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| **Phenanthrene** | **36** | **J** | 190 | 28 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| Phenol | 190 | U | 190 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |
| **Pyrene** | **37** | **J** | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:09 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *93* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 17:09* | *1* |

## Client Sample ID: BH-4 0-3
**Lab Sample ID: 480-205498-4**
**Date Collected: 01/13/23 10:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 86.8**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2-Fluorobiphenyl (Surr)* | *97* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 17:09* | *1* |
| *2-Fluorophenol (Surr)* | *81* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 17:09* | *1* |
| *Nitrobenzene-d5 (Surr)* | *87* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 17:09* | *1* |
| *Phenol-d5 (Surr)* | *84* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 17:09* | *1* |
| *p-Terphenyl-d14 (Surr)* | *123* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 17:09* | *1* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **11.4** | | 2.3 | 0.45 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:32 | 1 |
| **Barium** | **73.0** | | 0.57 | 0.12 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:32 | 1 |
| **Beryllium** | **0.52** | | 0.23 | 0.032 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:32 | 1 |
| **Cadmium** | **0.32** | | 0.23 | 0.034 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:32 | 1 |
| **Chromium** | **28.1** | | 1.1 | 0.45 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:35 | 2 |
| **Copper** | **20.4** | | 1.1 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:32 | 1 |
| **Lead** | **10.6** | | 2.3 | 0.54 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:35 | 2 |
| **Manganese** | **3450** | | 0.45 | 0.072 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:35 | 2 |
| **Nickel** | **13.9** | | 11.3 | 0.52 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:35 | 2 |
| **Selenium** | **1.5** | **J** | 4.5 | 0.45 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:32 | 1 |
| Silver | 0.68 | U | 0.68 | 0.23 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:32 | 1 |
| **Zinc** | **17.1** | | 2.3 | 0.72 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:32 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.040** | **B** | 0.022 | 0.0051 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 14:57 | 1 |

## Client Sample ID: BH-4 4-5
**Lab Sample ID: 480-205498-5**
**Date Collected: 01/13/23 10:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 78.7**

### Method: SW846 8260C - Volatile Organic Compounds by GC/MS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 560 | U | 560 | 160 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| 1,1-Dichloroethane | 560 | U | 560 | 170 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| 1,1-Dichloroethene | 560 | U | 560 | 190 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| 1,2,4-Trimethylbenzene | 560 | U | 560 | 160 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| 1,2-Dichlorobenzene | 560 | U | 560 | 140 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| 1,2-Dichloroethane | 560 | U | 560 | 230 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| 1,3,5-Trimethylbenzene | 560 | U | 560 | 170 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| 1,3-Dichlorobenzene | 560 | U | 560 | 150 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| 1,4-Dichlorobenzene | 560 | U | 560 | 78 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| 1,4-Dioxane | 11000 | U | 11000 | 2900 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| 2-Butanone (MEK) | 2800 | U | 2800 | 1700 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Acetone | 2800 | U | 2800 | 2300 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Benzene | 560 | U | 560 | 110 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Carbon tetrachloride | 560 | U | 560 | 140 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Chlorobenzene | 560 | U | 560 | 74 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Chloroform | 560 | U | 560 | 380 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| cis-1,2-Dichloroethene | 560 | U | 560 | 150 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Ethylbenzene | 560 | U | 560 | 160 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Methyl tert-butyl ether | 560 | U | 560 | 210 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |

## Client Sample ID: BH-4 4-5

**Lab Sample ID: 480-205498-5**
**Date Collected: 01/13/23 10:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 78.7**

### Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Methylene Chloride | 560 | U | 560 | 110 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| n-Butylbenzene | 560 | U | 560 | 160 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| N-Propylbenzene | 560 | U | 560 | 150 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| sec-Butylbenzene | 560 | U | 560 | 210 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Tetrachloroethene | 560 | U | 560 | 75 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Toluene | 560 | U | 560 | 150 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| trans-1,2-Dichloroethene | 560 | U | 560 | 130 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Trichloroethene | 560 | U | 560 | 160 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Vinyl chloride | 560 | U | 560 | 190 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| Xylenes, Total | 1100 | U | 1100 | 310 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |
| tert-Butylbenzene | 560 | U | 560 | 160 | ug/Kg | ☼ | 01/18/23 10:35 | 01/19/23 16:26 | 4 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *98* | | *53 - 146* | *01/18/23 10:35* | *01/19/23 16:26* | *4* |
| *4-Bromofluorobenzene (Surr)* | *93* | | *49 - 148* | *01/18/23 10:35* | *01/19/23 16:26* | *4* |
| *Toluene-d8 (Surr)* | *95* | | *50 - 149* | *01/18/23 10:35* | *01/19/23 16:26* | *4* |
| *Dibromofluoromethane (Surr)* | *94* | | *60 - 140* | *01/18/23 10:35* | *01/19/23 16:26* | *4* |

## Client Sample ID: BH-5 0-3

**Lab Sample ID: 480-205498-6**
**Date Collected: 01/13/23 10:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 85.5**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 110 | U | 110 | 63 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| 2-Methylphenol | 190 | U | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| 3-Methylphenol | 380 | U | 380 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| 4-Methylphenol | 380 | U | 380 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Acenaphthene** | **380** | | 190 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| Acenaphthylene | 190 | U | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Anthracene** | **840** | | 190 | 48 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Benzo[a]anthracene** | **1400** | | 190 | 19 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Benzo[a]pyrene** | **1200** | | 190 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Benzo[b]fluoranthene** | **1200** | | 190 | 31 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Benzo[g,h,i]perylene** | **830** | | 190 | 21 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Benzo[k]fluoranthene** | **640** | | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Chrysene** | **1300** | | 190 | 43 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Dibenz(a,h)anthracene** | **240** | | 190 | 34 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Dibenzofuran** | **220** | | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Fluoranthene** | **2900** | | 190 | 21 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Fluorene** | **390** | | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| Hexachlorobenzene | 190 | U | 190 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **740** | | 190 | 24 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Naphthalene** | **130** | **J** | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| Pentachlorophenol | 380 | U | 380 | 190 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Phenanthrene** | **3100** | | 190 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| Phenol | 190 | U | 190 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |
| **Pyrene** | **3100** | | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:34 | 1 |

## Client Sample ID: BH-5 0-3

**Lab Sample ID: 480-205498-6**
**Date Collected: 01/13/23 10:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 85.5**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *98* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 17:34* | *1* |
| *2-Fluorobiphenyl (Surr)* | *102* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 17:34* | *1* |
| *2-Fluorophenol (Surr)* | *86* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 17:34* | *1* |
| *Nitrobenzene-d5 (Surr)* | *92* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 17:34* | *1* |
| *Phenol-d5 (Surr)* | *86* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 17:34* | *1* |
| *p-Terphenyl-d14 (Surr)* | *124* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 17:34* | *1* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **44.0** | | 2.4 | 0.47 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:36 | 1 |
| **Barium** | **141** | | 0.59 | 0.13 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:36 | 1 |
| **Beryllium** | **0.89** | | 0.24 | 0.033 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:36 | 1 |
| **Cadmium** | **0.35** | | 0.24 | 0.035 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:36 | 1 |
| **Chromium** | **78.0** | | 1.2 | 0.47 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:38 | 2 |
| **Copper** | **63.7** | | 1.2 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:36 | 1 |
| **Lead** | **31.6** | | 2.4 | 0.57 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:38 | 2 |
| **Manganese** | **6080** | **B** | 0.47 | 0.076 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:38 | 2 |
| **Nickel** | **49.4** | | 11.8 | 0.54 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:38 | 2 |
| **Selenium** | **1.3** | **J** | 4.7 | 0.47 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:36 | 1 |
| **Silver** | **0.34** | **J** | 0.71 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:36 | 1 |
| **Zinc** | **22.7** | | 2.4 | 0.76 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:36 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.051** | **B** | 0.024 | 0.0055 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 14:58 | 1 |

## Client Sample ID: BH-6 0-3

**Lab Sample ID: 480-205498-7**
**Date Collected: 01/13/23 10:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 75.9**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 130 | U | 130 | 71 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| 2-Methylphenol | 220 | U | 220 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| 3-Methylphenol | 420 | U | 420 | 33 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| 4-Methylphenol | 420 | U | 420 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Acenaphthene** | **110** | **J** | 220 | 32 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Acenaphthylene** | **36** | **J** | 220 | 28 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Anthracene** | **370** | | 220 | 54 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Benzo[a]anthracene** | **1300** | | 220 | 22 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Benzo[a]pyrene** | **1300** | | 220 | 32 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Benzo[b]fluoranthene** | **1300** | | 220 | 35 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Benzo[g,h,i]perylene** | **850** | | 220 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Benzo[k]fluoranthene** | **720** | | 220 | 28 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Chrysene** | **1400** | | 220 | 49 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Dibenz(a,h)anthracene** | **270** | | 220 | 39 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Dibenzofuran** | **74** | **J** | 220 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Fluoranthene** | **2200** | | 220 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Fluorene** | **110** | **J** | 220 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| Hexachlorobenzene | 220 | U | 220 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **800** | | 220 | 27 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |

## Client Sample ID: BH-6 0-3
**Lab Sample ID: 480-205498-7**
**Date Collected: 01/13/23 10:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 75.9**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **71** | **J** | 220 | 28 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| Pentachlorophenol | 420 | U | 420 | 220 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Phenanthrene** | **1600** | | 220 | 32 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| Phenol | 220 | U | 220 | 33 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |
| **Pyrene** | **2300** | | 220 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 17:59 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *109* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 17:59* | *1* |
| *2-Fluorobiphenyl (Surr)* | *110* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 17:59* | *1* |
| *2-Fluorophenol (Surr)* | *91* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 17:59* | *1* |
| *Nitrobenzene-d5 (Surr)* | *99* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 17:59* | *1* |
| *Phenol-d5 (Surr)* | *95* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 17:59* | *1* |
| *p-Terphenyl-d14 (Surr)* | *126* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 17:59* | *1* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **10.2** | | 2.7 | 0.55 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Barium** | **248** | | 0.68 | 0.15 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Beryllium** | **0.78** | | 0.27 | 0.038 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Cadmium** | **0.62** | | 0.27 | 0.041 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Chromium** | **13.6** | | 0.68 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Copper** | **54.6** | | 1.4 | 0.29 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Lead** | **386** | | 1.4 | 0.33 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Manganese** | **198** | **B** | 0.27 | 0.044 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Nickel** | **16.7** | | 6.8 | 0.32 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Selenium** | **1.0** | **J** | 5.5 | 0.55 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Silver** | **0.34** | **J** | 0.82 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |
| **Zinc** | **174** | | 2.7 | 0.88 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:40 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.28** | **B** | 0.026 | 0.0060 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:02 | 1 |

## Client Sample ID: BH-7 0-3
**Lab Sample ID: 480-205498-8**
**Date Collected: 01/13/23 10:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 79.2**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 120 | U | 120 | 68 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| 2-Methylphenol | 210 | U | 210 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| 3-Methylphenol | 410 | U | 410 | 32 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| 4-Methylphenol | 410 | U | 410 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| Acenaphthene | 210 | U | 210 | 31 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| Acenaphthylene | 210 | U | 210 | 27 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| Anthracene | 210 | U | 210 | 52 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| **Benzo[a]anthracene** | **86** | **J** | 210 | 21 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| **Benzo[a]pyrene** | **130** | **J** | 210 | 31 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| **Benzo[b]fluoranthene** | **170** | **J** | 210 | 34 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| **Benzo[g,h,i]perylene** | **150** | **J** | 210 | 22 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| **Benzo[k]fluoranthene** | **71** | **J** | 210 | 27 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |

## Client Sample ID: BH-7 0-3
**Lab Sample ID: 480-205498-8**
**Date Collected: 01/13/23 10:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 79.2**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Chrysene** | **130** | **J** | 210 | 47 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| **Dibenz(a,h)anthracene** | **47** | **J** | 210 | 37 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| Dibenzofuran | 210 | U | 210 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| **Fluoranthene** | **140** | **J** | 210 | 22 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| Fluorene | 210 | U | 210 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| Hexachlorobenzene | 210 | U | 210 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **110** | **J** | 210 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| Naphthalene | 210 | U | 210 | 27 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| Pentachlorophenol | 410 | U | 410 | 210 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| **Phenanthrene** | **110** | **J** | 210 | 31 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| Phenol | 210 | U | 210 | 32 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |
| **Pyrene** | **170** | **J** | 210 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:24 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *96* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 18:24* | *1* |
| *2-Fluorobiphenyl (Surr)* | *94* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 18:24* | *1* |
| *2-Fluorophenol (Surr)* | *82* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 18:24* | *1* |
| *Nitrobenzene-d5 (Surr)* | *87* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 18:24* | *1* |
| *Phenol-d5 (Surr)* | *81* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 18:24* | *1* |
| *p-Terphenyl-d14 (Surr)* | *115* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 18:24* | *1* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **32.4** | **F1 F2** | 2.6 | 0.52 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| **Barium** | **109** | | 0.65 | 0.14 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| **Beryllium** | **1.1** | | 0.26 | 0.036 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| **Cadmium** | **0.37** | | 0.26 | 0.039 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| **Chromium** | **17.4** | **F2** | 0.65 | 0.26 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| **Copper** | **41.0** | **F1 F2** | 1.3 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| **Lead** | **90.1** | **F1 F2** | 1.3 | 0.31 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| **Manganese** | **261** | **B F2** | 0.26 | 0.042 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| **Nickel** | **23.3** | | 6.5 | 0.30 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| **Selenium** | **1.1** | **J** | 5.2 | 0.52 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| Silver | 0.78 | U | 0.78 | 0.26 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |
| **Zinc** | **91.4** | **F1 F2** | 2.6 | 0.83 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 00:44 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.16** | **B** | 0.026 | 0.0060 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:03 | 1 |

## Client Sample ID: BH-8 0-3
**Lab Sample ID: 480-205498-9**
**Date Collected: 01/13/23 11:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 77.1**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 13000 | U | 13000 | 7000 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| 2-Methylphenol | 22000 | U | 22000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| 3-Methylphenol | 42000 | U | 42000 | 3300 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| 4-Methylphenol | 42000 | U | 42000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Acenaphthene | 22000 | U | 22000 | 3200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |

## Client Sample ID: BH-8 0-3
**Lab Sample ID: 480-205498-9**

**Date Collected: 01/13/23 11:00**
**Matrix: Solid**

**Date Received: 01/14/23 09:15**
**Percent Solids: 77.1**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | 22000 | U | 22000 | 2800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Anthracene | 22000 | U | 22000 | 5400 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Benzo[a]anthracene | 22000 | U | 22000 | 2200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Benzo[a]pyrene | 22000 | U | 22000 | 3200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Benzo[b]fluoranthene | 22000 | U | 22000 | 3400 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Benzo[g,h,i]perylene | 22000 | U | 22000 | 2300 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Benzo[k]fluoranthene | 22000 | U | 22000 | 2800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Chrysene | 22000 | U | 22000 | 4800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Dibenz(a,h)anthracene | 22000 | U | 22000 | 3800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Dibenzofuran | 22000 | U | 22000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| **Fluoranthene** | **3500** | **J** | 22000 | 2300 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Fluorene | 22000 | U | 22000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Hexachlorobenzene | 22000 | U | 22000 | 2900 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Indeno[1,2,3-cd]pyrene | 22000 | U | 22000 | 2700 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Naphthalene | 22000 | U | 22000 | 2800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Pentachlorophenol | 42000 | U | 42000 | 22000 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Phenanthrene | 22000 | U | 22000 | 3200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| Phenol | 22000 | U | 22000 | 3300 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |
| **Pyrene** | **3200** | **J** | 22000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 18:48 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *0* | *S1-* | *54 - 120* | *01/17/23 15:51* | *01/18/23 18:48* | *10* |
| *2-Fluorobiphenyl (Surr)* | *109* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 18:48* | *10* |
| *2-Fluorophenol (Surr)* | *103* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 18:48* | *10* |
| *Nitrobenzene-d5 (Surr)* | *0* | *S1-* | *53 - 120* | *01/17/23 15:51* | *01/18/23 18:48* | *10* |
| *Phenol-d5 (Surr)* | *102* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 18:48* | *10* |
| *p-Terphenyl-d14 (Surr)* | *104* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 18:48* | *10* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **4.2** | | 2.6 | 0.53 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| **Barium** | **90.7** | | 0.66 | 0.14 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| **Beryllium** | **0.85** | | 0.26 | 0.037 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| **Cadmium** | **0.17** | **J** | 0.26 | 0.039 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| **Chromium** | **6.5** | | 0.66 | 0.26 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| **Copper** | **31.8** | | 1.3 | 0.28 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| **Lead** | **47.9** | | 1.3 | 0.32 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| **Manganese** | **290** | **B** | 0.26 | 0.042 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| **Nickel** | **8.4** | | 6.6 | 0.30 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| Selenium | 5.3 | U | 5.3 | 0.53 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| Silver | 0.79 | U | 0.79 | 0.26 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |
| **Zinc** | **39.8** | | 2.6 | 0.84 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:15 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.035** | **B** | 0.025 | 0.0058 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:05 | 1 |

## Client Sample ID: BH-9 0-3
**Date Collected: 01/13/23 11:15**
**Date Received: 01/14/23 09:15**

## Lab Sample ID: 480-205498-10
**Matrix: Solid**
**Percent Solids: 81.2**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 600 | U | 600 | 330 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| 2-Methylphenol | 1000 | U | 1000 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| 3-Methylphenol | 2000 | U | 2000 | 160 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| 4-Methylphenol | 2000 | U | 2000 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Acenaphthene | 1000 | U | 1000 | 150 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Acenaphthylene | 1000 | U | 1000 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Anthracene | 1000 | U | 1000 | 250 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Benzo[a]anthracene | 1000 | U | 1000 | 100 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| **Benzo[a]pyrene** | **180** | **J** | 1000 | 150 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| **Benzo[b]fluoranthene** | **210** | **J** | 1000 | 160 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| **Benzo[g,h,i]perylene** | **150** | **J** | 1000 | 110 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| **Benzo[k]fluoranthene** | **140** | **J** | 1000 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Chrysene | 1000 | U | 1000 | 230 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Dibenz(a,h)anthracene | 1000 | U | 1000 | 180 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Dibenzofuran | 1000 | U | 1000 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| **Fluoranthene** | **390** | **J** | 1000 | 110 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Fluorene | 1000 | U | 1000 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Hexachlorobenzene | 1000 | U | 1000 | 140 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| **Indeno[1,2,3-cd]pyrene** | **130** | **J** | 1000 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Naphthalene | 1000 | U | 1000 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Pentachlorophenol | 2000 | U | 2000 | 1000 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| **Phenanthrene** | **250** | **J** | 1000 | 150 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| Phenol | 1000 | U | 1000 | 160 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |
| **Pyrene** | **350** | **J** | 1000 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 15:27 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *91* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 15:27* | *5* |
| *2-Fluorobiphenyl (Surr)* | *105* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 15:27* | *5* |
| *2-Fluorophenol (Surr)* | *93* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 15:27* | *5* |
| *Nitrobenzene-d5 (Surr)* | *96* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 15:27* | *5* |
| *Phenol-d5 (Surr)* | *93* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 15:27* | *5* |
| *p-Terphenyl-d14 (Surr)* | *105* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 15:27* | *5* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **10.7** | | 2.5 | 0.51 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| **Barium** | **155** | | 0.63 | 0.14 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| **Beryllium** | **0.80** | | 0.25 | 0.035 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| **Cadmium** | **0.39** | | 0.25 | 0.038 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| **Chromium** | **26.8** | | 0.63 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| **Copper** | **32.1** | | 1.3 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| **Lead** | **104** | | 1.3 | 0.30 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| **Manganese** | **302** | **B** | 0.25 | 0.040 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| **Nickel** | **33.7** | | 6.3 | 0.29 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| **Selenium** | **0.65** | **J** | 5.1 | 0.51 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| Silver | 0.76 | U | 0.76 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |
| **Zinc** | **105** | | 2.5 | 0.81 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:18 | 1 |

## Client Sample ID: BH-9 0-3

**Lab Sample ID: 480-205498-10**
**Date Collected: 01/13/23 11:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 81.2**

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.15** | **B** | 0.021 | 0.0049 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:06 | 1 |

## Client Sample ID: BH-10 0-2

**Lab Sample ID: 480-205498-11**
**Date Collected: 01/13/23 11:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 82.2**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 120 | U | 120 | 66 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| 2-Methylphenol | 210 | U | 210 | 24 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| 3-Methylphenol | 400 | U | 400 | 31 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| 4-Methylphenol | 400 | U | 400 | 24 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Acenaphthene** | **49** | **J** | 210 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| Acenaphthylene | 210 | U | 210 | 27 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Anthracene** | **190** | **J** | 210 | 51 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Benzo[a]anthracene** | **390** | | 210 | 21 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Benzo[a]pyrene** | **380** | | 210 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Benzo[b]fluoranthene** | **420** | | 210 | 33 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Benzo[g,h,i]perylene** | **260** | | 210 | 22 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Benzo[k]fluoranthene** | **200** | **J** | 210 | 27 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Chrysene** | **430** | | 210 | 46 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Dibenz(a,h)anthracene** | **84** | **J** | 210 | 36 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Dibenzofuran** | **51** | **J** | 210 | 24 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Fluoranthene** | **800** | | 210 | 22 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Fluorene** | **64** | **J** | 210 | 24 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| Hexachlorobenzene | 210 | U | 210 | 28 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **250** | | 210 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Naphthalene** | **39** | **J** | 210 | 27 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| Pentachlorophenol | 400 | U | 400 | 210 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Phenanthrene** | **770** | | 210 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| Phenol | 210 | U | 210 | 31 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |
| **Pyrene** | **830** | | 210 | 24 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:13 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *87* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 19:13* | *1* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 19:13* | *1* |
| *2-Fluorophenol (Surr)* | *75* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 19:13* | *1* |
| *Nitrobenzene-d5 (Surr)* | *79* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 19:13* | *1* |
| *Phenol-d5 (Surr)* | *76* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 19:13* | *1* |
| *p-Terphenyl-d14 (Surr)* | *112* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 19:13* | *1* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **12.5** | | 2.5 | 0.49 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |
| **Barium** | **180** | | 0.61 | 0.13 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |
| **Beryllium** | **0.92** | | 0.25 | 0.034 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |
| **Cadmium** | **0.46** | | 0.25 | 0.037 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |
| **Chromium** | **26.6** | | 0.61 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |
| **Copper** | **33.2** | | 1.2 | 0.26 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |
| **Lead** | **281** | | 1.2 | 0.29 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |

## Client Sample ID: BH-10 0-2

**Lab Sample ID: 480-205498-11**
**Date Collected: 01/13/23 11:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 82.2**

### Method: SW846 6010C - Metals (ICP) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Manganese** | **375** | **B** | 0.25 | 0.039 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |
| **Nickel** | **31.6** | | 6.1 | 0.28 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |
| Selenium | 4.9 | U | 4.9 | 0.49 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |
| Silver | 0.74 | U | 0.74 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |
| **Zinc** | **176** | | 2.5 | 0.79 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:22 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.15** | **B** | 0.022 | 0.0051 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:07 | 1 |

## Client Sample ID: BH-11 0-2

**Lab Sample ID: 480-205498-12**
**Date Collected: 01/13/23 12:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 78.5**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 14000 | U | 14000 | 7600 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| 2-Methylphenol | 24000 | U | 24000 | 2800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| 3-Methylphenol | 46000 | U | 46000 | 3600 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| 4-Methylphenol | 46000 | U | 46000 | 2800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Acenaphthene | 24000 | U | 24000 | 3500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Acenaphthylene | 24000 | U | 24000 | 3000 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Anthracene | 24000 | U | 24000 | 5800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Benzo[a]anthracene | 24000 | U | 24000 | 2400 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Benzo[a]pyrene | 24000 | U | 24000 | 3500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Benzo[b]fluoranthene | 24000 | U | 24000 | 3700 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Benzo[g,h,i]perylene | 24000 | U | 24000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Benzo[k]fluoranthene | 24000 | U | 24000 | 3000 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Chrysene | 24000 | U | 24000 | 5300 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Dibenz(a,h)anthracene | 24000 | U | 24000 | 4200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Dibenzofuran | 24000 | U | 24000 | 2800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| **Fluoranthene** | **6300** | **J** | 24000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Fluorene | 24000 | U | 24000 | 2800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Hexachlorobenzene | 24000 | U | 24000 | 3200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Indeno[1,2,3-cd]pyrene | 24000 | U | 24000 | 2900 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Naphthalene | 24000 | U | 24000 | 3000 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Pentachlorophenol | 46000 | U | 46000 | 24000 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| **Phenanthrene** | **5800** | **J** | 24000 | 3500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| Phenol | 24000 | U | 24000 | 3600 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |
| **Pyrene** | **5000** | **J** | 24000 | 2800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 19:38 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *0* | *S1-* | *54 - 120* | *01/17/23 15:51* | *01/18/23 19:38* | *10* |
| *2-Fluorobiphenyl (Surr)* | *120* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 19:38* | *10* |
| *2-Fluorophenol (Surr)* | *0* | *S1-* | *52 - 120* | *01/17/23 15:51* | *01/18/23 19:38* | *10* |
| *Nitrobenzene-d5 (Surr)* | *83* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 19:38* | *10* |
| *Phenol-d5 (Surr)* | *89* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 19:38* | *10* |
| *p-Terphenyl-d14 (Surr)* | *97* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 19:38* | *10* |

## Client Sample ID: BH-11 0-2

**Lab Sample ID: 480-205498-12**
**Date Collected: 01/13/23 12:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 78.5**

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **10.0** | | 2.6 | 0.52 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| **Barium** | **194** | | 0.65 | 0.14 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| **Beryllium** | **0.74** | | 0.26 | 0.036 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| **Cadmium** | **0.95** | | 0.26 | 0.039 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| **Chromium** | **33.1** | | 0.65 | 0.26 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| **Copper** | **58.6** | | 1.3 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| **Lead** | **393** | | 1.3 | 0.31 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| **Manganese** | **320** | **B** | 0.26 | 0.041 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| **Nickel** | **44.6** | | 6.5 | 0.30 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| Selenium | 5.2 | U | 5.2 | 0.52 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| Silver | 0.78 | U | 0.78 | 0.26 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |
| **Zinc** | **261** | | 2.6 | 0.83 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:26 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.32** | **B** | 0.024 | 0.0056 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:08 | 1 |

## Client Sample ID: BH-12 0-2

**Lab Sample ID: 480-205498-13**
**Date Collected: 01/13/23 12:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 85.9**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 110 | U | 110 | 63 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| 2-Methylphenol | 190 | U | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| 3-Methylphenol | 380 | U | 380 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| 4-Methylphenol | 380 | U | 380 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Acenaphthene** | **420** | | 190 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| Acenaphthylene | 190 | U | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Anthracene** | **900** | | 190 | 48 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Benzo[a]anthracene** | **1500** | | 190 | 19 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Benzo[a]pyrene** | **1200** | | 190 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Benzo[b]fluoranthene** | **1100** | | 190 | 31 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Benzo[g,h,i]perylene** | **740** | | 190 | 21 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Benzo[k]fluoranthene** | **630** | | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Chrysene** | **1500** | | 190 | 44 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Dibenz(a,h)anthracene** | **180** | **J** | 190 | 34 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Dibenzofuran** | **160** | **J** | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Fluoranthene** | **2900** | | 190 | 21 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Fluorene** | **340** | | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| Hexachlorobenzene | 190 | U | 190 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **690** | | 190 | 24 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| Naphthalene | 190 | U | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| Pentachlorophenol | 380 | U | 380 | 190 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Phenanthrene** | **3600** | | 190 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| Phenol | 190 | U | 190 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |
| **Pyrene** | **3600** | | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:02 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *90* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 20:02* | *1* |

## Client Sample ID: BH-12 0-2

**Lab Sample ID: 480-205498-13**
**Date Collected: 01/13/23 12:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 85.9**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2-Fluorobiphenyl (Surr)* | *96* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 20:02* | *1* |
| *2-Fluorophenol (Surr)* | *79* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 20:02* | *1* |
| *Nitrobenzene-d5 (Surr)* | *89* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 20:02* | *1* |
| *Phenol-d5 (Surr)* | *79* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 20:02* | *1* |
| *p-Terphenyl-d14 (Surr)* | *119* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 20:02* | *1* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **9.4** | | 2.4 | 0.48 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| **Barium** | **203** | | 0.60 | 0.13 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| **Beryllium** | **0.50** | | 0.24 | 0.034 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| **Cadmium** | **0.63** | | 0.24 | 0.036 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| **Chromium** | **16.5** | | 0.60 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| **Copper** | **30.9** | | 1.2 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| **Lead** | **447** | | 1.2 | 0.29 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| **Manganese** | **365** | **B** | 0.24 | 0.038 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| **Nickel** | **15.6** | | 6.0 | 0.28 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| Selenium | 4.8 | U | 4.8 | 0.48 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| **Silver** | **0.39** | **J** | 0.72 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |
| **Zinc** | **284** | | 2.4 | 0.77 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:30 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **1.0** | **B** | 0.022 | 0.0050 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:10 | 1 |

## Client Sample ID: BH-13 0-2

**Lab Sample ID: 480-205498-14**
**Date Collected: 01/13/23 13:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 75.8**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 130 | U | 130 | 71 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| 2-Methylphenol | 220 | U | 220 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| 3-Methylphenol | 430 | U | 430 | 34 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| 4-Methylphenol | 430 | U | 430 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| Acenaphthene | 220 | U | 220 | 32 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| Acenaphthylene | 220 | U | 220 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| Anthracene | 220 | U | 220 | 54 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| **Benzo[a]anthracene** | **93** | **J** | 220 | 22 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| **Benzo[a]pyrene** | **130** | **J** | 220 | 32 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| **Benzo[b]fluoranthene** | **150** | **J** | 220 | 35 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| **Benzo[g,h,i]perylene** | **95** | **J** | 220 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| **Benzo[k]fluoranthene** | **61** | **J** | 220 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| **Chrysene** | **140** | **J** | 220 | 49 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| Dibenz(a,h)anthracene | 220 | U | 220 | 39 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| Dibenzofuran | 220 | U | 220 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| **Fluoranthene** | **250** | | 220 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| Fluorene | 220 | U | 220 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| Hexachlorobenzene | 220 | U | 220 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **95** | **J** | 220 | 27 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |

## Client Sample ID: BH-13 0-2

**Lab Sample ID: 480-205498-14**
**Date Collected: 01/13/23 13:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 75.8**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 220 | U | 220 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| Pentachlorophenol | 430 | U | 430 | 220 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| **Phenanthrene** | **190** | **J** | 220 | 32 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| Phenol | 220 | U | 220 | 34 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |
| **Pyrene** | **260** | | 220 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:27 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *86* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 20:27* | *1* |
| *2-Fluorobiphenyl (Surr)* | *94* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 20:27* | *1* |
| *2-Fluorophenol (Surr)* | *77* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 20:27* | *1* |
| *Nitrobenzene-d5 (Surr)* | *84* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 20:27* | *1* |
| *Phenol-d5 (Surr)* | *80* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 20:27* | *1* |
| *p-Terphenyl-d14 (Surr)* | *117* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 20:27* | *1* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **15.1** | | 2.7 | 0.55 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Barium** | **633** | | 0.68 | 0.15 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Beryllium** | **0.89** | | 0.27 | 0.038 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Cadmium** | **0.67** | | 0.27 | 0.041 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Chromium** | **28.2** | | 0.68 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Copper** | **70.8** | | 1.4 | 0.29 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Lead** | **1120** | | 1.4 | 0.33 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Manganese** | **762** | **B** | 0.27 | 0.044 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Nickel** | **30.1** | | 6.8 | 0.31 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Selenium** | **1.1** | **J** | 5.5 | 0.55 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Silver** | **0.49** | **J** | 0.82 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |
| **Zinc** | **438** | | 2.7 | 0.87 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:34 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **6.7** | **B** | 0.27 | 0.062 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 16:14 | 10 |

## Client Sample ID: BH-14 1-2

**Lab Sample ID: 480-205498-15**
**Date Collected: 01/13/23 13:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 84.6**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 580 | U | 580 | 320 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| 2-Methylphenol | 980 | U | 980 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| 3-Methylphenol | 1900 | U | 1900 | 150 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| 4-Methylphenol | 1900 | U | 1900 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| Acenaphthene | 980 | U | 980 | 140 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| **Acenaphthylene** | **130** | **J** | 980 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| Anthracene | 980 | U | 980 | 240 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| **Benzo[a]anthracene** | **440** | **J** | 980 | 98 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| **Benzo[a]pyrene** | **570** | **J** | 980 | 140 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| **Benzo[b]fluoranthene** | **830** | **J** | 980 | 160 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| **Benzo[g,h,i]perylene** | **380** | **J** | 980 | 100 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| **Benzo[k]fluoranthene** | **290** | **J** | 980 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |

## Client Sample ID: BH-14 1-2

**Lab Sample ID: 480-205498-15**
**Date Collected: 01/13/23 13:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 84.6**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Chrysene** | **520** | **J** | 980 | 220 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| Dibenz(a,h)anthracene | 980 | U | 980 | 170 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| Dibenzofuran | 980 | U | 980 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| **Fluoranthene** | **610** | **J** | 980 | 100 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| Fluorene | 980 | U | 980 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| Hexachlorobenzene | 980 | U | 980 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| **Indeno[1,2,3-cd]pyrene** | **370** | **J** | 980 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| Naphthalene | 980 | U | 980 | 130 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| Pentachlorophenol | 1900 | U | 1900 | 980 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| **Phenanthrene** | **200** | **J** | 980 | 140 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| Phenol | 980 | U | 980 | 150 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |
| **Pyrene** | **510** | **J** | 980 | 120 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 20:52 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *80* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 20:52* | *5* |
| *2-Fluorobiphenyl (Surr)* | *88* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 20:52* | *5* |
| *2-Fluorophenol (Surr)* | *75* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 20:52* | *5* |
| *Nitrobenzene-d5 (Surr)* | *76* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 20:52* | *5* |
| *Phenol-d5 (Surr)* | *82* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 20:52* | *5* |
| *p-Terphenyl-d14 (Surr)* | *99* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 20:52* | *5* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **8.3** | | 2.5 | 0.49 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| **Barium** | **89.7** | | 0.61 | 0.14 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| **Beryllium** | **0.80** | | 0.25 | 0.034 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| **Cadmium** | **0.23** | **J** | 0.25 | 0.037 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| **Chromium** | **11.0** | | 0.61 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| **Copper** | **49.0** | | 1.2 | 0.26 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| **Lead** | **70.6** | | 1.2 | 0.29 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| **Manganese** | **288** | **B** | 0.25 | 0.039 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| **Nickel** | **20.7** | | 6.1 | 0.28 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| Selenium | 4.9 | U | 4.9 | 0.49 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| Silver | 0.74 | U | 0.74 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |
| **Zinc** | **93.1** | | 2.5 | 0.79 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:49 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.44** | **B** | 0.024 | 0.0056 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:14 | 1 |

## Client Sample ID: BH-15 1-2

**Lab Sample ID: 480-205498-16**
**Date Collected: 01/13/23 13:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 84.9**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 120 | U | 120 | 64 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| 2-Methylphenol | 200 | U | 200 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| 3-Methylphenol | 380 | U | 380 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| 4-Methylphenol | 380 | U | 380 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| Acenaphthene | 200 | U | 200 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |

## Client Sample ID: BH-15 1-2
**Lab Sample ID: 480-205498-16**

**Date Collected: 01/13/23 13:30**
**Matrix: Solid**

**Date Received: 01/14/23 09:15**
**Percent Solids: 84.9**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Acenaphthylene** | **28** | **J** | 200 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| Anthracene | 200 | U | 200 | 49 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Benzo[a]anthracene** | **280** | | 200 | 20 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Benzo[a]pyrene** | **270** | | 200 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Benzo[b]fluoranthene** | **340** | | 200 | 31 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Benzo[g,h,i]perylene** | **160** | **J** | 200 | 21 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Benzo[k]fluoranthene** | **160** | **J** | 200 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Chrysene** | **300** | | 200 | 44 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Dibenz(a,h)anthracene** | **51** | **J** | 200 | 35 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Dibenzofuran** | **30** | **J** | 200 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Fluoranthene** | **310** | | 200 | 21 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| Fluorene | 200 | U | 200 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| Hexachlorobenzene | 200 | U | 200 | 27 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **160** | **J** | 200 | 24 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Naphthalene** | **41** | **J** | 200 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| Pentachlorophenol | 380 | U | 380 | 200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Phenanthrene** | **230** | | 200 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| Phenol | 200 | U | 200 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |
| **Pyrene** | **350** | | 200 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:17 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *101* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 21:17* | *1* |
| *2-Fluorobiphenyl (Surr)* | *101* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 21:17* | *1* |
| *2-Fluorophenol (Surr)* | *90* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 21:17* | *1* |
| *Nitrobenzene-d5 (Surr)* | *99* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 21:17* | *1* |
| *Phenol-d5 (Surr)* | *89* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 21:17* | *1* |
| *p-Terphenyl-d14 (Surr)* | *125* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 21:17* | *1* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **16.9** | | 2.4 | 0.49 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| **Barium** | **131** | | 0.61 | 0.13 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| **Beryllium** | **0.95** | | 0.24 | 0.034 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| **Cadmium** | **0.40** | | 0.24 | 0.036 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| **Chromium** | **12.9** | | 0.61 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| **Copper** | **84.5** | | 1.2 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| **Lead** | **192** | | 1.2 | 0.29 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| **Manganese** | **336** | **B** | 0.24 | 0.039 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| **Nickel** | **24.6** | | 6.1 | 0.28 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| **Selenium** | **1.4** | **J** | 4.9 | 0.49 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| Silver | 0.73 | U | 0.73 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |
| **Zinc** | **99.0** | | 2.4 | 0.78 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:53 | 1 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.27** | **B** | 0.023 | 0.0053 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:15 | 1 |

## Client Sample ID: BH-16 0--4
**Lab Sample ID: 480-205498-17**

**Date Collected: 01/13/23 13:45**
**Matrix: Solid**

**Date Received: 01/14/23 09:15**
**Percent Solids: 79.6**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 12000 | U | 12000 | 6800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| 2-Methylphenol | 21000 | U | 21000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| 3-Methylphenol | 41000 | U | 41000 | 3200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| 4-Methylphenol | 41000 | U | 41000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Acenaphthene | 21000 | U | 21000 | 3100 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Acenaphthylene | 21000 | U | 21000 | 2700 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Anthracene | 21000 | U | 21000 | 5200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| **Benzo[a]anthracene** | **2300** | **J** | 21000 | 2100 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| **Benzo[a]pyrene** | **3100** | **J** | 21000 | 3100 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Benzo[b]fluoranthene | 21000 | U | 21000 | 3300 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Benzo[g,h,i]perylene | 21000 | U | 21000 | 2200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Benzo[k]fluoranthene | 21000 | U | 21000 | 2700 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Chrysene | 21000 | U | 21000 | 4700 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Dibenz(a,h)anthracene | 21000 | U | 21000 | 3700 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Dibenzofuran | 21000 | U | 21000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| **Fluoranthene** | **6000** | **J** | 21000 | 2200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Fluorene | 21000 | U | 21000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Hexachlorobenzene | 21000 | U | 21000 | 2800 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Indeno[1,2,3-cd]pyrene | 21000 | U | 21000 | 2600 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Naphthalene | 21000 | U | 21000 | 2700 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Pentachlorophenol | 41000 | U | 41000 | 21000 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| **Phenanthrene** | **4800** | **J** | 21000 | 3100 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| Phenol | 21000 | U | 21000 | 3200 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |
| **Pyrene** | **4500** | **J** | 21000 | 2500 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 21:41 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *0* | *S1-* | *54 - 120* | *01/17/23 15:51* | *01/18/23 21:41* | *10* |
| *2-Fluorobiphenyl (Surr)* | *134* | *S1+* | *60 - 120* | *01/17/23 15:51* | *01/18/23 21:41* | *10* |
| *2-Fluorophenol (Surr)* | *0* | *S1-* | *52 - 120* | *01/17/23 15:51* | *01/18/23 21:41* | *10* |
| *Nitrobenzene-d5 (Surr)* | *0* | *S1-* | *53 - 120* | *01/17/23 15:51* | *01/18/23 21:41* | *10* |
| *Phenol-d5 (Surr)* | *120* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 21:41* | *10* |
| *p-Terphenyl-d14 (Surr)* | *102* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 21:41* | *10* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **62.2** | | 2.5 | 0.51 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:57 | 1 |
| **Barium** | **603** | | 0.64 | 0.14 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:57 | 1 |
| **Beryllium** | **0.61** | | 0.25 | 0.036 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:57 | 1 |
| **Cadmium** | **1.6** | | 0.25 | 0.038 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:57 | 1 |
| **Chromium** | **145** | | 3.2 | 1.3 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:43 | 5 |
| **Copper** | **114** | | 1.3 | 0.27 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:57 | 1 |
| **Lead** | **714** | | 6.4 | 1.5 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:43 | 5 |
| **Manganese** | **1910** | **B** | 1.3 | 0.20 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:43 | 5 |
| **Nickel** | **44.1** | | 31.9 | 1.5 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:43 | 5 |
| **Selenium** | **3.9** | **J** | 5.1 | 0.51 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:57 | 1 |
| Silver | 0.76 | U | 0.76 | 0.25 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:57 | 1 |
| **Zinc** | **376** | | 2.5 | 0.82 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 01:57 | 1 |

## Client Sample ID: BH-16 0--4

**Lab Sample ID: 480-205498-17**
**Date Collected: 01/13/23 13:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 79.6**

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.30 | B | 0.025 | 0.0057 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:19 | 1 |

## Client Sample ID: BH-4 4-5

**Lab Sample ID: 480-205498-18**
**Date Collected: 01/13/23 10:00**
**Matrix: Water**
**Date Received: 01/14/23 09:15**

### Method: SW846 8260C - Volatile Organic Compounds by GC/MS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 1.0 | 0.82 | ug/L | | | 01/18/23 18:55 | 1 |
| 1,1-Dichloroethane | 1.0 | U | 1.0 | 0.38 | ug/L | | | 01/18/23 18:55 | 1 |
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.29 | ug/L | | | 01/18/23 18:55 | 1 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 1.0 | 0.75 | ug/L | | | 01/18/23 18:55 | 1 |
| 1,2-Dichlorobenzene | 1.0 | U | 1.0 | 0.79 | ug/L | | | 01/18/23 18:55 | 1 |
| 1,2-Dichloroethane | 1.0 | U | 1.0 | 0.21 | ug/L | | | 01/18/23 18:55 | 1 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 1.0 | 0.77 | ug/L | | | 01/18/23 18:55 | 1 |
| 1,3-Dichlorobenzene | 1.0 | U | 1.0 | 0.78 | ug/L | | | 01/18/23 18:55 | 1 |
| 1,4-Dichlorobenzene | 1.0 | U | 1.0 | 0.84 | ug/L | | | 01/18/23 18:55 | 1 |
| 1,4-Dioxane | 40 | U | 40 | 9.3 | ug/L | | | 01/18/23 18:55 | 1 |
| 2-Butanone (MEK) | 10 | U | 10 | 1.3 | ug/L | | | 01/18/23 18:55 | 1 |
| Acetone | 3.4 | J | 10 | 3.0 | ug/L | | | 01/18/23 18:55 | 1 |
| Benzene | 1.0 | U | 1.0 | 0.41 | ug/L | | | 01/18/23 18:55 | 1 |
| Carbon tetrachloride | 1.0 | U | 1.0 | 0.27 | ug/L | | | 01/18/23 18:55 | 1 |
| Chlorobenzene | 1.0 | U | 1.0 | 0.75 | ug/L | | | 01/18/23 18:55 | 1 |
| Chloroform | 1.0 | U | 1.0 | 0.34 | ug/L | | | 01/18/23 18:55 | 1 |
| cis-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.81 | ug/L | | | 01/18/23 18:55 | 1 |
| Ethylbenzene | 1.0 | U | 1.0 | 0.74 | ug/L | | | 01/18/23 18:55 | 1 |
| Methyl tert-butyl ether | 1.0 | U | 1.0 | 0.16 | ug/L | | | 01/18/23 18:55 | 1 |
| Methylene Chloride | 1.0 | U | 1.0 | 0.44 | ug/L | | | 01/18/23 18:55 | 1 |
| n-Butylbenzene | 1.0 | U | 1.0 | 0.64 | ug/L | | | 01/18/23 18:55 | 1 |
| N-Propylbenzene | 1.0 | U | 1.0 | 0.69 | ug/L | | | 01/18/23 18:55 | 1 |
| sec-Butylbenzene | 1.0 | U | 1.0 | 0.75 | ug/L | | | 01/18/23 18:55 | 1 |
| tert-Butylbenzene | 1.0 | U | 1.0 | 0.81 | ug/L | | | 01/18/23 18:55 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.36 | ug/L | | | 01/18/23 18:55 | 1 |
| Toluene | 1.0 | U | 1.0 | 0.51 | ug/L | | | 01/18/23 18:55 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.90 | ug/L | | | 01/18/23 18:55 | 1 |
| Trichloroethene | 1.0 | U | 1.0 | 0.46 | ug/L | | | 01/18/23 18:55 | 1 |
| Vinyl chloride | 1.0 | U | 1.0 | 0.90 | ug/L | | | 01/18/23 18:55 | 1 |
| Xylenes, Total | 2.0 | U | 2.0 | 0.66 | ug/L | | | 01/18/23 18:55 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *115* | | *77 - 120* | | *01/18/23 18:55* | *1* |
| *4-Bromofluorobenzene (Surr)* | *99* | | *73 - 120* | | *01/18/23 18:55* | *1* |
| *Dibromofluoromethane (Surr)* | *103* | | *75 - 123* | | *01/18/23 18:55* | *1* |
| *Toluene-d8 (Surr)* | *95* | | *80 - 120* | | *01/18/23 18:55* | *1* |

## Client Sample ID: BH-17 0-4
**Lab Sample ID: 480-205498-19**

**Date Collected: 01/13/23 14:00**
**Matrix: Solid**

**Date Received: 01/14/23 09:15**
**Percent Solids: 87.5**

### Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 110 | U | 110 | 62 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| 2-Methylphenol | 190 | U | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| 3-Methylphenol | 370 | U | 370 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| 4-Methylphenol | 370 | U | 370 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Acenaphthene | 190 | U | 190 | 28 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Acenaphthylene | 190 | U | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Anthracene | 190 | U | 190 | 47 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Benzo[a]anthracene | 190 | U | 190 | 19 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Benzo[a]pyrene | 190 | U | 190 | 28 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Benzo[b]fluoranthene | 190 | U | 190 | 30 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Benzo[g,h,i]perylene | 190 | U | 190 | 20 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Benzo[k]fluoranthene | 190 | U | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Chrysene | 190 | U | 190 | 43 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Dibenz(a,h)anthracene | 190 | U | 190 | 34 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Dibenzofuran | 190 | U | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| **Fluoranthene** | **27** | **J** | 190 | 20 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Fluorene | 190 | U | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Hexachlorobenzene | 190 | U | 190 | 26 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Indeno[1,2,3-cd]pyrene | 190 | U | 190 | 24 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Naphthalene | 190 | U | 190 | 25 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Pentachlorophenol | 370 | U | 370 | 190 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Phenanthrene | 190 | U | 190 | 28 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| Phenol | 190 | U | 190 | 29 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |
| **Pyrene** | **27** | **J** | 190 | 23 | ug/Kg | ☼ | 01/17/23 15:51 | 01/18/23 22:06 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *89* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 22:06* | *1* |
| *2-Fluorobiphenyl (Surr)* | *100* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 22:06* | *1* |
| *2-Fluorophenol (Surr)* | *85* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 22:06* | *1* |
| *Nitrobenzene-d5 (Surr)* | *91* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 22:06* | *1* |
| *Phenol-d5 (Surr)* | *86* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 22:06* | *1* |
| *p-Terphenyl-d14 (Surr)* | *118* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 22:06* | *1* |

### Method: SW846 6010C - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **11.5** | | 2.3 | 0.46 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 02:01 | 1 |
| **Barium** | **161** | | 0.57 | 0.13 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 02:01 | 1 |
| **Beryllium** | **1.2** | | 0.23 | 0.032 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 02:01 | 1 |
| **Cadmium** | **0.45** | | 0.23 | 0.034 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 02:01 | 1 |
| **Chromium** | **51.9** | | 1.1 | 0.46 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:46 | 2 |
| **Copper** | **37.1** | | 1.1 | 0.24 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 02:01 | 1 |
| **Lead** | **12.0** | | 2.3 | 0.55 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:46 | 2 |
| **Manganese** | **9770** | **B** | 0.46 | 0.073 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:46 | 2 |
| **Nickel** | **22.9** | | 11.4 | 0.53 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 18:46 | 2 |
| **Selenium** | **3.5** | **J** | 4.6 | 0.46 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 02:01 | 1 |
| **Silver** | **0.38** | **J** | 0.69 | 0.23 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 02:01 | 1 |
| **Zinc** | **41.7** | | 2.3 | 0.73 | mg/Kg | ☼ | 01/17/23 12:42 | 01/19/23 02:01 | 1 |

# Client Sample Results

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

**Client Sample ID: BH-17 0-4**
**Lab Sample ID: 480-205498-19**
**Date Collected: 01/13/23 14:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 87.5**

**Method: SW846 7471B - Mercury (CVAA)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.0080 | J B | 0.024 | 0.0055 | mg/Kg | ☼ | 01/18/23 11:51 | 01/18/23 15:21 | 1 |

# Surrogate Summary

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

## Method: 8260C - Volatile Organic Compounds by GC/MS

**Matrix: Solid** — **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | |
|---|---|---|---|---|---|
| | | DCA | BFB | TOL | DBFM |
| Lab Sample ID | Client Sample ID | (53-146) | (49-148) | (50-149) | (60-140) |
| 480-205498-5 | BH-4 4-5 | 98 | 93 | 95 | 94 |
| LCS 480-656328/1-A | Lab Control Sample | 94 | 93 | 96 | 93 |
| MB 480-656328/3-A | Method Blank | 96 | 95 | 99 | 91 |

**Surrogate Legend**

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

## Method: 8260C - Volatile Organic Compounds by GC/MS

**Matrix: Water** — **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | |
|---|---|---|---|---|---|
| | | DCA | BFB | DBFM | TOL |
| Lab Sample ID | Client Sample ID | (77-120) | (73-120) | (75-123) | (80-120) |
| 480-205498-18 | BH-4 4-5 | 115 | 99 | 103 | 95 |
| LCS 480-656325/5 | Lab Control Sample | 108 | 100 | 99 | 97 |
| MB 480-656325/7 | Method Blank | 112 | 99 | 103 | 94 |

**Surrogate Legend**

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

**Matrix: Solid** — **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | |
|---|---|---|---|---|---|---|---|
| | | TBP | FBP | 2FP | NBZ | PHL | TPHd14 |
| Lab Sample ID | Client Sample ID | (54-120) | (60-120) | (52-120) | (53-120) | (54-120) | (79-130) |
| 480-205498-1 | BH-1 0-2 | 87 | 99 | 89 | 78 | 87 | 113 |
| 480-205498-2 | BH-2 0-3 | 111 | 98 | 83 | 83 | 94 | 108 |
| 480-205498-3 | BH-3 0-3 | 85 | 87 | 75 | 80 | 86 | 106 |
| 480-205498-4 | BH-4 0-3 | 93 | 97 | 81 | 87 | 84 | 123 |
| 480-205498-6 | BH-5 0-3 | 98 | 102 | 86 | 92 | 86 | 124 |
| 480-205498-7 | BH-6 0-3 | 109 | 110 | 91 | 99 | 95 | 126 |
| 480-205498-8 | BH-7 0-3 | 96 | 94 | 82 | 87 | 81 | 115 |
| 480-205498-9 | BH-8 0-3 | 0 S1- | 109 | 103 | 0 S1- | 102 | 104 |
| 480-205498-10 | BH-9 0-3 | 91 | 105 | 93 | 96 | 93 | 105 |
| 480-205498-10 MS | BH-9 0-3 | 105 | 93 | 79 | 82 | 87 | 100 |
| 480-205498-10 MSD | BH-9 0-3 | 102 | 99 | 84 | 87 | 87 | 102 |
| 480-205498-11 | BH-10 0-2 | 87 | 92 | 75 | 79 | 76 | 112 |
| 480-205498-12 | BH-11 0-2 | 0 S1- | 120 | 0 S1- | 83 | 89 | 97 |
| 480-205498-13 | BH-12 0-2 | 90 | 96 | 79 | 89 | 79 | 119 |
| 480-205498-14 | BH-13 0-2 | 86 | 94 | 77 | 84 | 80 | 117 |
| 480-205498-15 | BH-14 1-2 | 80 | 88 | 75 | 76 | 82 | 99 |
| 480-205498-16 | BH-15 1-2 | 101 | 101 | 90 | 99 | 89 | 125 |
| 480-205498-17 | BH-16 0--4 | 0 S1- | 134 S1+ | 0 S1- | 0 S1- | 120 | 102 |
| 480-205498-19 | BH-17 0-4 | 89 | 100 | 85 | 91 | 86 | 118 |

# Surrogate Summary

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

**Matrix: Solid** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | TBP | FBP | 2FP | NBZ | PHL | TPHd14 | | |
| Lab Sample ID | Client Sample ID | (54-120) | (60-120) | (52-120) | (53-120) | (54-120) | (79-130) | | |
| LCS 480-656244/2-A | Lab Control Sample | 112 | 104 | 90 | 94 | 94 | 120 | | |
| MB 480-656244/1-A | Method Blank | 81 | 87 | 78 | 81 | 84 | 114 | | |

**Surrogate Legend**

TBP = 2,4,6-Tribromophenol (Surr)
FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPHd14 = p-Terphenyl-d14 (Surr)

## Method: 8260C - Volatile Organic Compounds by GC/MS

**Lab Sample ID: MB 480-656325/7**
**Matrix: Water**
**Analysis Batch: 656325**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 1.0 | 0.82 | ug/L | | | 01/18/23 12:20 | 1 |
| 1,1-Dichloroethane | 1.0 | U | 1.0 | 0.38 | ug/L | | | 01/18/23 12:20 | 1 |
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.29 | ug/L | | | 01/18/23 12:20 | 1 |
| 1,2,4-Trimethylbenzene | 1.0 | U | 1.0 | 0.75 | ug/L | | | 01/18/23 12:20 | 1 |
| 1,2-Dichlorobenzene | 1.0 | U | 1.0 | 0.79 | ug/L | | | 01/18/23 12:20 | 1 |
| 1,2-Dichloroethane | 1.0 | U | 1.0 | 0.21 | ug/L | | | 01/18/23 12:20 | 1 |
| 1,3,5-Trimethylbenzene | 1.0 | U | 1.0 | 0.77 | ug/L | | | 01/18/23 12:20 | 1 |
| 1,3-Dichlorobenzene | 1.0 | U | 1.0 | 0.78 | ug/L | | | 01/18/23 12:20 | 1 |
| 1,4-Dichlorobenzene | 1.0 | U | 1.0 | 0.84 | ug/L | | | 01/18/23 12:20 | 1 |
| 1,4-Dioxane | 40 | U | 40 | 9.3 | ug/L | | | 01/18/23 12:20 | 1 |
| 2-Butanone (MEK) | 10 | U | 10 | 1.3 | ug/L | | | 01/18/23 12:20 | 1 |
| Acetone | 10 | U | 10 | 3.0 | ug/L | | | 01/18/23 12:20 | 1 |
| Benzene | 1.0 | U | 1.0 | 0.41 | ug/L | | | 01/18/23 12:20 | 1 |
| Carbon tetrachloride | 1.0 | U | 1.0 | 0.27 | ug/L | | | 01/18/23 12:20 | 1 |
| Chlorobenzene | 1.0 | U | 1.0 | 0.75 | ug/L | | | 01/18/23 12:20 | 1 |
| Chloroform | 1.0 | U | 1.0 | 0.34 | ug/L | | | 01/18/23 12:20 | 1 |
| cis-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.81 | ug/L | | | 01/18/23 12:20 | 1 |
| Ethylbenzene | 1.0 | U | 1.0 | 0.74 | ug/L | | | 01/18/23 12:20 | 1 |
| Methyl tert-butyl ether | 1.0 | U | 1.0 | 0.16 | ug/L | | | 01/18/23 12:20 | 1 |
| Methylene Chloride | 1.0 | U | 1.0 | 0.44 | ug/L | | | 01/18/23 12:20 | 1 |
| n-Butylbenzene | 1.0 | U | 1.0 | 0.64 | ug/L | | | 01/18/23 12:20 | 1 |
| N-Propylbenzene | 1.0 | U | 1.0 | 0.69 | ug/L | | | 01/18/23 12:20 | 1 |
| sec-Butylbenzene | 1.0 | U | 1.0 | 0.75 | ug/L | | | 01/18/23 12:20 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.36 | ug/L | | | 01/18/23 12:20 | 1 |
| Toluene | 1.0 | U | 1.0 | 0.51 | ug/L | | | 01/18/23 12:20 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.90 | ug/L | | | 01/18/23 12:20 | 1 |
| Trichloroethene | 1.0 | U | 1.0 | 0.46 | ug/L | | | 01/18/23 12:20 | 1 |
| tert-Butylbenzene | 1.0 | U | 1.0 | 0.81 | ug/L | | | 01/18/23 12:20 | 1 |
| Vinyl chloride | 1.0 | U | 1.0 | 0.90 | ug/L | | | 01/18/23 12:20 | 1 |
| Xylenes, Total | 2.0 | U | 2.0 | 0.66 | ug/L | | | 01/18/23 12:20 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *112* | | *77 - 120* | | *01/18/23 12:20* | *1* |
| *4-Bromofluorobenzene (Surr)* | *99* | | *73 - 120* | | *01/18/23 12:20* | *1* |
| *Toluene-d8 (Surr)* | *94* | | *80 - 120* | | *01/18/23 12:20* | *1* |
| *Dibromofluoromethane (Surr)* | *103* | | *75 - 123* | | *01/18/23 12:20* | *1* |

**Lab Sample ID: LCS 480-656325/5**
**Matrix: Water**
**Analysis Batch: 656325**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 25.0 | 26.3 | | ug/L | | 105 | 73 - 126 |
| 1,1-Dichloroethane | 25.0 | 24.5 | | ug/L | | 98 | 77 - 120 |
| 1,1-Dichloroethene | 25.0 | 23.4 | | ug/L | | 94 | 66 - 127 |
| 1,2,4-Trimethylbenzene | 25.0 | 24.6 | | ug/L | | 98 | 76 - 121 |
| 1,2-Dichlorobenzene | 25.0 | 23.6 | | ug/L | | 94 | 80 - 124 |
| 1,2-Dichloroethane | 25.0 | 26.4 | | ug/L | | 106 | 75 - 120 |

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCS 480-656325/5**
**Matrix: Water**
**Analysis Batch: 656325**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,3,5-Trimethylbenzene | 25.0 | 24.1 | | ug/L | | 97 | 77 - 121 |
| 1,3-Dichlorobenzene | 25.0 | 23.1 | | ug/L | | 92 | 77 - 120 |
| 1,4-Dichlorobenzene | 25.0 | 23.3 | | ug/L | | 93 | 80 - 120 |
| 1,4-Dioxane | 500 | 443 | | ug/L | | 89 | 50 - 150 |
| 2-Butanone (MEK) | 125 | 140 | | ug/L | | 112 | 57 - 140 |
| Acetone | 125 | 146 | | ug/L | | 117 | 56 - 142 |
| Benzene | 25.0 | 22.8 | | ug/L | | 91 | 71 - 124 |
| Carbon tetrachloride | 25.0 | 27.2 | | ug/L | | 109 | 72 - 134 |
| Chlorobenzene | 25.0 | 22.9 | | ug/L | | 92 | 80 - 120 |
| Chloroform | 25.0 | 24.7 | | ug/L | | 99 | 73 - 127 |
| cis-1,2-Dichloroethene | 25.0 | 23.1 | | ug/L | | 93 | 74 - 124 |
| Ethylbenzene | 25.0 | 24.4 | | ug/L | | 98 | 77 - 123 |
| Methyl tert-butyl ether | 25.0 | 24.1 | | ug/L | | 96 | 77 - 120 |
| Methylene Chloride | 25.0 | 23.7 | | ug/L | | 95 | 75 - 124 |
| n-Butylbenzene | 25.0 | 25.2 | | ug/L | | 101 | 71 - 128 |
| N-Propylbenzene | 25.0 | 24.3 | | ug/L | | 97 | 75 - 127 |
| sec-Butylbenzene | 25.0 | 24.3 | | ug/L | | 97 | 74 - 127 |
| Tetrachloroethene | 25.0 | 24.4 | | ug/L | | 98 | 74 - 122 |
| Toluene | 25.0 | 23.1 | | ug/L | | 92 | 80 - 122 |
| trans-1,2-Dichloroethene | 25.0 | 23.2 | | ug/L | | 93 | 73 - 127 |
| Trichloroethene | 25.0 | 23.8 | | ug/L | | 95 | 74 - 123 |
| tert-Butylbenzene | 25.0 | 22.9 | | ug/L | | 92 | 75 - 123 |
| Vinyl chloride | 25.0 | 28.4 | | ug/L | | 114 | 65 - 133 |
| Xylenes, Total | 50.0 | 48.7 | | ug/L | | 97 | 76 - 122 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *108* | | *77 - 120* |
| *4-Bromofluorobenzene (Surr)* | *100* | | *73 - 120* |
| *Toluene-d8 (Surr)* | *97* | | *80 - 120* |
| *Dibromofluoromethane (Surr)* | *99* | | *75 - 123* |

**Lab Sample ID: MB 480-656328/3-A**
**Matrix: Solid**
**Analysis Batch: 656463**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 656328**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 100 | U | 100 | 28 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| 1,1-Dichloroethane | 100 | U | 100 | 31 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| 1,1-Dichloroethene | 100 | U | 100 | 35 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| 1,2,4-Trimethylbenzene | 100 | U | 100 | 28 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| 1,2-Dichlorobenzene | 100 | U | 100 | 26 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| 1,2-Dichloroethane | 100 | U | 100 | 41 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| 1,3,5-Trimethylbenzene | 100 | U | 100 | 30 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| 1,3-Dichlorobenzene | 100 | U | 100 | 27 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| 1,4-Dichlorobenzene | 100 | U | 100 | 14 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| 1,4-Dioxane | 1900 | U | 1900 | 510 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| 2-Butanone (MEK) | 500 | U | 500 | 300 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Acetone | 500 | U | 500 | 410 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: MB 480-656328/3-A**
**Matrix: Solid**
**Analysis Batch: 656463**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 656328**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 100 | U | 100 | 19 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Carbon tetrachloride | 100 | U | 100 | 26 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Chlorobenzene | 100 | U | 100 | 13 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Chloroform | 100 | U | 100 | 69 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| cis-1,2-Dichloroethene | 100 | U | 100 | 28 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Ethylbenzene | 100 | U | 100 | 29 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Methyl tert-butyl ether | 100 | U | 100 | 38 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Methylene Chloride | 100 | U | 100 | 20 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| n-Butylbenzene | 100 | U | 100 | 29 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| N-Propylbenzene | 100 | U | 100 | 26 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| sec-Butylbenzene | 100 | U | 100 | 37 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Tetrachloroethene | 100 | U | 100 | 13 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Toluene | 100 | U | 100 | 27 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| trans-1,2-Dichloroethene | 100 | U | 100 | 24 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Trichloroethene | 100 | U | 100 | 28 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| tert-Butylbenzene | 100 | U | 100 | 28 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Vinyl chloride | 100 | U | 100 | 34 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |
| Xylenes, Total | 200 | U | 200 | 55 | ug/Kg | | 01/18/23 10:35 | 01/19/23 14:27 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *96* | | *53 - 146* | *01/18/23 10:35* | *01/19/23 14:27* | *1* |
| *4-Bromofluorobenzene (Surr)* | *95* | | *49 - 148* | *01/18/23 10:35* | *01/19/23 14:27* | *1* |
| *Toluene-d8 (Surr)* | *99* | | *50 - 149* | *01/18/23 10:35* | *01/19/23 14:27* | *1* |
| *Dibromofluoromethane (Surr)* | *91* | | *60 - 140* | *01/18/23 10:35* | *01/19/23 14:27* | *1* |

**Lab Sample ID: LCS 480-656328/1-A**
**Matrix: Solid**
**Analysis Batch: 656463**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 656328**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 2500 | 2160 | | ug/Kg | | 86 | 68 - 130 |
| 1,1-Dichloroethane | 2500 | 2100 | | ug/Kg | | 84 | 78 - 121 |
| 1,1-Dichloroethene | 2500 | 1930 | | ug/Kg | | 77 | 48 - 133 |
| 1,2,4-Trimethylbenzene | 2500 | 2190 | | ug/Kg | | 88 | 77 - 127 |
| 1,2-Dichlorobenzene | 2500 | 2190 | | ug/Kg | | 88 | 78 - 125 |
| 1,2-Dichloroethane | 2500 | 2210 | | ug/Kg | | 88 | 74 - 127 |
| 1,3,5-Trimethylbenzene | 2500 | 2200 | | ug/Kg | | 88 | 79 - 120 |
| 1,3-Dichlorobenzene | 2500 | 2250 | | ug/Kg | | 90 | 80 - 120 |
| 1,4-Dichlorobenzene | 2500 | 2310 | | ug/Kg | | 93 | 80 - 120 |
| 1,4-Dioxane | 50000 | 50100 | | ug/Kg | | 100 | 40 - 150 |
| 2-Butanone (MEK) | 12500 | 10600 | | ug/Kg | | 85 | 54 - 149 |
| Acetone | 12500 | 9320 | | ug/Kg | | 75 | 47 - 141 |
| Benzene | 2500 | 2210 | | ug/Kg | | 88 | 77 - 125 |
| Carbon tetrachloride | 2500 | 2170 | | ug/Kg | | 87 | 54 - 135 |
| Chlorobenzene | 2500 | 2270 | | ug/Kg | | 91 | 76 - 126 |
| Chloroform | 2500 | 2010 | | ug/Kg | | 80 | 78 - 120 |
| cis-1,2-Dichloroethene | 2500 | 2180 | | ug/Kg | | 87 | 79 - 124 |
| Ethylbenzene | 2500 | 2250 | | ug/Kg | | 90 | 78 - 124 |

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCS 480-656328/1-A**
**Matrix: Solid**
**Analysis Batch: 656463**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 656328**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | 2500 | 2040 | | ug/Kg | | 82 | 67 - 137 |
| Methylene Chloride | 2500 | 2200 | | ug/Kg | | 88 | 75 - 118 |
| n-Butylbenzene | 2500 | 2110 | | ug/Kg | | 84 | 80 - 120 |
| N-Propylbenzene | 2500 | 2280 | | ug/Kg | | 91 | 76 - 120 |
| sec-Butylbenzene | 2500 | 2180 | | ug/Kg | | 87 | 79 - 120 |
| Tetrachloroethene | 2500 | 2390 | | ug/Kg | | 96 | 73 - 133 |
| Toluene | 2500 | 2270 | | ug/Kg | | 91 | 75 - 124 |
| trans-1,2-Dichloroethene | 2500 | 2070 | | ug/Kg | | 83 | 74 - 129 |
| Trichloroethene | 2500 | 2220 | | ug/Kg | | 89 | 75 - 131 |
| tert-Butylbenzene | 2500 | 2320 | | ug/Kg | | 93 | 78 - 120 |
| Vinyl chloride | 2500 | 2070 | | ug/Kg | | 83 | 59 - 124 |
| Xylenes, Total | 5000 | 4430 | | ug/Kg | | 89 | 78 - 125 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *94* | | *53 - 146* |
| *4-Bromofluorobenzene (Surr)* | *93* | | *49 - 148* |
| *Toluene-d8 (Surr)* | *96* | | *50 - 149* |
| *Dibromofluoromethane (Surr)* | *93* | | *60 - 140* |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 480-656244/1-A**
**Matrix: Solid**
**Analysis Batch: 656282**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 656244**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 98 | U | 98 | 54 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| 2-Methylphenol | 170 | U | 170 | 20 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| 3-Methylphenol | 330 | U | 330 | 26 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| 4-Methylphenol | 330 | U | 330 | 20 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Acenaphthene | 170 | U | 170 | 25 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Acenaphthylene | 170 | U | 170 | 22 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Anthracene | 170 | U | 170 | 41 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Benzo[a]anthracene | 170 | U | 170 | 17 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Benzo[a]pyrene | 170 | U | 170 | 25 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Benzo[b]fluoranthene | 170 | U | 170 | 27 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Benzo[g,h,i]perylene | 170 | U | 170 | 18 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Benzo[k]fluoranthene | 170 | U | 170 | 22 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Chrysene | 170 | U | 170 | 37 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Dibenz(a,h)anthracene | 170 | U | 170 | 30 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Dibenzofuran | 170 | U | 170 | 20 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Fluoranthene | 170 | U | 170 | 18 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Fluorene | 170 | U | 170 | 20 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Hexachlorobenzene | 170 | U | 170 | 23 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Indeno[1,2,3-cd]pyrene | 170 | U | 170 | 21 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Naphthalene | 170 | U | 170 | 22 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Pentachlorophenol | 330 | U | 330 | 170 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Phenanthrene | 170 | U | 170 | 25 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |
| Phenol | 170 | U | 170 | 26 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 480-656244/1-A**
**Matrix: Solid**
**Analysis Batch: 656282**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 656244**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Pyrene | 170 | U | 170 | 20 | ug/Kg | | 01/17/23 15:51 | 01/18/23 13:48 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *81* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 13:48* | *1* |
| *2-Fluorobiphenyl (Surr)* | *87* | | *60 - 120* | *01/17/23 15:51* | *01/18/23 13:48* | *1* |
| *2-Fluorophenol (Surr)* | *78* | | *52 - 120* | *01/17/23 15:51* | *01/18/23 13:48* | *1* |
| *Nitrobenzene-d5 (Surr)* | *81* | | *53 - 120* | *01/17/23 15:51* | *01/18/23 13:48* | *1* |
| *Phenol-d5 (Surr)* | *84* | | *54 - 120* | *01/17/23 15:51* | *01/18/23 13:48* | *1* |
| *p-Terphenyl-d14 (Surr)* | *114* | | *79 - 130* | *01/17/23 15:51* | *01/18/23 13:48* | *1* |

**Lab Sample ID: LCS 480-656244/2-A**
**Matrix: Solid**
**Analysis Batch: 656282**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 656244**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 1650 | 780 | | ug/Kg | | 47 | 23 - 120 |
| 2-Methylphenol | 1650 | 1620 | | ug/Kg | | 98 | 54 - 120 |
| 3-Methylphenol | 1650 | 1580 | | ug/Kg | | 96 | 55 - 120 |
| 4-Methylphenol | 1650 | 1580 | | ug/Kg | | 96 | 55 - 120 |
| Acenaphthene | 1650 | 1600 | | ug/Kg | | 97 | 62 - 120 |
| Acenaphthylene | 1650 | 1700 | | ug/Kg | | 103 | 58 - 121 |
| Anthracene | 1650 | 1730 | | ug/Kg | | 105 | 62 - 120 |
| Benzo[a]anthracene | 1650 | 1820 | | ug/Kg | | 110 | 65 - 120 |
| Benzo[a]pyrene | 1650 | 1840 | | ug/Kg | | 112 | 64 - 120 |
| Benzo[b]fluoranthene | 1650 | 1710 | | ug/Kg | | 104 | 64 - 120 |
| Benzo[g,h,i]perylene | 1650 | 1720 | | ug/Kg | | 104 | 45 - 145 |
| Benzo[k]fluoranthene | 1650 | 1900 | | ug/Kg | | 115 | 65 - 120 |
| Chrysene | 1650 | 1760 | | ug/Kg | | 106 | 64 - 120 |
| Dibenz(a,h)anthracene | 1650 | 1850 | | ug/Kg | | 112 | 54 - 132 |
| Dibenzofuran | 1650 | 1620 | | ug/Kg | | 98 | 63 - 120 |
| Fluoranthene | 1650 | 1650 | | ug/Kg | | 100 | 62 - 120 |
| Fluorene | 1650 | 1640 | | ug/Kg | | 100 | 63 - 120 |
| Hexachlorobenzene | 1650 | 1690 | | ug/Kg | | 102 | 60 - 120 |
| Indeno[1,2,3-cd]pyrene | 1650 | 1920 | | ug/Kg | | 116 | 56 - 134 |
| Naphthalene | 1650 | 1520 | | ug/Kg | | 92 | 55 - 120 |
| Pentachlorophenol | 3300 | 3590 | | ug/Kg | | 109 | 51 - 120 |
| Phenanthrene | 1650 | 1680 | | ug/Kg | | 102 | 60 - 120 |
| Phenol | 1650 | 1510 | | ug/Kg | | 92 | 53 - 120 |
| Pyrene | 1650 | 1950 | | ug/Kg | | 118 | 61 - 133 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *112* | | *54 - 120* |
| *2-Fluorobiphenyl (Surr)* | *104* | | *60 - 120* |
| *2-Fluorophenol (Surr)* | *90* | | *52 - 120* |
| *Nitrobenzene-d5 (Surr)* | *94* | | *53 - 120* |
| *Phenol-d5 (Surr)* | *94* | | *54 - 120* |
| *p-Terphenyl-d14 (Surr)* | *120* | | *79 - 130* |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: 480-205498-10 MS**
**Matrix: Solid**
**Analysis Batch: 656282**

**Client Sample ID: BH-9 0-3**
**Prep Type: Total/NA**
**Prep Batch: 656244**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 600 | U | 2040 | 900 | | ug/Kg | ☼ | 44 | 13 - 120 |
| 2-Methylphenol | 1000 | U | 2040 | 1740 | | ug/Kg | ☼ | 85 | 48 - 120 |
| 3-Methylphenol | 2000 | U | 2040 | 1740 | J | ug/Kg | ☼ | 85 | 50 - 120 |
| 4-Methylphenol | 2000 | U | 2040 | 1740 | J | ug/Kg | ☼ | 86 | 50 - 120 |
| Acenaphthene | 1000 | U | 2040 | 1880 | | ug/Kg | ☼ | 92 | 60 - 120 |
| Acenaphthylene | 1000 | U | 2040 | 2000 | | ug/Kg | ☼ | 98 | 58 - 121 |
| Anthracene | 1000 | U | 2040 | 2060 | | ug/Kg | ☼ | 101 | 62 - 120 |
| Benzo[a]anthracene | 1000 | U | 2040 | 2280 | | ug/Kg | ☼ | 112 | 65 - 120 |
| Benzo[a]pyrene | 180 | J | 2040 | 2300 | | ug/Kg | ☼ | 105 | 64 - 120 |
| Benzo[b]fluoranthene | 210 | J | 2040 | 2460 | | ug/Kg | ☼ | 110 | 10 - 150 |
| Benzo[g,h,i]perylene | 150 | J | 2040 | 1940 | | ug/Kg | ☼ | 88 | 45 - 145 |
| Benzo[k]fluoranthene | 140 | J | 2040 | 2110 | | ug/Kg | ☼ | 97 | 23 - 150 |
| Chrysene | 1000 | U | 2040 | 2320 | | ug/Kg | ☼ | 114 | 64 - 120 |
| Dibenz(a,h)anthracene | 1000 | U | 2040 | 2070 | | ug/Kg | ☼ | 102 | 54 - 132 |
| Dibenzofuran | 1000 | U | 2040 | 1920 | | ug/Kg | ☼ | 94 | 62 - 120 |
| Fluoranthene | 390 | J | 2040 | 2490 | | ug/Kg | ☼ | 103 | 62 - 120 |
| Fluorene | 1000 | U | 2040 | 1920 | | ug/Kg | ☼ | 94 | 63 - 120 |
| Hexachlorobenzene | 1000 | U | 2040 | 1970 | | ug/Kg | ☼ | 97 | 60 - 120 |
| Indeno[1,2,3-cd]pyrene | 130 | J | 2040 | 2110 | | ug/Kg | ☼ | 97 | 56 - 134 |
| Naphthalene | 1000 | U | 2040 | 1780 | | ug/Kg | ☼ | 87 | 46 - 120 |
| Pentachlorophenol | 2000 | U | 4070 | 3860 | | ug/Kg | ☼ | 95 | 25 - 136 |
| Phenanthrene | 250 | J | 2040 | 2330 | | ug/Kg | ☼ | 102 | 60 - 122 |
| Phenol | 1000 | U | 2040 | 1680 | | ug/Kg | ☼ | 82 | 50 - 120 |
| Pyrene | 350 | J | 2040 | 2610 | | ug/Kg | ☼ | 111 | 61 - 133 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *105* | | *54 - 120* |
| *2-Fluorobiphenyl (Surr)* | *93* | | *60 - 120* |
| *2-Fluorophenol (Surr)* | *79* | | *52 - 120* |
| *Nitrobenzene-d5 (Surr)* | *82* | | *53 - 120* |
| *Phenol-d5 (Surr)* | *87* | | *54 - 120* |
| *p-Terphenyl-d14 (Surr)* | *100* | | *79 - 130* |

**Lab Sample ID: 480-205498-10 MSD**
**Matrix: Solid**
**Analysis Batch: 656282**

**Client Sample ID: BH-9 0-3**
**Prep Type: Total/NA**
**Prep Batch: 656244**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dioxane | 600 | U | 2010 | 964 | | ug/Kg | ☼ | 48 | 13 - 120 | 7 | 50 |
| 2-Methylphenol | 1000 | U | 2010 | 1750 | | ug/Kg | ☼ | 87 | 48 - 120 | 1 | 27 |
| 3-Methylphenol | 2000 | U | 2010 | 1900 | J | ug/Kg | ☼ | 95 | 50 - 120 | 9 | 24 |
| 4-Methylphenol | 2000 | U | 2010 | 1900 | J | ug/Kg | ☼ | 94 | 50 - 120 | 9 | 24 |
| Acenaphthene | 1000 | U | 2010 | 1920 | | ug/Kg | ☼ | 96 | 60 - 120 | 2 | 35 |
| Acenaphthylene | 1000 | U | 2010 | 2010 | | ug/Kg | ☼ | 100 | 58 - 121 | 0 | 18 |
| Anthracene | 1000 | U | 2010 | 2040 | | ug/Kg | ☼ | 102 | 62 - 120 | 1 | 15 |
| Benzo[a]anthracene | 1000 | U | 2010 | 2150 | | ug/Kg | ☼ | 107 | 65 - 120 | 6 | 15 |
| Benzo[a]pyrene | 180 | J | 2010 | 2120 | | ug/Kg | ☼ | 97 | 64 - 120 | 8 | 15 |
| Benzo[b]fluoranthene | 210 | J | 2010 | 2250 | | ug/Kg | ☼ | 101 | 10 - 150 | 9 | 15 |

## Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: 480-205498-10 MSD** — **Client Sample ID: BH-9 0-3**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 656282** — **Prep Batch: 656244**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo[g,h,i]perylene | 150 | J | 2010 | 2010 | | ug/Kg | ☼ | 93 | 45 - 145 | 3 | 15 |
| Benzo[k]fluoranthene | 140 | J | 2010 | 2050 | | ug/Kg | ☼ | 95 | 23 - 150 | 3 | 22 |
| Chrysene | 1000 | U | 2010 | 2100 | | ug/Kg | ☼ | 105 | 64 - 120 | 10 | 15 |
| Dibenz(a,h)anthracene | 1000 | U | 2010 | 1960 | | ug/Kg | ☼ | 98 | 54 - 132 | 5 | 15 |
| Dibenzofuran | 1000 | U | 2010 | 1910 | | ug/Kg | ☼ | 95 | 62 - 120 | 1 | 15 |
| Fluoranthene | 390 | J | 2010 | 2330 | | ug/Kg | ☼ | 96 | 62 - 120 | 7 | 15 |
| Fluorene | 1000 | U | 2010 | 1920 | | ug/Kg | ☼ | 96 | 63 - 120 | 0 | 15 |
| Hexachlorobenzene | 1000 | U | 2010 | 1900 | | ug/Kg | ☼ | 94 | 60 - 120 | 4 | 15 |
| Indeno[1,2,3-cd]pyrene | 130 | J | 2010 | 2120 | | ug/Kg | ☼ | 99 | 56 - 134 | 0 | 15 |
| Naphthalene | 1000 | U | 2010 | 1740 | | ug/Kg | ☼ | 87 | 46 - 120 | 2 | 29 |
| Pentachlorophenol | 2000 | U | 4020 | 3780 | | ug/Kg | ☼ | 94 | 25 - 136 | 2 | 35 |
| Phenanthrene | 250 | J | 2010 | 2190 | | ug/Kg | ☼ | 96 | 60 - 122 | 6 | 15 |
| Phenol | 1000 | U | 2010 | 1720 | | ug/Kg | ☼ | 86 | 50 - 120 | 2 | 35 |
| Pyrene | 350 | J | 2010 | 2290 | | ug/Kg | ☼ | 97 | 61 - 133 | 13 | 35 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,4,6-Tribromophenol (Surr)* | *102* | | *54 - 120* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *60 - 120* |
| *2-Fluorophenol (Surr)* | *84* | | *52 - 120* |
| *Nitrobenzene-d5 (Surr)* | *87* | | *53 - 120* |
| *Phenol-d5 (Surr)* | *87* | | *54 - 120* |
| *p-Terphenyl-d14 (Surr)* | *102* | | *79 - 130* |

## Method: 6010C - Metals (ICP)

**Lab Sample ID: MB 480-656221/1-A** — **Client Sample ID: Method Blank**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 656462** — **Prep Batch: 656221**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 2.0 | U | 2.0 | 0.40 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Barium | 0.50 | U | 0.50 | 0.11 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Beryllium | 0.20 | U | 0.20 | 0.028 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Cadmium | 0.20 | U | 0.20 | 0.030 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Chromium | 0.50 | U | 0.50 | 0.20 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Copper | 1.0 | U | 1.0 | 0.21 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Lead | 1.0 | U | 1.0 | 0.24 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Manganese | 0.167 | J | 0.20 | 0.032 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Nickel | 5.0 | U | 5.0 | 0.23 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Selenium | 4.0 | U | 4.0 | 0.40 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Silver | 0.60 | U | 0.60 | 0.20 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |
| Zinc | 2.0 | U | 2.0 | 0.64 | mg/Kg | | 01/17/23 12:42 | 01/19/23 00:01 | 1 |

## Method: 6010C - Metals (ICP) (Continued)

**Lab Sample ID: LCSSRM 480-656221/2-A**
**Matrix: Solid**
**Analysis Batch: 656462**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 656221**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Arsenic | 129 | 102.6 | | mg/Kg | | 79.5 | 60.9 - 113.2 |
| Barium | 169 | 148.3 | | mg/Kg | | 87.7 | 68.6 - 114.2 |
| Beryllium | 137 | 100.9 | | mg/Kg | | 73.7 | 66.3 - 110.2 |
| Cadmium | 227 | 171.9 | | mg/Kg | | 75.7 | 64.8 - 110.1 |
| Chromium | 115 | 89.41 | | mg/Kg | | 77.8 | 62.4 - 115.7 |
| Copper | 76.0 | 62.36 | | mg/Kg | | 82.1 | 69.5 - 115.8 |
| Lead | 74.8 | 86.60 | | mg/Kg | | 115.8 | 67.0 - 128.9 |
| Manganese | 400 | 342.6 | | mg/Kg | | 85.7 | 70.5 - 115.8 |
| Nickel | 282 | 258.9 | | mg/Kg | | 91.8 | 62.1 - 114.9 |
| Selenium | 246 | 180.6 | | mg/Kg | | 73.4 | 60.2 - 114.6 |
| Silver | 87.5 | 68.14 | | mg/Kg | | 77.9 | 63.7 - 115.4 |
| Zinc | 401 | 313.2 | | mg/Kg | | 78.1 | 62.8 - 116.7 |

**Lab Sample ID: 480-205498-8 MS**
**Matrix: Solid**
**Analysis Batch: 656462**

**Client Sample ID: BH-7 0-3**
**Prep Type: Total/NA**
**Prep Batch: 656221**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 32.4 | F1 F2 | 48.8 | 61.57 | F1 | mg/Kg | ☼ | 60 | 75 - 125 |
| Barium | 109 | | 48.8 | 146.2 | | mg/Kg | ☼ | 77 | 75 - 125 |
| Beryllium | 1.1 | | 48.8 | 46.88 | | mg/Kg | ☼ | 94 | 75 - 125 |
| Cadmium | 0.37 | | 48.8 | 47.20 | | mg/Kg | ☼ | 96 | 75 - 125 |
| Chromium | 17.4 | F2 | 48.8 | 59.48 | | mg/Kg | ☼ | 86 | 75 - 125 |
| Copper | 41.0 | F1 F2 | 48.8 | 88.31 | | mg/Kg | ☼ | 97 | 75 - 125 |
| Lead | 90.1 | F1 F2 | 48.8 | 181.2 | F1 | mg/Kg | ☼ | 187 | 75 - 125 |
| Manganese | 261 | B F2 | 48.8 | 356.7 | 4 | mg/Kg | ☼ | 196 | 75 - 125 |
| Nickel | 23.3 | | 48.8 | 71.24 | | mg/Kg | ☼ | 98 | 75 - 125 |
| Selenium | 1.1 | J | 48.8 | 43.15 | | mg/Kg | ☼ | 86 | 75 - 125 |
| Silver | 0.78 | U | 12.2 | 10.93 | | mg/Kg | ☼ | 89 | 75 - 125 |
| Zinc | 91.4 | F1 F2 | 48.8 | 165.6 | F1 | mg/Kg | ☼ | 152 | 75 - 125 |

**Lab Sample ID: 480-205498-8 MSD**
**Matrix: Solid**
**Analysis Batch: 656462**

**Client Sample ID: BH-7 0-3**
**Prep Type: Total/NA**
**Prep Batch: 656221**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 32.4 | F1 F2 | 52.3 | 94.74 | F2 | mg/Kg | ☼ | 119 | 75 - 125 | 42 | 20 |
| Barium | 109 | | 52.3 | 158.0 | | mg/Kg | ☼ | 94 | 75 - 125 | 8 | 20 |
| Beryllium | 1.1 | | 52.3 | 50.80 | | mg/Kg | ☼ | 95 | 75 - 125 | 8 | 20 |
| Cadmium | 0.37 | | 52.3 | 52.26 | | mg/Kg | ☼ | 99 | 75 - 125 | 10 | 20 |

## Method: 6010C - Metals (ICP) (Continued)

**Lab Sample ID: 480-205498-8 MSD** — **Client Sample ID: BH-7 0-3**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 656462** — **Prep Batch: 656221**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 17.4 | F2 | 52.3 | 79.27 | F2 | mg/Kg | ☼ | 118 | 75 - 125 | 29 | 20 |
| Copper | 41.0 | F1 F2 | 52.3 | 124.3 | F1 F2 | mg/Kg | ☼ | 159 | 75 - 125 | 34 | 20 |
| Lead | 90.1 | F1 F2 | 52.3 | 114.8 | F1 F2 | mg/Kg | ☼ | 47 | 75 - 125 | 45 | 20 |
| Manganese | 261 | B F2 | 52.3 | 1213 | 4 F2 | mg/Kg | ☼ | 1820 | 75 - 125 | 109 | 20 |
| Nickel | 23.3 | | 52.3 | 86.74 | | mg/Kg | ☼ | 121 | 75 - 125 | 20 | 20 |
| Selenium | 1.1 | J | 52.3 | 47.57 | | mg/Kg | ☼ | 89 | 75 - 125 | 10 | 20 |
| Silver | 0.78 | U | 13.1 | 12.12 | | mg/Kg | ☼ | 93 | 75 - 125 | 10 | 20 |
| Zinc | 91.4 | F1 F2 | 52.3 | 115.6 | F1 F2 | mg/Kg | ☼ | 46 | 75 - 125 | 36 | 20 |

## Method: 7471B - Mercury (CVAA)

**Lab Sample ID: MB 480-656294/1-A** — **Client Sample ID: Method Blank**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 656381** — **Prep Batch: 656294**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.0120 | J | 0.019 | 0.0044 | mg/Kg | | 01/18/23 11:51 | 01/18/23 14:46 | 1 |

**Lab Sample ID: LCSSRM 480-656294/2-A ^10** — **Client Sample ID: Lab Control Sample**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 656381** — **Prep Batch: 656294**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 20.7 | 12.66 | | mg/Kg | | 61.2 | 38.3 - 110.1 |

**Lab Sample ID: 480-205498-1 MS** — **Client Sample ID: BH-1 0-2**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 656381** — **Prep Batch: 656294**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.52 | F1 F2 B | 0.430 | 0.918 | | mg/Kg | ☼ | 93 | 80 - 120 |

**Lab Sample ID: 480-205498-1 MSD** — **Client Sample ID: BH-1 0-2**
**Matrix: Solid** — **Prep Type: Total/NA**
**Analysis Batch: 656381** — **Prep Batch: 656294**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.52 | F1 F2 B | 0.411 | 1.17 | F1 F2 | mg/Kg | ☼ | 159 | 80 - 120 | 24 | 20 |

## GC/MS VOA

### Analysis Batch: 656325

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-18 | BH-4 4-5 | Total/NA | Water | 8260C | |
| MB 480-656325/7 | Method Blank | Total/NA | Water | 8260C | |
| LCS 480-656325/5 | Lab Control Sample | Total/NA | Water | 8260C | |

### Prep Batch: 656328

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-5 | BH-4 4-5 | Total/NA | Solid | 5035A_H | |
| MB 480-656328/3-A | Method Blank | Total/NA | Solid | 5035A_H | |
| LCS 480-656328/1-A | Lab Control Sample | Total/NA | Solid | 5035A_H | |

### Analysis Batch: 656463

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-5 | BH-4 4-5 | Total/NA | Solid | 8260C | 656328 |
| MB 480-656328/3-A | Method Blank | Total/NA | Solid | 8260C | 656328 |
| LCS 480-656328/1-A | Lab Control Sample | Total/NA | Solid | 8260C | 656328 |

## GC/MS Semi VOA

### Prep Batch: 656244

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-1 | BH-1 0-2 | Total/NA | Solid | 3550C | |
| 480-205498-2 | BH-2 0-3 | Total/NA | Solid | 3550C | |
| 480-205498-3 | BH-3 0-3 | Total/NA | Solid | 3550C | |
| 480-205498-4 | BH-4 0-3 | Total/NA | Solid | 3550C | |
| 480-205498-6 | BH-5 0-3 | Total/NA | Solid | 3550C | |
| 480-205498-7 | BH-6 0-3 | Total/NA | Solid | 3550C | |
| 480-205498-8 | BH-7 0-3 | Total/NA | Solid | 3550C | |
| 480-205498-9 | BH-8 0-3 | Total/NA | Solid | 3550C | |
| 480-205498-10 | BH-9 0-3 | Total/NA | Solid | 3550C | |
| 480-205498-11 | BH-10 0-2 | Total/NA | Solid | 3550C | |
| 480-205498-12 | BH-11 0-2 | Total/NA | Solid | 3550C | |
| 480-205498-13 | BH-12 0-2 | Total/NA | Solid | 3550C | |
| 480-205498-14 | BH-13 0-2 | Total/NA | Solid | 3550C | |
| 480-205498-15 | BH-14 1-2 | Total/NA | Solid | 3550C | |
| 480-205498-16 | BH-15 1-2 | Total/NA | Solid | 3550C | |
| 480-205498-17 | BH-16 0--4 | Total/NA | Solid | 3550C | |
| 480-205498-19 | BH-17 0-4 | Total/NA | Solid | 3550C | |
| MB 480-656244/1-A | Method Blank | Total/NA | Solid | 3550C | |
| LCS 480-656244/2-A | Lab Control Sample | Total/NA | Solid | 3550C | |
| 480-205498-10 MS | BH-9 0-3 | Total/NA | Solid | 3550C | |
| 480-205498-10 MSD | BH-9 0-3 | Total/NA | Solid | 3550C | |

### Analysis Batch: 656282

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-1 | BH-1 0-2 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-2 | BH-2 0-3 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-3 | BH-3 0-3 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-4 | BH-4 0-3 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-6 | BH-5 0-3 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-7 | BH-6 0-3 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-8 | BH-7 0-3 | Total/NA | Solid | 8270D | 656244 |

## GC/MS Semi VOA (Continued)

### Analysis Batch: 656282 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-9 | BH-8 0-3 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-10 | BH-9 0-3 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-11 | BH-10 0-2 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-12 | BH-11 0-2 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-13 | BH-12 0-2 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-14 | BH-13 0-2 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-15 | BH-14 1-2 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-16 | BH-15 1-2 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-17 | BH-16 0--4 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-19 | BH-17 0-4 | Total/NA | Solid | 8270D | 656244 |
| MB 480-656244/1-A | Method Blank | Total/NA | Solid | 8270D | 656244 |
| LCS 480-656244/2-A | Lab Control Sample | Total/NA | Solid | 8270D | 656244 |
| 480-205498-10 MS | BH-9 0-3 | Total/NA | Solid | 8270D | 656244 |
| 480-205498-10 MSD | BH-9 0-3 | Total/NA | Solid | 8270D | 656244 |

## Metals

### Prep Batch: 656221

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-1 | BH-1 0-2 | Total/NA | Solid | 3050B | |
| 480-205498-2 | BH-2 0-3 | Total/NA | Solid | 3050B | |
| 480-205498-3 | BH-3 0-3 | Total/NA | Solid | 3050B | |
| 480-205498-4 | BH-4 0-3 | Total/NA | Solid | 3050B | |
| 480-205498-6 | BH-5 0-3 | Total/NA | Solid | 3050B | |
| 480-205498-7 | BH-6 0-3 | Total/NA | Solid | 3050B | |
| 480-205498-8 | BH-7 0-3 | Total/NA | Solid | 3050B | |
| 480-205498-9 | BH-8 0-3 | Total/NA | Solid | 3050B | |
| 480-205498-10 | BH-9 0-3 | Total/NA | Solid | 3050B | |
| 480-205498-11 | BH-10 0-2 | Total/NA | Solid | 3050B | |
| 480-205498-12 | BH-11 0-2 | Total/NA | Solid | 3050B | |
| 480-205498-13 | BH-12 0-2 | Total/NA | Solid | 3050B | |
| 480-205498-14 | BH-13 0-2 | Total/NA | Solid | 3050B | |
| 480-205498-15 | BH-14 1-2 | Total/NA | Solid | 3050B | |
| 480-205498-16 | BH-15 1-2 | Total/NA | Solid | 3050B | |
| 480-205498-17 | BH-16 0--4 | Total/NA | Solid | 3050B | |
| 480-205498-19 | BH-17 0-4 | Total/NA | Solid | 3050B | |
| MB 480-656221/1-A | Method Blank | Total/NA | Solid | 3050B | |
| LCSSRM 480-656221/2-A | Lab Control Sample | Total/NA | Solid | 3050B | |
| 480-205498-8 MS | BH-7 0-3 | Total/NA | Solid | 3050B | |
| 480-205498-8 MSD | BH-7 0-3 | Total/NA | Solid | 3050B | |

### Prep Batch: 656294

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-1 | BH-1 0-2 | Total/NA | Solid | 7471B | |
| 480-205498-2 | BH-2 0-3 | Total/NA | Solid | 7471B | |
| 480-205498-3 | BH-3 0-3 | Total/NA | Solid | 7471B | |
| 480-205498-4 | BH-4 0-3 | Total/NA | Solid | 7471B | |
| 480-205498-6 | BH-5 0-3 | Total/NA | Solid | 7471B | |
| 480-205498-7 | BH-6 0-3 | Total/NA | Solid | 7471B | |
| 480-205498-8 | BH-7 0-3 | Total/NA | Solid | 7471B | |
| 480-205498-9 | BH-8 0-3 | Total/NA | Solid | 7471B | |

## Metals (Continued)

### Prep Batch: 656294 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-10 | BH-9 0-3 | Total/NA | Solid | 7471B | |
| 480-205498-11 | BH-10 0-2 | Total/NA | Solid | 7471B | |
| 480-205498-12 | BH-11 0-2 | Total/NA | Solid | 7471B | |
| 480-205498-13 | BH-12 0-2 | Total/NA | Solid | 7471B | |
| 480-205498-14 | BH-13 0-2 | Total/NA | Solid | 7471B | |
| 480-205498-15 | BH-14 1-2 | Total/NA | Solid | 7471B | |
| 480-205498-16 | BH-15 1-2 | Total/NA | Solid | 7471B | |
| 480-205498-17 | BH-16 0--4 | Total/NA | Solid | 7471B | |
| 480-205498-19 | BH-17 0-4 | Total/NA | Solid | 7471B | |
| MB 480-656294/1-A | Method Blank | Total/NA | Solid | 7471B | |
| LCSSRM 480-656294/2-A ^1 | Lab Control Sample | Total/NA | Solid | 7471B | |
| 480-205498-1 MS | BH-1 0-2 | Total/NA | Solid | 7471B | |
| 480-205498-1 MSD | BH-1 0-2 | Total/NA | Solid | 7471B | |

### Analysis Batch: 656381

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-1 | BH-1 0-2 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-2 | BH-2 0-3 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-3 | BH-3 0-3 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-4 | BH-4 0-3 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-6 | BH-5 0-3 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-7 | BH-6 0-3 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-8 | BH-7 0-3 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-9 | BH-8 0-3 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-10 | BH-9 0-3 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-11 | BH-10 0-2 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-12 | BH-11 0-2 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-13 | BH-12 0-2 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-14 | BH-13 0-2 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-15 | BH-14 1-2 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-16 | BH-15 1-2 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-17 | BH-16 0--4 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-19 | BH-17 0-4 | Total/NA | Solid | 7471B | 656294 |
| MB 480-656294/1-A | Method Blank | Total/NA | Solid | 7471B | 656294 |
| LCSSRM 480-656294/2-A ^1 | Lab Control Sample | Total/NA | Solid | 7471B | 656294 |
| 480-205498-1 MS | BH-1 0-2 | Total/NA | Solid | 7471B | 656294 |
| 480-205498-1 MSD | BH-1 0-2 | Total/NA | Solid | 7471B | 656294 |

### Analysis Batch: 656462

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-1 | BH-1 0-2 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-2 | BH-2 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-3 | BH-3 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-4 | BH-4 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-6 | BH-5 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-7 | BH-6 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-8 | BH-7 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-9 | BH-8 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-10 | BH-9 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-11 | BH-10 0-2 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-12 | BH-11 0-2 | Total/NA | Solid | 6010C | 656221 |

## Metals (Continued)

### Analysis Batch: 656462 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-13 | BH-12 0-2 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-14 | BH-13 0-2 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-15 | BH-14 1-2 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-16 | BH-15 1-2 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-17 | BH-16 0--4 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-19 | BH-17 0-4 | Total/NA | Solid | 6010C | 656221 |
| MB 480-656221/1-A | Method Blank | Total/NA | Solid | 6010C | 656221 |
| LCSSRM 480-656221/2-A | Lab Control Sample | Total/NA | Solid | 6010C | 656221 |
| 480-205498-8 MS | BH-7 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-8 MSD | BH-7 0-3 | Total/NA | Solid | 6010C | 656221 |

### Analysis Batch: 656575

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-4 | BH-4 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-6 | BH-5 0-3 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-17 | BH-16 0--4 | Total/NA | Solid | 6010C | 656221 |
| 480-205498-19 | BH-17 0-4 | Total/NA | Solid | 6010C | 656221 |

## General Chemistry

### Analysis Batch: 656135

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-205498-1 | BH-1 0-2 | Total/NA | Solid | Moisture | |
| 480-205498-2 | BH-2 0-3 | Total/NA | Solid | Moisture | |
| 480-205498-3 | BH-3 0-3 | Total/NA | Solid | Moisture | |
| 480-205498-4 | BH-4 0-3 | Total/NA | Solid | Moisture | |
| 480-205498-5 | BH-4 4-5 | Total/NA | Solid | Moisture | |
| 480-205498-6 | BH-5 0-3 | Total/NA | Solid | Moisture | |
| 480-205498-7 | BH-6 0-3 | Total/NA | Solid | Moisture | |
| 480-205498-8 | BH-7 0-3 | Total/NA | Solid | Moisture | |
| 480-205498-9 | BH-8 0-3 | Total/NA | Solid | Moisture | |
| 480-205498-10 | BH-9 0-3 | Total/NA | Solid | Moisture | |
| 480-205498-11 | BH-10 0-2 | Total/NA | Solid | Moisture | |
| 480-205498-12 | BH-11 0-2 | Total/NA | Solid | Moisture | |
| 480-205498-13 | BH-12 0-2 | Total/NA | Solid | Moisture | |
| 480-205498-14 | BH-13 0-2 | Total/NA | Solid | Moisture | |
| 480-205498-15 | BH-14 1-2 | Total/NA | Solid | Moisture | |
| 480-205498-16 | BH-15 1-2 | Total/NA | Solid | Moisture | |
| 480-205498-17 | BH-16 0--4 | Total/NA | Solid | Moisture | |
| 480-205498-19 | BH-17 0-4 | Total/NA | Solid | Moisture | |

# Lab Chronicle

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

## Client Sample ID: BH-1 0-2
**Lab Sample ID: 480-205498-1**
**Date Collected: 01/13/23 09:10**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-1 0-2
**Lab Sample ID: 480-205498-1**
**Date Collected: 01/13/23 09:10**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 76.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 10 | 656282 | JMM | EET BUF | 01/18/23 15:52 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 00:20 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 14:49 |

## Client Sample ID: BH-2 0-3
**Lab Sample ID: 480-205498-2**
**Date Collected: 01/13/23 09:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-2 0-3
**Lab Sample ID: 480-205498-2**
**Date Collected: 01/13/23 09:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 83.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 10 | 656282 | JMM | EET BUF | 01/18/23 16:18 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 00:24 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 14:54 |

## Client Sample ID: BH-3 0-3
**Lab Sample ID: 480-205498-3**
**Date Collected: 01/13/23 09:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

# Lab Chronicle

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

## Client Sample ID: BH-3 0-3
**Lab Sample ID: 480-205498-3**
**Date Collected: 01/13/23 09:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 86.1**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 5 | 656282 | JMM | EET BUF | 01/18/23 16:43 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 00:28 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 14:55 |

## Client Sample ID: BH-4 0-3
**Lab Sample ID: 480-205498-4**
**Date Collected: 01/13/23 10:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-4 0-3
**Lab Sample ID: 480-205498-4**
**Date Collected: 01/13/23 10:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 86.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 1 | 656282 | JMM | EET BUF | 01/18/23 17:09 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 00:32 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 2 | 656575 | LMH | EET BUF | 01/19/23 18:35 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 14:57 |

## Client Sample ID: BH-4 4-5
**Lab Sample ID: 480-205498-5**
**Date Collected: 01/13/23 10:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-4 4-5
**Lab Sample ID: 480-205498-5**
**Date Collected: 01/13/23 10:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 78.7**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035A_H | | | 656328 | AXK | EET BUF | 01/18/23 10:35 |
| Total/NA | Analysis | 8260C | | 4 | 656463 | LCH | EET BUF | 01/19/23 16:26 |

# Lab Chronicle

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

## Client Sample ID: BH-5 0-3
**Lab Sample ID: 480-205498-6**
**Date Collected: 01/13/23 10:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-5 0-3
**Lab Sample ID: 480-205498-6**
**Date Collected: 01/13/23 10:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 85.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 1 | 656282 | JMM | EET BUF | 01/18/23 17:34 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 00:36 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 2 | 656575 | LMH | EET BUF | 01/19/23 18:38 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 14:58 |

## Client Sample ID: BH-6 0-3
**Lab Sample ID: 480-205498-7**
**Date Collected: 01/13/23 10:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-6 0-3
**Lab Sample ID: 480-205498-7**
**Date Collected: 01/13/23 10:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 75.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 1 | 656282 | JMM | EET BUF | 01/18/23 17:59 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 00:40 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:02 |

## Client Sample ID: BH-7 0-3
**Lab Sample ID: 480-205498-8**
**Date Collected: 01/13/23 10:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-7 0-3
**Lab Sample ID: 480-205498-8**
**Date Collected: 01/13/23 10:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 79.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 1 | 656282 | JMM | EET BUF | 01/18/23 18:24 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 00:44 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:03 |

## Client Sample ID: BH-8 0-3
**Lab Sample ID: 480-205498-9**
**Date Collected: 01/13/23 11:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-8 0-3
**Lab Sample ID: 480-205498-9**
**Date Collected: 01/13/23 11:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 77.1**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 10 | 656282 | JMM | EET BUF | 01/18/23 18:48 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 01:15 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:05 |

## Client Sample ID: BH-9 0-3
**Lab Sample ID: 480-205498-10**
**Date Collected: 01/13/23 11:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-9 0-3
**Lab Sample ID: 480-205498-10**
**Date Collected: 01/13/23 11:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 81.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 5 | 656282 | JMM | EET BUF | 01/18/23 15:27 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 01:18 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:06 |

# Lab Chronicle

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

## Client Sample ID: BH-10 0-2
**Lab Sample ID: 480-205498-11**
**Date Collected: 01/13/23 11:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-10 0-2
**Lab Sample ID: 480-205498-11**
**Date Collected: 01/13/23 11:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 82.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 1 | 656282 | JMM | EET BUF | 01/18/23 19:13 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 01:22 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:07 |

## Client Sample ID: BH-11 0-2
**Lab Sample ID: 480-205498-12**
**Date Collected: 01/13/23 12:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-11 0-2
**Lab Sample ID: 480-205498-12**
**Date Collected: 01/13/23 12:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 78.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 10 | 656282 | JMM | EET BUF | 01/18/23 19:38 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 01:26 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:08 |

## Client Sample ID: BH-12 0-2
**Lab Sample ID: 480-205498-13**
**Date Collected: 01/13/23 12:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-12 0-2
**Lab Sample ID: 480-205498-13**
**Date Collected: 01/13/23 12:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 85.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 1 | 656282 | JMM | EET BUF | 01/18/23 20:02 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 01:30 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:10 |

## Client Sample ID: BH-13 0-2
**Lab Sample ID: 480-205498-14**
**Date Collected: 01/13/23 13:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-13 0-2
**Lab Sample ID: 480-205498-14**
**Date Collected: 01/13/23 13:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 75.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 1 | 656282 | JMM | EET BUF | 01/18/23 20:27 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 01:34 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 10 | 656381 | NVK | EET BUF | 01/18/23 16:14 |

## Client Sample ID: BH-14 1-2
**Lab Sample ID: 480-205498-15**
**Date Collected: 01/13/23 13:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-14 1-2
**Lab Sample ID: 480-205498-15**
**Date Collected: 01/13/23 13:15**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 84.6**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 5 | 656282 | JMM | EET BUF | 01/18/23 20:52 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 01:49 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:14 |

# Lab Chronicle

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

## Client Sample ID: BH-15 1-2
**Lab Sample ID: 480-205498-16**
**Date Collected: 01/13/23 13:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-15 1-2
**Lab Sample ID: 480-205498-16**
**Date Collected: 01/13/23 13:30**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 84.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 1 | 656282 | JMM | EET BUF | 01/18/23 21:17 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 01:53 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:15 |

## Client Sample ID: BH-16 0--4
**Lab Sample ID: 480-205498-17**
**Date Collected: 01/13/23 13:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-16 0--4
**Lab Sample ID: 480-205498-17**
**Date Collected: 01/13/23 13:45**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 79.6**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 10 | 656282 | JMM | EET BUF | 01/18/23 21:41 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 01:57 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 5 | 656575 | LMH | EET BUF | 01/19/23 18:43 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:19 |

## Client Sample ID: BH-4 4-5
**Lab Sample ID: 480-205498-18**
**Date Collected: 01/13/23 10:00**
**Matrix: Water**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8260C | | 1 | 656325 | AXK | EET BUF | 01/18/23 18:55 |

# Lab Chronicle

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

## Client Sample ID: BH-17 0-4
**Lab Sample ID: 480-205498-19**
**Date Collected: 01/13/23 14:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 656135 | DSC | EET BUF | 01/16/23 18:49 |

## Client Sample ID: BH-17 0-4
**Lab Sample ID: 480-205498-19**
**Date Collected: 01/13/23 14:00**
**Matrix: Solid**
**Date Received: 01/14/23 09:15**
**Percent Solids: 87.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550C | | | 656244 | SJM | EET BUF | 01/17/23 15:51 |
| Total/NA | Analysis | 8270D | | 1 | 656282 | JMM | EET BUF | 01/18/23 22:06 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 1 | 656462 | LMH | EET BUF | 01/19/23 02:01 |
| Total/NA | Prep | 3050B | | | 656221 | VAK | EET BUF | 01/17/23 12:42 |
| Total/NA | Analysis | 6010C | | 2 | 656575 | LMH | EET BUF | 01/19/23 18:46 |
| Total/NA | Prep | 7471B | | | 656294 | NVK | EET BUF | 01/18/23 11:51 |
| Total/NA | Analysis | 7471B | | 1 | 656381 | NVK | EET BUF | 01/18/23 15:21 |

**Laboratory References:**
EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

# Accreditation/Certification Summary

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

## Laboratory: Eurofins Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| New York | NELAP | 10026 | 03-31-23 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| Moisture | | Solid | Percent Moisture |
| Moisture | | Solid | Percent Solids |

# Method Summary

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 8260C | Volatile Organic Compounds by GC/MS | SW846 | EET BUF |
| 8270D | Semivolatile Organic Compounds (GC/MS) | SW846 | EET BUF |
| 6010C | Metals (ICP) | SW846 | EET BUF |
| 7471B | Mercury (CVAA) | SW846 | EET BUF |
| Moisture | Percent Moisture | EPA | EET BUF |
| 3050B | Preparation, Metals | SW846 | EET BUF |
| 3550C | Ultrasonic Extraction | SW846 | EET BUF |
| 5030C | Purge and Trap | SW846 | EET BUF |
| 5035A_H | Closed System Purge and Trap | SW846 | EET BUF |
| 7471B | Preparation, Mercury | SW846 | EET BUF |

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

# Sample Summary

Client: Brydges Engineering in Environment & Energy DPC
Job ID: 480-205498-1
Project/Site: Regan Development - Dunkirk, NY

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 480-205498-1 | BH-1 0-2 | Solid | 01/13/23 09:10 | 01/14/23 09:15 |
| 480-205498-2 | BH-2 0-3 | Solid | 01/13/23 09:30 | 01/14/23 09:15 |
| 480-205498-3 | BH-3 0-3 | Solid | 01/13/23 09:45 | 01/14/23 09:15 |
| 480-205498-4 | BH-4 0-3 | Solid | 01/13/23 10:00 | 01/14/23 09:15 |
| 480-205498-5 | BH-4 4-5 | Solid | 01/13/23 10:00 | 01/14/23 09:15 |
| 480-205498-6 | BH-5 0-3 | Solid | 01/13/23 10:15 | 01/14/23 09:15 |
| 480-205498-7 | BH-6 0-3 | Solid | 01/13/23 10:30 | 01/14/23 09:15 |
| 480-205498-8 | BH-7 0-3 | Solid | 01/13/23 10:45 | 01/14/23 09:15 |
| 480-205498-9 | BH-8 0-3 | Solid | 01/13/23 11:00 | 01/14/23 09:15 |
| 480-205498-10 | BH-9 0-3 | Solid | 01/13/23 11:15 | 01/14/23 09:15 |
| 480-205498-11 | BH-10 0-2 | Solid | 01/13/23 11:30 | 01/14/23 09:15 |
| 480-205498-12 | BH-11 0-2 | Solid | 01/13/23 12:30 | 01/14/23 09:15 |
| 480-205498-13 | BH-12 0-2 | Solid | 01/13/23 12:45 | 01/14/23 09:15 |
| 480-205498-14 | BH-13 0-2 | Solid | 01/13/23 13:00 | 01/14/23 09:15 |
| 480-205498-15 | BH-14 1-2 | Solid | 01/13/23 13:15 | 01/14/23 09:15 |
| 480-205498-16 | BH-15 1-2 | Solid | 01/13/23 13:30 | 01/14/23 09:15 |
| 480-205498-17 | BH-16 0--4 | Solid | 01/13/23 13:45 | 01/14/23 09:15 |
| 480-205498-18 | BH-4 4-5 | Water | 01/13/23 10:00 | 01/14/23 09:15 |
| 480-205498-19 | BH-17 0-4 | Solid | 01/13/23 14:00 | 01/14/23 09:15 |

**Eurofins Buffalo**
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

# Chain of Custody Record

eurofins | Environment Testing

| Client Information | Sampler: Jacob Cox | Lab PM: Beninati, John | Carrier Tracking No(s): | COC No: 480-180870-38241.1 |
|---|---|---|---|---|
| Client Contact: Mr. Peter Gorton | Phone: (716) 418-0192 | E-Mail: John.Beninati@et.eurofinsus.com | State of Origin: | Page: Page 1 of 2 |
| Company: Brydges Engineering in Environment & Energy DPC | PWSID: | | | Job #: |
| Address: 960 Busti Ave Suite B-150 | Due Date Requested: | | | |
| City: Buffalo | TAT Requested (days): 10 day | | | |
| State, Zip: NY, 14213 | Compliance Project: Δ Yes Δ No | | | |
| Phone: 716-362-6533(Tel) | PO #: Purchase Order not required | | | |
| Email: pgorton@be3corp.com | WO #: Regan Development | | | |
| Project Name: BE3 - Job #8206 | Project #: 48024347 | | | |
| Site: Dunkirk | SSOW#: | | | |

**Analysis Requested**

**Preservation Codes:**
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | 6010C, 7471B | 8270D - Part 375 SVOCs | 8260C - Part 375 VOCs (LL BULK) | 8260C - Part 375 VOCs | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | N | N | N | A | | |
| BH1 0-2' | 1/13 | 9:10 | G | Solid | | | X | X | | | | |
| BH2 0-3' | 1/13 | 9:30 | G | Solid | | | X | X | | | | |
| BH3 0-3' | 1/13 | 9:45 | G | Solid | | | X | X | | | | |
| BH4 0-3' | 1/13 | 10:00 | G | Solid | | | X | X | | | | |
| BH4 4-5' | 1/13 | 10:00 | G | Solid | | | | | X | | | |
| BH5 0-3' | 1/13 | 10:15 | G | Solid | | | X | X | | | | |
| BH6 0-3' | 1/13 | 10:30 | G | Solid | | | X | X | | | | |
| BH7 0-3' | 1/13 | 10:45 | G | Solid | | | X | X | | | | |
| BH8 0-3' | 1/13 | 11:00 | G | Solid | | | X | X | | | | |
| BH9 0-3' | 1/13 | 11:15 | G | Solid | | | X | X | | | | |
| BH10 0-2' | 1/13 | 11:30 | G | Solid | | | X | X | | | | |

480-205498 Chain of Custody

**Possible Hazard Identification**
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: NONE

| Empty Kit Relinquished by: Jacob Cox | Date: | Time: | Method of Shipment: |
|---|---|---|---|

| | Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |
|---|---|---|---|---|---|---|
| | Jacob Cox | 1/14/23 915 | | | | |
| | Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |
| | Relinquished by: | Date/Time: | Company | Received by: | Date/Time: 1/14/23 915 | Company |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 6.3 #1

Ver: 06/08/2021

**Eurofins Buffalo**
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

# Chain of Custody Record

eurofins | Environment Testing

| Client Information | Sampler: Jacob Coy | Lab PM: Beninati, John | Carrier Tracking No(s): | COC No: 480-180870-38241.2 |
|---|---|---|---|---|
| Client Contact: Mr. Peter Gorton | Phone: (716) 418 0192 | E-Mail: John.Beninati@et.eurofinsus.com | State of Origin: | Page: Page 2 of 2 |
| Company: Brydges Engineering in Environment & Energy DPC | PWSID: | | | Job #: |
| Address: 960 Busti Ave Suite B-150 | Due Date Requested: | | | |
| City: Buffalo | TAT Requested (days): 10 day | | | |
| State, Zip: NY, 14213 | Compliance Project: Δ Yes Δ No | | | |
| Phone: 716-362-6533(Tel) | PO #: Purchase Order not required | | | |
| Email: pgorton@be3corp.com | WO #: Regan Development | | | |
| Project Name: BE3 - Job #8206 | Project #: 48024347 | | | |
| Site: Dunkirk | SSOW#: | | | |

**Analysis Requested**

**Preservation Codes:**
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify), Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | 6010C, 7471B | 8270D - Part 375 SVOCs | 8260C - Part 375 VOCs (LL BULK) | 8260C - Part 375 VOCs | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | N | N | N | A | | |
| BH 11 0-2' | 1/13 | 12:30 | G | Solid | | | X | X | | | | |
| BH 12 0-2' | 1/13 | 12:45 | G | Solid | | | X | X | | | | |
| BH 13 0-2' | 1/13 | 13:00 | G | Solid | | | X | X | | | | |
| BH 14 1-2' | 1/13 | 13:15 | G | Solid | | | X | X | | | | |
| BH 15 1-2' | 1/13 | 13:30 | G | Solid | | | X | X | | | | |
| BH 16 0-4' | 1/13 | 13:45 | G | Solid | | | X | X | | | | |
| BH4 4-5' | 1/13 | 10:00 | G | Water | | | | | | X | | |
| BH 17 0-4' | 1/13 | 14:00 | G | Water SOLID | | | X | X | | | | |

**Possible Hazard Identification**
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: NONE

| Empty Kit Relinquished by: Jacob Coy | Date: | Time: | Method of Shipment: |
|---|---|---|---|

| Relinquished by: Jacob Coy | Date/Time: 1/14/2023 | Company | Received by: | Date/Time: | Company |
|---|---|---|---|---|---|
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: 1/14/23 915 | Company TMD |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

# Login Sample Receipt Checklist

Client: Brydges Engineering in Environment & Energy DPC

Job Number: 480-205498-1

**Login Number: 205498**
**List Number: 1**
**Creator: Sabuda, Brendan D**

**List Source: Eurofins Buffalo**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | True | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 6.3 #1 ICE |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time (Excluding tests with immediate HTs).. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Sampling Company provided. | True | |
| Samples received within 48 hours of sampling. | True | |
| Samples requiring field filtration have been filtered in the field. | True | |
| Chlorine Residual checked. | True | |

# APPENDIX G

# RESUMES

## Overview

Mr. Brydges has worked in the environmental engineering discipline for over 25 years performing health physics applications; radioactive and hazardous materials remediation; stormwater, erosion, and sediment control design; decontamination and decommissioning (D&D) operations design; contaminated site closure engineering; NYSDEC brownfield cleanup design and remediation, landfill and cover permitting, design, and construction; soil vapor assessment, design, and remediation; waste transportation, storage, and disposal; contaminated media sampling design; and groundwater, soils, and facility remediation design using NYSDEC Brownfield Cleanup Program (BCP), Federal Resource Conservation and Recovery Act (RCRA), National Environmental Policy Act (NEPA), and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations under various U.S. Department of Energy (DOE), U.S. Nuclear Regulatory Commission (NRC), U.S. Environmental Protection Agency (EPA), U.S. Air Force Civil Engineering Center (AFCEC), New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and U.S. Army Corps of Engineers (USACE) programmatic guidance.

## Areas of Expertise

Environmental Remediation
Radioactive, Solid, and Hazardous Waste Management
Health Physics
Stormwater, Erosion and Sediment Control
Groundwater
Soil Vapor Intrusion
Facility Decontamination and Decommissioning (D&D)

## Years of Experience

BE3: 11+ years
LATA: 3 years
URS: 11 Years
Other Firms: 2 Years

## Project-Specific Experience

**Project Manager/Professional Engineer, Douglas Development Corporation, 308 Crowley Avenue, Buffalo, Time and Materials, $200k, 2022-Present:** As PM/PE, I am leading our team through the BCP process for an approximately 3-acre site in the Black Rock section of Buffalo for the redevelopment of an industrial facility. Completed tasks to date include preliminary environmental work such as SEQRA, Phase I and II ESAs, and hazardous building materials inspections, The requisite NYSBCP requirements that have been completed include the application, RI work plan, RI field work, and alternatives analysis reporting. This project is on-going and subsequent work will include remedial action work plan development, remediation and construction field support activities per 6NYCRR375, 6NYCRR360, and DER-10, Final Engineering Reporting, and obtaining the project certificate of completion.

**Project Manager/Professional Engineer, DLV Properties LLC, 624 River Road, North Tonawanda NY, Time and Materials, $200k, 2018-Present:** As PM/PE, I completed the entire pre-BCP, BCP, and post-BCP process for an approximately 5-acre site on the Niagara River in North Tonawanda for a market rate housing project. This is the sister project of 600 River Road, which was another BCP project completed for DLV properties in 2017. Completed tasks included Phase I and II ESAs, gamma walkover surveys, BCP application process, building and grading permits, and all the requisite NYSBCP requirements (e.g., application, RI work plan, RI field work, alternatives analysis, remedial action design and remediation, and final engineering reporting. This project is on-going as work continues under the site management plan to complete the construction of the new condominiums on the NYSDEC approved cap and cover for protection of human health and the environment.

**Project Manager/Professional Engineer, Kearney Development, Former Harrison Facility,**

**Lockport NY, Time and Materials, $200k – 2021:** As PM/PE, I administered the progress through the NYSDEC BCP process for a 1.5-acre historical industrial radiator manufacturing plant. As lead PE, I authored and designed the remedial investigation, the alternatives analysis, and remedial action work plan. I performed groundwater treatment amendment calculations for the TCE contamination and generated corresponding design drawings.

**Professional Engineer/Health Physicist, Plexus, Tonawanda Landfill, Tonawanda NY, Fixed Unit Rate, $200k – 2020:** As PE/HP, I assisted with the design and execution of the radioactive waste remediation for the USACE Buffalo District on the Tonawanda Landfill. As subcontracted PE/HP, I performed perimeter air contamination calculations, radiation to curie conversions, and designed the removal of tens of thousands of FUSRAP material for disposal at a certified radioactive waste disposal facility.

**Project Manager/Professional Engineer, Regan Development, 19 Doat Street, Buffalo, Fixed Price Not To Exceed, $1.5M, 2017-2019:** As PM/PE, I completed the entire BCP process including remediation for an approximately 2 acre site on the East Side of Buffalo for an affordable housing project. In addition to remedial design and remediation completed tasks included the following: SEQRA documentation, SHPO documentation, interface with GC and architect, geotechnical management, sub slab depressurization system (SSDS) design and installation, interface with NYS HCR/HFA, and all of the requisite NYSBCP requirements (e.g., application, RI work plan, RI field work, alternatives analysis, remedial action design and remediation, and final engineering reporting.

**Project Manager/Professional Engineer, Yots-Frizlen, 68 Tonawanda Street, Buffalo, Time and Materials, $150k, 2017-2019:** As PM/PE, I completed the BCP design for the conversion of an old train depot into market rate housing on Tonawanda Street in Buffalo New York. As PM/PE I authored design and contract documents that included a program application, a remedial investigation work plan, a remedial alternative analysis report, a remedial action work plan, and a final engineering report.

**Project Manager/Professional Engineer, Southern Tier Environments for Living (STEL), 31 Water Street, Jamestown NY, Time and Materials, $300k, 2017-Present:** As PM/PE, I completed numerous environmental investigations and assessments to assist with the NYS Brownfield Cleanup Program including Phase I ESA, Phase II ESA, Hazardous Building Materials Inspection, SEQRA reporting, soil vapor intrusion, groundwater sampling, wetland and endangered species assessments, SWPPP reporting, remedial investigation work plans, remedial investigation, remedial action work plans, and planning for development and remediation of the property that consists of multiple buildings covering approximately 6 acres.

**Project Manager/Professional Engineer, Solar Liberty, Many Sites, New York, Project Lump Sum, $80k, 5-2015 – 2017:** As PM/PE, authored and managed several deliverables for a solar installation client on many sites throughout New York State. Project plans include Phase I ESAs, civil/ALTA surveys, SEQRA forms, SHPO CRI reports, SWPPPs, wetland delineation/surveys, endangered/threatened species surveys, and geotechnical reports that involved wind uplift, differential settlement, and slope stability calculations. Most of these services are performed in-house and all services are managed in-house. Subcontractors are utilized to complete civil surveys and geotechnical borings, while labor reach-back services are utilized for the cultural resource investigations. For the approximately 12 sites performed to date, some require all services and others just require a few of the services. Typically, the civil survey and SWPPPs are performed for all sites; whereas Phase I ESA/SEQRA/SHPO are sometimes performed by the owner or municipality. These activities ultimately allow Solar Liberty to arrange for array development with a racking system and set of solar panels.

**Project Manager/ Professional Engineer/Health Physicist, JGMS, SUNY Buffalo Cyclotron, New York, Time and Materials NTE, $50k, 8-2016 – 2018:** As PM/PE/HP, performed site walk to verify design drawings of cyclotron vaults and reviewed the quantity take-offs to ensure contractor was provided an accurate and user-friendly request for proposal. Primary tasks were to communicate with the primary contractor during review of Decommissioning Plan, edit the UB D&D RFQ, obtain feedback from UB regarding RFQ, and review and edit bid

documents and contract documents for the procurement. A significant portion of the work was generating a new selective demolition specification and editing the existing general conditions specification. Approximately 10 drawings were generated and submitted to UB for review to include with specifications for general conditions and selective demolition. As lead engineer, helped the primary HP contractor and UB through the contractor site walk prior to bid.

**Professional Engineer, Guiseppe Holdings, River Road, Tonawanda New York, Time and Materials, $100k, 2016:** As PE, assisted the client through the NYS Brownfield Cleanup Program for a xylene impacted site that included soil excavation, clean fill sampling and importing, administration of air monitoring devices for dust and volatile organic compounds, logging dust and VOC results periodically for QA purposes, and documenting site activities including waste T&D, contamination excavation and stockpiling, backfilling operations, excavation shoring and bracing, health and safety administration, etc. In general, the site remediation included the excavation of soil to uncover a lens of impacted material 6 to 8 feet below grade surface (bgs) where eventually approximately 9000 tons of impacted soil was removed from this area and sent to the landfill. Test pits were utilized to locate the extent of contamination during the remedial process, and a barrier wall was installed to delineate contamination that existed along the United Refinery (neighbor) property line.

**Project Manager/Professional Engineer, TRM Architects, Many Sites, New York, Lump Sum, 6/2015 – 8/2016:** As PE/PM, performed stormwater design calculations and reporting for various developments as required by NYSDEC and municipality guidance to obtain permits. The project at 500 Franklin Street was a standard TR-55 stormwater design for 2 year pre and 25 year post development conditions that generated WQv, peak discharge, retention, pipe sizing, and design drawing markups. The project in East Aurora was a dry well design that also utilized TR-55 to calculate WQv with the ultimate goal of designing a dry well with adequate sump, surface area, pipe sizing, and ensuring the well layout detail fit the existing system. The project at 760 Seneca Street was identical to that at Franklin Street with the addition of subsurface retention design that included R-tanks and an erosion and sediment control plan.

**Professional Engineer/Health Physicist, LATA, USACE Linde Project Tonawanda, New York, Fixed Unit Rate, 5/2015 – 3/2016:** As field engineer and HP technical, monitored and surveyed a groundwater well decommissioning project at the former Linde Site in Tonawanda, New York. The project scope of work involved the decommissioning and removal of 9 GW wells on-site that were not anticipated to be radiologically impacted. BE3's scope of work was to ensure that project personnel and the environment was not unnecessarily exposed to FUSRAP radioactive material that once existed at this location. A driller, waste T&D, and asphalt paving subcontractors were also present to support the project. Due to the nature of some of the wells, a few were not constructed as anticipated and therefore abandoned in place. All areas were restored and all waste material (both liquid and solid) was surveyed and sampled for proper disposal.

**Project Manager/Professional Engineer, NYS Parks Department, Niagara Falls, New York, Lump Sum, 8/2015 - 1/2016:** As PE/PM, authored a Records Search Report for the NYS Parks Department for the Port Day Pond area near the intersection of Buffalo Avenue and John B Daly Boulevard. The report was generated as a result of a Consent Order from the NYSDEC to the Parks Department regarding contamination suspected within the area being developed for the Robert Moses Parkway. In addition to specification of the Consent Order, the Records Search Report was generated in compliance with the Standard Clauses of the NYS Superfund Administrative Orders. The report was eventually utilized by NYS Parks to develop an RI/FS work plan and Phase II investigation.

**Project Manager/Health Physicist, Clark/Patterson/Lee, Niagara Falls, New York, Lump Sum, 11/2015 – 1/2016:** A gamma walkover survey was performed prior to a sewer improvement project within the Town of Niagara near Lockport and Hyde Park Blvd Road. The field effort was completed in a single day with an experienced radiation technician, gamma scintillation system, and GPS equipment. During the project equipment was source checked, data was plotted on a color coordinated figure, and a letter report of findings was generated to summarize the radiological characteristics of the neighborhood.

**Project Manager/Health Physicist, Environmental Dimensions Inc, USACE Buffalo Seaway Tonawanda, New York, Fixed Unit Rate, $70k, 5/2015 – 12/2015:** Managed 4 radiation technicians as a subcontractor on a project involving the subsurface removal of FUSRAP radioactive waste from the former Seaway Landfill in Tonawanda, New York. The EDI HP representative that was on-site managed the day-to-day duties of the technicians that performed equipment calibrations, soil sampling, perimeter air sampling and analyses, gamma walkover surveys, final status surveys, equipment surveys, surveys for waste T&D activities, and surveys for site restoration activities. LATA was the prime contractor to the Buffalo District and supplied the PM/Superintendent as well as the labor, equipment and material for the remediation activity. EDI was the HP subcontractor and BE3 supplied the HP labor. Three separate areas required remediation of impacted FUSRAP soil; however, only 1 area was completed. This area contained 3 times the quantity of soil anticipated for the project, and the waste material from the other 2 areas was buried deeper than anticipated; therefore, the project was halted early.

**Project Manager/Professional Engineer/Health Physicist, Ravi Engineering, 6th Street Niagara Falls, New York, Fixed Unit Rate, $30k, 4/2015 – 12/2015:** Managed and self performed a small NORM waste remediation project for Ravi Engineering, who was supporting a development by Housing Visions. The one acre plot of land had localized hot spots of radioactive material buried in the subsurface. As PM/PE, the field mobilization of the equipment, operator, waste subcontractor, and transportation subcontractor was coordinated, and as HP technician, directed remediation of the NORM waste in the field. All excavated material was stockpiled on poly, segregated, surveyed, and eventually loaded into dump trailers for out of State disposal. The waste disposal contractor was utilized for in-situ gamma spectroscopy of each trailer prior to off-site transportation. A final completion report was generated to document all field activities.

**Professional Engineer, Groove Roofing Services, Buffalo, New York, Lump Sum, 4/2015 – 7/2015:** As PE, completed 2 Phase I environmental site assessments (ESAs) for a property located in Buffalo and another located in Rochester, New York. Standard Phase I ESA protocol per the ASTM Standard was adhered to throughout the project that included a site visit, gathering property information from the local municipality, gathering electronic data on the property for environmental due diligence, and generating a final report.

**Project Manager/Health Physicist, Damon Morey and Vesuvius, Hamburg, New York, Time and Materials NTE, $40k, 1/2015 – 6/2015:** As PM /HP for Phase I, (1) examined lab results and made site visits to an old demolition facility to confirm "classification" of 2 waste piles that was transmitted in a formal professional interpretation memo; (2) confirmed appropriate disposal method with recommendations on T&D utilizing properly licensed entities; and (3) generated a final Summary of Findings Report that included cost estimates for the T&D of the waste. As PM/HP for Phase II, self performed the loading, packaging, transportation and disposal of the radioactive material from Hamburg NY to Grandview Idaho. This involved radiation control support, waste manifest generation, coordination of field crew and T&D activities, and closeout documentation for the approximately 40 tons of radioactive material.

**Professional Engineer/Health Physicist, JGMS Inc., Rochester, New York, Fixed Unit Rate, $150k, 8/2014 – 6/2015:** Assisted in the remediation of a few hospital rooms as the Strong Facility in Rochester, NY. Radiological surveys were performed to detect alpha and beta contamination in walls and floors as a result of plutonium 241 and radium 226 impacts as a result of the isotopic use on patients during the Manhattan Project era. A number of rooms were sampled and surveyed for fixed and removable contamination, and a few rooms were subsequently remediated via scabbling the concrete floors and concrete block walls. All areas were poly protected and secured prior to workers entering in Level B PPE. Constant ambient air monitoring for alpha and beta contamination was utilized in addition to alpha/beta scintillation systems, alpha/beta GM probes, alpha/beta sample counters, and dose rate meters. Once remediation was complete, the dust collection devices, poly sheeting, PPE, and scabbled waste was packaged and sent off-site for LLW disposal.

**Project Manager/Professional Engineer/Health Physicist, TM Montante Development, Niagara Falls, New York, Fixed Price-Lump Sum, 7/2014 – 6/2015:** Performed the Phase I and Phase II site assessments for a 3 acre facility scheduled for entrance into the NYS Brownfield Cleanup Program (BCP). Activities

included performing numerous subsurface boring over a two day period in and outside of the building using a drill rig. Other instruments included use of a PID for volatile organics and a gamma scintillation system for gamma radiation. Ultimately, samples were collected and SVOCs, metals and radionuclides were detected assisting the property to get into the BCP. Formal reports were generated for the Phase I and Phase II activities; the Phase I activities occurred prior to the field activities and included research of the history of the environmental aspects of the property.

**Project Manager/Professional Engineer/Health Physicist, The LiRo Group, Niagara Falls, New York, Fixed Price-Lump Sum, $1M, 6/2014 – 6/2015:** Managed the quality assurance services for LiRo and New York State Parks for the NORM waste remediation of a 5.5 acre park in Niagara Falls, NY. A new Parks Police Station was being constructed on an area impacted with approximately 800 tons of NORM waste in excess of 50 pCi/g U-238 decay chain isotopes. BE3 represented NYS Parks and the LiRo Group to ensure that the site contractor and its radiation controls subcontractor performed their remedial activities in accordance with the Work Plans (also drafted by BE3). A BE3 radiation technician and PE/HP supervised the excavation, surveying, waste handling, packaging and transportation and disposal. The field instrumentation utilized in the field included air monitoring, gamma scintillation devices, alpha/beta GM friskers, dose meters, and sample counters. BE3 was also responsible for communications between the NYSDEC, LiRo, and the NYS Parks; in addition to completing the project Completion Report documenting the activities.

**Project Manager/Professional Engineer/Health Physicist, Housing Visions Construction and Walnut Avenue Housing, LLC, Niagara Falls, New York, Time and Materials (NTE), $100K, 10/2014 – 1/2015:** As PE, developed work plans required for the radioactive material remediation that included a Site Operations Plan, Waste Management Plan and Health/Radiation Safety Plan. Plans were submitted to the NYSDOH, NYSDEC, Walnut Avenue Housing, and City of Niagara Falls for review. As PM, supervised and administered project activities including project setup, billing and invoicing, personnel management, coordination of field activities, interface with regulatory authorities, daily QA notes, project status updates, contract clarifications, cost tracking, and vendor management. As HP and with assistance from the Superintendent, performed sampling and sample shipment for NORM waste disposal, delineation of excavation, guided removal of impacted material and segregation of clean overburden, and supervised rad controls. As PM/HP, supervised multiple mobilizations and demobilizations that occurred due to inclement weather, supervised waste loading into certified and lined dump trailers and material packaging per USDOT regulations, and administered shipping paperwork and manifest documentation. As HP/PE and with assistance from RCT, performed radiation and radiological contamination control checks, waste characterization and profiling, weekly site visits, and security of waste and excavation with engineering controls. As PE/PM, documented daily QC reports, radiation surveys, equipment release surveys, waste shipping documentation, pictures, a summary of project activities, and waste disposal paperwork in a Final Completion Report.

**Professional Engineer, Town of Porter, New York, Time and Materials 11/2014:** Providing professional engineering services for the Town of Porter, reviewed and documented applicable zoning law requirements as related to Waste Management's submittal for landfill expansion that included a DEIS, an Engineering Report, a Permit Modification Report, and various NYS required applications and regulatory responses. Applicable Town requirements included those stipulated within M-3, General District, building permit, review procedures, site plan review, special use permit, and variance sections of the Zoning Law. The Host Community Agreement between the Town and WM as it applies to the Subtitle C landfill expansion submittal was also reviewed and included limitations on operations, Town benefits, and miscellaneous covenants/enforcement agreements. The final deliverable included a list of some of the potentially significant omissions from WM's application per the Town's requirements and zoning laws.

**Project Manager/Health Physicist, Ravi Engineering, Niagara Falls, New York, Time and Materials, 10/2014:** As field health physicist, performed a gamma walkover survey with global positioning system (GPS) in conjunction with a boring investigation and additional radiation survey support. No radiation technician was utilized, therefore, field work involved use of a gamma scintillation system over a 4 work day period. As project manager, generated daily field notes, GWS GPS map, and summary of findings report to provide the

client sufficient details for decisions on future remediation and development of the site. Other field activities included collection of field sample and laboratory analyses. The scope of work was expanded to include providing an excavator with operator for two days to perform more test pitting with radiation survey support and gamma scintillation system. Documentation including daily field notes was also generated for these activities.

**Professional Engineer, JGMS Inc., Albuquerque, New Mexico, Fixed Unit Rate, 8/2014 – 9/2014:** Supported the efforts of other professional engineers tasked to compile 5 design packages for the Air Force at Kirkland Air Force Base in Albuquerque NM. The design support was required for 4 projects that were subsequently placed out for proposal/bid to existing Air Force contractors. All projects were design/build and consisted of (1) bridge replacement and stormwater controls (2) 300,000 gallon steel tank construction, (3) 1600 foot below ground surface potable water well installation, and (4) two facility renovations. The design/build packages consisted of front end specifications, drawings, SOWs, cost estimates, risk analyses, permit requirements, and Air Force Facility forms and documentation. Although most of the effort was "soft" design since they were being bid out for design and build, significant design calculations were required for the bridge replacement, potable water well replacement, and 300,000 gallon tank construction.

**Project Manager/Professional Engineer/Health Physicist, URS Corporation – Niacet, Niagara Falls, New York, Fixed Unit Rate, 1/2012 – 8/2014, $300k:** Managed radiation control services to support URS and its subcontractors during the remediation of visible mercury (Hg) in the subsurface. Project scope covered the excavation of approximately 10,000 tons of visibly impacted material down to approximately 6 feet bgs. This material was staged on-site in stockpiles or directly loaded for off-site disposal to Stablex in Canada. Bedrock was often encountered and the visible Hg was vacuumed from the surface for complete remediation. Radioactive materials were discovered at a few locations throughout the project through the use of qualified RCTs; some of this material was approved for continued disposal at Stablex, but most of the material was characterized and shipped to an out of State radioactive material disposal facility. Radiation controls included gamma scintillation systems and alpha/beta/gamma GM systems for surveying material during excavation and equipment for release, respectively. Full controls were utilized as required to survey and delineate NORM, excavate and stockpile Hg-impacted NORM, and package/transport/dispose of waste material. Daily reports, surveys, dose assessments, work plan addenda, radiation health and safety support, worker radiation safety training, and sample analyses were continually generated throughout the currently 2 year remediation project.

**Project Manager/Professional Engineer/Health Physicist, Greenpac Mill/Frontier Chemical, Niagara Falls, New York, Fixed Price, 4/2014:** Proposed, managed and performed a gamma walkover survey on a vacant plot of Superfund Site land that encompassed approximately 9 acres. In hopes of acquiring the adjacent property, Greenpac wanted to quantify the remaining NORM waste that was known to have been buried in the subsurface subsequent to the recent Superfund remediation for VOCs. A three day field investigation was performed utilizing an RCT with a GPS and gamma scintillation system to confirm the presence of NORM. No boring investigation or sampling program was performed; however, four areas of significance were located on the property exhibiting gamma radiation readings up to 10 times background through the existing backfill and asphalt. It is anticipated that future radioactive material remediation design will be required for future purchase or development of this site.

**Professional Engineer/Health Physicist/Project Manager, Panamerican Environmental/River Road and Gooding Street Projects, Tonawanda and Lockport, New York, Fixed Price, 1/2014 - 2/2014:** Managed and performed two site assessments on two different properties involving potential NORM waste contamination at an old iron works facility and hard-goods manufacturing facility. Activities included Geoprobe borings accompanied with material sampling and radiological surveys. At the old iron works facility in Tonawanda, slag is ubiquitous throughout the project, and some areas possess radioactivity exceeding 20 times gamma background radiation. Gamma scintillation detection equipment was utilized with a 3-man crew that included a driller, PM, and RCT. Nothing of significance was encountered at the Gooding Street site in Lockport beyond the neighboring property containing a parking lot exhibiting up to 3 times background radiation through backfill and a few inches of snow. Summary of Findings Reports were generated to document all of the activities performed and information gathered during the investigations.

**Professional Engineer/Health Physicist/Expert Investigation, Slater Law Firm PLLC/Greenpac Mill Project, Niagara Falls, New York, Fixed Price, 2/2014 - 4/2014:** As a professional environmental engineer, health physicist and former contractor for the Greenpac Mill Remediation, I performed a quantitative and qualitative assessment of the NORM encountered and eventually removed and disposed from the Greenpac Mill Project. The original project was approximately $7M and involved the removal of approximately 20,000 tons of NORM from the future mill site. This expert investigation involved historical review of the Niagara Falls metallurgical industry and the production of NORM waste as a result of metals processing (e.g., phosphorous, vanadium, etc.). It also involved the sampling and analyses of material removed from the Greenpac Site for a radiological, metallurgical, and geological profile that was utilized to interpret from where the original waste material was generated. This data was valuable to the attorney and his client in the pursuit of reimbursement funds owed to Greenpac as a result of this material being buried many years ago. As of 6/2014, no court decision has been reached.

**Project Manager/Professional Engineer/Health Physicist, Ravi Engineering/Parks Police Project, Niagara Falls, New York, Fixed Price, 9/2013 to 2/2014, $50k:** Proposed, managed and performed a three phase site investigation for a NYS Parks Police Station that required radiation surveys, test pitting, and sampling. The approximately 2 acre site along the Niagara Gorge possessed slag like material in the subsurface as confirmed by a previous geotechnical investigation. The three phase field effort revealed the presence of approximately 450 tons of radioactive slag-like material in various areas of the project design footprint. Utilizing an RCT, radiation detection equipment, a GPS, and an excavator, the field crew confirmed that a significant quantity of building debris and radioactivity in excess of 5 times federal cleanup standards exists on the property. As follow up to the investigation, work plans were developed for the remediation design including a Site Operations Plan, Waste Management Plan and Radiation Safety Plan. These plans were reviewed by the client, NYSDOH, the construction manager, and NYSDEC for use during hot spot remediation.

**Project Manager/Professional Engineer/ Health Physicist, Panamerican Environmental/Military Road, Niagara Falls New York, Fixed Price, 11/2013:** Proposed, managed and performed a site assessment of a vacant tire store for a Phase 1 investigation. Activities included over a dozen Geoprobe borings accompanied with material sampling and radiological surveys. Slag-like material with radioactivity exceeding 20 times gamma background radiation was encountered from an approximately 3000 SF area. Gamma scintillation detection equipment was utilized with the 4-man crew (including an RCT) and a summary report of findings was generated.

**Project Manager/Professional Engineer/Health Physicist, Ravi Engineering/Walnut Avenue, Niagara Falls, New York, Fixed Price, 11/2013:** Proposed, managed and performed a gamma walkover survey for a housing development project that encompassed approximately 3 acres over 6 separate properties. With concerns of subsurface radioactive material throughout Niagara Falls, the client requested that a two day field investigation be performed to confirm or disprove the presence of NORM with the future design limits of the property. The three to four-man crew, including a qualified RCT, performed a GPS gamma walkover with intermittent sampling and boring penetrations using radiation and exposure instrumentation. Only a single property was shown to possess NORM in excess of 10 times federal cleanup standards. It is anticipated that future design and remediation will be performed at this site.

**Project Manager/Professional Engineer/ Health Physicist, Panamerican Environmental/ Cornerstone, Niagara Falls New York, Fixed Price, 10/2013:** Proposed, managed and performed a gamma walkover survey of an approximately 10 acre residential property that was once the site of an old rail yard. Significant subsurface weathered ballast was present and thought by the City of Niagara Falls to be impacted by radioactive material. The four day field effort involved a two man RCT crew utilizing a gamma scintillation device, GPS, and a dose monitor. A final summary of findings report was generated for the area that was not found to be impacted at levels that are dangerous to human health and the environment.

**Project Manager/Professional Engineer/ Health Physicist, Hebeler Corporation, Tonawanda New**

**York, Fixed Price, 9/2013:** Proposed, managed and performed a site assessment for a steel company involving the radiological surveying of process waste that was rejected by a local steel recycler. The assessment involved a two stage effort utilizing a gamma scintillation detector and exposure monitor for the initial survey of the waste bins and the aluminum oxide process; and the second mobilization involved an RCT with radiation instrumentation to package and release the waste bin future use. Background gamma radiation and various dose and activity measurements were obtained in excess of 5 times background and two field reports were generated. It is anticipated that radioactive waste transportation and disposal will be required.

**Project Manager/Professional Engineer/ Health Physicist, Globe Metallurgical, Niagara Falls New York, Fixed Price, 7/2013:** Proposed, managed and performed a gamma walkover survey of a railroad spur covering approximately 2 acres on a NYS Brownfield Site. This was performed after concerns arose regarding slag like material in the subsurface that may possess radioactivity within the railroad project design limits at the metallurgical facility. A two-man RCT crew completed the field work utilizing gamma scintillation detector and exposure monitor. Efforts included obtaining background gamma radiation, observing dose and activity measurements in excess of 10 times background on the surface and generating a field report. It is anticipated that additional work plan development for remediation design and subsequent remediation will be required.

**Project Manager/Professional Engineer/Health Physicist, Amendola Property Management, Niagara Falls New York, Fixed Price, 5/2013:** Proposed, managed and performed a gamma walkover survey of an approximately 2 acre vacant commercial property consisting of asphalt parking area, grassy open area, and single story commercial building. This was performed due to potential concerns with radioactive materials buried in the subsurface and monitored over the past 35 years. A two-man RCT crew completed the field work utilizing gamma scintillation detector and exposure monitor. Efforts included obtaining background gamma radiation, observing dose and activity measurements in excess of 100 times background, collecting field samples and generating a field report.

**Project Manager/Health Physicist, Niacet Corporation, Niagara Falls, New York, Firm Fixed Price and Fixed Unit Rate, 1/2012 – 1/2013, $230k:** Managed and performed gamma walkover surveys (GWS) and radioactive materials remediation for a food chemical production plant in Niagara Falls, NY. The GWS's performed in accordance with MARSSIM protocol supported the decision to remediate subsurface radioactive materials. Comprehensive surveys were performed where elevated gamma radiation readings were detected, followed by excavation and offsite disposal of the radioactive material. Field activities included walking the site with a radiation technician and gamma scintillation detector, delineating elevated gamma readings in the field, mobilizing field crew and equipment, excavating and managing 150 tons of impacted materials, packaging Class 7 radioactive material for shipment via rail, restoring the site to grade with asphalt, producing a daily report of field activities, and producing a final closure report.

**Project Manager, Waste Control Specialists, Andrews, Texas, Time and Materials, 8/2011 – 12/2012, $400k:** Administrated and performed operational support to WCS for their Low Level Radioactive Waste Disposal Facility, which is the only commercial low level waste disposal facility in the US in more than 30 years to have the ability to receive Class A, B, and C low level waste. Support activities include procedure development for waste tank farm operations and critical lift planning, landfill cell model construction, processing and management of native sand and caliche, heavy equipment and operational support material procurement, and operational readiness associated with license compliance. LATA continues to support WCS through the Grand Opening of both the Compact Waste Cell (November 2011) and Federal Waste Cell (May 2013).

**Project Manager, USEPA Region II, Black River PCB Site, Carthage, New York, Time and Materials, 6/2011 – 1/2013 $450k:** Managed the development of a Work Plan, Cost Estimate, and Basis of Estimate for an EPA Region II RAC project involving the CERCLA documentation process for the Black River PCB Site near Carthage, NY that was placed on the NPL on 10/2010. The zone of contamination within the River is approximately 0.5 miles long as a result of known PCB discharges from the 1950s and subsequent PCB detections by NYSDEC in 1997. The project consists of the following activities to be completed over a 24 month period:

project planning and negotiations, community relations, data evaluation, RI Report, remedial alternatives screening and evaluation, FS Report, and EPA support during the process.

**Project Manager, Waste Management, Model City, New York, Time and Materials, 3/2011 – Present, $300k:** Produced a Remedial Action Plan (RAP) and presentation to the New York State Department of Environmental Conservation (NYSDEC) for the remediation of Facultative Pond 8 at the Model City Facility. Due to the nature of the FUSRAP contamination and previous investigations, a RAP was required prior to the remediation of Fac Pond 8 to analyze the existing contamination, calculate a DCGL, and propose a remedy. As Program Manager and Health Physicist of the remediation and waste disposal of approximately 150 tons of FUSRAP waste, the project was completed cost effectively using a superintendent, project manager, CHP, field radiation technicians, operators, laborers, and an on-site laboratory manager. Fac Pond 8 needed to be consistently dewatered and treated on-site, while 1.5 ton supersacks were filled and staged for disposal. MARSSIM surveys were completed to prepare the site for excavation activities and release the site after excavation and confirmatory sampling. The HP and laboratory subcontractors worked effectively to quickly analyze samples on-site and release areas as they were completed.

**Proposal Manager, Waste Control Specialists Beryllium Program, Firm Fixed Price, 10/2012, $59k:** Administered proposal efforts for LATA to establish a Be Program for WCS. Program creation was separated into three phases. Initial costs were only for completion of Phase 1, which included the development of a program plan consisting of the following: requirements needed for a safe, compliant, and efficient Be Program; essential components of the Program such as training, personnel monitoring, hazard analyses, recordkeeping, and emergency response; and initial recommendations for plans or procedures modification. Subsequent Phases 2 and 3 consisted of program integration into current Facility operations, and Program administration and maintenance.

**Program Manager; USACE Baltimore District; Multiple Award Radiation Services (MARS) Contract; Performance Based, Cost Reimbursable, and Firm Fixed Price ID/IQ; 1/2008 – 1/2013; $29.5 million:** Manager over various task orders involving radiological and environmental remediation services in support of USACE Baltimore District and its customers located within North Atlantic Region. Sites of interest include those impacted by radioactive material or hazardous contamination requiring characterization or remediation of commingled or incidental munitions and explosives or hazardous materials.

- Colonie FUSRAP – TO Proposal Manager – 10/2010 - $200k: managed TO proposal for the Colonie FUSRAP Site that included the sampling and analysis of dust and soils in the vicinity of the old facility to characterize the radioactivity known to be present. T&D of IDW and associated work plans for the field effort were also included in the scope of work.
- Fort Greely, Alaska – TO Proposal Manager – 2/2011 - $1.2 million: managed TO proposal for the Fort Greely deactivated nuclear power plan. Scope of work included work plans, field investigations of impacted buildings and exterior land, and radiological characterization with intrusive sampling and subsequent analyses.

**Program Manager; USACE Buffalo District; Multiple Award Remediation Contract (MARC); Performance Based, Cost Reimbursable, and Firm Fixed Price ID/IQ; 3/2007 – 1/2013; $300 million:** Manager over various task orders involving the execution of remedial activities of hazardous toxic and radioactive waste (HTRW) projects nationwide with a focus on radiological remediation services within the Great Lakes and Ohio River Division. Projects include formally utilized sites remedial action program (FUSRAP) sites contaminated with residual radioactive materials as a result of Manhattan Engineer District (MED) or Atomic Energy Commission (AEC) activities.

- ❖ Former LOOW WWTP – Firm Fixed Price, September 2010 – September 2011, $450k: structure demolition and soil remediation project involving work plan development, site mobilization, soil/debris excavation and structural demolition, radioactive/PCB waste T&D, media sampling and analysis, site restoration, and project completion report.
- ❖ Harshaw IDW – TO Proposal Manager - 9/2012 - $150k: managed TO proposal for the management, transportation, and disposal of chemically and radiologically impacted drums, sludge, and groundwater. The waste was generated from FUSRAP investigations at the Harshaw site for groundwater and soil.

Activities included in this proposal included USACE coordination, IDW preparation, packaging and repackaging of IDW, heavy equipment for loading and handling, waste T&D, and decontamination processes.

**Proposal Manager, US AFCEE WERC 09 PBC, Southwest Bases, Arizona and Nevada, Firm Fixed Price, 3/2012, $24 million:** Administered proposal efforts for LATA as a subcontractor to Kemron for five sites at Nellis Air Force Base in Nevada and Davis Monthan Air Force Base in Arizona. All five sites were considered waste burial sites and had been impacted by radioactive materials or suspected to have been impacted in the past. Like all WERC 09 efforts, this was a performance based remediation opportunity where we proposed to closeout 3 of the five sites through excavation and offsite disposal techniques. Other aspects of the bid included development of a MARSSIM scoping survey and Decommissioning Plan, waste characterization activities, and completion of a MARSSIM FSS to achieve unrestricted site closure.

**Proposal Manager, US AFCEE WERC 09 PBC, New England Bases, New York and Massachusetts, Firm Fixed Price, 3/2012, $10 million:** Administered proposal efforts for LATA as a subcontractor to Tidewater for 13 sites at Niagara Falls Air Reserve Station in Niagara Falls, NY. The sites consisted of old landfills, waste staging areas, firing ranges, and leaking underground storage tanks (LUSTs), and had been impacted by the release of hazardous materials or petroleum products in the past. This was a performance based remediation opportunity where we proposed to closeout 7 of the 13 sites through excavation, GW injection, and pump and treat technologies. Other aspects of the bid included EPA five year reviews, waste characterization activities, optimal exit strategy development, and adherence to NYSDEC site-wide monitoring permit guidance.

**Project Manager, Bison Laboratories, Buffalo, New York, Cost plus Fixed Fee, 11/2011 – 8/2013, $50k:** Supervised and help perform the investigation, characterization, transportation and disposal of approximately 60 hazardous and non-hazardous waste drums from a past laboratory warehouse in Buffalo, NY. Field activities included an initial site visit to perform reconnaissance of the dilapidated drums, a second field effort to review MSDS' and quantify the type and number of drums to be disposed, and lastly a third mobilization to label/placard and manifest the drums for transportation. LATA provided a field technician with expertise in hazardous materials to assist our waste T&D subcontractor in profiling the wastes and repackaging those drums not fit to transport. Wastes handled ranged from non-regulated material to corrosive inorganics to flammable organics to toxic liquids. Continued interface with NYSDEC was required to ensure waste reporting for State GM Form was accurate.

**Proposal Manager, Niagara Falls Air Reserve Station, Niagara Falls, New York, Firm Fixed Price IDIQ, 11/2011, $5 million:** Managed LATA's proposal efforts as subcontractor to RJR Engineers for a potential opportunity to provide AE services to support the NFARS. The SF330 format was submitted to administer, coordinate, and technically support facility sustainability, restoration, and modernization (SRM) and environmental studies and restoration programs of interest to the 914 Airlift Wing at Niagara Falls Air Reserve Station, Niagara Falls, NY. The work includes all efforts necessary to manage and execute Title I, Title II, and other A-E services for traditional A-E Services for design and construction oversight supporting SRM and Environmental Studies and Restoration programs.

**Program Manager, Greenpac Mill LLC, Niagara Falls, New York, Fixed Unit Rate, 9/2011 – 3/2012, $5.3 million:** Managed contract negotiations, work plan development, mobilization and demobilization, subsurface excavation of radioactive slag, off-site laboratory analyses, NYSDEC correspondence for cleanup guidance, development of a NYSDOH radioactive materials license, worker radiation safety training, and waste T&D. Radioactive slag materials were discovered in the subsurface at a Greenpac Mill during the construction of a new $440 million facility for paper recycling. The slag material was previously deposited at the site at an unknown time in the past and used for subsurface foundation support. LATA managed the radiation control subcontractor, operators and laborers, and waste T&D subcontractors to remove approximately 20,000 tons of radioactive slag from the subsurface. The field work was effectively completed within a 3 month schedule despite logistical issues with our waste T&D subcontractor and their transporters.

**Proposal Member, Advanced Medical Systems, Inc., Cleveland, Ohio, Time and Materials, 8/2011, $80k:** Assisted in the generation of a LATA lead proposal for the review and revision of a Facility Decommissioning Plan. AMS' London Road Facility manufactured sealed radioactive sources for medical imaging equipment under an NRC license, and the scope of work was to (1) communicate the decommissioning process with AMS, its attorneys and the Ohio EPA Bureau of Radiation Protection, (2) review, evaluate, and revise the existing DP, and (3) provide support to AMS for regulatory negotiations.

**Proposal Member, Department of Energy – WVDP Phase I Decommissioning Facility Disposition, Performance Based Cost Plus Award Fee, 10/2010 – 6/2011, $420 million:** Assisted team in estimating and technically proposing the D&D of the above grade structures at the WVDP. Opportunity included a seven year contract with an annual funding profile of approximately $60 million. Major milestone activities proposed included HLW canister relocation, management and T&D of existing site legacy waste, D&D of MPPB and Vitrification Facility, and D&D of the balance of the superstructures on site.

**Proposal Manager; USACE Omaha District; B-47 Plane Crash Site; Firm Fixed Price; 8/2010; $150k:** Environmental remediation services for a non time critical removal action of uranium and lead contaminated soil as a result of a 1958 B-47 plane crash in Abilene, TX. The effort was associated with SDVOSB set aside IDIQ MATOC for the Omaha district and included visual site inspections, records review, removal of up to 15 cy of contaminated soil, site restoration, FSS sampling, temporary storage at Dyess AFB, and final waste T&D to Clive, Utah.

**Project Manager, Waste Management, Model City, New York, Time and Materials 1/2010 – 6/2010, $50,000:** While in close communications with the WM Model City facility and the NYSDEC, mixed waste materials from the RCRA facility were characterized, packaged, and shipped for disposal at Energy Solutions' Clive Facility. The drummed materials consisted of PCB waste in addition to radioactive byproduct-like material left over from the Lake Ontario Ordnance Works (LOOW) site. The project involved gathering historical data on the materials, surveying and weighing the materials, packaging the materials into 55-gallon drums, manifesting the materials on NRC and EPA forms, negotiations of disposal costs with Energy Solutions, and arranging shipment.

**Proposal Manager, Department of Energy – WVDP Environmental Characterization Services, Cost Plus Fixed Fee, 1/2010 – 2/2010, $25 million:** This opportunity involved site wide characterization services for radioactive materials at the WVDP. A cost and technical proposal was issued that diagnosed a hypothetical radiological investigation of a waste staging area involving on site laboratory support, MARSSIM investigation, establishment of cleanup goals, final status surveys, and waste management/disposal activities.

**Radiation Safety Officer, City of Niagara Falls, Time and Materials, 11/2009 – 4/2011, $8 million:** Managed all aspects of radiation protection for a road reconstruction project for the City of Niagara Falls. Funds for the project were allotted via a stimulus package through the USDOT and were set aside to specifically address the removal of radioactive slag buried beneath Route 104. RSO responsibilities included development of a NYSDOH radioactive materials license, generation of a radiation protection program, radiation safety training, bioassay and TLD program, air monitoring, radioactive materials source separation during road construction, set up and take down of CRZ and waste staging areas, administrating a radiation detection equipment program for source and background checking, and overall control of field paperwork.

**Proposal Manager, Waste Control Specialists – LLRW Facilities, Firm Fixed Price, 11/2009 – 3/2010, $70 million:** Generated cost and technical proposals for the construction of a LLRW facility in Andrews, Texas. The proposal presented the approach and to creating a facility equipped with two waste processing buildings, ten 500k above ground storage tanks, three 1 million-plus disposal cells, infrastructure roads and surface water controls, security buildings and fencing, and 6 other support buildings. The facility was designed to receive and dispose of commercial radioactive waste with the Texas Compact in addition to federal radioactive wastes.

**Project Manager, Waste Control Specialists, Andrews, Texas, Time and Materials NTE, 8/2009 –**

**12/2009, $1.1 million:** Produced a Plan of Action (POA) and subsequent Operational Readiness Review (ORR) for Byproduct Facility operations. Tasks consisted of formulating Department of Energy approach to operational readiness including pre-start items, core requirements, ORR prerequisites, review of License Application and applicable procedures, and performing thorough review of personnel, equipment, policies, training, etc. Once the ORR was approved by management, disposal operations of 3776 canisters of radioactive byproduct waste from Fernald were conducted. This included a 15 man crew using water trucks, loaders, fork trucks, sand slingers, and motor-grader to place the 10 ton waste canisters in the cell ahead of schedule and under budget.

**Project Manager, American Rock Salt Company, Mt Morris, New York, Time and Materials, 3/2009 – 6/2010, $200,000:** Managed all environmental activities for one of the largest rock salt producer in the northeastern United States. With over 20 storage/processing/mining facilities in Pennsylvania and New York, ARSC needed continual oversight of their permits, storm water control plans, spill control plans, and facility designs. Constant communications with PADEP and NYSDEC was important to success on this project as notices of intent, site characterization reports, final reports, retention basin design drawings, and sampling and analysis plans were generated.

**Proposal Manager, New York State Energy Research and Development Authority – WVDP SDA Environmental Monitoring Services, Cost Plus Incentive Fee, 3/2010, $300,000:** Produced a cost and technical proposal for an opportunity to replace the incumbent (E&E) at the WVDP SDA. The proposal addressed comprehensive environmental monitoring of the NYSERDA owned and operated disposal area. The tasks included TLD administration and management, groundwater and surface water sampling and analysis, and random soils/sediment sampling accompanied with radiation protection activities.

**Project Engineer, Town of Tonawanda Landfill, Tonawanda, New York, Time and Materials, 3/2009 – 6/2010, $200,000:** Designed and supported operational and closure activities for a 60 acre landfill that is being closed on Consent Order from the State of New York. The landfill was once a construction and demolition debris landfill, but received various other wastes including radioactive materials over the long life of this facility. With less than 1 year capacity remaining until closure, non-hazardous petroleum contaminated wastes are continually disposed at the site and used as BUD material for final closure. Many project documents were generated in support of facility closure including closure design drawings for stormwater control and cover, NYSDEC Multi-sector SWPPP, spill prevention plans, manifesting, and supplemental bioremediation facility permit application.

**Field Engineer, Waste Control Specialists, Andrews, Texas, Cost Plus Fee, 06/2008 – 03/2009, $30 million:** Lead field engineer for a design-build landfill project in West Texas. Project consisted of performing design and construction activities to expand a waste disposal facility allowing it to receive radioactive Byproduct Waste and Low Level Radioactive Waste. As lead field engineer, was the liaison between office design team and construction manager to ensure landfill and railroad designs were effectively employed into the field. Activities included SWPPP management (document and field), daily communications with client on construction and design issues, review design drawings/CQC plans/specifications, generate contract change control documents, facilitate weekly construction meetings, etc.

**Proposal Member, AE IDC for the Execution of the HTRW/Environmental Mission of the USACE Northwestern Division, Kansas City, Missouri, Firm Fixed Price or Cost Reimbursement Task Order, 3/2008, $120 million:** Lead proposal writer representing the Buffalo Office to support Kansas City and Seattle offices focusing on EPA Region 2 remedial work. The proposal was released by the KC District to acquire 5 firms capable of performing remedial work on a variety of HTRW/environmental sites complying with federal, state, and local regulations and focusing on Superfund Projects within EPA Region 2.

**Design Engineer, Closure Engineering Design, West Valley, New York, West Valley Nuclear Services, Cost Plus Fee, 1998/2008, $7M/year:** Produced cost estimate calculations for closure of the WVDP. Estimates addressed Removal, In-Place, and Preferred alternatives for the entire site. From these calculations, technical reports were developed that detail the design approach for remediating all Waste Management Areas within the WVDP. Ultimately, the engineering and cost estimates are used to create or support the Environmental

Impact Statement for Site Closure.

Assisted in the production of Closure Engineering Reports CERs that were prepared as data inputs to the Environmental Impact Statement (EIS), and intended to describe engineered approaches and alternatives for closing the WNYNSC. These alternatives are conceptual designs that could be applied to the West Valley facilities, and they contain remedial technologies that set the foundation for evaluating and identifying key closure engineering parameters.

Assisted in the production of the Draft Environmental Impact Statement (DEIS) for the decommissioning or long term stewardship of the WNYNSC that provided information to regulatory authorities (DOE, EPA, NRC, NYSDEC, and NYSERDA) so they could best determine the manner in which the site could be decontaminated and decommissioned.

Assisted in the feasibility study, design and cost estimate of the remediation of a radioactive groundwater plume. Management technologies included groundwater control with barrier walls, dewatering with pumping systems and trenches, wastewater treatment, large-scale excavation, PRBs, and solid waste handling.

Assisted in the design of an approximately 10-ft thick cover equipped with slurry walls, a French drain, and reactive barriers. The design was created to assist in the closure of radiologically and chemically contaminated buildings, surrounding soils, and process equipment. The concept of the cap was generated using the HELP Model, infiltration equations, groundwater transport models, material property evaluations, degradation assumptions, stability calculations, etc.

Assessed the site-wide, ventilation system safety requirements for a decommissioned nuclear fuel reprocessing facility to evaluate whether the activities mandated by site policies were being performed. The assessment involved the evaluation of current standard operating procedures and documented safety requirement activities.

Co-authored a data gap analysis plan for the collection of data gaps intended to provide the necessary information to support the decommissioning of contaminated facilities and subsequent characterization of waste.

Designed a 40,000-$ft^2$ container management facility for the drying, processing, characterization, and packaging of radioactive and mixed waste. The building was designed to accept remote handled waste and store the characterized waste until a licensed facility was available for disposal.

Designed a cover system for a disposal area containing NRC-licensed waste. The system involved the re-grade of existing topography, design of a 10-ft thick long-term cover, and design of detention ponds and other surface water routing controls using various computer programs such as Pond-2 and QTR-55.

Authored a Waste Generator's Guidance Manual, which was developed to help a waste generator through the waste management process.

Authored a Low-Level Radioactive Waste Classification Program Plan, which was used as a guidance to classify waste based on direct and indirect measurements of radionuclides.

Designed a sampling methodology for 41 mercury-contaminated, mixed waste containers to develop scaling factors for waste classification and offsite disposal.

Compiled material (e.g., process equipment, structural steel and concrete, roofing, HVAC and electrical equipment, etc.) inventories for contaminated facilities at a nuclear fuel reprocessing facility using as-built drawings. Using the material inventories, the amount of waste generated and costs of labor, equipment, and materials corresponding to the D&D and closure of contaminated facilities were estimated.

Analyzed and assessed laboratory data containing radionuclide activities, contamination values, and dose rates from various waste materials in order to classify and dispose of the waste in accordance with NRC waste classification

values in 10 CFR 61.55 and disposal facility waste acceptance criteria.

Authored the Data Quality Objectives and Sampling and Analysis Plan for the following projects:

- Decontamination and disposal of radiologically contaminated soil and concrete debris associated with radioactivity release in the vicinity of above ground storage tank pad.

- RCRA hazardous characterization and NRC radiological classification of waste generated from the D&D of a nuclear-fuel-pool cooling tower. Chemical characterization was done in accordance with 40 CFR 261 and 262, and NRC waste classification was done in accordance with 10 CFR 61.55.

- NRC classification of waste generated from the shutdown of high-level radioactive waste (HLW) vitrification operations and the corresponding D&D of HLW storage tanks.

- Classification, management, and disposal of expended material from a decommissioned HLW vitrification facility.

**Proposal Member, Moody Air Force Base Performance Based Remediation Task Order, Georgia, Department of the Air Force, Cost Plus Incentive Fee, 9/2007, $10 million:** Acted as a lead member on a team that authored a proposal describing our technical/management approach, regulatory experience, approach risks, and price for cleaning up 12 SWMUs contaminated with various chemical constituents. The objectives of the technical and cost proposal were to describe the necessary activities and costs to achieve one of the following site goals: No Further Action site closure, production of a risk based closure plan/exit strategy, or reduction of site life cycle costs.

**Proposal Member, SPRU Land Areas, Niskayuna, New York, DOE, Cost Plus Incentive Fee, 6/2007, $35 million:** As part of a team including CAPE, TPMC, and ECOR; helped produce a technical, management, and cost proposal for the environmental restoration services of approximately 15 acres of radiologically contaminated soil and groundwater. The objective of the proposal was to detail our approach for cleaning up the contaminated areas in accordance with specified criteria, transporting and disposing of wastes in a permitted facility, generating final closure reports for the site, and restoring the area to existing conditions for unrestricted release.

**Proposal Manager, Buffalo District Environmental Services, Buffalo, New York, USACE, Task Order Not to Exceed, 5/2007, $7.5 million:** Led a team consisting of URS and Chesapeake Nuclear Services personnel that authored a proposal for an IDIQ Small Business Set Aside contract involving environmental support efforts within the Great Lakes and Ohio River Division boundaries. The proposal detailed the technical requirements needed to furnish studies, materials, labor, investigations, equipment, permits, etc that could be necessary for environmental support at hazardous waste sites with emphasis on radioactive waste and site closure.

**Proposal Member, St Louis District HTRW, St Louis, Missouri, USACE, Task Order Not to Exceed, 4/2007, $4 million:** As part of a proposal team led by the 8a small business LATA and EDI, prepared a task order proposal that included information on capabilities, past performance, and price/cost for HTRW removal/remedial activities managed by the St Louis District. The proposal included detailed descriptions of the team's field engineering, remedial work, and management services expertise and experience with federal HTRW programs primarily involving low-level radioactive material removal.

**Proposal Member, Moab Project Site, Moab, Utah, Department of Energy, Cost Plus Award Fee, 1/2007, $102 million:** As part of a large proposal team consisting of many people from WGI, SEC, and URS, helped to contribute to the production of the task order and cost proposal for the remediation of a portion of the Moab Project Site to the standards set forth in 40CFR192, while placing the materials in an NRC-approved disposal cell near Crescent Junction, Utah. Some of the major task order objectives that were detailed in the proposal include completion of a Final RAP, excavation and management of residual radioactive material, shipment of the excavated

material, and management of the material at the disposal site.

**Proposal Member, Mound Operable Unit 1 (OU-1) Project, Miamisburg, Ohio, Department of Energy, Cost Plus Fixed Fee, 8/2006, $29 million:** As part of a proposal team including CAPE, TPMC, ECOR, Morphic, and WGI, assisted in writing and producing a technical and cost proposal to provide remediation and disposal of sanitary, hazardous, and low-level radioactive soils from the OU-1 Project Area at the DOE Mound Site. The 25 page proposal documented work activities such as sampling and analyses, contaminated materials removal, site closure to acceptable industrial reuse standards, and compliance with CERCLA.

**Engineer, Stormwater Pollution Prevention Plan, Greeneville, Tennessee, John Deere Power Products, Fixed Price, 9/2006, $15K:** Performed the surface water hydrology modeling and detention pond analyses for a 20-acre site using TR-55 and Pond-2 computer programs. The modeling and design procedures were necessary to complete the Plan and receive approval for a permit to expand a 14-acre truck parking area. Activities included watershed delineation, soils and terrain investigation, runoff determination, and surface water/erosion control structure design.

**Engineer/Consultant, Feasibility Study, Parks Township, Pennsylvania, U.S. Army Corps of Engineers, Cost Plus Fee, 2004-2006, $500K:** Co-authored a feasibility study report for a 44-acre, NRC-licensed disposal area in Pennsylvania. The site consisted of a number of shallow, unlined trenches within which radioactive wastes were disposed of throughout the 1960s. The site is to be cleaned up under the Formerly Utilized Site Remedial Action Program, with USACE guidance, and in accordance with the CERCLA process.

**Engineer/Consultant, CERCLA Documents, Middlesex, New Jersey, U.S. Army Corps of Engineers, Time and Materials, 2002-2005, $5M:** Co-authored several documents for a remedial action involving contaminated soils and groundwater at a facility formerly used to sample, store, test, and transfer uranium, thorium, and beryllium contained ores. The purpose of the Superfund process was to define the nature and extent of contamination, identify and discuss potential applicable or relevant and appropriate requirements, identify and screen remedial technologies, develop remedial action alternatives, and recommend an appropriate cleanup process.

**Consultant/Citizen, Advisory Board, Lewiston, New York, U.S. Army Corps of Engineers/Town of Lewiston, 2003-Present:** Involved with the Lake Ontario Ordnance Works (LOOW) Restoration Advisory Board, which is made up of a panel of community advocates, environmental professionals, and government agencies to promote the satisfactory remediation of the LOOW site that has been contaminated over many years from various chemical and radiological activities. The Board is made up of many committees that work together to ensure the greatest protection of human health and the environment within the Niagara County community.

**Support Engineer, Landfill Design, Clive, Utah, Envirocare of Utah, Fixed Price, 10/2002, $20K:** Performed the preliminary design and cost estimate of a mixed waste landfill equipped with a 6-ft multilayer cover and double liner leachate collection system. The landfill was constructed to contain excavated soils and sediments from dewatered ponds, storage areas, and facility D&D waste contaminated with various metals and radionuclides.

**Support Engineer, Remedial/Cover Design, Niagara Falls, New York, Dupont, Cost Plus Fee, 2001-2002, $100K:** Supported the design of a groundwater remediation and hazardous waste cover system installed to clean up and prevent further migration of hazardous contamination caused from solid waste dumping. The design involved the installation of a trench system and a RCRA cover.

**Consultant, Landfill Closure, New York, New York, CSX Real Property, Time and Materials, 5/2002, $10K:** Performed an independent design and cost estimate review of a 10.5-acre cover that was constructed over an abandoned solid waste dump. The design included a groundwater collection system, post closure maintenance, and various closure activities including clearing and grubbing, grading and earthwork, geotextile installation, storm water controls, and gas venting system construction.

**Consultant/Engineer, Phase 1 Environmental Site Assessment, Multiple Locations, Cardinal Health, Fixed Price, 12/2001, $10K:** Performed Phase 1 environmental site assessments (ESAs) for a radiopharmaceutical company to evaluate potential environmental concerns that may be associated with the subject sites and the neighboring properties. The ESAs involved site reconnaissance and creation of reports in accordance with ASTM standards.

**Consultant/Engineer, Design Review, Utah, Western Zirconium and Envirocare of Utah, Fixed Price, 7/2001, $20K:** Acted as expert reviewer for the closure design of portions of a decommissioned nuclear fuel reprocessing facility and the design of new disposal cells for a radioactive Class A waste disposal area at a licensed radioactive waste disposal facility.

**Design/Field Engineer, Waste Characterization and Shipping, Billerica, Massachusetts, Dupont, Fixed Price, 7/2001, $10K:** Designed and performed a sampling project for the characterization of mixed waste contained in 55-gal drums. The project included writing a health and safety plan, estimating the cost of the sampling activities, designing a sampling procedure, performing the drum sampling, and packaging the samples for shipment to the authorized laboratory.

**Support Engineer, Superfund Soils and Facility Remedial Design, Glen Cove, New York, Li Tungsten/U.S. Environmental Protection Agency, Fixed Price, 2001, $500K:** Assisted in the creation of a remedial design package intended to clean up an abandoned metal processing facility. The design involved large-scale excavation and characterization, packaging, and disposal of naturally occurring radioactive material. The deliverable included project specifications, cost estimations of all design activities, drawings of the remediation method and site conditions, and a bid package.

**Design Engineer, Aboveground Storage Tank Containment Design Specifications, Spartanburg, South Carolina, Milliken, Time and Materials, 6/2001, $10K:** Designed and authored specifications for a retention basin equipped with a geomembrane and sump for the secondary containment of process acids in an above ground storage tank.

**Design/Support/Field Engineer, Soils and Facility Remedial Design, Long Island, New York, Brookhaven National Laboratory/U.S. Department of Energy, Fixed Price, 1999-2000, $500K:** Prepared and designed the remedial action for four “areas of concern” containing radiologically contaminated soils and debris at a national laboratory. The action involved large-scale excavation, contamination controls, site restoration, and waste handling, stockpiling, separation, classification, and disposal.

**Engineer/Field Engineer, Hazardous Waste Removal Design, Lewiston, New York, Town of Lewiston/U.S. Army Corps of Engineers, Fixed Price, 2000, $200K:** Designed a demolition/remediation plan for an abandoned TNT pipeline made of vitrified clay and once used for processing ordnance.

**Consultant/Engineer, Waste Brokering, Tri State Area, Lawley Service Insurance, Cost Plus Fee, 1996, $10K:** Created and managed a database containing information on solid waste disposal and transfer facilities in the Tri-State area in order to mediate activities and set up contracts for waste transportation and disposal and landfill/facility insurance.

**Support Consultant, Landfill Support/Permitting, Rotterdam Landfill, Time and Materials, 1996, $100K:** Produced and restructured permits, engineering reports, policy plans, Environmental Impact Statement and other documentation for newly constructed and recently expanded solid waste facilities.

**Support Engineer, Landfill Design, Seneca Falls, New York, Seneca Meadows, Cost Plus Fee, 1996, $50K:** Designed solid waste landfill cells in accordance with the existing topography, state and federal regulations and guidelines, planimeter calculations, HELP model simulations, foundation analyses, liner technologies, etc.

**Field Engineer/Manager, Landfill Cap, Ovid, New York, Superior Disposal, Time and Materials, 1996, $100K:** Designed, coordinated, and managed the construction of an interceptor drainage trench, clay wall barrier, landfill gas emission system, and geomembrane cap for an abandoned construction and demolition landfill. The closure construction activities were performed using heavy machinery, excavation crews, survey equipment, design specifications, etc.

**Support Consultant/Engineer, Underground Storage Tank Removal, Youngstown, New York, Yellow Goose Service Station, Fixed Price, 1995, $40K:** Designed the remediation and closure of two underground storage tanks and the associated contaminated soils at an abandoned gas station.

**Field Engineer, Indoor Air Sampling, Buffalo, New York, Channel 7 News, Fixed Price, 1995, $10K:** Sampled indoor HVAC systems to determine indoor air quality through identification of hazardous fungal and bacterial cultures.

## Education

2005: MBA, Marketing, Management, and Negotiations, SUNY at Buffalo
1998: MS, Environmental Engineering and Science, Clemson University
1995: BS, Environmental Engineering Sciences, University of Florida

## Registration/Certification/Specialized Training

2016: 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) refresher
2015: NYSDEC Erosion and Sediment Control
2015: NCEES Record Completed
2014: 10-hour OSHA Construction Industry
2014: 30-hour OSHA Construction Industry
2013: FEMA Training Certification
2013: NYSDOH Asbestos Project Designer Certification
2013: NYSDOT Transportation Enhancement Program and Federal Aid Highway Reimbursement Program
2012: Arsenic - Health and Remediation Applications
2012: Hazardous Materials Management
2011: Building Demolition and Environmental Remediation Planning and Execution
2011: USACE Great Lakes and Ohio River Division Construction Roundtable
2010: Construction Quality Management (CQM) for Contractors – USACE - 5 year period
2010: AHA Heartsaver First Aid Program Certification
2009: New York State Stormwater Management Certification
2009: Construction Administration for Design Professionals
2002: Professional Engineer, New York, 079402
2001: Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)
1998: 40-hour HAZWOPER – initial/original course
1995: Engineer In Training, Florida

## Publications and Presentations

"Radioactive Materials in Niagara County," presented to the Monroe County Environmental Law Committee in November 2013 to help explain the issue of radioactive materials in the subsurface throughout many areas within WNY primarily centered in Niagara Falls.

"Radioactive Materials in Niagara County," presented to the Buffalo Environmental Law Committee in April 18, 2013 to address the growing issue of radioactive materials in the subsurface throughout many areas within WNY primarily centered in Niagara Falls as a result of historical metallurgical processes.

"Long-Term Performance Evaluation for a Multi-Layer Closure Cap," presented at the 2001 International Containment & Remediation Technology Conference, Orlando, Florida and published in ASCE's Practice Periodical of Hazardous, Toxic and Radioactive Waste Management, 2004.

"Landfill Leachate Characterization and Lagoon Treatment", presented at Clemson University in 1998 to the Graduate School of Environmental Systems Engineering in partial fulfillment of the requirements for the degree of Master of Science.

## Chronology

1/2013 – present: Brydges – environment, engineering and energy (BE3)
7/2010 – 1/2013: LATA, Inc., Amherst, New York
3/2009 – 7/2010: EnSol, Inc., Niagara Falls, New York
8/2002 – 9/2005: SUNY at Buffalo, Amherst, New York
3/1998 – 3/2009: URS, Buffalo, New York
8/1996 – 3/1998: Clemson University, Clemson, South Carolina
6/1995 – 8/1996: EnSol, Inc., Niagara Falls, New York; Biolyne, Amherst, New York
8/1990 – 6/1995: University of Florida, Gainesville, Florida

**John H. Boyd, PE**
**Senior Geologist**

## Overview

Mr. Boyd has expertise in project management and field coordination of soil vapor intrusion investigations, soil and groundwater investigations, in-situ and ex-situ soil bioremediation, and environmental sampling and analysis at MGP, petroleum and PCB contaminated sites. He has worked on petroleum remediation system design and installations, remedial system operation and maintenance, geophysical investigations, wellhead/watershed protection studies, and performed landfill, construction and storage tank inspections. He has extensive field experience in drilling supervision, borehole logging, environmental sampling of NAPL, DNAPL, soil, groundwater, surface water and sediment at petroleum refineries and manufacturing facilities.

## Areas of Expertise

Environmental Assessment and Remediation
Brownfield Assessment and Remediation
Stormwater, Erosion and Sediment Control Design and Installation
Petroleum Facility Remediation

## Years of Experience

BE3: 6 years
AECOM: 22 years
Other Firms: 10 years

## Project-Specific Experience

**Site Supervisor, Dow Chemical Company, Niagara Falls, New York (2013-2018):** Site supervisor for a multi-million dollar cleanup of mercury impacted soil and bedrock at an active chemical manufacturing facility once owned by Dow Chemical Co. Responsibilities include overseeing site excavation activities and the offsite shipment of approximately 14,000 tons of mercury impacted soil to date. Position also requires extensive contact and coordination with NYSDEC
regulatory personnel, numerous subcontractors and the current site owners.

**Site Supervisor, General Electric International, Inc., Tonawanda, New York (2015):** Site supervisor for a Corrective Measures Implementation at an active GE Parts and Repair Service Center. Corrective measures included the excavation and disposal of approximately 6,000 tons of PCB contaminated hazardous and non-hazardous soil, the cleaning of approximately 2,400 feet of sanitary and storm sewer pipe, and the repair or replacement of asphalt parking areas and roadways.

**Site Coordinator, Con Edison Corporation, New Rochelle, New York (2014):** Site coordinator for a Remedial Investigation (RI) at a former MGP site which is situated beneath a five lane highway and adjacent commercial properties. Responsible for implementation of Community Air Monitoring Plans, drilling supervision, well design and construction, and well development and testing. .

**Site Coordinator, Con Edison Corporation, Bronx, New York (2011-2012):** Site coordinator for three extensive MGP Remedial Investigations (137$^{th}$ Street, 138$^{th}$ Street and 295 Locust Avenue). Responsible for implementation of Community Air Monitoring Plans, drilling supervision, well design and construction, and well development and testing.

**New York State Electric & Gas Corp., Former MGP Sites (2010-2011):** Provided implementation of Community Air Monitoring Plans at the Saranac Street former MGP site in Plattsburgh, NY and at the Court Street former MGP site in Ithaca, NY.

**Field Coordinator, New York State Department of Environmental Conservation, various locations, New York**

**(2005-ongoing):** Field coordinator for numerous soil vapor intrusion (SVI) investigations throughout New York State. Extensive experience in the collection of soil vapor, indoor and outdoor air samples in a variety of residential and industrial environments, using a variety of sample collection techniques. Responsible for the design of many of the sampling techniques used by URS, NYSDEC and others.

**Project Manager, New York State Department of Environmental Conservation, various locations, New York (2006-2008):** Project and field coordinator for an 18 month NYSDEC funded research project to study the temporal and spatial variability of chlorinated soil vapor in residential structures for evaluating the soil vapor intrusion pathway. Project consisted of monthly sampling of soil vapor, sub-slab soil vapor, indoor air and outdoor air in residential structures at five locations throughout New York State. Other parameters collected included CO2, CH4, O2, subslab/indoor pressure gradients and weather data.

**Project Manager, Chemcentral, Inc., Tonawanda, New York (2005):** Project Manager responsible for creating SPCC plans for this large chemical products distributor.

**Field Coordinator, Bethlehem Steel Corporation, New York (1995-2004):** Field Coordinator for an extensive RCRA Facility Investigation at this former integrated steel manufacturing facility. Responsible for management of numerous field investigations through five investigation phases to characterize the nature and extent of environmental conditions at this facility. This 1600-acre site along Lake Erie has a wide range of hazardous and solid waste management units. LNAPL and DNAPL, significant concerns at the site, were investigated through the installation and sampling of over 200 monitoring wells and piezometers in a multi-aquifer system. MGP-type wastes were present in several operable units and resulted from facility coking, benzol plant, and steel-making operations. Mr. Boyd represented the client at numerous regulatory meetings and interfaced with client's legal team on a continuing basis. Responsible for the coordination and preparation of the draft RFI report submitted to the USEPA and NYSDEC in 2004.

**Site Coordinator, Bethlehem Steel Corporation, Galvanized Products Division, New York (1999):** Site Coordinator for Chemical Bulk Storage tank testing program, which included the integrity testing of tanks ranging in size from 1,000 gallons to over 100,000 gallons in capacity.

**Project Manager, Bethlehem Steel Corporation, South Buffalo Railway, New York (1998):** Project Manager for the investigation of a diesel fuel spill that had entered a nearby surface water body. Provided recommendations for cleanup alternatives.

**Project Manager, City of Niagara Falls, New York (1997):** Field Project Manager for a New York State Brownfields site investigation program in Niagara Falls, NY.

**Project Manager, Mobil Oil Corporation, New York (1991-1995):** Site Coordinator and Project Manager for 40 investigations and remediation projects for two large petroleum retailers. Performed petroleum remediation investigations and remedial system designs and installations at retail and refinery facilities. Managed the budgets and reporting for remedial system operation and maintenance.

**Project Manager, Mobil Oil Corporation, New York (1992-1994):** Project Manager for two New York State Part 360 permitted aboveground soil bioremediation facilities.

**Project Manager, Elmira Water Board, Elmira, New York (1989-1991):** Field Project Manager for the construction and testing of four high-yield (2,000 gpm each) groundwater production wells. Responsible for drilling supervision, well design, development and testing. Wells are presently in service and provide a significant source of the city's water supply.

## Education

1986: M.A., Geology, State University of New York at Buffalo
1970: B.A., Geography, Boston University

## Registration/Certification/Specialized Training

OSHA 29 CFR 1910.120 40-Hour Safety Training
OSHA Hazardous Materials Transportation Regulations: DOT/HM-126F

## Publications and Presentations

.Sundquist, J. A., W.E. Wertz, J.H. Boyd, September 27, 2007 "Sub-slab Depressurization Performance Evaluation", Proceedings of Air & Waste Management Association's Vapor Intrusion: Learning from the Challenges, Providence R.I. pages 213-224

## Chronology

2016 – Present: Brydges Engineering in Environment & Energy (BE3)
1989 – 2016: AECOM, Buffalo, New York
1979 – 1989: With other Firms

**Paul Staub, E.I.T**
**Environmental Engineer/Consultant**

## Overview

Experienced in project management including scheduling, testing and construction oversight. Proficient in technical writing, managing multiple projects and communication with clients and contractors. Comprehension of environmental permitting and local, state and federal standards, laws and guidance. Familiarity with Community Air Monitoring Program (CAMP), Brownfield Cleanup Program (BCP), Phase I and II Environmental Site Assessment (ESA), and Erosion and Sediment Control.

## Areas of Expertise

Environmental Assessment and Remediation
Environmental Engineering

## Project-Specific Experience

**Project Manager, Various Locations, 2023 – Present:** Experience formulating Phase I ESA reports. Associated tasks include site reconnaissance, historical review, and interviews.

**Project Manager, Steamboat Square Properties, Albany NY, July 2023 – Present:** Formulated multiple Phase I ESA and Phase II ESA reports, Soil Vapor Intrusion Work Plan, and completed a Nation Environmental Policy Act (NEPA) Part 50 Environmental Assessment. Associated tasks include site reconnaissance, historical review, interviews, sampling various media, coordination with and oversight of drilling subcontractors, communication and comment response with Housing and Urban Development (HUD) Environmental Officer.

**Permit Application Drafting, 377 Main Street, Buffalo, NY, February 2024 – March 2024:** Tasks include communication between clients and agencies (e.g., Buffalo Sewer Authority (BSA)), sampling, and application drafting.

**Excavation Oversight/Qualified Environmental Professional (QEP), Alta Vista, Rochester, NY, 2024 – Present:** Monitoring site excavation and transport of contaminated soil and completing daily field reports. Ensured compliance with the Community Air Monitoring Program (CAMP).

**Excavation Oversight/QEP, Fairfield Village, Rochester, NY, 2024 – Present:** Monitoring site excavation and transport of contaminated soil and completing daily field reports. Ensured compliance with the CAMP. Completed pre-occupancy vapor intrusion sampling.

**Excavation Oversight/QEP, Playter Gardens, Buffalo, NY, 2024 – Present:** Monitoring site excavation and transport of contaminated soil and completing daily field reports. Ensured compliance with the CAMP.

**Project Engineer, Simon Southwest Properties (BCP Site C915387), Buffalo New York, 2024 – Present:** Responsible for coordination with New York State Department of Environmental Conservation (NSYDEC) Project Manager (PM) regarding Remedial Investigation (RI) field work. Associated tasks include sampling groundwater, soil, and vapor in accordance with Division of Environmental Remediation (DER)-10 standards.

**Project Engineer, 47 East Amherst (BCP Site C915397), 2024 – Present**: Formulated Remedial Investigation Work Plan (RIWP) and assisted in field sampling activities.

**Project Manager, 1262 Broadway, Buffalo NY, December 2024 – February 2025**: Completed Phase I ESA and Phase II ESA reports. Associated tasks included site reconnaissance, historical review, interviews, and sampling soil, groundwater, sub-slab and soil probe vapor sampling, coordination with and oversight of drilling subcontractor.

**Project Manager, 333 1st Street (BCP Site C932183), 2025 – Present:** Responsible for coordination with NYSDEC regarding all BCP activities. Associated tasks include formulating work plans, summary letters, DEC comment response, and daily field reporting.

**Project Manager, Ellicott Town Center, Buffalo NY, 2025 – Present**: Responsible for communication with client regarding pre-occupancy radon and vapor testing. Associated tasks include collecting vapor and radon samples, creating analytical tables, and formulating summary reports.

## Education

2023: BS, Environmental Engineering, University at Buffalo - SUNY

## Registration/Certification/Specialized Training

40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER)
Engineer in Training Certification
8-hour Radiation Safety Training course
4-hour Erosion & Sediment Control Training
Radiological Worker Training I&II

**John B. Berry, P.E.**
**Environmental Engineer/Senior Project Manager**

## Overview

Mr. Berry is the senior engineer and project manager for environmental services and remediation projects and he has recently evaluated and remediated properties for large commercial developments included assessment of environmental concerns, utility services, permit and zoning requirements, community master plans, access restrictions, drainage concerns and site geology. He has managed numerous projects for BE3 including various Brownfields remedial investigation/remedial design projects and Phase II/remediation programs. Mr. Berry is also prepared numerous remedial and soil management plans to manage the handling and movement of impacted soils including erosion and storm water controls.

Mr. Berry's past experience includes being the District Manager of Maxim Technologies Northeast District where he was responsible for all engineering and environmental/civil investigation projects in several northeast States. He was responsible for projects related to environmental site assessments (ESAs), site investigation and remediation of UST sites and remediation of industrial sites. Prior to his time at Maxim, Mr. Berry was the manager of RUST Environment & Infrastructure Buffalo, New York office. He was responsible for the management of all technical and support personnel and production aspects of the Division Office. He also managed projects related to hazardous waste remediation with particular emphasis on ESA's, RI/FS and remedial design. Mr. Berry served as Assistant Program Manager for RUST's $20 million NYSDEC Standby Contract.

Mr. Berry was Acres International Corporation Division Manager responsible for Acres' Industrial and Waste Management Division in Acres' Buffalo office. The Division serviced a nationwide client base of industries and government agencies. He has also been a Project and design engineer on a variety of highway and airport projects for McFarland-Johnson-Gibbons Engineers.

## Areas of Expertise

Environmental Remediation
Radioactive, Solid, and Hazardous Waste Management
Health Physics
Stormwater, Erosion and Sediment Control Design and Installation
Business Development and Marketing
Facility Decontamination and Decommissioning (D&D)

## Years of Experience

BE3: 5+ years
PEI (became BE3) 10 years
Maxim: 9 years
RUST: 4 years
Acres: 17 years

## Project-Specific Experience

**Project Manager/Professional Engineer 2015 – present:** As PM/PE, authored and managed several NYS Brownfield Program deliverables for a verity of client on many sites throughout New York State. Project plans include Phase I & II ESAs, Brownfield applications to NYSDEC, remedial design/implementation, remediation Final Engineering Reports and Site Management Plans, civil/ALTA surveys, SEQRA forms, SWPPPs, endangered/threatened species surveys, and geotechnical

## Private Industry

Project manager for Brownfields SI/RAR/IRM Building Demolition/site remediation Puritan Laundry Facility, Rochester, NY.

Project manager for Brownfields SI/RAR/IRM Remington Rand Facility BCP, North Tonawanda, NY; Brownfields SI/RAR/IRM.

Liaison Manager for services at Chemical Waste Managements (CWM) Model City, New York hazardous waste treatment, storage and disposal facility. Projects performed included: site wide Corrective Measures Study (CMS); surveying and oversight management of the construction of a new hazardous waste landfill; design of several interim remedial measures (IRM) for groundwater and soil remediation; design and construction oversight of aqueous treatment system modifications and leachate transfer systems.

Construction oversight manager for several remediation projects at Occidental Chemicals Tonawanda, New York operations including preparation of Engineering Certification Reports. Remediation included excavation of contaminated river inlet sediments, installation of a ground water interceptor trench, several pump stations and the installation of a groundwater monitoring system.

Project Manager for several investigation and design projects at Niagara Mohawk's Dunkirk, New York coal fired power plant site. Projects included the investigation of contaminated surface runoff and groundwater contamination, design of treatment/collection systems to meet outfall permit standards, performed a plant water balance study and a coal pile leachate contamination study.

Project Manager for the Phase 2 investigation, remedial design and remedial oversight for the removal of contaminated soils required for the expansion of the Niagara Falls Factory Outlet Mall for Benderson Development. Project manager for the design and construction oversight of a new process plant to separate PCB contaminates from transformer oils for Union Carbide Corp.

Project Manager for a new aqueous treatment plant for SCA Chemical Services in Niagara Falls, New York. The plant was designed with flexible treatment options to handle a variety of hazardous liquid waste streams.

Responsible for the design and construction oversight of the geotechnical stabilization of uranium tailings impoundments for Union Carbide in Uravan, Colorado. The project included characterization of surface runoff and tailings leachate, design and construction oversight of a stabilization berm with a seepage collection system and preparation of a long-term operation and maintenance plan.

Responsible for the design and construction oversight of stabilization measures for a 120 feet high vanadium tailings dam and an acid mine runoff collection and treatment system from a1200 acre mining and process facility for Union Carbide in Hot Springs, Arkansas.

Project Manager for the design of an industrial wastewater treatment system at Union Carbide's Ashtabula, Ohio Metals Plant. The project included treatment ponds, chlorination system, back acidification system and a new COE permitted lake discharge pipeline system.

Project Manager for the re-design of a series of interconnected treatment and storage ponds for Union Carbide's Marietta, Ohio Metals Plant. The project included the sampling, characterizing, removal and land filling of pond sediments and the raising of a flash/sediment retention dam.

Design and site Resident Engineer for the construction of a 180 feet high flash retention dam for the Ohio Power Co.

Responsible for numerous Environmental Site Assessments (ESA) for a variety of industrial and commercial clients.

## Government Agencies

Project manager for the following Brownfield remediation Projects: SI/RAR/IRM Hopkins Road Lime Piles, City of Buffalo ERP project; Brownfields SI/RAR/IRM Trinidad Park Site, City of Buffalo ERP project; Brownfields SI/RAR/IRM Randolph Foundry Site, Cattaraugus County; and SI/RAR/IRM Bush Industries Site ERP project, Cattaraugus NY.

Project manager for a project with a local municipality associated with residential well and ambient air monitoring and has completed a third-party review of a municipal landfill expansion.

Project Manager for an RI/FS at the Former Lake Ontario Ordinance Works site for the
U.S. Army Corps of Engineer's Kansas City District. The site was part of the "Manhattan Project" during World War II and is located in Lewiston, New York. Past operations at the site included the manufacturing, storage, and detonation of explosives and ordinances; storage of chemical warfare agents and radioactive materials; and TNT and high-energy fuels production.

Project Manager for an Interim Remedial Measure project at a NYSDEC Superfund site involving the preparation of remedial design documents, contractor bid review, remedial oversight and preparation of a final engineering report. The project involved the removal of over 2000 drums and 2500 tons of contaminated soil from an abandoned landfill. Upon completion of the IRM an RI/FS was conducted focusing on groundwater remediation.

Project Manager for the remedial design of the Florence Landfill EPA Superfund Site in New Jersey for the NJDEP. The site was a 26-acre closed industrial/municipal landfill. The design included: a synthetic membrane and clay composite cap; a perimeter soil bentonite slurry wall (5,000 feet); up gradient groundwater interceptor system; leachate extraction and treatment system; and gas collection and treatment.

Project Manager for an RI/FS at the Radiation Technology Superfund Site for the NJDEP. The site is a 100-acre former rocket fuel test facility.

Project Manager for an RI/FS at a NYSDEC Superfund site on the Hudson River related to cadmium contamination of a marsh.

Project Manager for an RI/FS for NJDEP at the Wilson Farm EPA Superfund Site in central New Jersey.

Project Manager for an RI/FS for NJDEP at the Central Gravel Pit EPA Superfund Site.

Project Manager for an RI/FS for NJDEP at the Hopkins Farm EPA Superfund Site.

Project Manager for the evaluation of a landfill cap at a PCB contaminated landfill for the NYSDEC and the design of a replacement cap.

Report review and QA/QC of investigation/remediation reports on oil spill sites (primarily UST) under a NYSDEC statewide petroleum spills contract. Each site included an evaluation of the extent and level of spill contamination, remedial design, and contractor oversight and closure report.

## Education

1966: B.S Civil Engineering, State University of New York at Buffalo

## Registration/Certification/Specialized Training

Registered **Professional Engineer** in the States of New York, Ohio, Maryland, South Carolina, West Virginia, Indiana, Michigan, New Jersey, Arkansas, Pennsylvania, Oklahoma, Colorado, Georgia, Illinois, Kentucky, Louisiana and Iowa.
2010: Filtrex Stormwater and Erosion Control Design Training/Certification
2009: Streambank Stabilization for Restoration/Flood Control/Erosion Projects Course
2005: SPDES General Permit for Stormwater Discharge from Construction Activity
1980: 40-hour HAZWOPER – initial/original course

## Publications and Presentations

Uranium Tailings Stabilization Project Paper – 1986 – presented at several conferences in Colorado and NewYork.

## Chronology

2013 – Present: Brydges Engineering in Environment & Energy (BE3)
2002 – 2013: Panamerican Environmental, Inc. (PEI)
1993 – 2002: Maxim, New York
1989 - 1993: RUST, Buffalo, New York
1972- 1989: Acres, Inc., Amherst, New York
1966 – 1972: MacFarland & Johnson Engineers, Buffalo, New York
1962 - 1966: SUNY at Buffalo, New York

# TRAVIS NUMAN

2392 Printup Rd. Sanborn, NY 141432
Phone : 775-848-1382 | E-Mail : tnuman0024@gmail.com

***Professional Summary***

Environmental Engineer | Ph.D. in Civil & Environmental Engineering
Results driven with expertise in water infrastructure, wastewater treatment, and project management. Extensive experience in post-wildfire water quality research, soil contamination analysis, and project coordination. Experience with GIS, AutoCAD, hydrological modeling, data analytics, and field investigations. Strong record of securing funding, publishing in peer-reviewed journals, and presenting at national and international conferences. Adept at project coordination, regulatory compliance, and interdisciplinary collaboration to drive successful business and environmental solutions.

***Technical Skills***

- **Environmental engineering**: Water quality assessment, water treatment design, wastewater treatment, stormwater management, hydrological modeling, air quality and atmospheric chemistry, hydrology.
- **Software & tools**: AutoCAD, ArcGIS, MATLAB, Python (for data analysis), SPSS, Microsoft, Adobe.
- **Field & lab skills**: Soil/water sampling, environmental chemical analysis, modeling, contaminate transport and air quality monitoring.
- **Project management & regulatory compliance**: Grant writing & funding acquisition, budgeting, environmental policy and permitting, stakeholder collaboration (tribal, federal, and municipal partnerships), technical reporting, research communication.

***Education***

**Ph.D.**

***University of Nevada Reno*** *(2019- 2025)* **|** ***Civil and Environmental Engineering,*** *Reno, NV.*

- CEE Tribal Fellowship
- William F. & Nadine M. Pillsbury Engineering Endowed Graduate Fellowship
- Harriet Wolf Scholarship awardee
- Tribal Agricultural Council Fellow
- Native Forward Fellow

***M.S.***

***San Diego State University*** *(2007-2009)* **|** ***Exercise Physiology,*** *San Diego, CA.*

- Co-chair Native American Student Association (NASA)
- SDSU ENS Dept. Fred Kasch research grant winner

***B.S.***

***California State University Sacramento*** *(2004-2007)* **|** ***Kinesiology, Exercise Science,*** *Sacramento, CA.*

- Chairman, Ensuring Native Indian Traditions Student Club
- Student Health Advisory Committee member
- Honors Society & Dean's List
- Varsity baseball team

**Work Experience**

***University of Nevada Reno*** **|** ***Research Assistant*** (2021-2025) | Reno, NV

- Managed field and laboratory studies for the Yang lab, ensuring timely delivery of results and adherence to grant requirements.
- Designed and implemented data collection methods for three post-wildfire carbon and nitrogen mobilization studies.
- Collaborated with interdisciplinary teams to develop actionable insights into soil and water quality impacts.

***Reno Sparks Indian Colony*** **|** ***Project Consultant*** (2023-2025) | Reno, NV

- Spearheaded project planning, financial acquisition, coordination and field/lab activities for Hungry Valley water/soil quality study.
- Worked with tribal leaders, engineers, and community stakeholders to align project objectives with environmental and infrastructure goals.

***Three Nations Management Group*** **|** ***Vice President*** (2019-2023) | Reno, NV

- Spearheaded the development and management of Reno-Spark Indian Colony dispensaries, driving strategic growth from inception to profitability.
- Led cross-governmental coordination with Federal, State, Tribal, and Local entities to ensure compliance and operational success.
- Established and structured a shell company to protect tribal interests, working closely with the Board of Directors and Tribal Council.
- Oversaw all business operations, financial planning, and market expansion, resulting in two profitable locations in South Reno and Verdi.
- Developed and executed marketing strategies.

***United Auburn Indian Community (UAIC)*** **|** ***PE Teacher*** (2015-2019) | Auburn, CA

- Developed and implemented physical education and cultural curriculum for the UAIC Private Tribal School, aligning with California educational standards.
- Integrated tribal traditions and cultural teachings into physical education programs to promote holistic student development.
- Designed and led age-appropriate fitness programs to enhance student health, coordination, and overall well-being.
- Collaborated with school administrators and tribal leaders to create an inclusive, culturally responsive learning environment.

***Four Winds of Indian Education*** **|** ***Program Specialist*** (2011-2015) | Chico, CA

- Managed and administered a large federal grant to enhance physical education programs in schools serving high Native American populations in Butte and Glenn County, CA.
- Developed and implemented culturally relevant physical education curricula, integrating Indigenous traditions and community engagement.
- Coordinated with school districts, tribal organizations, and government agencies to ensure compliance with grant requirements and maximize grant programing impact.

### *Conference Presentations & Industry Leadership*

- **Water infrastructure and the sacred circle** (2024) – Invited opening speaker
  Water Environment Federation Circular Water Economy Summit, Dallas, TX (National).
- **Incorporating indigenous knowledge** (2024) – Earth Day keynote speaker
  MET Council, Minneapolis MN (Local).
- **Fire and water** (2024) – Invited speaker
  Nevada Tribal Leaders Summit, Reno, NV (Regional).
- **Land, lithium, & water: basis of ongoing tribal objections** (2024) – Invited speaker
  Lithium Circular Economy Conference Symposium, Reno, NV (National).
- **The intersection of Indian and water law understanding tribes and current fights for water of the Colorado River** (2023) – Invited Speaker
  Water Environment Federation's Technical Exhibition and Conference 2023; Chicago, IL (International).
- **Indigenous relationship to water** (2023) – Invited Plenary Speaker
  Nevada Water Environment Association 2023 Annual Conference, Reno, NV (State).
- **Water motivation** (2023) – Invited Speaker
  Partnering For Impact Symposium, University of Nevada, Reno (National).
- **Water from a native perspective** (2022-2024) – Invited Speaker
  Water Environmental Federation Water Leadership Institute Program (National).

### *Committees*

- National Alliance for Water Innovation (US Dept. of Energy) – Small potable reuse (2024) .

### *Media Coverage*

- Ph.D. student Tavis Numan interviewed as panelist, aired by PBS Native America Season 2
- Ph.D. student Travis Numan's activities related to tribal development and water innovation. Read more.
- Ph.D. student Travis Numan interviewed for WEF monthly publication. Read more.
- Ph.D. student Travis Numan interviewed WEFTEC Live 2023. Watch here.

### *Peer-reviewed Publications*

1. **Numan T**, Lokesh S, Shahriar A, Timilsina A, Basyal S, Lard M L, Clark J, Zhao Q, Richardson J, Poulson SR, Cook RL, Samburova V, Joshi P, Yang Y. 2025. Post-wildfire mobilization of organic carbon. *Soil Systems.* 9*,*11.
2. Shahriar A, Lokesh S, Timilsina A, **Numan T**, Schramm T, Stincone P, Nyarko L, Dewey C, Petras D, Boiteau R, Yang Y. 2024. High-Resolution Tandem Mass Spectrometry-Based Analysis of Model Lignin-Iron Complexes: Novel Pipeline and Complex Structures. *Environmental Science & Technology*. 34, 15090-15099.
3. Timilsina A, Lokesh S, Shahriar A, **Numan T**, Yang Y. 2023. Quantification of quinones in environmental media by chemical tagging with cysteine-containing peptides coupled to size exclusionary separation. *Analytical Chemistry*. 95, 12575–12579
4. Timilsina A, Lokesh S, Shahriar A, **Numan T**, Schramm T, Stincone P, Schramm T, Nyarko L, Dewey C, Boiteau R, Petras D, Yang Y. Identifying quinones in complex aqueous environmental media (biochar extracts) through tagging with cysteine and cysteine-contained peptides and high-resolution mass spectrometry analysis. *Environmental Science & Technology*. 37, 16432-16443.

# James H. Hull

## Field Supervisor/Radiation Control Technician

- Highly adaptable at learning and understanding new procedures and techniques.
- Able to work independently or as part of a team.
- Skilled at working with people with diverse backgrounds.
- Highly developed communication and conflict resolution skills

### Relevant Skills

**RCT/Field Supervisor**

- Performed and documented radiation surveys, removal, and disposal of radioactive materials including gamma walkover surveys, remedial and waste T&D oversight.
- Performed calibration and testing of radiological equipment and probes.
- Collected smear, soil, and air samples for subsequent analysis.
- Processed documentation and manifests required by law for bulk packing, transporting and disposal of radioactive waste.
- Monitored and controlled personnel and equipment access to and from Radiation Controlled Zones.
- Facilitated and monitored the donning and doffing of personal protective equipment.
- Implemented and managed TLD and bioassay programs for monitoring workers exposure to radiation and radioactive materials. Tasks included sample collection, chain of custody documentation, packaging, and shipment of samples/badges to laboratories.
- Assigned daily work responsibilities, conducted site specific safety meetings for onsite radiological staff.
- Functioned as intermediary between radiological staff including RSO and other entities operating on the site including engineering staff and general contractor's superintendent.

**Construction Supervisor**

- Rigging loads and directing crane operations on commercial roof truss installations.
- Remediation assessment-construct data-data Transfer for Facilities Remediation
- Extensive experience in mold remediation working in full body Tyvek Suits and respirators.
- Reading and filling out daily reports and documents.
- Extensive experience working with as well as operating heavy equipment: concrete mixers, concrete pumps, site cranes, large cranes, boom lifts, excavators, lift baskets.
- Experience working in excavations.
- Extensive experience working at height on ladders, scaffolds, and mechanical lift baskets.

### Experience

- N Sabella: 2022 to present
- BE3: 2016-present
- Greater Radiological Dimensions: 2012 – 2016
- Great Lakes Environmental: 2010-2012
- Hartland Builders of N.Y. Inc. 2009-2010
- Timberline Builders: 2008-2009
- DenMar Concrete Co., 2007-2008
- Mississippi/Florida/Gulf Coast Area Hurricane Relief, 2004-2007
- Epic Landscaping and Maintenance: 2001-2004
- Niagara Co. Sheriff's Dept: 1986-2001

### Education

- Lewiston Porter High School Graduate 1984
- Criminal Justice Course Work, Buffalo State, 3 Years
- 1991 Graduate Niagara Co. Law Enforcement Academy, NCCC

### Certifications

- Radiation Safety Training
- OSHA Hazwoper 40-hour
- OSHA 10 Hour OSHA Construction Safety and Health
- Admar Supply Co. Safety Training /RT Forklifts